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Igniting Climate Entrepreneurship in MOROCCO

Findings from the Climate Entrepreneurship and Innovation Ecosystem Diagnostic

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"Entrepreneurship and innovation are the twin values that are both stepping stones towards freedom, social mobility and prosperity..."

- His Majesty the King Mohamed VI

GES, 2014

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Climate innovation Center MOROCCO

MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE

CLUSTER SOLAIRE

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Acronyms

AI	Artificial Intelligence
AMIC	Moroccan Association of Capital Investors
B2B	Business-to-business
CEED	Climate Entrepreneurship and Innovation Ecosystem Diagnostic
CO2	Carbon dioxide
CSP	Concentrated solar power
CTIC	Clean Tech Innovation Challenge, Morocco
CSP	Concentrated solar power
DIV	Development Innovation Ventures
GEM	Global Entrepreneurship Monitor
GIZ	German Agency for International Cooperation
GDP	Gross domestic product
GES	Global Entrepreneurship Summit
HR	Human resources
IFC	International Finance Corporation
IT	Information Technology
MAD	Moroccan Dirham
MASEN	Moroccan Agency for Sustainable Energy
MCIC	Morocco Climate Innovation Center
mCISE	Moroccan Center for Innovation and Social Entrepreneurship
MENA	Middle East and North Africa
MNF	Maroc Numeric Fund
MRE	Ministry of Moroccans Living Abroad and Migration Affairs
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
OS	Operating system
P2P	Person-to-person
PER	Public Expenditure Review
PV	Photovoltaic
R&D	Research and development
SEIS	Seed Enterprise Investment Scheme (UK)
SME	Small and medium enterprise
USAID	United States Agency for International Development
VC	Venture capital
WBG	World Bank Group

Glossary

Green Technology (Greentech or Cleantech)	Technologies that provide climate mitigation, adaptation benefits, or positive environmental benefits. Typical sectors include clean energy, energy efficiency, sustainable agriculture, food production, forestry, resource management and conservation, sustainable consumption and production, and environmental sustainability.
Green Technology Entrepreneur	An entrepreneur whose business is based on utilizing green technology in some form. This covers both entrepreneurs wishing to commercialize indigenous/local technologies and those deploying technologies and business models invented elsewhere. *Example.* A person who initially deployed a green technology successfully in Country A, and is now looking for new markets in Country B.
Green Technology Company	Companies that base their business on green technology, whether existing or new. This includes companies that innovate with regard to their process/business model — whether or not their technological solution is new. *Example.* Many solar startups (for example, SolarCity, Mosaic) do not offer a new solar technology, but are nevertheless innovating their delivery and business model aspects. *Note.* Many ventures that the World Bank considers "greentech firms" do not actually regard themselves as such.
Business Model	A company's method of creating value for the customers and capturing value for the company and its stakeholders.
Opportunity Entrepreneurs	An opportunity entrepreneur leads, founds, organizes, and/or runs a business that aims to grow beyond the scope of an individual's needs. It ultimately provides jobs and income for others in specific sectors.

Executive summary

The environment in Morocco, like many other low- to high-income countries, is particularly vulnerable to climate change. However, unlike other countries facing similar struggles, the Moroccan government has responded to these challenges and imbalances through a green growth agenda. This agenda is firmly oriented toward climate change mitigation and adaptation. Further motivated by concerns not only about energy security — but also about economic development and poverty reduction — the Moroccan government invested more than US2 billion in clean energy technologies and installed 166 megawatts (MW) of capacity between the years 2009 and 2013.[1] The primary goal of this investment was to drastically reduce the energy dependence on foreign sources and become increasingly more energy self-sufficient.

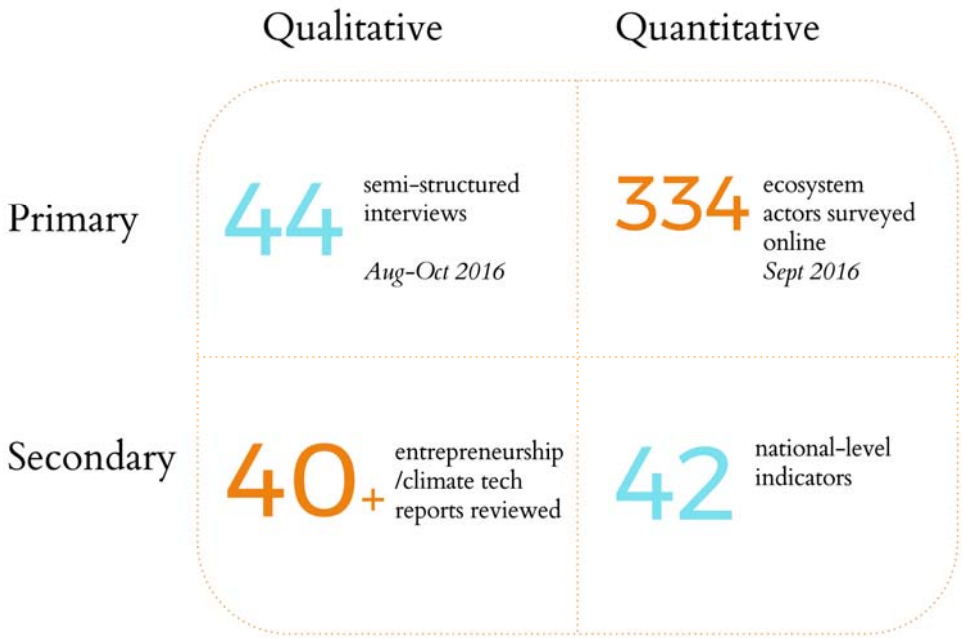
However, self-sufficiency begins at home. It requires investment in localized technologies through innovative entrepreneurs who can propel this growth in direct response to Morocco's climate threats. The primary way to combat these challenges is largely through the creation and adaptation of green technologies and climate solutions, such as small-scale hydroelectric plants, photovoltaic solar installations, off-grid solar plants, and biomass treatment facilities. Indeed, climate technology is an area in which investments are expected to exceed US$23 trillion in emerging markets between now and 2030, according to the International Finance Corporation (IFC).[2]

Although there are good opportunities for Moroccan growth-oriented entrepreneurs, stronger entrepreneurship-related policies and support to the climate entrepreneurship ecosystem is necessary. Such support would help improve the environment for green entrepreneurs, and unlock the full potential of Morocco's green private sector development agenda.

In recent years, investment in the various facets of Morocco's entrepreneurship ecosystem has become the focus of both the public and private sectors. The foundation has been developed, and all the structures necessary for nurturing not only entrepreneurship, but specifically climate entrepreneurship, have reached a 'start-up' stage. Nonetheless, the overall support environment requires more targeted intervention, in particular, favorable policies, resources, and a resilient entrepreneurial-minded culture to inspire future growth.

Research Approach

The report takes a mixed-methods approach, and is based on four forms of data collection and analysis undertaken from August-November 2016. By using different data sources, the team was able to triangulate the data and gain higher validity and consistency for the findings and recommendations (see figure 1e).



Source: Authors

Figure 1e. Climate Entrepreneurship and Innovation Diagnostic Data Collection Channels

From the perspective of various Moroccan stakeholders, the ecosystem suffers from structural barriers, a policy environment that could be strengthened, and gaps in knowledge and access. The research and analysis for this report delved deeper into these issues, and explored the current situation for the Moroccan green entrepreneur, while also bringing to light the different factors that shape Morocco's current entrepreneurship ecosystem.

The following are a range of the report's findings that have been organized into two interwoven groups: (i) "Morocco's green entrepreneurs," which details insights about green entrepreneurs doing business in Morocco; and (ii) "Morocco's burgeoning climate entrepreneurship ecosystem," which explores and defines the various strengths and limitations of the environment for doing business in Morocco.

Morocco's Green Entrepreneurs

Profile of Moroccan Green Entrepreneurs

The Moroccan green entrepreneur (surveyed) is young, educated, and started their business because they wanted to be their own boss. These entrepreneurs work in diverse sectors —from green

information technology (IT) to energy efficiency — and are creating and adapting technologies and solutions to solve some of Morocco's greatest environmental challenges. They are doing so at a time when investment in solutions to combat the country's climate challenges is high, as well as a public necessity. Case studies throughout the report complete the profile of the Moroccan green entrepreneur, showing the different stages of business maturity and providing more context to the different types of green IT, solar refrigeration, and other products and services being developed by local entrepreneurs.

Solo founders lack co-founders to build high-growth firms. The skills gap in Morocco limits most businesses from reaching their full potential. While entrepreneurs are generally highly skilled, most of their value tends to lie in technical areas, for example, scientific and mathematical skills. However, they lack the business savvy to advance their concepts and technologies beyond the ideation and early stages. Indeed, forty-three percent of surveyed Moroccan entrepreneur businesses are solo-run. This not only exacerbates the skills issue —as most of these climate technology startups tend to be started by a technical expert with a great idea, but less of the know-how to run and operate a successful business —but also makes it more difficult to obtain funding.

Too few mentors limit entrepreneurial growth. Finding solid vested mentors in Morocco to guide entrepreneurs through all phases of the growth cycle is difficult. Not only do mentors tend to be more technically- than business-focused in nature, but because of a perceived lack of a "giving-back" culture in the ecosystem, many mature entrepreneurs are viewed as unwilling to mentor their younger counterparts. This also promotes a lack of trust within the broader community.

Women entrepreneurs could benefit from dedicated support. There are currently no focused cleantech entrepreneurship programs for women. In this context, women lack entrepreneurial role models and mentors. Overarching inhibiting factors include: cultural expectations (including social and familial responsibilities); a lack of access to information, networks, financing — and by extension — markets and inputs. Nonetheless, young women are increasingly prevalent and active at a young age in the field of social entrepreneurship.

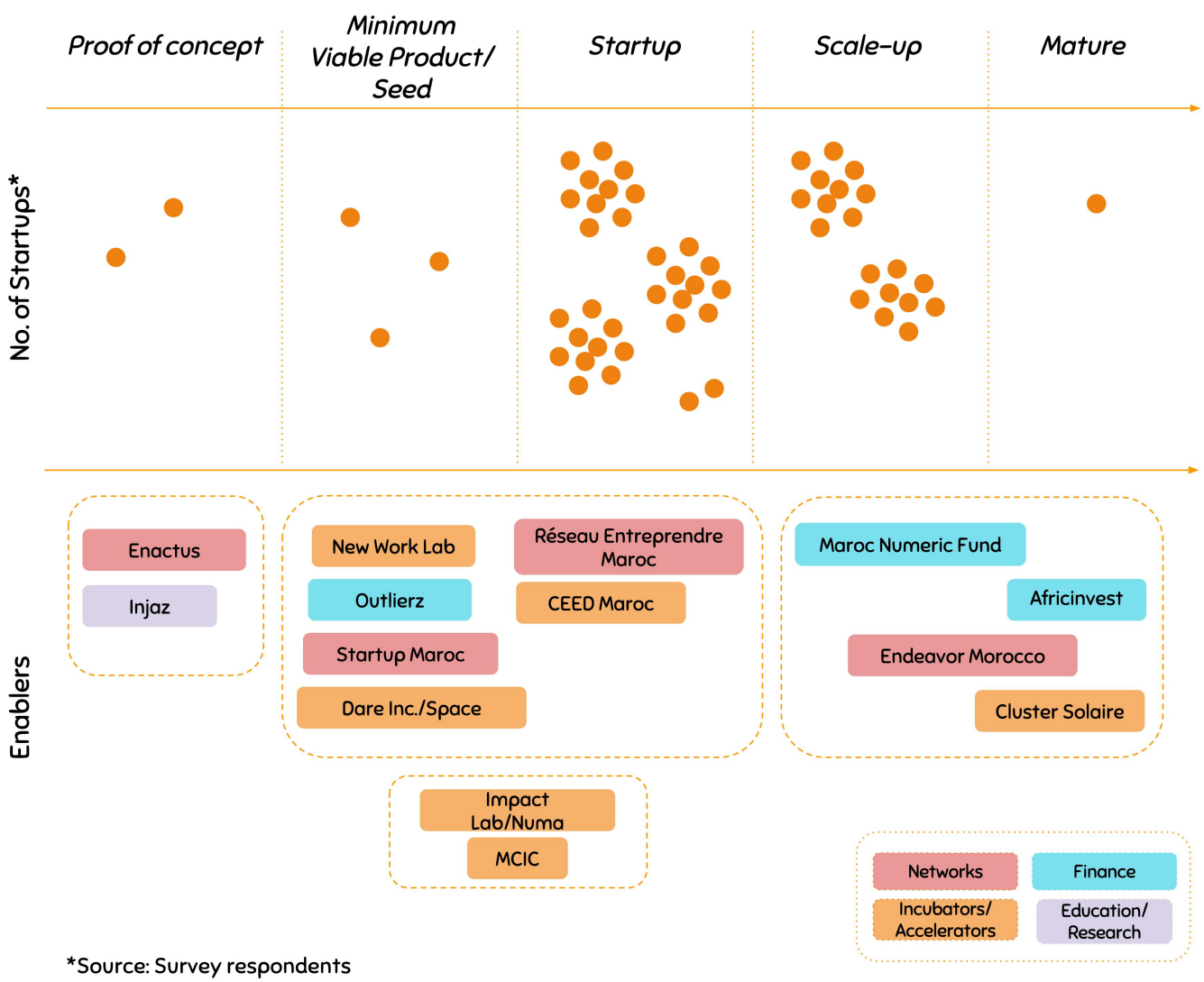
Morocco's Burgeoning Climate Entrepreneurship Ecosystem

A perceived lack of policy support to green entrepreneurs. The policy aspects of green entrepreneurship remain relatively new, and the roles of all of the players in the ecosystem and government are slightly underdeveloped. Further, there are misconceptions about the profile of entrepreneurs, and especially green entrepreneurs. These misconceptions hinder further development of the ecosystem. The government has taken steps toward better serving entrepreneurs, centralizing information and providing incentives for investing in startups. However, knowledge of these efforts is not yet widespread among the community. In this context, 62 percent of surveyed entrepreneurs said that overall government support is lacking.

A growing, but fragmented ecosystem. Many of the pieces necessary for building a healthy entrepreneurship ecosystem exist in Morocco. These include: active support organizations; a willing government; education and research centers with potential for impact; and investment from the international community. However, as many respondents suggested, there is a disconnect within the ecosystem that is exacerbated by a lack of communication among the key players (namely government and the private sector), which results in lack of sufficient support for entrepreneurial activities.

Entrepreneurs lack later-stage support. The general consensus among interview respondents was that early-stage support exists, but requires stronger connections in the ecosystem, as well as an improvement of existing infrastructure and quality. There is a clear gap in later-stage support programming in Morocco for green entrepreneurs. It is evident that the support a green entrepreneur can receive currently has its limits — in contrast to a digital entrepreneur, for example. With an absence of financial support and acceleration services, it is difficult for many green entrepreneurs, who are at this critical juncture to fully scale their businesses (figure 2e).

Figure 2e. Mapping Startups and their Enablers by Entrepreneurial Stage



Source: Authors

Few corporate and private foundation linkages exist to boost the ecosystem. Corporations and large private foundations have few links to the Moroccan entrepreneurship ecosystem. There is little trace of financial support or other significant entrepreneurship programs, which are commonplace in more developed ecosystems. This is a missed opportunity, as corporations and private foundations could bring value to the ecosystem by simply working with a select number of startups. This would provide them with the opportunity to grow.

Funding for start-ups is limited by risk-averse investors. Access to funding at every stage of enterprise development is difficult to attain in Morocco, and potential sources of financing are limited. Eighty-four percent of surveyed entrepreneurs were self-funded at the early-stages. With regard to later-stage support, 38 percent of entrepreneurs found it difficult to access (this includes loans, angel investing, and venture capital funding) — indicating that it as the biggest financial barrier to doing business in Morocco. This financial barrier is also exacerbated by the lack of risk-appetite among investors who are commonly viewed as only seeking stable investments. In this regard, such investors are more likely to invest in real estate than in a new start-up venture. Likewise, they are more likely to invest in digital than in cleantech ventures.

Market access is not widely available for green entrepreneurs. Green entrepreneurs commonly found the Moroccan market to be small and difficult to access. Almost 50 percent of surveyed entrepreneurs found the market size and demand unfavorable for doing business. Experts and entrepreneurs agree that the public market is virtually inaccessible. Opportunities are perceived to be reserved for larger, more established companies, and often international ones.

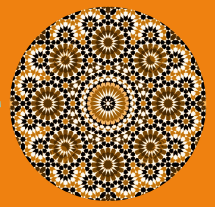
Additional market information is necessary for doing business. Fifty-four percent of entrepreneurs said that there was a lack of access to market information, nothing that this is the biggest market barrier to doing business in Morocco. As a result, green entrepreneurs often start their businesses in reverse. Rather than trying to solve a problem or fill a gap, many Moroccan green entrepreneurs create a technology or solution before sourcing demand or market fit. This, in turn, can stunt the development of a start-up business and its potential to scale.

Recommendations

	Short-term Strategy	Long-term Strategy	Goal
POLICY **Entrepreneurship and Innovation Policy**	Systematically review existing policies in the areas of innovation and entrepreneurship, as well as regulations in the cleantech space. Clarify the role of different government organizations in innovation and entrepreneurship. Clarify government funding in this space, particularly at the early stage. - *Examples* include Public Expenditure Reviews (PERs) for Science, Technology and Innovation; World Bank Research, Innovation and Technology Transfer Projects (Serbia, Colombia, and so on).	Establish a clear, overarching policy that supports innovation and entrepreneurship - *Examples:* the Italian Startup Act, the draft Tunisian Startup Act	Optimal and stable policy support to facilitate new firm creation, innovation, job creation, and growth.
SUPPORT **Ecosystem Strengthening**	Increase stakeholder networking and ecosystem linkages through a focused program to incentivize these linkages. - *Examples* include ecosystem strengthening programs in New York and Cape Town, South Africa. Fill existing gap in later stage support program (Cleantech acceleration program) - *Example:* Climate-KIC cleantech acceleration program (this is the European Union's main climate innovation initiative).	Robust linkages between different ecosystem players in the forms of collaborations, joint programs, networking events and possibly associations (of incubators, for example).	Strongly networked ecosystem that provides cohesive support from ideation through growth stages.

	Short-term Strategy	Long-term Strategy	Goal
FINANCE			
Access to Finance for Green Entrepreneurs	Pilot innovative funding mechanisms to test the appetite for alternative funding sources to working capital for green-growth stage entrepreneurs in Morocco. - *Examples* include person-to-person (P2P) initiatives to increase the focus on green firms, funding schemes to facilitate access to clean technologies by private households, and so on; de-risking financing to green entrepreneurs. Ensure that entrepreneurship programs are focused on product markets that are of interest to investors. Increase linkages with early stage and angel investors in this space (national and international). Pilot angel association for green investing, or build capacity of local investors / angels to invest in green firms. - *Example*: Caribbean angel investor network (focused on green firms)	Increase awareness about different mechanisms to increase access or de-risk finance for green small and growing businesses. Crowd in international sources of green investment (impact investors, foundations, and so on).	Increase access to working capital for green small and growing businesses.
HUMAN CAPITAL AND CULTURE			
Help Build Stronger Green Firms	Incorporate a strong co-founder matchmaking component to entrepreneurship programs, through working with existing business schools in Morocco to match technical talent with business talent. - *Examples*: Aalto University Raise awareness on importance of co-founders.	Broaden effort and include in education/training curricula.	Increase the deal flow of investible high-growth potential green ventures in Morocco.
Increasing Opportunities for Green Women Entrepreneurs	Increase opportunities for women green entrepreneurs through existing programs, raising awareness, as well as specialized training and mentoring.	Mainstream female entrepreneurship-focused programs through the educational system.	Boost the number of successful high-growth women co-founders / entrepreneurs.

MARKETS	Short-term Strategy	Long-term Strategy	Goal
Increasing Number of High Growth Green Ventures	Initiate an international matchmaking program that would aim to bring in existing business models and proven technologies to Morocco. - *Examples:* pilot through the CTIC program in Morocco with American entrepreneurs; Existing programs in , Ethiopia, Kenya, and South Africa through the World Bank Group. Increase support to more mature firms scaling new green solutions. - *Examples:* Cluster Solaire and the German Agency for International Cooperation (GIZ)-supported Fast Track 2 Market (FT2M) program.	Scale up to broader level initiatives that have proven successful in supporting green high-growth ventures.	Scale up to broader level initiatives that have proven successful in supporting green high-growth ventures.
Expanding Market Information for Entrepreneurs	Increase market awareness and information for green entrepreneurs in Morocco. - *Examples:* GIZ and the SwitchMed (European Union) are currently working on several initiatives.	Encourage broad market information on green sectors and intelligence to be mainstreamed into Moroccan organization's mandate and disseminated on web.	Increase growth opportunities for green entrepreneurs.
Expanding Market Access	Facilitate knowledge and opportunities for Moroccan green entrepreneurs to increase their presence abroad through matchmaking, partnerships, and so on. Stimulate the demand-side in Morocco through increasing the number of demonstration projects for green technologies, as well as working with corporates.	Increase information regarding the importance of small and medium enterprises (SMEs) being included in large corporate and government contracts.	Increase the potential market size /market pull for green Moroccan entrepreneurs.



INTRODUCTION

Introduction

A World Bank Group (WBG) team, together with the support of Cluster Solaire's and the Moroccan Agency for Sustainable Energy (MASEN), undertook a climate entrepreneurship ecosystem diagnostic in Morocco. The purpose was to shed light on the complexities of the country's climate entrepreneurship ecosystem. This was part of the preparation of an International Finance Corporation (IFC) advisory service activity.

Climate-smart development is a rapidly growing area in Morocco, and indeed much of the world. It has simultaneously been proven to boost economic development and contribute to more sustainable economic development by reducing emissions and energy costs, creating jobs, and increasing economic opportunity.[1] Climate entrepreneurship[2] offers a good opportunity to promote climate-smart development and help countries transition to a green economy. Opportunity entrepreneurs, who are the main focus of this report, and small and medium enterprises (SMEs) can play a key role in propelling the industry through the creation and adaptation of green technologies and solutions, as well as attendant job creation. However, there is currently a knowledge gap as to how to utilize existing resources to design solutions to promote future entrepreneurial activity in the green sector.

In order to substantially contribute to the knowledge in this area, as well as contribute to existing and planned WBG activities, the team considered several questions to guide the research:

I. What are the strengths, weaknesses, and opportunities for improvement in the existing climate entrepreneurship ecosystem?
II. What is the typical profile of potential high-growth, green entrepreneurs in Morocco, and what do they require to scale their operations?
III. How are the current climate entrepreneurship ecosystem players in Morocco – mainly the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify, and diffuse new technologies – helping or hindering climate entrepreneurship in the country?
IV. How can the scaling up of emerging technologies be better supported in Morocco?
V. How can Morocco's existing entrepreneurship activity be more inclusive of women and youth?

The overarching aim of this report is to inform different ecosystem stakeholders in Morocco on how to spur and sustain high-growth, green entrepreneurship and innovation activity. At the same, this report also aims to increase the awareness of and support to green entrepreneurs, as well as contribute substantively to the design of the aforementioned International Finance Corporation (IFC)-supported activity.

Methodology Overview

The report's methodology and analytical process were developed based on the Babson Entrepreneurship Ecosystem model (see Annex I for complete methodology). This model captures the most widely held understanding of entrepreneurial ecosystems, including the factors that constitute them and how they work. While the World Bank Group has previously undertaken diagnostics in Bangladesh, Serbia, and Suriname for various sectors, the Morocco diagnostic is the first climate-focused Entrepreneurship Diagnostic.

This report adopts a mixed-method approach. It is based on four forms of data collection and analysis undertaken from August-November 2016 (See figure 2). By using different data sources, the team was able to triangulate the data and gain higher validity and consistency for its findings and recommendations.

The structure of the report is as follows:

I. A context section based on secondary data analysis seeks to position Morocco's current status in the entrepreneurship, innovation, and climate-centered fields.

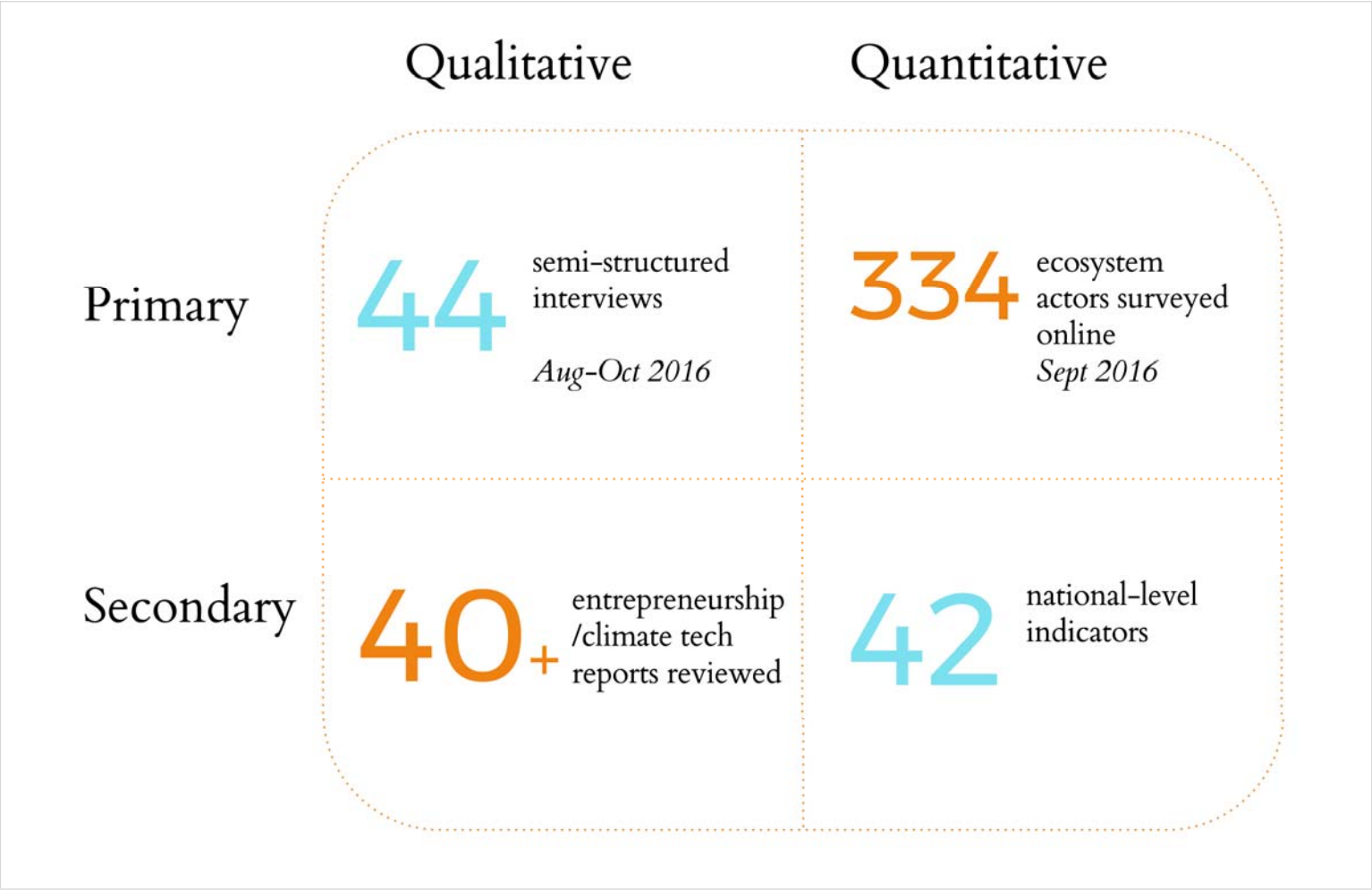
II. A findings section based entirely on primary data — both survey and in-person interviews — presenting the main outcomes of the assessment.

III. A recommendations section based on the findings and analysis of the two preceding Sections.

Figure 1. Babson Entrepreneurship Ecosystem Model

Source: Authors

Figure 2. Climate Entrepreneurship and Innovation Diagnostic Data Collection Channels



Source: Authors

The city of Ouarzazate, located in the middle of a bare plateau south of the High Atlas Mountains. To the south of the town is the desert.

Photo: Arne Hoel / World Bank

Morocco's Climate Challenge and Economic Opportunity

The environment in Morocco is particularly vulnerable to climate change. From the sand dunes of Ouarzazate to the coast of Tangiers, Morocco faces many climate-related challenges. These include: air pollution, solid hazardous waste, soil degradation, and decreasing water quantities and qualities. These conditions are slowly intensifying — and have tremendous social and economic ramifications.[3]

Detrimental climate impacts, such as droughts, sea-level rise, and food scarcity could be limited through the reduction of emissions by 12 gigatons (Gt).[4] Due to the substantial impact the recent drought had on agricultural production in the early part of 2015, Morocco's real gross domestic product (GDP) growth declined nearly three-fold, that is, from 5 to 1.7 percent in 2016.[5] It is clear that cutting the costs of climate change in countries like Morocco, which has an economy reliant on positive climate trends, is imperative. Indeed, it can have substantial lifetime effects and benefits.

In addition, Morocco is substantially energy dependent. About 90 percent of its energy comes from abroad. This includes a combination of coal, oil, gas, and electricity[6] — with a continuing strong reliance on petroleum.[7] The government has responded to these challenges and imbalances with a green-growth agenda. The government has firmly oriented its policy toward climate change mitigation, as well as the adaptation of multiple policy commitments to sustainable development.[8,9]

In order to reduce its dependence on foreign energy sources, the government set a goal in 2008 of generating 42 percent of its energy from renewables (mainly solar and wind) by the year 2020.[10] From 2009 to 2013 — further motivated by concerns about energy security, economic development, and poverty reduction — the government invested more

than US$2 billion in clean energy technologies and installed 166 megawatts (MW) of capacity.[11]

Of the existing renewable energy, currently 90 percent comes from large-scale hydroelectric plants, with the remaining ten percent comprised largely of a mix of wind parks, thermo-solar plants, photovoltaic solar installations, micro-hydroelectric plants, and biomass treatment facilities.[12] In just under eight years, Morocco has made substantial strides to reach its "green stimulus" goals. In this regard, it has been continuously recognized by the international community for its efforts.

- In 2014, Ernst & Young ranked Morocco 4th of all Middle East and North African (MENA) countries as the country with the highest level of potential in renewable energy investment. By comparison, Jordan ranked 3rd.[13]
- In 2015, the Pew Charitable Trusts ranked the country as the 7th best emerging market in clean energy investment (and the only one in MENA). Kenya ranked 4th.[14]
- In 2015, according to WAMDA (a platform of programs and networks that aims to accelerate entrepreneurship ecosystems across MENA), Morocco had the most renewable energy projects in MENA, with an *estimated* 28 projects. By comparison, Jordan had 12 projects.[15]

By January 2016, state officials indicated that renewable energy accounted for 35 percent of the current electricity generation capacity in the country.[16] Furthermore, as a result of the success of these investments, the renewable energy target was increased to 52 percent. Although government officials aim to create jobs through large-scale renewable energy projects,[17] further investment in the private sector will be key to attaining the country's ambitious social, environmental, and economic goals.

The private sector is the engine of economic growth with an important role in eradicating poverty and fostering inclusivity.[18] Increasingly, governments in developing economies are realizing that in order to cultivate a competitive, diverse, inclusive and thriving economy, investment in entrepreneurship and innovation will be required.[19]

Climate entrepreneurship will be the driving force of the green economy. High-growth entrepreneurs and SMEs are propelling the industry and responding to climate threats through the creation and adaptation of green technologies and climate solutions, as well as through job creation. Furthermore, according to the IFC, climate technology is an area in which investments are expected to exceed nearly US$23 trillion for climate-smart investments in emerging markets between now and 2030.[20]

In Egypt, Jordan, and Morocco, in particular, the total climate-investment potential is estimated at US$265 billion — with over one-third available for renewable

energy generation (US$97 billion); and 64 percent (US$169 billion) for climate-smart buildings, transportation, industrial energy efficiency, electricity transmission and distribution, and waste solutions. An earlier estimation of the market (made before the 2016 Paris Agreement) suggested that a quarter of this investment potential is accessible to SMEs. This translates into a similar but substantially larger opportunity for green entrepreneurs operating in this space.[21]

Strengthening targeted support of the country's climate entrepreneurship ecosystem will boost job creation, sustainability, and the formation of a stronger knowledge-based economy.[22] As the government already recognizes, working with the private sector, civil society, and other parts of the ecosystem is fundamental for climate-smart development. Indeed, these partnerships could help mobilize more investment to facilitate unique technology solutions for the country.

Box 1.1 Entrepreneurship Macro-data Snapshot

This sampling of macro-level indicators measures various aspects of Morocco's entrepreneurship ecosystem. It reveals how the country compares to relevant regional and international counterparts in areas such as infrastructure, start-up activity, and financing. Several trends emerge from these macro-level statistics and show Morocco's comparability with other strong regional players. For example, the ease of doing business is on par with the other middle-income countries on the continent, such as South Africa. In fact, the statistics show that Morocco is considerably stronger than other Middle East and North African countries. However, access to finance remains more problematic.

Figure 3. Benchmarking Morocco's Key Indicators vis-a-vis Other Countries

Indicator	Metric	Morocco	Egypt	France	Jordan	South Africa	Source
New business density	new registrations per 1,000 people ages 15-64	1.54	0.13	2.26	.99	6.54	World Bank
Fear of Failure Rate	% of 18-64 population	29	33	41	39	25	Global Entrepreneurship Monitor
Ease of doing business	1-181 (1=most business-friendly regulations)	75	131	27	113	73	World Bank, World Development Indicators (2015)
% of firms selected access to finance as major constraint	% of firms	27.7	28.5	no data	42.8	15.5	World Bank, Enterprise Survey
Listed local angel investors	number of local listed angel investors	7	23	410	9	83	Angel.co
Gross tertiary education enrollment rate	% of population at tertiary education level	12.88	28.45	54.58	40.65	15.41	World Economic Forum, Global Competitiveness Report
# of cleantech meetup groups in leading tech city	number	17	30	110 +	13	108	Meetup.com
Internet users	per 100 population	57.1	35.9	84.7	53.4	51.9	World Bank (2015)

MAIN FINDINGS

The exact formula for what generates a "mature" or "thriving" entrepreneurship ecosystem is conditional on the many intersecting factors of its origin, and how they relate to each other within a specified context. Thus, this diagnostic analysis is rooted in the six-pronged Babson Entrepreneurship Ecosystem model. It aims to reveal insights into the challenges that hamper the creation, development, and existence of enterprises in any given country.

Since the 2014 Global Entrepreneurship Summit in Morocco, investment in the various facets of the country's entrepreneurship ecosystem have become a focal point of both the public and private sectors. During this time, the foundation of Morocco's ecosystem solidified, and all the structures necessary for nurturing climate entrepreneurship have reached a 'start-up' stage. Nonetheless, the overall support environment requires more targeted support. In particular, it will require favorable policies, additional resources, and a resilient, entrepreneurial-minded culture to inspire future growth.

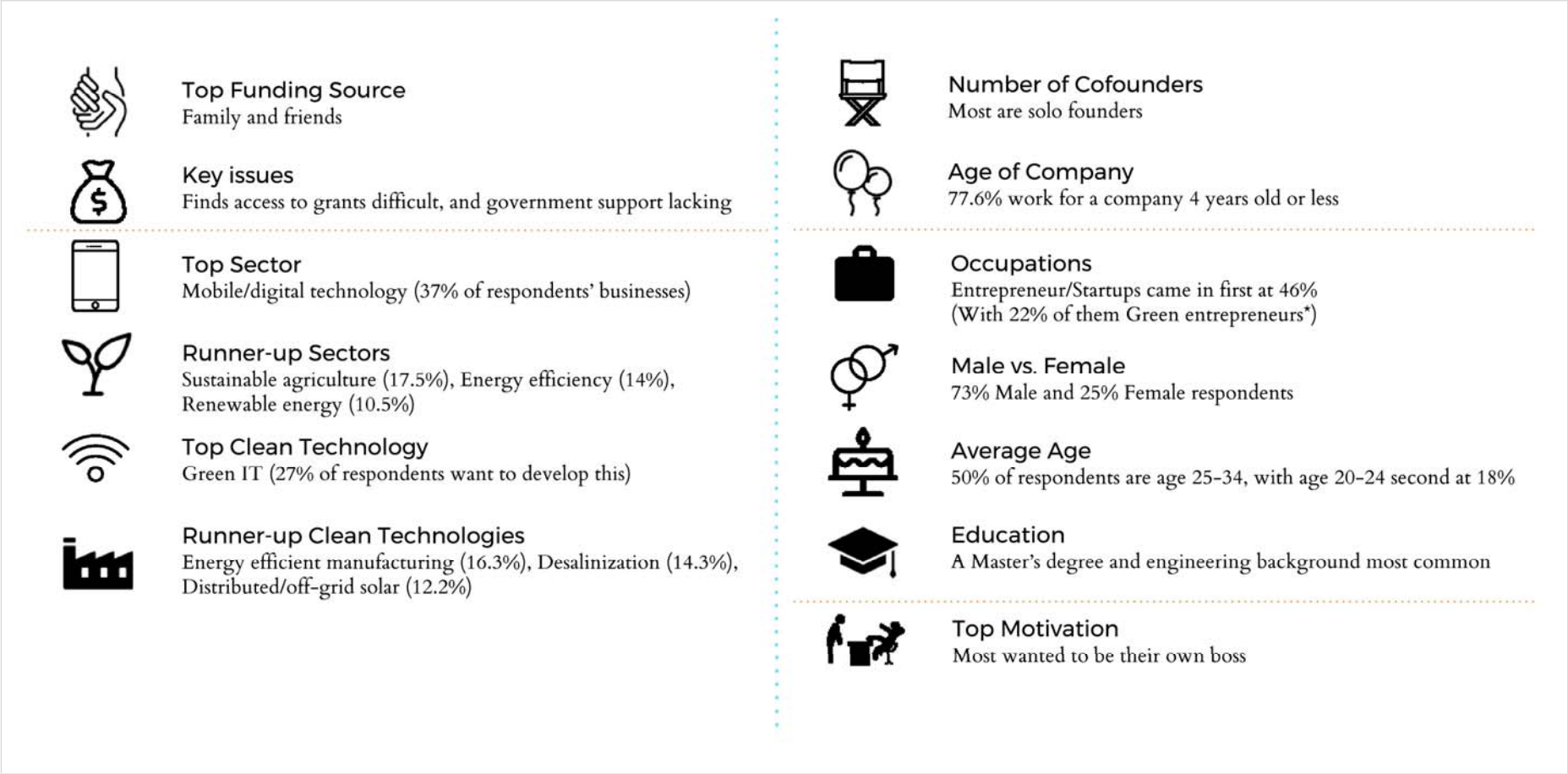
There are a variety of reasons for the existence of these structural barriers, as well as the fact that the gap in knowledge and access persists. The following section aims to delve into these issues, exploring the current situation of the Moroccan green entrepreneur. It also brings to light the factors that have contributed to Morocco's current entrepreneurship ecosystem. The holistic findings are based on the primary data collected, including interviews with over 40 key stakeholders and a survey of 334 individuals.

A man waits for the tramway service between Rabat and Salé. Photo: Arne Hoel/World Bank

Morocco's Green Entrepreneurs

The Moroccan green entrepreneur surveyed is young, educated, and started their business because they wanted to be their own boss. These entrepreneurs are innovative and are creating technologies and solutions to solve some of Morocco's greatest environmental challenges. This is occurring at a time when investment in solutions to combat the country's climate challenges is high — as well as a public necessity. Morocco is not their only target market, as many have clients or customers in over 40 other countries (see figure 4 below). Indeed, many of these entrepreneurs work in diverse sectors — from green IT to desalinization. Yet, broad recognition of their ideas, and further participation in the field is limited due to a variety of social and operational barriers common in a growing entrepreneurship ecosystem. These barriers include, among others, a lack of mentors and/or market accessibility.

Figure 4. Profile of Morocco's Green Entrepreneurs, based on survey results



Source: Authors

The surveyed entrepreneurs have clients or customers in more than 40 countries. France had the highest amount of activity, with 51 percent of entrepreneurs reporting clients or customers there, followed by Senegal, with 19 percent, and finally Côte d'Ivoire with 17 percent. Reportedly, the European market is saturated, and the Middle Eastern market is difficult to enter (even with mutual Arab heritage). Therefore, North-West/West Africa is the prime market for Moroccan entrepreneurs to do business. Morocco's reintegration into the African Union, after a long absence (ending January 2017), should further facilitate African integration and attendant opportunities for Moroccan entrepreneurs.

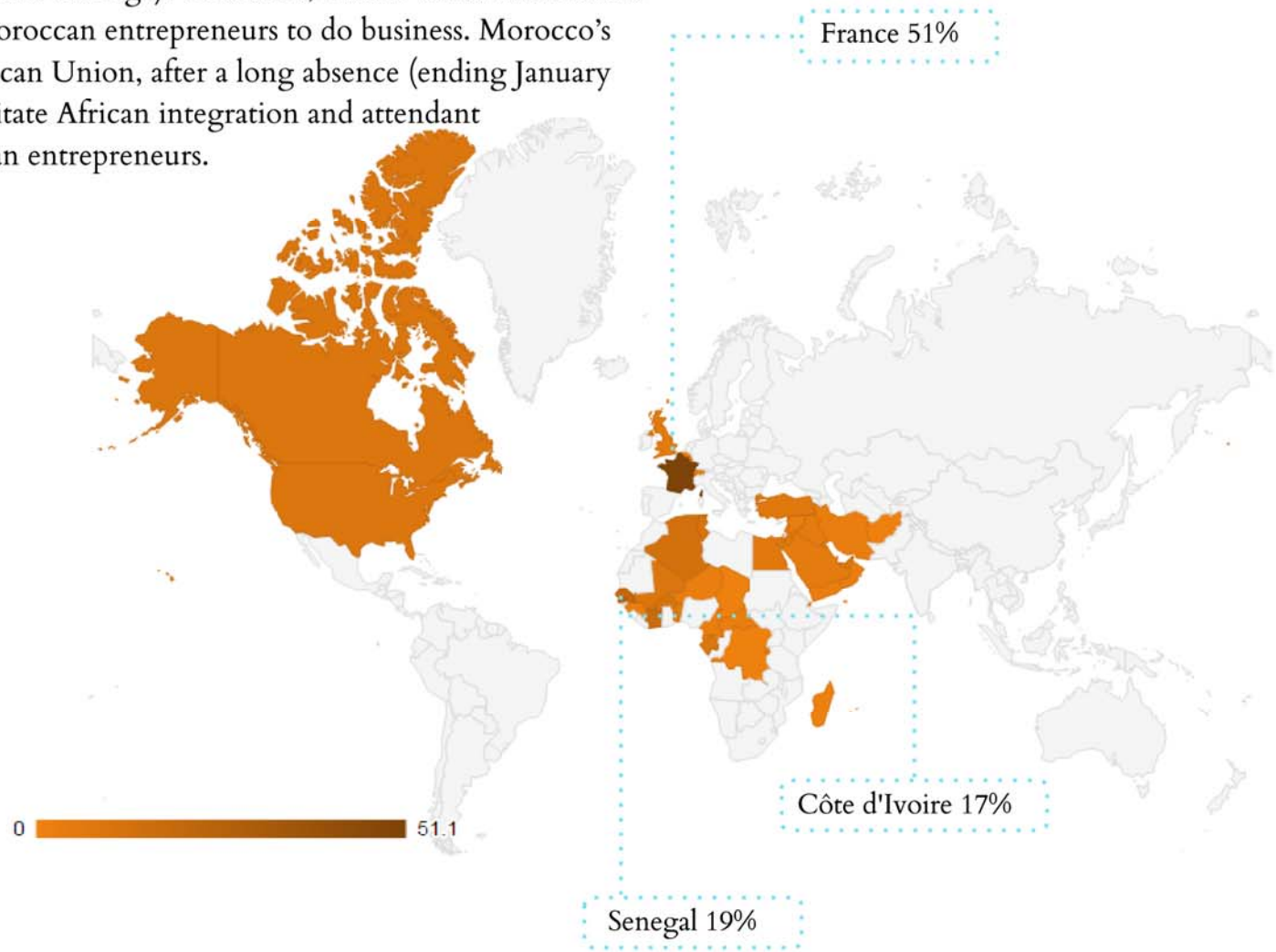


Figure 5. Top Client Countries for Morocco's Entrepreneurs

Source: Authors

Case study 1: eLum

Product/Service
eLum offers a software-as-service product, dubbed the Energy OS (Operating System). It employs artificial intelligence to help manage both on-grid and off-grid energy costs for industrial players. This solution targets industrial and commercial customers seeking to gain insight and save money on their electricity bills and fuel consumption. In particular, eLum is piloting an energy storage system coupled with a photovoltaic production unit that runs on their Energy OS.

Number of staff
22

Location (national location and international if relevant)
Paris, France; Casablanca, Morocco

Year founded
2016

Funding sources, amount
Self-funded: 100,000 Moroccan Dirham (MAD)
Grants:
- AMICA: 50,000 MAD
- Banque Populaire: 50,000 MAD
- Morocco Climate Innovation Center (MCIC): 50,000 MAD

Growth angle
The market for energy management software has been growing by 30 percent year-over-year, so a product that optimizes the yield for independent energy producers is well positioned. There is a large need for effective energy management systems across the African continent, especially in the telecommunications towers and the mining industry.

Environmental impact
- eLum supports reduction of carbon emissions by enabling solar energy (the electricity grid in Morocco is 700h/kWh).
- eLum also helps reduce losses linked to transportation of electricity (estimated between 3 and 7 percent).
- eLum's product helps decrease dependence on polluting fossil energy sources.

Current and target customer market
eLum's first target customer is the automobile industry located in Tangier. eLum aims to help the industry optimize production, storage and consumption of renewable energy. Beyond that, the larger target is the off-grid market in Africa, represented by the mines and the telecommunications towers (with 400,000 towers off-grid).

Key value proposition
eLum's solution increases the value and profitability of both on-grid and off-grid energy projects, making it more attractive for industries to invest in renewable energy production and storage. It helps its customers save at least 20 percent of their energy costs— and reduce their carbon emissions by 30 percent.

Competitive advantage
This solution represents a new opportunity for industries that relied on the national energy costs to move off-grid, and potentially dramatically reduce their energy costs. eLum has two strong competitive advantages:
- Powerful algorithm based in artificial intelligence (AI) that forecasts the consumption of the plant coupled with the weather forecasts.
- The ability of the software to be plugged in any kind of photovoltaic technology or brand.

Box 1.2 Misconceptions about Green Entrepreneurs

There are several misconceptions about green entrepreneurs that limit the support they are currently receiving — and thus their ability to scale up and make a lasting and larger impact on the green economy. First, green entrepreneurs do not always identify themselves as such (nor do they necessarily receive support from "green"-focused incubators). As such, they not being embraced by 'green'-focused support organizations. They also sometimes lack the necessary recognition and credibility for their pursuits.

A common misconception about green entrepreneurship is that the types of technologies or services they innovate are mainly hardware in nature. However, based on the analysis for this report, more than 40 entrepreneurs claim to be developing companies focused on Green IT, for example.

Second, of concern is the "new-to-the-world" or "cutting-edge" bias that currently exists in the Morocco's climate technology entrepreneurship ecosystem. Moroccan green entrepreneurs tend to be focused on creating *new* solutions to climate challenges instead of using existing and proven technologies with clear models applied to a local country. The latter can be an easier path to scale in developing contexts, not least because funders tend to be reassured when investing in these types of businesses. Some support organizations are supporting entrepreneurs that have a new-to-the-world idea/technology and an unproven business model — rather than actively plugging into global networks and resources for existing technologies, and using validated and scalable business models that could then be replicated and adapted in Morocco by local high-growth entrepreneurs.[23]

The final misconception is that all Moroccan green entrepreneurs are in the start-up stage. In fact, many existing mature companies are also introducing new green products and spinning off new ventures. These have as much, if not more, potential to grow green sectors overall. However, without recognition of green entrepreneurs beyond the start-up stage, there has not been the kind of dedicated thought and calibration to the types of support needed beyond quite limited initiatives, for the time being (such as those being undertaken by the Fast-Track-to-Market (FT2M) program of the Cluster Solaire).

While there are no official statistics about the level of entrepreneurship activity in Morocco, Startup Morocco, one of the more influential stakeholders in the ecosystem, recently reported that there are less than 200 active start-ups in the country, with the bulk of activity concentrated in Casablanca and Rabat. This compares to activity in more developed markets, such as in Paris, France, where there are between 2,400 and 3,200 active tech start-ups.[24]

Library at Mohammed V University at Agdal, Rabat. Photo: Arne Hoel/World Bank

1. Solo Founders Lack Co-founders to Build High-growth Firms

"[Students] are good in scientific skills and mathematics, but they lack self-confidence and personal skills."
- Adalia

When asked to rank the skill level of entrepreneurs, 70 percent of experts in Morocco found entrepreneurs to have good technical skills, and 31 percent found them to have business savvy. This exemplifies the skills gap that many entrepreneurs suggested may prevent businesses from reaching their full potential. While many respondents stated that support institutions are not sufficiently encouraging the development of entrepreneurs' soft skills, it is often blamed on Morocco's educational system, and a culture that does not value entrepreneurship. Reportedly, from primary to college level education, students are encouraged to become employees with stable salaries, either working in the public sector or for a major corporation. Although this limits the available talent in the country willing to work for a start-up firm, it also does not positively present entrepreneurship or innovation as a viable career option.

As the Organization for Economic Co-operation and Development (OECD) suggests, one of the Moroccan government's key priorities should be to develop a comprehensive policy framework that ensures

Case study 2: Cleanzy

Product/Service
Cleanzy has created a new concept for an ecologically friendly, on-demand laundry service in Morocco. Cleanzy's stores offer cleaning of different types of textile products using biodegradable products. Their products do not use polluting solvents, such as perchlorethylene (a classified carcinogen banned in several countries). The company's premium quality and prices are competitive with those of traditional cleaners, while also supporting environmental sustainability.

Number of staff
5; Near future: 8 employees as the store nears completion.

Location (national location and international if relevant)
Rabat

Year founded
2015

Funding sources, amount
- Personal funds: 2.5 million MAD
- Bank credit: 1.5 million MAD

Growth angle
This year, Cleanzy opened the first store in Rabat and is finalizing the planning of three new stores in the coming months. Using a franchise model, Cleanzy plans to open eight stores in the next two years, with the target of 20 stores in Morocco in the medium term. This expected growth has the potential to create an additional 165 jobs.

Environmental impact
Cleanzy's services significantly reduce water consumption per laundry cycle (50 to 70 liters in aqua cleaning versus 250 to 400 liters in dry cleaning). Cleanzy does not use perchlorethylene (a classified carcinogenic solvent banned in several countries); instead, it uses biodegradable products in laundering.

Current and target customer market
Cleanzy currently has 400 direct customers in a premium neighborhood in Rabat, with a retention rate of 95 percent. Cleanzy is developing a business-to-business (B2B model to serve businesses (restaurants, hotels, spas, and so on), and is preparing partnerships that will benefit their franchisees.

Key value proposition
Cleanzy offers high-quality, eco-friendly laundry service for consumers, employees, and neighbors. More than 98 percent of laundry services in Morocco use dry cleaning methods involving toxic perchlorethylene, which have been banned in several countries. Cleanzy's aqua cleaning techniques avoid these toxic chemicals, and can prevent air and water pollution. Furthermore, Cleanzy is currently building a brand in the Moroccan laundry market, which lacks local brands. They will compete with existing global brands that are harmful for the environment and public health, while still being well-positioned at the same price.

Competitive advantage
Cleanzy has exclusive contracts with the suppliers who developed this special aqua cleaning process. While consumers have the choice of utilizing traditional cleaners, for the same price point, Cleanzy offers a laundry service with best-in-class cleaning capabilities (keeping colors vibrant and without deteriorating fibers), as well as environmental and health benefits.

entrepreneurship is recognized and taught as a key competency from the primary to the tertiary school levels.[25] This would not only begin to transform the culture of entrepreneurship, emphasizing more understanding and respect for the field, but it would also inspire youth to approach life with a more entrepreneurial attitude. In turn, more people will begin to start businesses, and provide potential services and products that can contribute value-added goods and services to the Moroccan economy.

Furthermore, even with the current situation of uneven skills in the ecosystem, many entrepreneurs are not forming teams to overcome these gaps. While 46 percent of entrepreneurs are open to collaborating (forming teams and partnerships), 43 percent of surveyed entrepreneur businesses are solo-run. This not only exacerbates the skills issue, but also influences the amount and kinds of funding that entrepreneurs can access. These start-ups are often founded by a technical expert (typically an engineer) with a great idea. Unfortunately, start-ups require much more than just technical savvy, including a range business skills, human resource (HR), financial, and so on. These skills are typically supplemented by a co-founder as a complementary skillset. As financial experts emphasize, entrepreneurs who run solo businesses rarely gain access to equity, venture capital (VC), or angel funding. It is considered to be a basic premise and commonly held principle that investors look for teams because no one person can build a high-growth business.

2. Too Few Mentors Limits Entrepreneurial Growth

There are several sources of mentorship throughout the ecosystem. These are either directly accessed through the *Réseau Entreprendre Maroc* network, using a variety of structured mentor talks and training held by organizations such as *Secteur 21* and *Startup Maroc.* Alternatively, mentorship sources can be utilized through other ad-hoc activities. However, entrepreneurs indicated that the ability to find a solid, vested mentor who will support an entrepreneur is difficult. Furthermore, many of the mentors who do exist in the ecosystem tend to be more technically- than business-focused in nature. Many are either foreign and do not understand the particular characteristics of the Moroccan ecosystem, or are from corporations and have never acted as entrepreneurs themselves.

"The most important [need] is not the investment itself, but more the coaching of the entrepreneurs."
- Maroc Numeric Fund

"The problem is that bringing foreign mentors will help, but they won't give the best advice, as they can't understand the Moroccan problems."[26] There were a variety of reasons suggested for this absence of available mentors, such as a lack of a "give-back" culture. As one stakeholder noted, "Entrepreneurship skills are hard to develop in Morocco

Case study 3: Evaptainers

Evaptainers

Product/Service
Evaptainers offers an electricity-free mobile refrigeration technology to keep food fresher, longer, using only sunlight and water.

Number of staff
7

Location (national location and international if relevant)
Rabat, Morocco
Boston, USA

Year founded
2015

Funding sources, amount
US$250,000+ in grants from the United States Agency for International Development (USAID): Development Innovation Ventures (DIV), the National Geographic Society, the Massachusetts Clean Energy Center, and a sponsorship from the 3M company.

Growth angle
Evaptainers is launching in Morocco as a pilot market. After a successful proof of concept in Morocco, Evaptainers plans to expand to other countries in Africa, starting with Nigeria, where potential distributors have already signaled interest.

Environmental impact
Evaptainers reduces greenhouse gas emissions related to conventional refrigeration. It also reduces carbon dioxide (CO2) released into the atmosphere due to food spoilage. The spoilage rate of fruits and vegetables grown in African countries is 45 percent. In high-temperature regions, produce typically spoils after only two days. With Evaptainers, produce can stay fresh for two weeks with no energy consumption and minimal water usage.

Current and target customer market
The company has distributed 150 Evaptainers, mainly in the central region of Morocco (Ifrane). This first batch of units is intended as a proof of concept. Once adjustments are made for a final prototype. Evaptainers will start mass production and target small villages without access to electricity. The ultimate target is to reach the 700 million people who live without refrigeration in the world.

Key value proposition
Evaptainers creates dependable, cold-chain solutions without dependence on costly infrastructure, as their refrigeration solution runs on only sunlight and water. This enables small rural farmers to increase the percentage of their crops that go to market, thereby improving their standard of living and putting fresher food in the hands of consumers.

Competitive advantage
Evaptainers' target market is people living off-grid who currently do not use refrigeration. Therefore, Evaptainers is not replacing another product. Most of the vegetables and fruits spoil quickly for these people living off-grid. Evaptainer introduces a new, low-cost, transportable solution that ensures they obtain the most value from their produce.

because there is a serious lack of mentors that are willing to give back."[27] This leads to weaker levels of trust between entrepreneurs.

Figure 6. Top 5 Sources of Mentorship

Source: Authors

"Young entrepreneurs are not trusted by the market," was a statement consistently heard during interview. Indeed, the lack of trust is often viewed as ageist.[28] In fact, while serial entrepreneurs were the highest rated mentorship source by surveyed young entrepreneurs, the same serial entrepreneurs were reported as not investing in helping new, younger entrepreneurs navigate the ecosystem. As noted in the interviews, "There is a critical lack of entrepreneurs that want to share their experiences."[29]

3. Women Entrepreneurs Could Benefit from Dedicated Support

McKinsey Global Institute reported that by 2025, US$12 trillion could be added to the global GDP by advancing gender equality.[30] Closing these inequality gaps and encouraging equal opportunity is a clear objective for any country. This is a fact his Majesty, the King Mohamed VI, exemplified through a 2014 speech: "Female entrepreneurship holds so much promise for our economies and our societies that we all need to encourage it; otherwise, we will be depriving ourselves of huge potential."[31]

"Women need a dedicated program to empower them."
- Espace Bidaya

The current situation for women entrepreneurs in Morocco is multifaceted and complex. The interview respondents — of whom 34 percent were women —were unable to express a single cause to explain the difficulties women entrepreneurs face. In fact, many did not think there was an issue at all. In this regard, it is important to note that only 25 percent of surveyed entrepreneurs were women, and only 33 percent of entrepreneurs found there to be an uneven playing field for women active in entrepreneurship. While many noted the visibility of a high number of women operating in positions of power, in reality, only about 10 percent of Moroccan women are active in entrepreneurship,

and very few of them are beyond the proof of concept stage.[32] When compared to the data of the Global Entrepreneurship Monitor (GEM) regarding entrepreneurial intentions[33] in the broader Middle East (innovation-driven) region, where 41 percent of women (and 46 percent of men) expressed an interest in starting a business, it is clear that more dedicated initiatives and a focus on the lessening various cultural barriers are essential if policy-makers and other stakeholders are to provide better support for women entrepreneurs.[34]

Cultural expectations (social and familial responsibilities) were commonly stated as a reality, but not necessarily a barrier for women entrepreneurs. Nonetheless, young women are most active in social entrepreneurship. International entrepreneurial education non-profit, Enactus, has a high participation rate of at least 90 percent among women in social entrepreneurship, with heavily-attended training and activities. CEED Morocco, which operates in the early-stage incubation space, reported that of the 200 entrepreneurs in their program, nearly 30 percent are women.[35] Further, several women-focused hackathons and competitions are increasingly being hosted by organizations such as the World Bank. However, beyond these few examples, there are not many other existing programs in the ecosystem to support women entrepreneurs.

Women entrepreneurs are commonly viewed as only concentrating in industries with lower capital intensities and lower average returns to capital. Many experts maintain that this tendency lowers financial performance.[36] However, the opportunity for women entrepreneurs to claim a stake in the climate technology entrepreneurship market is high.[37] Furthermore, women's involvement in entrepreneurship is becoming more lucrative, according to recent first round data from the United States. Investments in companies with at least one female founder outperformed investments in all-male teams by 63 percent; in their own words "women are winning."[38]

Yet, there are several constraints for women to overcome before they can sufficiently participate as economic actors in Morocco. These include the lack of access to information, networks, financing, and by extension, markets and inputs.[39] Although women said that they face the same legal barriers as men, they have a particular difficulty in accessing funds, and often experience other forms of implicit bias.

Moroccan women stated one of the biggest barriers to doing business was the lack of local mentors (specifically women mentors) to help guide and shape their ideas, operations, and businesses as a whole. A major barrier to women operating in the realm of entrepreneurship is the lack of dedicated support programs and mentors to help

quell insecurities, educate, and support women's particular needs throughout the business growth stages. As one respondent stated, "There are great women managers from large corporations, but they are not inspiring role models in entrepreneurship: a woman [who] built something from scratch."[40]

Box 1.3 Women's Support Programs around the World

Of all the existing incubator-type programs available globally, only a small percentage have a women-centric focus. However, existing programs from Colorado, US (MergeLane) to Lagos, Nigeria (She Leads Africa), and the mentorship/network-focused Pan-African (Graca Machel Trust Women's Rights or Economic Advancement Program) equally suggest that women-focused programs can provide the right environment to nurture ideas, collaborate, mentor, and teach women how to navigate traditionally male-dominated industries. For example, from 2014 to the present, MergeLane's accelerator cohorts of high-growth entrepreneurs have raised US$20.2 million in funding, and created 231 jobs — including 38 leadership roles for women.

Soukaina and Mouna work in the marketing department at Label Vie headquarters in Rabat. Photo: Arne Hoel/World Bank

Case study 4: Biodôme du Maroc

Product/Service
Biodôme is the first Moroccan company specialized in developing bio-gas facilities for farms. These facilities take organic waste from agricultural activities and transform it into bio-gas and compost. The farms can then use the bio-gas for their energy needs, helping secure energy independence. The compost can be sold as fertilizer to other users or back to Biodôme. The methanation process is accomplished via a cave where farmers deposit daily animal waste, organic waste and used water. Biodôme is also working on a compost solution for urban users.

Number of staff
6

Location (national location and international if relevant)
Khouribga

Year founded
2013

Funding sources, amount
Morocco Climate Innovation Center (MCIC): 500K MAD (through the fast-track-to-market program)

Growth angle
Biodôme is developing two solutions for rural and urban usage:

- A unit for bio-gas production from animal waste or organic waste, to be used in farms and rural areas.
- A unit for compost production in urban areas, for users such as hotels. Biodôme also has future goals to build a distribution network for compost within the cities.

Environmental impact
- Recycling waste decreases carbon emissions from agriculture waste.
- Production of organic fertilizer offers an alternative to chemical fertilizers, and lowers pesticide use.
- Using compost fixes the carbon in the soil, which helps water retention and decreases runoff into waterways.

Current and target customer market
Biodôme's current customer is a local farm in the region of Khouribga. Biodôme built a biogas unit for the farm's animal waste as a proof of concept. With this successful demonstration, Biodôme is planning to develop biogas facilities for other regional farmers. Concurrently, Biodôme targets hotels in urban areas for their compost production unit.

Key value proposition
Biodôme's technology will reduce household waste, which accounts for over 70 percent of total waste, and costs cities over 400 MAD/ton to collect and destroy. For farms and rural operators, Biodôme offers a way to self-generate energy safely, as well as to reduce agricultural waste.

Competitive advantage
Biodôme's bio-gas facility can produce enough energy to replace all of the industrial gas currently being purchased by the farmers for heating, lighting, pumping water, and other uses. For example, in the pilot farm, bio-gas production replaced around 10 bottles of gas used for energy (which costs ~400MAD /month, or 4800 MAD/year).

"The most important [need] is not the investment itself, but more the coaching of the entrepreneurs."

- Maroc Numeric Fund

Photo: Arne Hoel / World Bank

Morocco's Burgeoning Climate Entrepreneurship Ecosystem

1. A Perceived Lack of Policy Support to (Green) Entrepreneurs

"The government [...] is not involved in entrepreneurship. They don't understand it and don't value its impact."

His majesty King Mohammed VI has described entrepreneurship and innovation as "the twin values that are both stepping stones towards freedom, social mobility and prosperity..."[41] Nonetheless, entrepreneurship is still a relatively new field in Morocco. In reality, the role of policy is underdeveloped, and the misconceptions about this burgeoning field have resulted in an ecosystem that could benefit from high-level policy support.

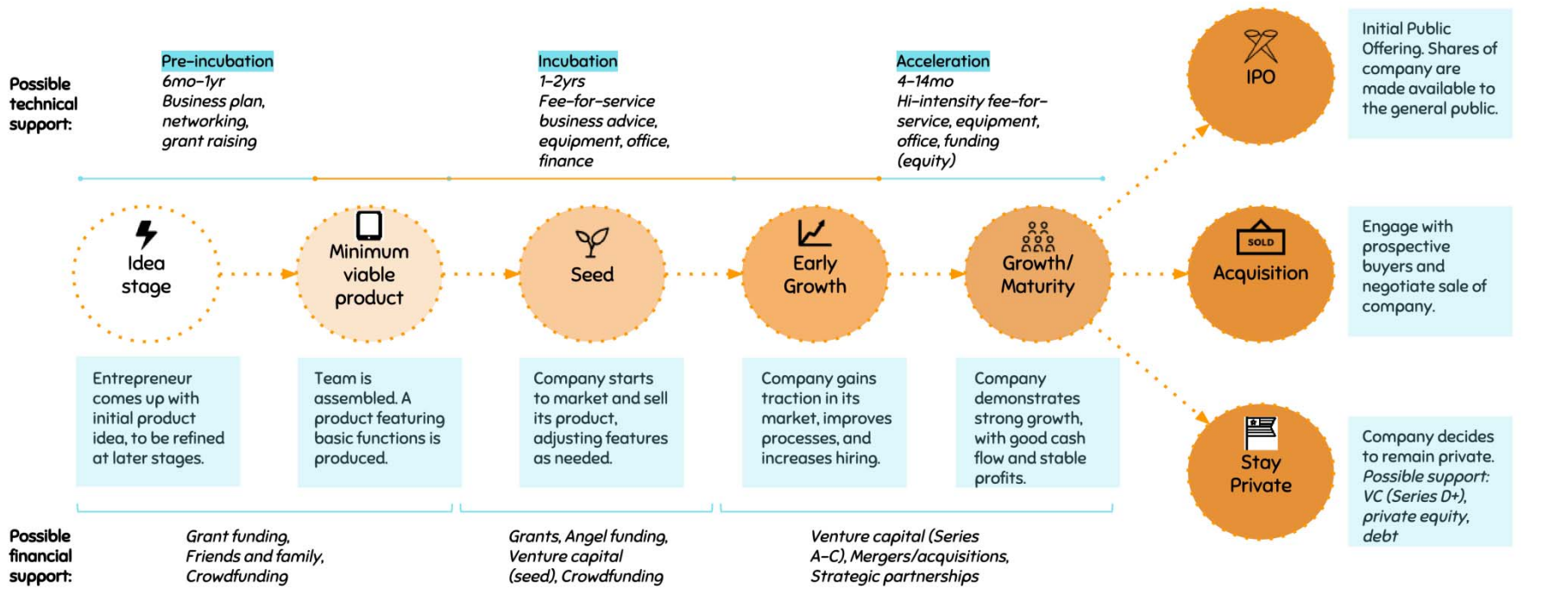
The lifecycle of an entrepreneur, from the proof of concept stage to high-growth, requires specialized and tailored support, and funding and knowledge. These elements are key to spurring entrepreneurial activity and cultivating the ecosystem that supports it. This can include: (i) an educational structure that embeds entrepreneurial attitudes and practices into its curriculum from the primary level through university; (ii) available financing mechanisms for each phase of product/idea development; (iii) market information to accurately assess supply and demand; (iv) a favorable culture that emphasizes the need for and importance of entrepreneurship; and (v) support for institutions to provide for the needs of entrepreneurs from incubation to acceleration through growth.

The Moroccan government is acutely aware of its potential to increase economic opportunities through the green sector. However, its awareness of the opportunities and potential gains from (climate) entrepreneurship have yet to be harnessed in terms of an overarching policy. This is a fact not lost on the entrepreneurial community. In this context, 62 percent of surveyed entrepreneurs stated that overall government support is lacking.

Nonetheless, it should be noted that since 2014, the government has made notable strides in centralizing information and providing incentives, including: (i) auto-entrepreneurship status[42]; (ii) various tax benefits for hiring staff at young companies; and (iii) a one-stop investment shop spearheaded by the *Centre Régional d'Investissement;* and so on. Current initiatives for climate entrepreneurs are fragmented between ministries (including the Ministry of Environment, and the Ministry of Industry), as well as other organizations with weak overarching support for entrepreneurs.

Currently, from the entrepreneurs' perspective, there is a lack of knowledge about existing government initiatives (64 percent of entrepreneurs found communication with the government difficult). While individuals and institutions who work more closely with the government are aware of these initiatives (and others in the pipeline), the majority of entrepreneurs see a fragmented, uncoordinated government role in entrepreneurship. They also find that there is a lack of support from private institutions in general. As many entrepreneurs stated, "Government agencies, incubators and the financial industry [need to] work together to support entrepreneurs."[43] The Italian Startup Act, or the draft Tunisian Startup Act, are examples of policies aiming to clarify government support to the entrepreneurial space.

Figure 7. The Entrepreneurial Process



Source: Authors

Moreover, there is work to be done to improve the overall environment for doing business. This starts with streamlining administrative processes (paperwork, permits, and so on)[44] across ministries. Although Morocco ranks 40 out of 190 countries in the World Bank's *Doing Business* rankings — compared to Egypt (39) and France (27) — nearly 50 percent of surveyed entrepreneurs for this report found these administrative processes to be inconvenient to doing business in Morocco. This may be due to the fact that, although overall doing business is not unfavorable, doing business as a start-up--which is a very particular type of business is. Even with the online one-stop shop improving Morocco's rankings in 2017, many entrepreneurs still find the government support of entrepreneurship falling short of potential, with 37 percent of entrepreneurs ranking this as the biggest policy barrier in Morocco.

2. A Growing, but Fragmented Ecosystem

Many of the pieces necessary for a healthy entrepreneurship ecosystem to thrive are in place in Morocco. This includes active support organizations, a willing government, education and research centers with potential for impact, and investment from the international community.

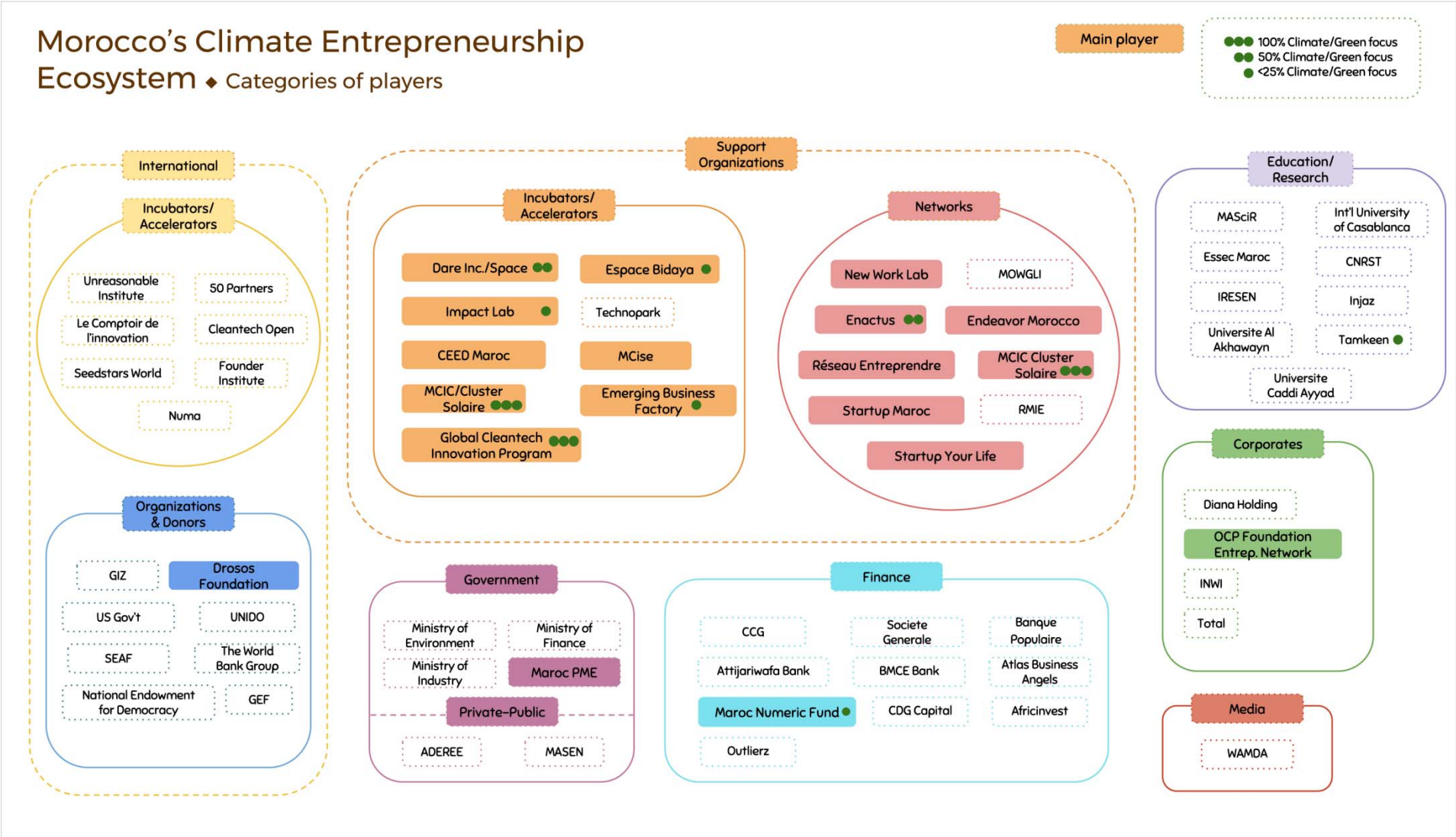
Morocco's ecosystem is comprised of a number of local and international support organizations, with all mostly concentrated in the early-stage support space (that is, Impact Lab; Startup Maroc; Espace Bidaya; Dare inc.). Many of these organizations have been set up recently and, in particular, after the Global Entrepreneurship Summit (GES) summit. The ecosystem also includes government ministries, financial institutions, and educational institutions. A few of these programs have a partial-to-entirely-based climate technology focus (that is, MCIC/Cluster Solaire,).

Furthermore, there are few providers for a variety of support services, such as training or financing. Also, most of the ecosystem is either highly dependent on funding from one private player (for example, the Office Chérifien des Phosphates [OCP] Entrepreneurship Network), or external donor program-related financing, which poses a larger sustainability issue.

Also, although there are quite some active players in these ecosystem roles, and while each occupies areas essential to entrepreneurship promotion and support, they are disconnected. As such, they operate insufficiently as an ecosystem. As one interview respondent stated, "The ecosystem is still young. Every player is [still] trying to find his space."[45]

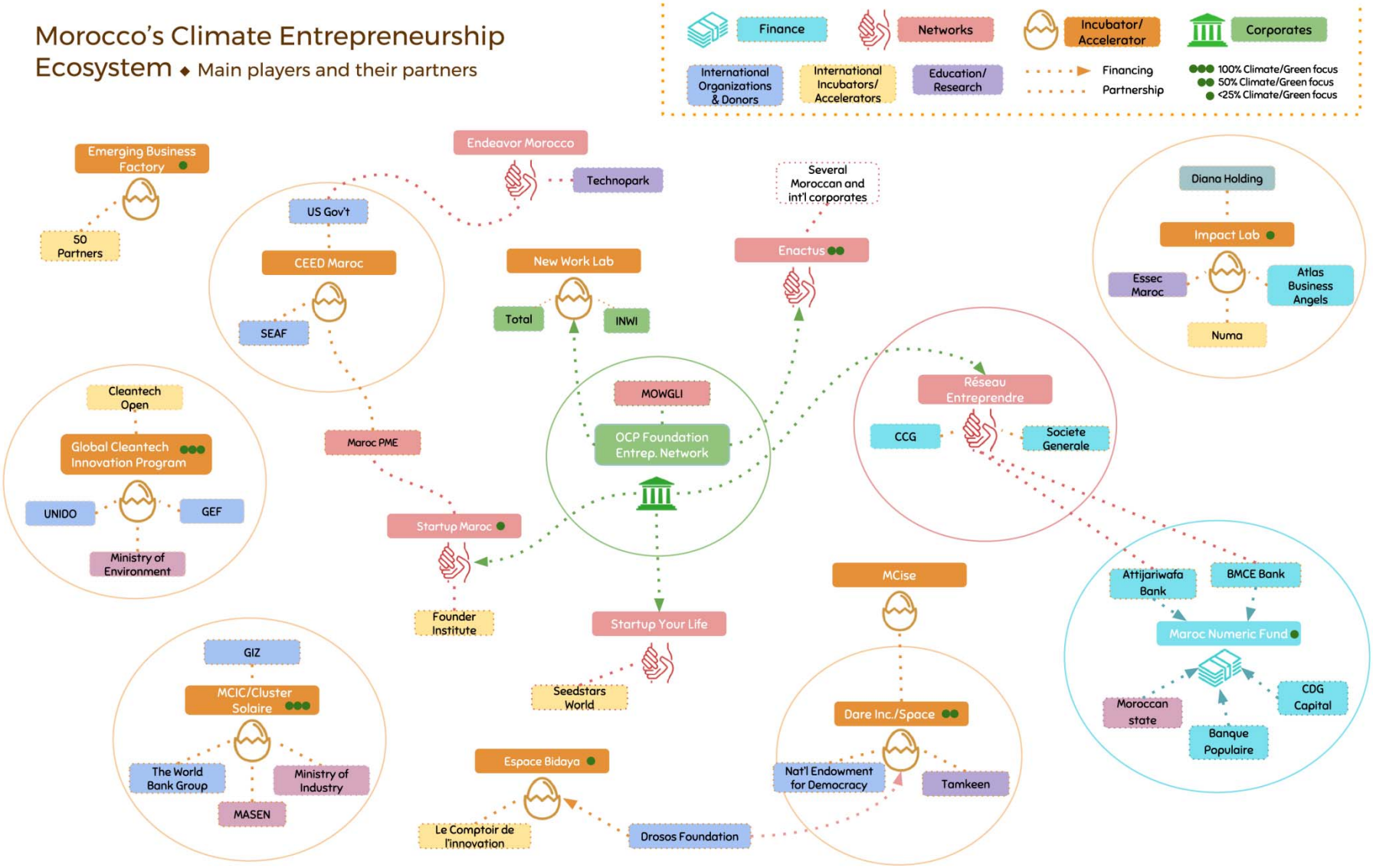
Most respondents suggested that there is a disconnect within the ecosystem that is exacerbated by a lack of communication among the key players, namely the government and the private sector, but also among the private sector stakeholders. This results in insufficient support for entrepreneurial activities. Based on primary data collected, there are several robust connections within individual silos. However, as a whole, each stakeholder largely operates in isolation. One entrepreneur 'wishes,' "[for] the ecosystem [to] be less isolated, [with] players working together" (Figures 8 and 9).[46]

Figure 8. Morocco's Climate Entrepreneurship Ecosystem, mapped by category



Source: Authors

Figure 9. Morocco's Climate Entrepreneurship Ecosystem, mapped by connections



Source: Authors

This reality is exemplified by the relatively low linkages in the ecosystem dedicated to research/academia and technology transfer. If these aspects were better connected, it could boost the commercialization of green technologies, but most particularly to financiers, which most support organizations seem to be quite disconnected from, which is problematic from a growth standpoint.

Furthermore, with a range of incubator offerings, international interventions, and government actions occurring with little co-ordination, basic service gaps are not being filled. Therefore, the forward momentum of the field is hindered, and entrepreneurs are not being optimally supported. As the Kauffman Foundation suggests, an entrepreneurship ecosystem is like a rainforest, and the challenge is facilitating connections between all parts of the ecosystem so that they are working together and reinforcing each other's efforts.[47] There are a few enablers, such as InJaz, Enactus and mCISE, which offer educational options, (or Startup Weekend with competitions). However, overarching and structured support in acceleration beyond the seed stage, as it is internationally recognized, is currently lacking (beyond ad-hoc programs).

"Support in Morocco has developed a lot at the seed stage, but beyond [this stage] it just stops."

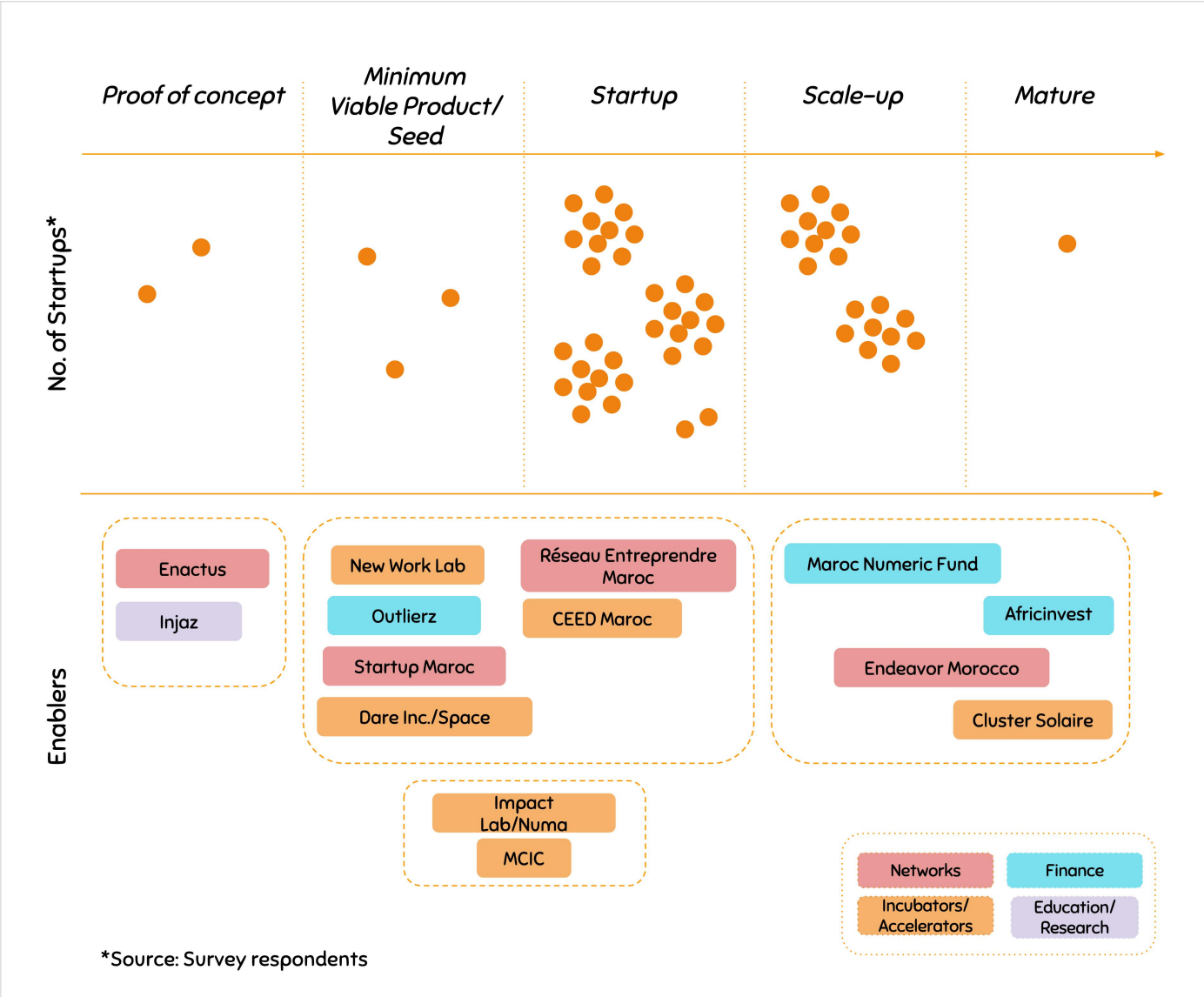
- Evaptainers

3. Entrepreneurs Lack Later-stage Support

The general consensus among interview respondents was that early-stage support exists. However, the quality and professionalism of services is somewhat lacking. Further, beyond the need to connect and improve existing infrastructure, there is a clear gap in later-stage support programs. This lack of later-stage support is symptomatic of the larger issue; as one stakeholder noted, "The ecosystem is growing, but the pipeline is not."[48]

As many interview respondents stated, competitions, grants, and other forms of seed funding are accessible through enablers, such as Réseau Entreprendre Maroc (Morocco Entrepreneurship Network) and Startup Maroc. However, without later-stage sources of financial support and acceleration services, it is difficult for many entrepreneurs, who are at this critical juncture, to fully scale their businesses. This is also linked to the fact that entrepreneurs are not being optimally prepared for acceleration by current incubation support, including matchmaking efforts for solo founders. There are a lack of services focused on support beyond the early stages, as can be seen from figure 10.

Figure 10. Mapping Startups and their Enablers by Entrepreneurial Stage



Source: Authors

Box 1.4 Acceleration Support can Help Businesses Scale

While acceleration programs often provide funding, mentorship, and other essential services to help entrepreneurs scale their businesses beyond the startup stage, it is not a guaranteed ticket to success. Whether an entrepreneur works in the technology, fashion, or food science field, the core benefit of acceleration is the boost it can provide, initially for funding — and, over time, in terms of exposure to relevant influential players, mentoring, and knowledge in an ecosystem. There are various types of acceleration programs in countries around the world, each consisting of the same central tenets of support. However, each are uniquely designed to the contexts in which they provide support.

Climate KIC Accelerator, the European Union's only acceleration program focused on climate impact and clean technology commercialization, offers a three step, 18-month program to provide cleantech entrepreneurs/startups with the knowledge, resources, tools and coaching necessary for success, including:

Step 1: Fundamentals, that is, finding a market niche, and developing a financial model to scale a business.
Step 2: Validation in terms of grant funding, often up to €25,000 to talk to customers and verify any business assumptions.
Step 3: Take-off in which entrepreneurs can receive up to €50,000 in seed funding; find launch customers, development partners, and investors; and form partnerships that can help an entrepreneur scale.

In addition, KIC requires an equity percentage in return for grants and all other services received through the program. Finally, this sort of acceleration program can be applied in more developing country contexts. For example, the Ghana Climate Innovation Center applied innovation models from Silicon Valley to encourage the growth of firms working in the green technology space in the country, and in the developing world more broadly.

Sources:
http://www.climate-kic.org/for-entrepreneurs/accelerator/
Climate Technology Program In Brief: No. 4

Case study 5: Kilimanjaro

Product/Service
Kilimanjaro collects used cooking oil from restaurants and hotels in Morocco, which it then processes to sell to traders and bio-diesel manufacturers internationally. It also supplies fatty acid products.

Number of staff
70

Location (national location and international if relevant)
Casablanca (HQ)
Ain Sebaa (Warehouse and production unit)

Year founded
2008

Funding sources, amount
Personal funds and credit (2008-2015)
20 million MAD debt for investment (2016)

Growth angle
Kilimanjaro is looking to grow its collection of oil, as well as fatty acids. It also plans to develop animal fat supplies from slaughterhouses. Beyond finding more suppliers, the company plans to develop its production of bio-diesel and distribute it locally to the industry sector. Kilimanjaro currently works with businesses, but plans to target households for oil collection by raising awareness on sustainable waste management. Households can donate plastic, cartons and used oil.

Environmental impact
- Bio-diesel emits 88 percent less carbon than traditional diesel.
- One ton of bio-diesel reduces CO2 by 2.6 tons compared to traditional diesel.
- Reduction of wasted oils and fatty acids in discharge pipes will lessen water pollution that can impact both human and ecological health.

Current and target customer market
- Customers of Kilimanjaro are global traders mainly in Europe. It is currently focused on developing the suppliers.
- Kilimanjaro collects from around 2500 locations. They target growth to 10500 locations. Of these suppliers, there are around 65 large accounts (e.g. McDonald's, KFC), with the rest local shops and businesses.
- Kilimanjaro plans to develop large industries that produce fatty acids such as olive oil fatty acid or fish acids. Kilimanjaro also plans to develop slaughterhouses. These three products (used oils, fatty acids and animal fat) can then be inputs for biodiesel.

Key value proposition
Kilimanjaro collects a waste product from a large network of suppliers. These are waste products that would otherwise pollute water channels. The company then repurposes it for bio-diesel production. By expanding its reach to household consumers, Kilimanjaro aims to raise environmental awareness, and create value from ordinary kitchen waste as well.

Competitive advantage
Kilimanjaro's competitive advantage is its large network of suppliers. It has secured supplies from some of the largest restaurant chains in Morocco, which ensures a sustainable supply source for the company.

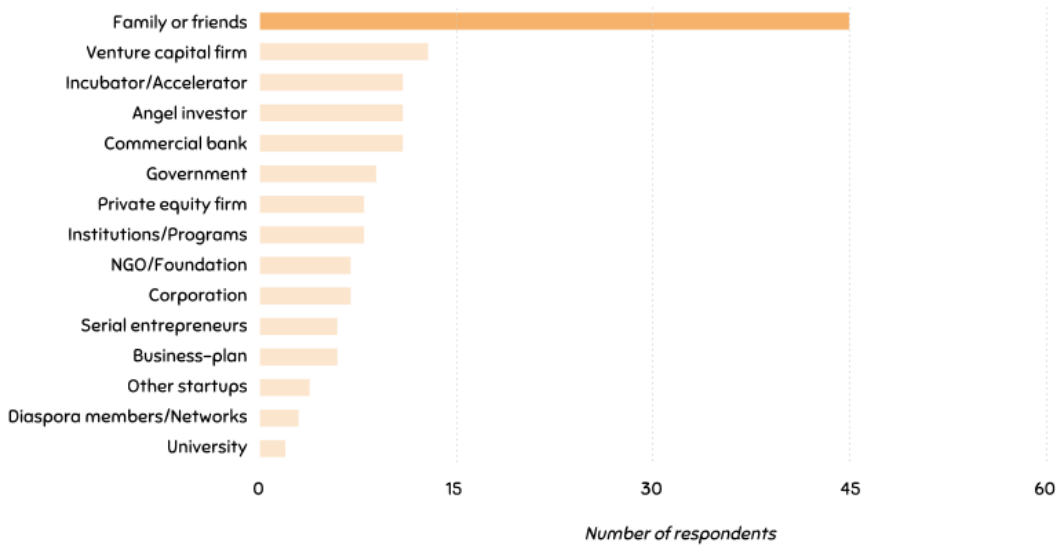
4. Few Corporate and Private Foundation Linkages to Boost Ecosystem

Corporations and large private foundations have few links to the Moroccan entrepreneurship ecosystem. Apart from OCP Foundation, several banks making small corporate social responsibility-type contributions to the ecosystem, and some mentors who work in the corporate world, there is little trace of financial support or other significant entrepreneurship programs, which are commonplace in more developed ecosystems.

A benefit of the ecosystem would be for corporations and private foundations to work with a select number of startups to give them the opportunity to grow. For example, the Shell Foundation supports green entrepreneurs who are working to provide access to clean energy services for low-income communities in developing countries. Programs like Shell's have been fundamental in East Africa and India. They help to fill crucial gaps in ecosystems like Morocco's that have yet to fully embrace and bolster green entrepreneurship.

Figure 11. Top sources of funding connections for entrepreneurs, based on survey

Which of the following actors have given you funding connections?



Source: Authors

5. Funding for Start-ups Limited by Risk-averse Investors

Seventy-seven percent of entrepreneurs found the strongest financial support channel to be family and friends. While this is a common occurrence in nearly every start-up ecosystem, almost every other Moroccan ecosystem actor received an extremely low favorability rating vis-a-vis financing and most other forms of financial support (figure 11).

Eighty-four percent of surveyed entrepreneurs were self-funded in the early-stages. With regard to later-stage support, 38 percent of entrepreneurs found it difficult to access funding, including loans, angel investing, and venture capital funding. This indicates that it is the biggest financial barrier to doing business in Morocco. As one respondent stated, "There is a critical need [for] structures [such as] VCs (venture capital firms) that will [help] start-ups reach a critical development level."[49]

Beyond the difficulty of accessing funding, entrepreneurs found the risk-appetite among investors to be the biggest cultural barrier to doing business in Morocco. It was commonly stated that investors, including (potential) angel investors, seek stable investments. They are more likely to invest in real estate than a new start-up venture. Some think this harkens back to the lack of a "give-back culture" in the ecosystem. As one stakeholder suggested, "some rich people invest in start-ups for their own public relations [PR] and for their image."[50]

Only 12 percent of surveyed entrepreneurs found it "easy" to access investors with valuable expertise and support. Maroc Numeric Fund (MNF) is one of the country's only operational VC-type institutions. MNF's initial focus was on supporting early-stage tech startups. However, in recent years, it has shifted to more innovative growth-centered ventures. This pivot was suggested to have been influenced by several recent failures in the ecosystem and a general disappointment in its own early returns on investment. As a result of these early trials, many investors also do not fully embrace the common mindset of an investor: someone whose knowledge, experience, and guidance play an essential role as capital in their investment. The World Bank Group has finalized a program aimed at boosting equity investments to entrepreneurs, and this should help to somewhat fill this gap.

The Morocco Piloting Equity Financing for SMEs project is an integrated approach to building early-stage risk finance in Morocco, particularly by crowding *in* private sector investors. It has three key elements. First, it aims to establish a seed co-investment fund that will match investments from local investors on a deal-by-deal basis for young innovative firms. Second, it will support the establishment of several co-investment venture capital companies combining government and private investment funds. These would be run by private sector fund managers. Third, it will provide some support to strengthen the entrepreneurship ecosystem. However, beyond this, the question remains of how to further channel funds and/or de-risk investments into green businesses, which continue to be perceived as more risky by investors.

Case study 6: Farasha

Product/Service
Farasha offers solar field diagnostic services for improving performance and reducing operation and maintenance costs of large-scale solar plants. Farasha can help concentrated solar power (CSP) and photovoltaic (PV) plants to detect and measure thermal leakages, as well as the need for cleaning through a mobile unit (vehicle or drone).

Number of staff
5

Location (national location and international if relevant)
Rabat

Year founded
2016 (incubated in the MCIC since 2014)

Funding sources, amount
- ~ 650,000 MAD
- Equity: 100,000 MAD
- PACEIM Prize 2014: 35,000 €
- MVP22 Prize 2016: 50,000 MAD
- MEETAfrica Prize 2016: 15,000 €

Growth angle
- Farasha plans to have a first project validated with Noor 1, and expand with other projects in Morocco and in the Middle East and Africa region.
- In 3 years, Farasha plans to grow to 35 employees (5 administrative and commercial staff, 10 in research and development [R&D], and 20 in four solar power plants).
- In 5 years, Farasha plans to grow to 110 employees (10 administrative and commercial staff, 20 in R&D, and 80 in sixteen solar power plants).

Environmental impact
Farasha helps improve solar power's return on investment, making the clean energy source more attractive to businesses and investors. Its product also reduces water consumption in the solar field cleaning process.

Current and target customer market
Farasha's targeted customers are large-scale CSP and PV operators in Middle East and Africa region.

Key value proposition
Farasha improves the performance and reduces the costs of large-scale solar fields. Its diagnostic services can help plants avoid an environmental disaster. For example, it can detect if there is a leakage of heat transfer fluid (by tracking hundreds of kilometers of oil piping).

Competitive advantage
To date, the cleaning of solar power plants is done periodically, without optimization, and there is no specific method to measure the heat produced. Checking is done visually by the operators. Farasha's solution enables plants to measure their statistics automatically, with real-time alerts if there is an issue.

Box 1.5 French and British Investor Financial Incentives

***French* Tax incentives for Investment in Start-ups**

- Deductions on income tax (Impot sur le Revenu): deduction of up to 18 percent of the amount subscribed to the capital of unlisted companies.
- Deductions on the solidarity tax on wealth (ISF): deduction of up to 50 percent of the in-kind or cash contributions made toward the initial capital or capital increases of an unlisted company.

***British* Seed Enterprise Investment Scheme (SEIS)**

In order to stimulate entrepreneurship and kick-start economic growth, the British Seed Enterprise Scheme was implemented in 2011 by Chancellor George Osborne. It offers tax efficient benefits to investors in return for investment in small and early stage star-tup businesses in the United Kingdom. A few details about the scheme include:

- SEIS investors can place a maximum of 拢 100,000 in a single tax year, which can be spread over a number of companies.
- Investors can receive up to 50 percent tax relief in the tax year the investment is made, regardless of their marginal rate.

Some countries, including France and the United Kingdom, have investment incentives for individuals to invest in start-ups (Box 1.5). Tapping into international sources of financing for green entrepreneurs and working on novel financing mechanisms (such as blended finance / results-based funds) can be an alternative way to boost funding to this sector.

6. Market Access Not Widely Available for Entrepreneurs

Entrepreneurs commonly deemed the Moroccan market to be small and difficult to access, with almost 50 percent of surveyed entrepreneurs finding the market size and demand unfavorable for doing business. Experts and entrepreneurs agree that the public market is virtually inaccessible, with opportunities reserved for larger, more established, and often international companies. Moroccan entrepreneurs who are seeking funding and attempting to procure public projects are often plagued by a perceived lack of maturity.

"Startups are automatically excluded from public bidding where they should be prioritized."

-mCISE

Between 2009-2013, the Moroccan government invested $2 billion.[51] Yet, few of those funds have gone to local entrepreneurs. As one entrepreneur noted, "Large projects are developed by large foreign companies, [and] the environment is not adapted for small Moroccan companies to be included."[52] While the government has recently increased its investment in clean energy, local green entrepreneurs are not yet receiving significant opportunities to play a role.

Agencies like MASEN encourage the growth of the green economy, and entrepreneurs and SMEs by creating biddable projects, for example, for green mosques or public lighting in Marrakech. Further encouraging small and growing companies to be involved in these bids would help them grow. It would also help validate new technologies, as is done in South Africa, with regard to many public sector renewable energy tenders.[53] The capacity and desire to take on larger-scale projects will also increase over time.

7. Additional Market Information Necessary for Doing Business

Fifty-four percent of entrepreneurs noted there was a lack of access to market information, viewing this as the biggest market barrier to doing business in Morocco. As a result, entrepreneurs often start their businesses in reverse. Rather than trying to solve a problem or fill a gap, many Moroccan entrepreneurs create a technology or solution before sourcing demand or determining market fit. This can potentially stunt the development of a start-up, as well hinder its potential to scale.

There are a few organizations that aim to address this issue. For example, the International Youth Foundation, which conducts research into agricultural industries, helps to find opportunities in the market for associated entrepreneurs. The Moroccan Center for Innovation and Social Entrepreneurship (mCISE) trains entrepreneurs to develop market-oriented products and services. Official networks, such as *Réseau Entreprendre Maroc*, aim to use their international reach to open potential markets to entrepreneurs and guide them along the way. Yet, these initiatives are few and far between. In this context, there is a lack of available ecosystem players that can multiply the necessary guidance and support to entrepreneurs wishing to navigate and operate in these markets.

Ecosystem actors and local and foreign investors are also handicapped by a lack of available market information, as they require similar information when navigating the Moroccan market. Twenty-four percent of surveyed experts expressed the view that information about the market was lacking. Experts interviewed repeatedly stated that market information is largely inaccessible to the ecosystem and anyone interested in it. As a result of the missing context about the level of entrepreneurial activity, the outcomes of past and current investments, as well as unfavorable policies toward foreign investment, "international investors are not very interested in Morocco."[54]

Box 1.6 GreenCape: Providing South Africa with Green Market Intelligence

GreenCape, a South African non-governmental organization (NGO) mandated by the Western Cape Government with working in the green technology space, produces market intelligence reports about the green economy. This includes sector-focused information, market opportunities and challenges, and a general overview of investment opportunities for both investors and businesses interested in, or already operating in, the green space.[55] This information is accumulated through engagement with various facets within the country's ecosystem, including businesses, investors, government, and academia. GreenCape aims to play a key role in removing barriers to the growth of green entrepreneurs and the green economy as a whole.

Over the past three years, GreenCape has written annual market intelligence reports about: utility-scale renewable energy; energy services; sustainable agriculture; the waste economy; and water.

Source: http://www.green-cape.co.za/

RECOMMENDATIONS

Morocco's potential for climate entrepreneurship is high, and the country's dynamic high-growth entrepreneurs are helping lead Morocco toward its green growth goals. By scaling innovative business solutions to local climate challenges, these entrepreneurs are benefiting not only Moroccans, but Africans across the continent as well.

Morocco has a young and highly educated workforce, and bountiful natural assets. It has a potentially big economic opportunity to play a leading role in climate change adaptation and mitigation both in Morocco, as well as abroad. Moreover, many young Moroccan entrepreneurs have already started their businesses with an international mindset, and are working in various countries throughout the world.

Although the potential for climate entrepreneurship is high, as the findings in the report demonstrate, there are various constraints weakening the momentum for entrepreneurship. These constraints hamper Morocco's potential to create jobs and increase overall economic growth. However, these are not unsurmountable challenges.

Recommendations

Improving the overall ecosystem will require investment in several key areas, such as policy, financing, markets, and culture. In particular, a coherent and pro-active national entrepreneurship policy would set the tone for dynamism throughout the sector. Furthermore, this would help lay the official foundation for entrepreneurship, while ideally easing the culture of risk around securing funding for the earliest stages of activity. Executing a well-crafted policy is often a lengthy and difficult cross-governmental process. However, the benefits of achieving this would have a lasting effect across all entrepreneurial sectors, especially with regard to green entrepreneurship. For example, countries such as Italy have been pioneering entrepreneurship policy, through the Start-Up Act.[56]

Pending this reform, Morocco may wish to explore the following pragmatic areas of thematic focus, some of which are being explored as part of IFC project implementation.

	Short-term Strategy	Long-term Strategy	Goal
POLICY			
Entrepreneurship and Innovation Policy	Systematically review existing policies in the areas of innovation and entrepreneurship, as well as regulations in the cleantech space. Clarify the role of different government organizations in innovation and entrepreneurship. Clarify government funding in this space, particularly at the early stage. - *Examples* include Public Expenditure Reviews (PERs) for Science, Technology and Innovation; World Bank Research, Innovation and Technology Transfer Projects (Serbia, Colombia, and so on).	Establish a clear, overarching policy that supports innovation and entrepreneurship - *Examples:* the Italian Startup Act, the draft Tunisian Startup Act	Optimal and stable policy support to facilitate new firm creation, innovation, job creation, and growth.
SUPPORT			
Ecosystem Strengthening	Increase stakeholder networking and ecosystem linkages through a focused program to incentivize these linkages. - *Examples* include ecosystem strengthening programs in New York and Cape Town, South Africa. Fill existing gap in later stage support program (Cleantech acceleration program) - *Example:* Climate-KIC cleantech acceleration program (this is the European Union's main climate innovation initiative).	Robust linkages between different ecosystem players in the forms of collaborations, joint programs, networking events and possibly associations (of incubators, for example).	Strongly networked ecosystem that provides cohesive support from ideation through growth stages.

	Short-term Strategy	Long-term Strategy	Goal
FINANCE			
Access to Finance for Green Entrepreneurs	Pilot innovative funding mechanisms to test the appetite for alternative funding sources to working capital for green-growth stage entrepreneurs in Morocco. - *Examples* include person-to-person (P2P) initiatives to increase the focus on green firms, funding schemes to facilitate access to clean technologies by private households, and so on; de-risking financing to green entrepreneurs. Ensure that entrepreneurship programs are focused on product markets that are of interest to investors. Increase linkages with early stage and angel investors in this space (national and international). Pilot angel association for green investing, or build capacity of local investors / angels to invest in green firms. - *Example*: Caribbean angel investor network (focused on green firms)	Increase awareness about different mechanisms to increase access or de-risk finance for green small and growing businesses. Crowd in international sources of green investment (impact investors, foundations, and so on).	Increase access to working capital for green small and growing businesses.
HUMAN CAPITAL AND CULTURE			
Help Build Stronger Green Firms	Incorporate a strong co-founder matchmaking component to entrepreneurship programs, through working with existing business schools in Morocco to match technical talent with business talent. - *Examples*: Aalto University Raise awareness on importance of co-founders.	Broaden effort and include in education/training curricula.	Increase the deal flow of investible high-growth potential green ventures in Morocco.
Increasing Opportunities for Green Women Entrepreneurs	Increase opportunities for women green entrepreneurs through existing programs, raising awareness, as well as specialized training and mentoring.	Mainstream female entrepreneurship-focused programs through the educational system.	Boost the number of successful high-growth women co-founders / entrepreneurs.

MARKETS	Short-term Strategy	Long-term Strategy	Goal
Increasing Number of High Growth Green Ventures	Initiate an international matchmaking program that would aim to bring in existing business models and proven technologies to Morocco. - *Examples:* pilot through the CTIC program in Morocco with American entrepreneurs; Existing programs in , Ethiopia, Kenya, and South Africa through the World Bank Group. Increase support to more mature firms scaling new green solutions. - *Examples:* Cluster Solaire and the German Agency for International Cooperation (GIZ)-supported Fast Track 2 Market (FT2M) program.	Scale up to broader level initiatives that have proven successful in supporting green high-growth ventures.	Scale up to broader level initiatives that have proven successful in supporting green high-growth ventures.
Expanding Market Information for Entrepreneurs	Increase market awareness and information for green entrepreneurs in Morocco. - *Examples:* GIZ and the SwitchMed (European Union) are currently working on several initiatives.	Encourage broad market information on green sectors and intelligence to be mainstreamed into Moroccan organization's mandate and disseminated on web.	Increase growth opportunities for green entrepreneurs.
Expanding Market Access	Facilitate knowledge and opportunities for Moroccan green entrepreneurs to increase their presence abroad through matchmaking, partnerships, and so on. Stimulate the demand-side in Morocco through increasing the number of demonstration projects for green technologies, as well as working with corporates.	Increase information regarding the importance of small and medium enterprises (SMEs) being included in large corporate and government contracts.	Increase the potential market size /market pull for green Moroccan entrepreneurs.

ENDNOTES & BIBLIOGRAPHY

Endnotes

[1] "Climate-smart development: adding up the benefits of actions that help build prosperity, end poverty and combat climate change." World Bank, 2014.
[2] The team defines climate/green entrepreneurship as the process of developing a new business or a new product line from an existing business for purposes of climate mitigation, adaptation, or other positive environmental benefits.
[3] Energy and Development at a Glance: Country Fact Sheet Morocco, German Watch, 2016,
[4] Green to Scale: Low-carbon success stories to inspire the world. Sitra, 2015.
[5] *Global Economic Prospects: Divergences and Risks*. World Bank, 2016.
[6] Morocco. International Energy Agency, 2014.
[7] 100% Renewable Energy: Boosting Development in Morocco. World Future Council, 2015.
[8] The Green Economy in Morocco, United Nations Economic Commission for Africa, 2014.
[9] This includes: the Plan Maroc Vert (green growth) for agriculture, water resource management, Vision 2020 for ecotourism, and a National Energy Policy, which was adopted in 2009. The energy policy comprises five main strands to provide support for energy efficiency and renewable energy programs. Additionally, as a key component of Morocco's National Sustainable Development Strategy, a National Charter for Environment and Sustainable Development was adopted in 2012. The Charter strengthens integration of the environment in all public and sectoral strategies, and a framework law (99-12 Model Law on the Environment and Sustainable Development Charter) was enacted in 2014 to help operationalize the Charter's efforts.
[10] National Sustainable Development Strategy, Kingdom of Morocco, 2012.
[11] Power Shifts: Emerging Clean Energy Markets. Pew Charitable Trusts, 2015.
[12] Morocco Country Commercial Guide. U.S. Export Agency, 2016.
[13] Cleantech Survey Report: Middle East and North Africa, 4th edition. Ernst & Young, 2014.
[14] Pew Charitable Trusts, 2015.
[15] "MENA's Cleantech startups: unlocking the path to scale and solve environmental challenges", WAMDA, 2016.
[16] Office National de Electricité et de l'Eau Potable (ONEE), 2016.

[17] Report: Morocco, “Morocco sets bold targets to boost renewable energy generation capacity,” Oxford Business Group, 2015.
[18] “A Thriving Private Sector at The Heart of an Inclusive Society,” The European Commission, 2016.
[19] High-Growth Entrepreneurship, a Preliminary Literature Review. infoDev, 2016.
[20] “Climate Investment Opportunities in Emerging Markets: An IFC analysis.” IFC, 2016.
[21] Building Competitive Green Industries, infoDev, 2014.
[22] WAMDA, 2016.
[23] The World Bank Group’s Innovation and Entrepreneurship Unit is currently working on a program, “Market Connect”, with different local partners in Ethiopia, Kenya and South Africa, as well as global corporate partners such as the Shell Foundation. The program aims to forge B2B technology and knowledge matchmaking on a larger scale.
[24] L’usine Nouvelle “Startup Maroc, l'usine 胩 fabriquer des jeunes pousses”. http://www.usinenouvelle.com/article/maroc-l-ete-des-startups-1-10-startup-maroc-l-usine-a-fabriquer-des-jeunes-pousses.N342781
[25] Implementation of the “Small Business Act” for Europe in the Mediterranean Middle East and North Africa. OECD, 2014.
[26] Secteur 21 Interview.
[27] OCP Foundation Interview.
[28] mCise Interview.
[29] Secteur 21 Interview.
[30] “The power of parity: How advancing women’s equality can add $12 trillion to global growth.” Mckinsey Global Institute, 2015.
[31] Royal Message to The 4th Global Entrepreneurship Summit, His Majesty King Mohammed VI, Marrakech, 2014.
[32] Association of Women Entrepreneurs in Morocco (AFEM), 2015.
[33] Entrepreneurial intentions refers to the percentage of the adult population between 18-64 years of age (excluding individuals already engaged in any stage of entrepreneurial activity) who intend to start a business within the next three years.
[34] Women’s Report, Global Entrepreneurship Monitor, 2015.
[35] http://ceed-morocco.org/

[36] "Gender and the Business Environment for New Firm Creation." Leora Klapper, Simon Parker, World Bank Research Observer, 2011.
[37] http://10years.firstround.com/
[38] Klapper, Parker, 2011.
[39] Klapper, Parker, 2011.
[40] New Work Lab Interview.
[41] His Majesty King Mohammed VI, 2014.
[42] Any individual carrying out an individual industrial, commercial or craft activity, or service provider, whose annual turnover (CA) received does not exceed 500,000 MAD for industrial/commercial/crafts and 200,000 MAD for services.
[43] Entrepreneur with the Morocco Climate Innovation Center. Interview.
[44] There are currently four procedures required to start a business in Morocco: 1) Obtain a "Certificat Négatif" to register the company name; 2) Pay stamp duty; 3) Register for patent tax, the Tribunal of Commerce, social security and taxation; and 4) Make a company stamp. It takes 9.5 days, and costs 7.9 percent of income per capita for both men and women.
[45] International Youth Foundation Interview.
[46] Adalia Interview.
[47] Enabling Entrepreneurial Ecosystems: Insights from Ecology to Inform Effective Entrepreneurship Policy, Kauffman Foundation, 2015.
[48] Espace Bidaya Interview.
[49] Secteur 21 Interview.
[50] Maroc Numeric Fund Interview.
[51] Pew Charitable Trusts, 2015.
[52] Rawa Services Interview.
[53] Renewable Energy Auctions, International Renewable Energy Agency, 2016.
[54] New Work Lab Interview.
[55] http://www.green-cape.co.za/
[56] http://www.mise.gov.it/images/stories/documenti/italian_startup_act_annual_report_to_parliament_2016.pdf

Bibliography

Akbar, S.; Kleiman, G.; Menon, S.; Segafredo, L. 2014. *Climate-smart development : adding up the benefits of actions that help build prosperity, end poverty and combat climate change*. World Bank Group.

Auerswald, P. October 2015. *Enabling Entrepreneurial Ecosystems: Insights from Ecology to Inform Effective Entrepreneurship Policy*. Kauffman Foundation.

Bayt.com. 2016. *Top Cities in the Middle East and North Africa Survey*.

Bayt.com. November 2015. *Entrepreneurship in the Middle East survey.*

Calenda, C. 2016. *Annual Report to Parliament on the implementation of legislation in support of innovative startups and SMEs.* Ministry of Economic Development, Italy.

Compass. 2015.*The Global Startup Ecosystem Ranking*

Ernst & Young. 2014. *Cleantech Survey Report: Middle East and North Africa.* 4th edition.

European Bank for Reconstruction and Development, European Investment Bank, and The World Bank. 2016. *What's Holding Back the Private Sector in MENA? Lessons from the Enterprise Survey:* 124.

European Commission. 2016. "A Thriving Private Sector at The Heart of an Inclusive Society."

Global Entrepreneurship Monitor. 2015. *The Entrepreneurial Dynamics in Morocco*

Global Entrepreneurship Monitor. 2015. *Women's Entrepreneurship*

HSBC Private Bank. 2016. *The Essence of Enterprise Development.*

International Finance Corporation (IFC). 2016. *Climate Investment Opportunities in Emerging Markets*.

infoDev. 2014. *Building Competitive Green Industries*.

infoDev. 2016. *High-Growth Entrepreneurship: a Preliminary Literature Review.*

International Energy Agency. 2014. *Morocco 2014.*

International Labor Organization. 2014. *Key Indicators of the Labor Market database.*

International Renewable Energy Agency. 2016. *Renewable Energy Auctions.*

Kingdom of Morocco. 2012. *National Sustainable Development Strategy.*

Klapper, L. Parker, S. 2011. "Gender and the Business Environment for New Firm Creation." *World Bank Research Observer* Vol. 26, No. 2: 237-57.

Klawitter, J. Shinke, B. 2016. *Country fact sheet Morocco*. Energy and Development at a Glance. German Watch.

Mckinsey Global Institute. 2015. *The power of parity: How advancing women's equality can add $12 trillion to global growth*.

Organization for Economic Co-operation and Development (OECD). 2014. *Implementation of the "Small Business Act" for Europe in the Mediterranean Middle East and North Africa 2014.* SME Policy Index: 41.

Oxford Business Group. 2015. "Morocco sets bold targets to boost renewable energy generation capacity." *Energy & the Environment.* Report: Morocco 2015.

Pew Charitable Trusts. 2015. *Power Shifts: Emerging Clean Energy Market*s.

Sitra. 2015. *Green to Scale: Low-carbon success stories to inspire the world.*
United Nations Economic Commission for Africa. 2014. *The Green Economy in Morocco*.

United States Agency for International Development (USAID). 2012. *Morocco Economic Competitiveness, Entrepreneurship Promotion Organizations: Summary Analysis.*

United States Census Bureau. 2010. Small Business Association: Update 2002- 2010.

United States Export Agency. 2016. *Morocco Country Commercial Guide.*

WAMDA. 2016. *MENA's Cleantech startups: unlocking the path to scale and solve environmental challenges*.

World Bank Group. 2014. *Country Partnership Strategy: Morocco 2014-2017.*

World Bank Group. 2016. *Divergences and Risks.* Global Economic Prospects, June 2016.

World Bank. 2017. Doing Business: *Morocco.*

World Bank. 2012. *Kingdom of Morocco, Promoting Youth Opportunities and Participation.*

World Bank Group. 2016. Trade and Competitiveness Monitoring Note: *Morocco.*

World Future Council. 2015. 100% *Renewable Energy: Boosting Development in Morocco.*

ANNEXES

Annex I: Report methodology

The diagnostic was developed based on the Babson Entrepreneurship Ecosystem model, which captures the most widely held understanding of entrepreneurial ecosystems, including what factors they consist of, and how they work. (See figure 1a)

Figure 1a. Babson Entrepreneurship Ecosystem Model

Source: Authors

Several diagnostics have already been undertaken by the World Bank in Bangladesh, Serbia, Sri Lanka, and Suriname. Although some have focused specifically on the digital sector, the Morocco diagnostic is the first climate-focused iteration.

There are a variety of external and internal factors at each stage of enterprise development that affect the livelihood of a business. This can include the culture and attitudes to entrepreneurship that one is exposed to, and the policies that can help, hinder, or even halt activity. These factors influence everything from the concept to the start-up stage, and from there to growth, optimization, and eventually innovation.

The Babson model consists of six domains, each with several sub-components (see figure 2a).It captures the most important dimensions of an ecosystem that are (initially) interdependent of each other. These six domains are meant to determine the overall entrepreneurial strengths, weaknesses, and opportunities that ultimately drive entrepreneurship in any city or country.

Figure 2a: Six Pillars of Babson's Ecosystem Framework, applied to an innovation and entrepreneurship context

Policy	Financial Capital	Markets	Culture	Human Capital	Support
• R&D environment & institutions • Regulation • Taxation • Venture-friendly legislation and processes • Foreign business friendliness • Industry policy, support and incentives	• Debt finance • Foreign direct investments • Equity Investments	• Key product markets and their demand for innovation • State of Internet Access • Role of large companies as buyers of local products • Overall financial inclusion	• Business activity • Startup activity • Risk tolerance • Confidence • Role models	• State of youth employment • Skilled workforce • Management quality • Availability of management training	• Support to entrepreneurs and startups • Business networks • Diaspora • Incubators/ accelerators • Cluster initiatives/supply chain development • Business development services

Source: Authors

By conducting a comprehensive and holistic diagnostic that uses an advanced analytical approach to identify existing gaps and challenges in the ecosystem, one can gauge the need for future support programs that can be designed to address identifiable gaps. These interventions, in turn, could be expected to move the ecosystem toward greater synergy among the domains, leading to non-linear, catalytic effects.

Secondary Data Collection

The report is based on the collection and analysis of four sources of data:

Two primary sources: 1) 44 semi-structured interviews conducted from August-October 2016 throughout Morocco, 2) a targeted national online survey of 334 ecosystem actors in Morocco; and
Two secondary sources: 1) 42 national-level quantitative indicators, 2) a review of more than 40 existing reports on entrepreneurship and clean technology.

Morocco	Jordan	South Africa	Egypt	France
Country of Analysis *GDP:* $107b *Population:* 34.4m *Governance:* Constitutional Monarchy *Unemployment:* 10.2%	Comparable country along the units of: *GDP:* $35.8b *Population* 6.74m *Governance:* Constitutional Monarchy *Unemployment:* 11.1%	Comparable country along the units of: *GDP:* $313b *Population:* 54.8m *Governance:* Republic *Unemployment* 25.1%	Regional comparator *GDP:* $287b *Population:* 91.5m *Governance:* Republic *Unemployment* 13.2%	Global comparator *GDP:* $2.3t *Population:* 66.5m *Governance:* Republic *Unemployment* 9.9%

Figure 3a. Morocco CEED Benchmarking Rationalization

Source: World Bank, World Development Indicators

For each data collection method, the team designed complementary analytical instruments to capture data along each of the six ecosystem domains and their sub-components. Specifically, the team performed extensive background research of relevant publications about climate sectors, entrepreneurship, access to finance, innovation and more. The team also selected suitable country-level indicators, and developed an interview guide for each stakeholder group in the ecosystem. Finally, the team designed and distributed a survey to a defined population of stakeholders. By using different data sources to assess the same ecosystem dimensions and reflecting sources against each other, the team triangulated the data to gain higher validity and consistency for the findings.

Indicator Assessment

The indicator assessment started from a list of 109 potential indicators. These were subsequently distilled by relevance to the objectives of the diagnostic. Several countries were included in the analysis to benchmark the data and compare Morocco to countries relative in composition (see figure 3a below). Often serving as regional benchmarks or places of comparison for Moroccan policymakers and ecosystem actors, Egypt and Jordan were included. As one of the strongest economies on the African continent, South Africa was also incorporated. Finally, France was included largely because of the historical connection that continues between the countries — socially, economically, and linguistically.

The preliminary indicator selection was further refined following the in-country data collection. Data was ultimately collected through desk research on 43 indicators.

Qualitative In-country Data Collection

Semi-structured interviews

The qualitative in-country data collection component represented the basis for all report findings. It encompassed a series of semi-structured interviews with stakeholders from multiple sectors. An initial informant list was established based on desk research, and local and in-country contacts. It was reviewed and updated by several strong ecosystem influencers in Morocco.

The focus was on meeting with a wide array of ecosystem actors and entrepreneurs who were all uniquely positioned to speak to one or more of the six ecosystem domains. This included, but was not limited to 1) entrepreneurs and SMEs; 2) managers of ecosystem enabler organizations; 3) government officials and policymakers; 4) financiers; 5) NGOs; 6) academic institutions and scholars; as well as 7) leaders of business associations and chambers. Figure 4a shows the breakdown of interviews and group consultations by segment.

Figure 4a. Interviews by Stakeholder Group

Segment	# Interviews
Entrepreneurs and SMEs	14
Ecosystem enablers (incubators, accelerators, mentors, co-working spaces, etc.)	10
Government officials	2
Financial representatives	4
Corporate Stakeholders	3
Business Associations and Chambers	8
Academia	3
Total	**44**

Online entrepreneurial attitudes and experts survey

The team conducted a survey of ecosystem actors in Morocco during September 2016. The survey was intended to further corroborate and quantify the findings from the qualitative stage of analysis.

Defining a population and distribution

There are no known official statistics regarding the exact number of entrepreneurs in Morocco, including green entrepreneurs. However, in an effort to ensure accuracy of results, the team did a wide review of existing literature on related topics in the region to find an estimation of the number of active entrepreneurs in Morocco.

Figure 5a. Defined Population of Morocco's Entrepreneurship Ecosystem

Name	Estimate Size of Network
7ay	30
AMIC/LixCap	16
Amina Investment Network	75
Cluster Solaire / MCIC	80
Enactus Maroc	84
Espace Bidaya	13
Ministére des MRE	100
MOWGLI Morocco	168
Réseau Entreprendre Maroc	52
Secteur 21	15
Total:	**603**

Startup Morocco, one of the biggest and most influential stakeholders in the ecosystem, recently stated that Morocco has less than 200 start-ups. This is the only known source to help validate the sample. Based on this information the only way to determine any sort of sample was to distribute the survey through various known green and entrepreneurship-related networks in the country. This ultimately served to estimate the population size: **603** (see figure 5a for details), for which the team received **334** responses. This self-selection approach brought with it a potential bias in the results. However, based on the (albeit limited) available data to estimate the size of the entrepreneurial community in Morocco, and the number of responses received, it can be assumed that the results are representative of the population.

Calculating confidence

From the survey of 603 ecosystem actors in Morocco — with a margin of error of plus or minus five percentage points at 95 percent level of confidence — a sample size of 219 actors was required. With a large sample size of 334, it can be inferred that the data collected is representative. However, considering the green-focus of the survey, it cannot be claimed that the findings are representative of all entrepreneurs in Morocco. Furthermore, as the survey was taken by self-selection, the team acknowledges the potential bias associated with the data.

Defining the sample

The survey was designed to capture the "ecosystem identity" of each respondent by having them self-select the classification that best described their current situation (See Figure 6a for list of actors). Since the survey ultimately aimed to gather insights about green entrepreneurial attitudes and experiences in Morocco, the term "entrepreneur" was broadly defined. Four classifications were used to encompass entrepreneurship and innovation-

related activities from the ideation stage to market-ready established businesses.

The classifications include: 1) Entrepreneur; 2) Researcher; 3) Startup; and 4) Existing company creating or adapting a climate technology or business model. From this group of stakeholders, **205 responses** were received. Additionally, as the green/climate technology field is still emergent in Morocco and many do not self-identify as green entrepreneurs, of the total entrepreneurs surveyed, an estimated 22 percent would consider themselves to be green entrepreneurs. This number is based on Question 29 (optional) of the survey, which received 45 responses. It asked respondents to indicate: "What clean technology do you develop and/or commercialize? (if relevant)."

Figure 6a. Ecosystem Actors Survey and Response Rate

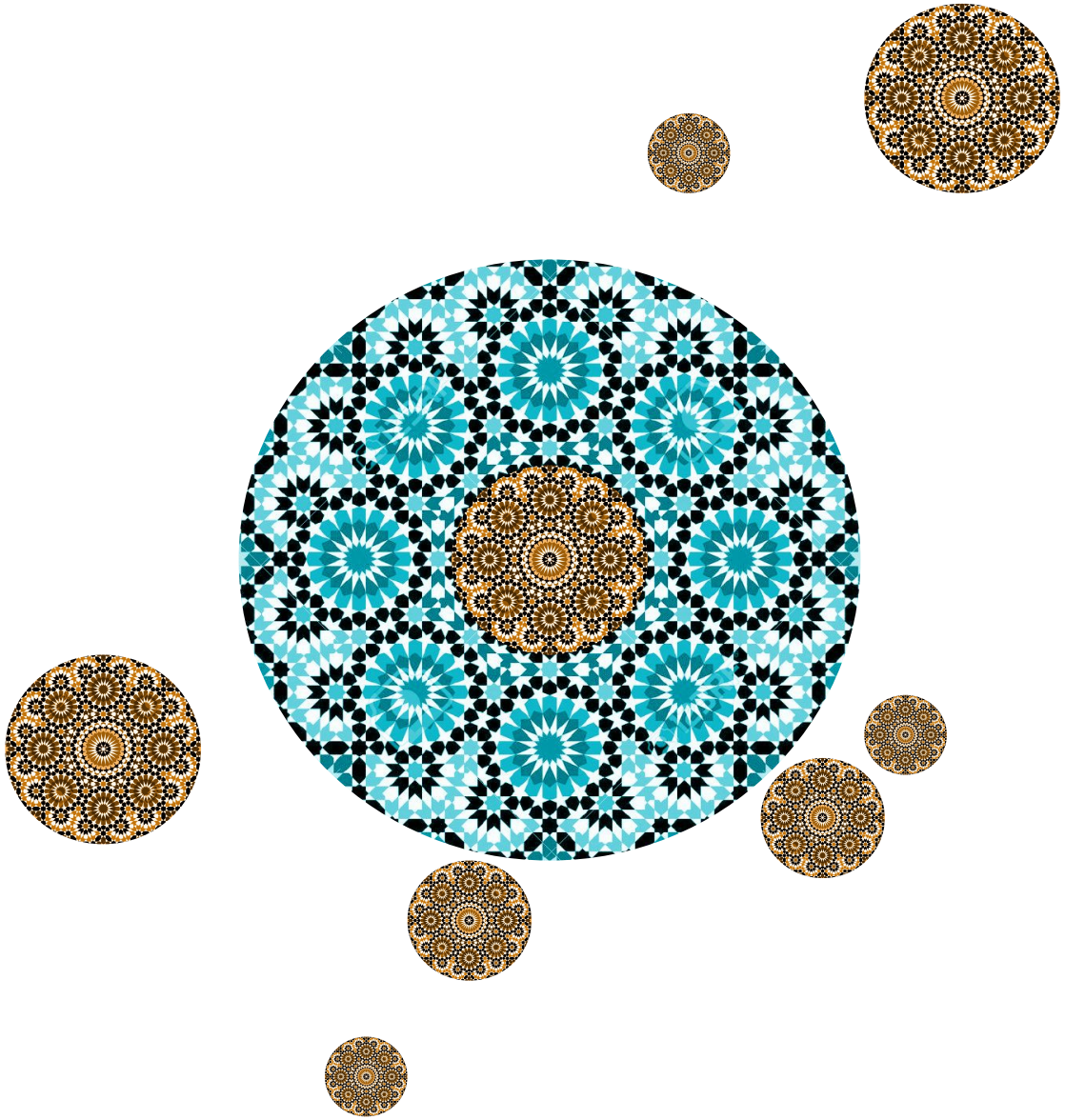
Ecosystem Actors	Response Rate
Entrepreneur	118
Researcher (e.g. R&D person in a university)	31
Startup	38
Existing Company creating or adapting a climate technology or business model	18
Total number of entrepreneurs	**205**
Government Official	7
Association	28
Incubator/Accelerator	14
Investor/Banker	3
Journalist	2
Private Sector	29
Other	46
Total Survey Responses	**334**

Annex II: Why Climate Innovation?

The need to discover innovative solutions for mitigating the effects of climate change is at the forefront of almost every nation's policies. Morocco, like many other countries has invested in renewable energy, and begun to develop more sustainably-driven policies. However, Morocco has yet to realize the greater industrial competitiveness and economic growth that can accompany investment in climate innovation. A pivotal part of this potential growth is through the promotion of climate entrepreneurship, which can lead to greater economic development in emerging markets.

- **Large sector growth rates**: Political pressure, technological advances, and falling prices lead to high expected growth rates for climate-related sectors. This is particularly true for emerging economies and developing countries, which must make large infrastructure investments (for example, in power sector supply and transmission). On the adaptation side, the increase in climate change will also force countries to invest in sectors such as clean water supply and climate-smart agriculture.

- **Availability of Financing**: There has been increase in national government policy support, and a growing recognition from commercial sources about the importance of "social impact investing." Multinationals continue to make climate change a centerpiece of their strategies, and have emphasized the global need to 'go cleaner.' As a result of these developments, there is now a wide-range of financing sources for climate-related sectors. This includes public sources, such as the Green Climate Fund, which is scaling to its target of US$100 billion per year, and the World Bank, which will increase its share of overall investments in climate to 28 percent by 2020.

- **Transformation favors new entrants**: Climate sectors have traits that allow new entrants to gain market share against incumbents. These traits include the expansion of markets, technological advancement and disruption, and immense growth in demand (particularly in emerging/developing countries), which goes beyond supply capacity of existing firm capability. In general, whereas developed country firms hold dominant incumbency positions in most sectors, firms from developing countries are the new entrants in climate sectors.

- **Local knowledge needed for entrance into local markets**: Climate technology requirements for developing countries differ from developed countries due to local market, social, and natural circumstances. Greater participation by developing country firms to innovate relevant technologies and related business models can develop solutions appropriate for local markets. Firms are innovating rather than relying on the often imperfect, technology-transfer model. While some components of clean products have been commoditized (for example, photovoltaic cells), most require knowledge of local market conditions. This gives local firms a distinct advantage vis-à-vis competition from foreign firms.