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NATIONAL REPORT 2017/18

GUEST SECTION

CYPRUS REGIONAL
CLEANTECH INNOVATION AND
ENTREPRENEURSHIP HUB STUDY



University
of Cyprus



AUTHORS

ENTREPRENEURSHIP IN CYPRUS
NATIONAL REPORT 2017/18

POLYVIU ARIANA
ETEOKLEOUS PANTELITSA
DIKAIAKOS MARIOS
KASSINIS GEORGE

GUEST SECTION:
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KARAPATAKI CHRISTINA
YIATROS STYLIANOS
CHARALAMBIDES G. ALEXANDROS

TABLE OF CONTENTS

Forefront from the Chairman of Entrepreneurship Council, University of Cyprus	6
Foreword by the Minister of Finance	7
Message from the Permanent Secretary of the Ministry of Energy, Commerce, Industry and Tourism	8
Message from The Bank of Cyprus	9
1. EXECUTIVE SUMMARY	10
2. GEM INTRODUCTION AND BACKGROUND	13
2.1 Gem's Conceptual Framework	15
2.2 Gem Methodology.....	18
3. ENTREPRENEURIAL ACTIVITY IN CYPRUS IN 2017	19
3.1 Societal Values & Perceptions about Entrepreneurship	20
3.2 Total Early-Stage Entrepreneurial Activity (Tea).....	21
3.3 Established Business Owners	24
3.4 Employee Entrepreneurial Activity.....	25
3.5 Business Discontinuance.....	25
3.6 Profile of Entrepreneurs in Cyprus.....	25
3.7 Entrepreneurial Impact.....	27
4. ENTREPRENEURSHIP ECOSYSTEM	34
4.1 Strengths and Limitations of the Entrepreneurial Ecosystem in Cyprus.....	36
5. EXISTING POLICIES AND FUTURE POLICY RECOMMENDATIONS	46
6. CYPRUS REGIONAL CLEANTECH INNOVATION AND ENTREPRENEURSHIP HUB STUDY	54

TABLE OF FIGURES

Figure 2.1: GEM economies by geographic region and economic development level in 2017	14
Figure 2.2: GEM Conceptual Framework	16
Figure 2.3: The entrepreneurial process and GEM operational definitions	16
Figure 3.1: Societal values about entrepreneurship in Cyprus and Europe	20
Figure 3.2: Self-perceptions about entrepreneurship in Cyprus and in Europe	22
Figure 3.3: Total Early-stage Entrepreneurship (TEA) in Cyprus and Europe	22
Figure 3.4: Total Early-Stage Entrepreneurial Activity (TEA) Index levels.....	23
Figure 3.5: Nascent Entrepreneurs in Cyprus and Europe	24
Figure 3.6: New business owners in Cyprus and Europe.....	24
Figure 3.7: Established business ownership in Cyprus and Europe.....	24
Figure 3.8: Employee entrepreneurial activity in Cyprus and Europe	25
Figure 3.9: Reasons for business discontinuance in Cyprus and Europe.....	25
Figure 3.10: Total Early-Stage Entrepreneurial Activity (TEA) rates by age group in Cyprus and Europe	26
Figure 3.11: Total Early-Stage Entrepreneurial Activity (TEA) rates by gender and motivation in Cyprus and Europe	26
Figure 3.12: Percentage of the population that received corresponding education and is involved in Total Early-Stage Entrepreneurial Activity (TEA)	27
Figure 3.13: Total Early-Stage Entrepreneurial Activity (TEA) and industry sectors in Cyprus and in Europe.....	28
Figure 3.14: Expected new job openings in Cyprus and Europe	30
Figure 3.15: Innovation and international orientation of entrepreneurial activity in Cyprus and Europe	29
Figure 4.1: Entrepreneurial Framework Conditions (EFCs).....	35

LIST OF TABLES

Table 4.1: Entrepreneurial framework condition scores	36
Table 4.2: Physical infrastructure	38
Table 4.3: Commercial and services infrastructure.....	38
Table 4.4: Government policies	29
Table 4.5: Procedures stages and time to complete for setting up a business in Cyprus	40
Table 4.6: Entrepreneurial education	41
Table 4.7: Government entrepreneurship program.....	42
Table 4.8: Access to finance	42
Table 4.9: Cultural and social norms.....	43
Table 4.10: Internal market dynamics and burdens.....	44
Table 4.11: Research and Development Transfer	45
Table A: Entrepreneurial Activity Type in selected countries, GEM 2017/2018	51

FOREFRONT FROM THE CHAIRMAN OF ENTREPRENEURSHIP COUNCIL, UNIVERSITY OF CYPRUS

Universities are at the forefront of knowledge creation and dissemination. They play a crucial role in challenging norms and catalyzing societal changes. As such, their role is fundamental in achieving sustainable economic and social development in an increasingly globalized, resource-constrained, complex and interconnected world.

In this context, we at the University of Cyprus and its Centre for Entrepreneurship are actively involved, both locally and internationally, in organizing, promoting, and supporting initiatives that promote entrepreneurial thinking and action. We do so because we view entrepreneurship as a mindset that challenges the status quo and fosters innovation, including through solid data collection, research and analysis. Implementing the Global Entrepreneurship Monitor study for Cyprus was one way to contribute to our collective understanding of the entrepreneurial phenomenon. Most importantly, the process of carrying out GEM demonstrates what can be achieved when stakeholders collaborate

efficiently and effectively. The result is a report that promises to be a valuable tool to policy makers and private-sector actors alike. In fact, extending and enhancing the University's partnerships with various actors to include entrepreneurial activities promises to be invaluable in strengthening the fledgling local entrepreneurial ecosystem.

Last but not least our choice to highlight the potential role of Cyprus as a regional cleantech innovation and entrepreneurship hub in the guest section of the report highlights both the challenges and opportunities presented to researchers and entrepreneurs in addressing major global challenges such as climate change.

This report is the result of true collaboration and would not have been possible without the active involvement of all those listed within. We are grateful for their contributions and look forward to continuing our partnerships in the future.

George Kassinis

*Associate Professor
Chairman (2014-2018),
Entrepreneurship Council,
University of Cyprus*

FOREWORD BY THE MINISTER OF FINANCE

The Global Entrepreneurship Monitor (GEM), is not just another benchmarking study, but a well documented attempt to understand the complex set of relationships between entrepreneurship and economic growth. Since this is the second year that Cyprus is participating chronological data are becoming available, showing the trends and giving insight to entrepreneurial perceptions in the country. In the years to come we will be able to use the results, in order to propose the right policy interventions since entrepreneurship is vital for maintaining our recovery and building a sustainable economy.

The current report contains some encouraging news. One in two adults in Cyprus (51%) believe that there are good opportunities to initiate entrepreneurial activity. Interestingly, last year's figure was 35,9%. The improved perceptions regarding opportunities to initiate entrepreneurial activity could be attributed to the improved economic environment. However, one should be concerned by the notable drop in entrepreneurial activity, i.e. percentage of the population that considers entrepreneurship as a good career choice, from 72,7% in the previous year to 66.2%, although still above EU average. Two main areas identified for further action in this year's report are entrepreneurial education and access to finance.

The role of the government is to facilitate entrepreneurship and innovation and create the conditions that will allow them to flourish. Governments should do their best to reduce the barriers facing any entrepreneur, be it in the form of excess bureaucracy or excess taxation. They should maintain a

stable, predictable and safe economic environment. They should invest in education and in technology. They should incentivise research and innovation. Moreover, if they do so, they will be able to broaden the productive base of their economy, to create high value jobs and to enhance competitiveness.

An important tool for government initiatives in this direction is the Policy Statement for Entrepreneurship, the first such integrated policy paper ever drafted in Cyprus, approved by the cabinet back in 2015. Already over 51% of its actions have been implemented, and there is substantial progress on a further 29%, with actions offering a trigger for entrepreneurial innovation. Since 2016, the first year of implementation of the Policy Statement, there is a remarkable mobilization of key players in the business ecosystem, whose contribution to promoting and strengthening business culture and operations in Cyprus has been crucial.

I am sure that the national GEM Report will be a very useful tool both for the Government and all other stakeholders to better understand the Cypriot business ecosystem and the findings will contribute to more effective formulation of policy measures, including the revision of the Policy Statement whenever appropriate.

I would like to congratulate the authors not only for the quality of their research, but also for introducing into this year's report specific policy making recommendations on cleantech innovation and entrepreneurship.

Harris Georgiades

Minister of Finance

MESSAGE FROM THE PERMANENT SECRETARY OF THE MINISTRY OF ENERGY, COMMERCE, INDUSTRY AND TOURISM

The Government recognizes entrepreneurship as one of the main drivers of job creation and acceleration of economic activity in particular business activity based on knowledge and innovation. The main challenge for the Government is to further enhance the entrepreneurial ecosystem so as to provide the right conditions for a successful and comprehensive development of entrepreneurial activities.

The measurement and evaluation of entrepreneurship should be part of any integrated national system monitoring and assessing the competitiveness of the economy by utilizing data, methodologies and indicators. In this framework I am happy to welcome the 2nd GEM Report for Cyprus. The following findings of the GEM report are very interesting regarding the perception related to entrepreneurship:

- 66.2% of the population considers entrepreneurship as a good career choice
- 61.5% perceive that entrepreneurs receive a high status in the society

- 50.5% believe that the media provide adequate attention to entrepreneurship

The results of the 2nd Report are really encouraging for the entire ecosystem to keep trying!

The government will evaluate and take into consideration the results and policy recommendations of the 2nd GEM report. We will focus particularly on the reinvigoration of entrepreneurial spirit, the modernization of the existing educational system and cultivate entrepreneurial mindset from an early age. In addition we will promote e-government and the creation of synergies between the academia and the enterprises.

I seize this opportunity to thank the University of Cyprus for being our National Coordinator for GEM and for the excellent work they perform in this process that has been done.

Dr. Stelios Himonas

*Permanent Secretary
Ministry of Energy, Commerce,
Industry and Tourism*

MESSAGE FROM THE BANK OF CYPRUS

It is a pleasure to preface the Second National Report on Entrepreneurship as part of the Global Entrepreneurship Monitor (GEM). This is a report that will greatly help in identifying both the strengths and weaknesses of Cyprus as a place to start-up a new business.

Cyprus has a highly educated workforce, good infrastructure, a favorable geographical location and a business-friendly culture. However, it can sometimes face some challenges in taking advantage of these assets outside of a few traditional sectors and this is where entrepreneurship can help.

Entrepreneurship is hugely beneficial for both the economy and the society. New businesses create more jobs, boost growth and improve living standards, while also breaking ground for new economic activity beyond traditional sectors.

One important area through which start-ups have been able to transform the economic landscape around the world, has been technology. Technology start-ups can push a country forward as today's world requires rapid adjustment to the changes that technology brings. All sectors of the economy - including banking and financial services - are subject to the forces of change that technology startups can bring and if a country fails to nurture entrepreneurship and innovation, it

risks falling behind. The disruption is already here and it is incumbent on us all to embrace it.

Bank of Cyprus is already making a substantial contribution to entrepreneurship in Cyprus not the least through its IDEA program, which helps to support startups for a period of up to 9 months. The financial sector as a whole will need to play a bigger role in the future by developing the necessary expertise for more venture capital investment firms. Access to capital remains a key challenge for startups and new business, especially in Cyprus. This is a challenge we are all called to tackle, as debt finance is virtually the only option today.

I would like to sincerely thank the Centre for Entrepreneurship (C4E) of the University of Cyprus, the Ministry of Energy, Commerce, Industry and Tourism and the Structural Reform Support Service of the European Commission. This report has indeed been the product of their joint cooperation and the grouping of their considerable resources.

This report can be a useful and important tool that can help the development of entrepreneurship in the country. Having the necessary information and data is often a major stepping stone to the realization of a goal.

Michalis Persianis

*Director of Corporate Affairs
Bank of Cyprus*

An aerial architectural rendering of a coastal park. The scene shows a paved road on the left with a parking lot, a wide pedestrian walkway, and several rectangular swimming pools. The park is landscaped with numerous palm trees and other greenery. A stone-lined promenade runs along the edge of a blue body of water, with a long wooden pier extending into the sea. In the background, a city skyline is visible under a clear sky. The text 'EXECUTIVE SUMMARY' is overlaid in the center-right.

EXECUTIVE SUMMARY

Entrepreneurship is the principal mechanism for materializing the impact of technological innovation on economies and societies. Technological innovation is, in turn, the ultimate source of productivity improvement and the main driver for economic growth. Consequently, innovation and entrepreneurship have become top policy priorities in the national agendas of countries that strive to deliver prosperity for their citizens through economic growth, job creation and poverty reduction.

What are the factors that determine the status of entrepreneurship in societies around the world? How can we observe and measure those factors and track their evolution in time as societies and economies evolve? Addressing those questions is the goal of the Global Entrepreneurship Monitor (GEM), the leading worldwide study on entrepreneurship. GEM was initially conceptualized in 1997 and is currently considered as the most authoritative and informative longitudinal study on entrepreneurship in the world, covering all geographic regions and economic levels. The GEM conceptual framework is based on the assumption that national economic growth is the result of the personal traits and capabilities of individuals to identify and seize opportunities, and that this process is affected by environmental factors that influence individuals' decisions to pursue entrepreneurial initiatives. Therefore, GEM seeks to capture the attitudes of societies towards entrepreneurship, the characteristics, motivations and ambitions of entrepreneurs, and the quality of entrepreneurial ecosystems in different economies. GEM accounts for specific contextual factors, which are considered influential in creating unique business and entrepreneurial contexts, such as social, political, and economic.

Measuring and understanding the factors that affect the status of entrepreneurship is important in order to drive policy-making that can lead to solid productivity improvements and a positive change in economic activity. Policy making in the modern world is particularly challenging, as it needs to take into account the rapid and profound changes brought by exponential progress in technology, the unprecedented acceleration of globalization and the onslaught of climate change. Exponential progress in knowledge and technology makes most new technologies obsolete very fast. The cycle of innovation, which comprises

experimentation, learning, knowledge application, and assessment of success or failure - is becoming shorter than ever. Automation, Artificial Intelligence, and the 4th Industrial Revolution are disrupting whole economic sectors and threaten to render a variety of blue and white collar jobs across numerous sectors obsolete. Globalization is leading to the acceleration of global flows of information, knowledge, people, commerce and finance, making the world hyper-connected and interdependent with markets, businesses, governments and societies interwound more tightly together than ever. Climate change raises unexpected challenges and threats that may require radical solutions to problems of great complexity and scale; such solutions might call for the deployment of innovative inventions, in synchrony with the mobilization of society and a radical change of mindset at a global scale.

The aspiration of the Cyprus GEM National Report is to analyze the status and evolution of entrepreneurship in Cyprus through the lens of modern-world challenges. We believe this is important for informed, timely and agile decision-making.

What are the key observations from the 2017/2018 survey? On the positive side, we observe that there is a constantly positive perception about entrepreneurship and entrepreneurial opportunities in Cyprus, and that an encouraging percentage of the population expresses entrepreneurial intention. Physical, commercial and legal Infrastructures are considered to be on par with the European average, while government policies regarding taxes and bureaucracy are considered more positive to entrepreneurship than the EU average. In comparison to 2016/2017, it seems that an improved awareness about entrepreneurship is helping Cypriots to develop a more pragmatic view of the challenges involved in undertaking entrepreneurial activity. However, this is combined with an increased fear of failure and a weaker access to finance in comparison to the respective EU averages. Moreover, the risk-reward balance offered in Cyprus appears rather limited, due to the small size of the country, the lack of highly specialized talent, and the sparsity of networks that connect local entrepreneurs and innovators with global finance and big markets. These factors can deter the up taking of high-risk or unconventional entrepreneurial activities.



The GEM surveys for Cyprus of the last two years depict a country in transition from the financial crisis of 2012-2013 into a future that is still uncertain. Total Early-Stage Entrepreneurial Activity (TEA) seems weaker compared to last year (7.3% in 2017/2018, 12% in 2016/2017). Most of the TEA entrepreneurs in Cyprus are opportunity-driven rather than necessity-driven. However, there is still a notable gender gap between female and male TEA entrepreneurs as the ratio between females and males involved in TEA is 0.6. Most of TEA is recorded in Wholesale and Retail sectors (45.4%), whereas rapidly growing sectors with strong innovation potential in globalized marketplaces, like ICT, renewable energy and intelligent manufacturing, have a modest contribution to TEA. Also, entrepreneurs involved in TEA do not foresee substantial creation of new jobs (46.6% expect no new jobs). Few entrepreneurs consider that their TEA activity is internationally oriented (10%), whereas activity relevant to medium-tech or high-tech is very limited (4.9%). These can be a source of concern for the future of economic competitiveness and job creation in dynamic economic sectors. Beyond the impact of entrepreneurship

on Cyprus' economic competitiveness and job creation, entrepreneurship can largely contribute to the altering of climate change and the protection of the environment. This year's guest section emphasizes on green entrepreneurship. Drawing on international best cleantech practices, it provides recommendations to assist Cyprus in becoming a regional Cleantech Innovation and Entrepreneurship Hub for the Middle East and North Africa (MENA) region.

Cyprus' participation in GEM fosters the generation of data on the country's entrepreneurship status across time and allows the comparison with other countries. This year's GEM report analyzes the status of the entrepreneurship in Cyprus as it has evolved between 2016/2017 and 2017/2018 and compares it to corresponding European average values. It then outlines several policy making recommendations organized in respect to the following categories: Education, Government process, Financial support and Business Processes. We aspire that GEM 2017/2018 can be a practical and valuable tool for improving the status of entrepreneurship in Cyprus.

GEM INTRODUCTION AND BACKGROUND

2



Global Entrepreneurship Monitor (GEM) is the leading worldwide study of entrepreneurship. It was initially conceived in 1997 by, Michael Hay of London Business School and Bill Bygrave of Babson College. The first GEM report was published in 1999 and included data from ten different countries. Since then, the number of countries participating in GEM annually has grown to over 100 countries, representing all levels of economic development and almost all geographic regions. GEM currently represents between 70% and 75% of the world's population and approximately 90% of the world's GDP. Thus, it can be considered as the most authoritative and informative study of entrepreneurship available in the world today.

The main difference between GEM and other entrepreneurship studies currently conducted is that it looks beyond businesses and towards individuals 18 to 64 years old, from a demographically representative portion of the population. GEM explores the attributes, aspirations, attitudes, perceptions and intentions of the adult population in each country. It looks at what makes people think, do and not do, as these indicators play an important part in the entrepreneurial pipeline moving from potential, to intention, to those entrepreneurs

who actually start a business and those that become fully established and grow.

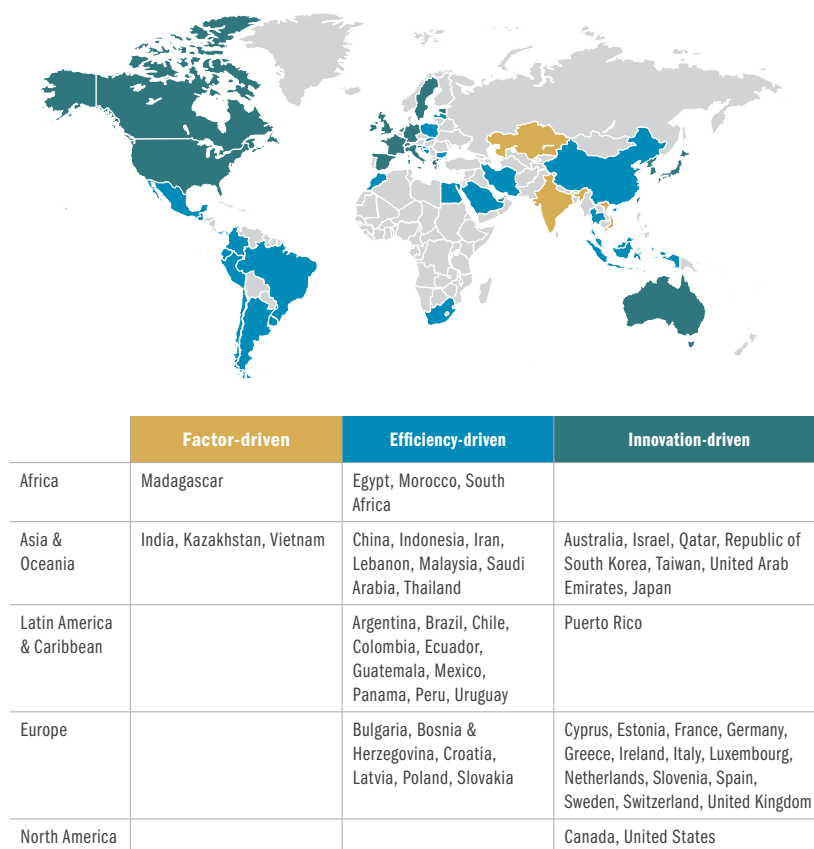
Beyond their economic impact, entrepreneurs and new businesses play a critical part in the development and well-being of a country's society. As such, there is currently increased appreciation for, and acknowledgement of, the role assumed by new and small businesses in an economy. GEM contributes to this recognition with longitudinal studies and comprehensive analyses of entrepreneurial attitudes and activity across the globe.

Over the years, GEM has gained widespread recognition as the most informative and authoritative longitudinal study of entrepreneurship in the world. The 2017/2018 GEM study includes 54 economies and captures multiple phases of the business processes, including the attitudes of societies towards entrepreneurship, the characteristics, motivations and ambitions of entrepreneurs and the quality of entrepreneurial ecosystems in different economies. Moreover, it groups the participating economies according to the geographic region and economic development level², as illustrated in Figure 2.1.

1 Classification of economies by geographic region is adapted from the United Nation's composition of the world's macro geographical regions. Found at: <http://unstats.un.org/unsd/methods/m49/m49regin>

2 GEM's classification of economies by economic development level is adapted from the World Economic Forum (WEF). According to WEF's classification, the factor-driven phase is dominated by subsistence agriculture and extraction businesses, with a heavy reliance on (unskilled) labour and natural resources. In the efficiency-driven phase, an economy has become more competitive with more-efficient production processes and increased product quality. As development advances into the innovation-driven phase, businesses are more knowledge-intensive, and the service sector expands (<http://weforum.org>). Economies in transition from factor- to efficiency-driven have been grouped with the factor-driven economies, while those in transition from efficiency- to innovation-driven have been included in the efficiency-driven category.

Figure 2.1: GEM economies by geographic region and economic development level 2017



Source: GEM 2017/2018



2.1 GEM'S CONCEPTUAL FRAMEWORK

GEM accounts for specific contextual factors such as social, political, and economic, as it considers them influential in creating unique business and entrepreneurial contexts. Thus, the GEM methodology regards the relationships between the various key determinants of the entrepreneurial framework conditions.

GEM considers that the national economic growth is the outcome of the inter-dependencies between several entrepreneurial framework conditions and the personal traits and capabilities of individuals to identify and seize opportunities. Drawing on these parameters as the basis of its conceptual framework, the GEM survey aims at identifying the factors that encourage or limit entrepreneurial activity, investigating the extent of a variety of entrepreneurial activities and deriving policy implications to assist governments in enhancing their entrepreneurial capacity.

The GEM conceptual framework is based on the assumption that national economic growth is the result of people's capacity to identify and seize opportunities, and that this process is affected by environmental factors which influence individuals' decisions to pursue entrepreneurial initiatives (regarded as entrepreneurial framework conditions in GEM methodology). Figure 2.2 shows the main components and relationships into which GEM divides the entrepreneurial process and depicts how it classifies entrepreneurs according to the level of their organizational development.

The social, cultural, political and economic context is represented through National Framework Conditions (NFCs), which take into account the advancement of each society through the three phases of economic development (factor-driven, efficiency-driven and innovation-driven), and Entrepreneurial Framework Conditions (EFCs), which

Figure 2.2: GEM Conceptual Framework

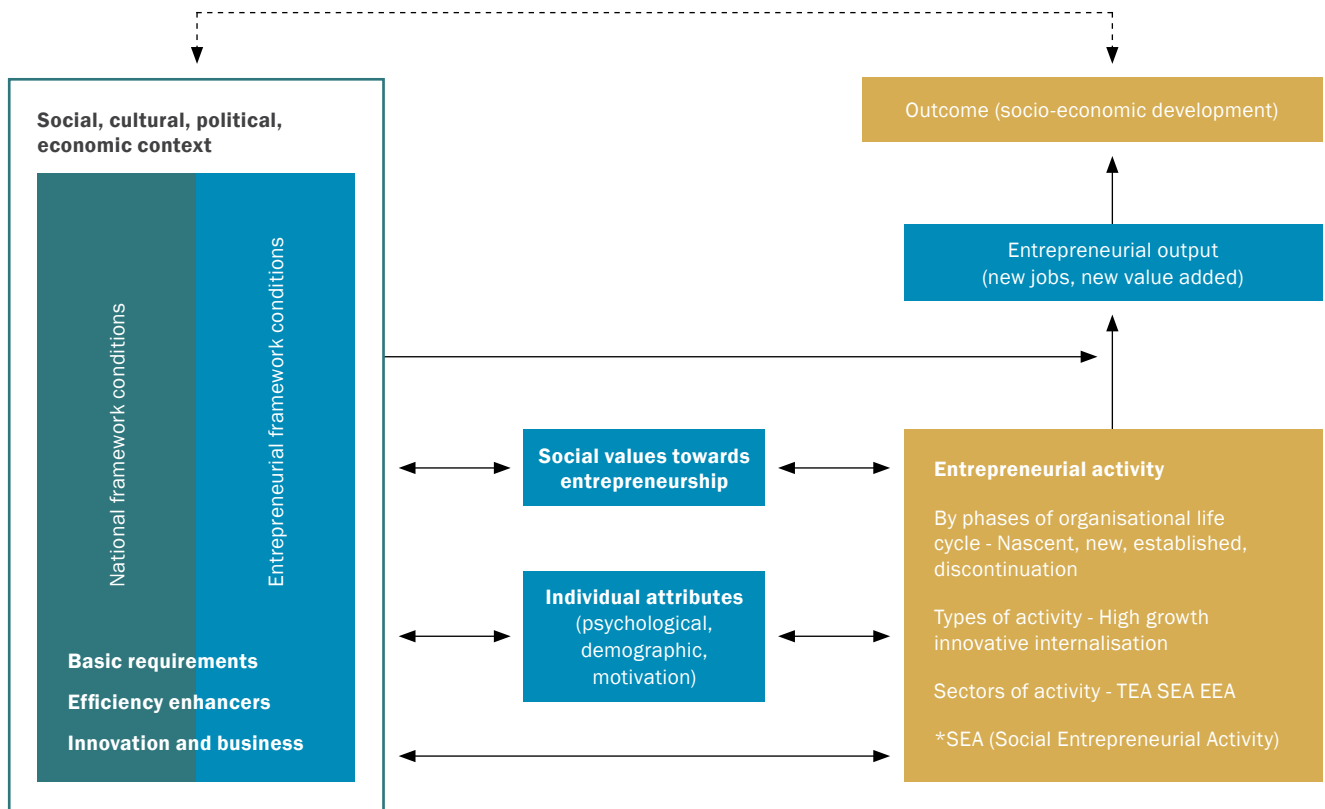
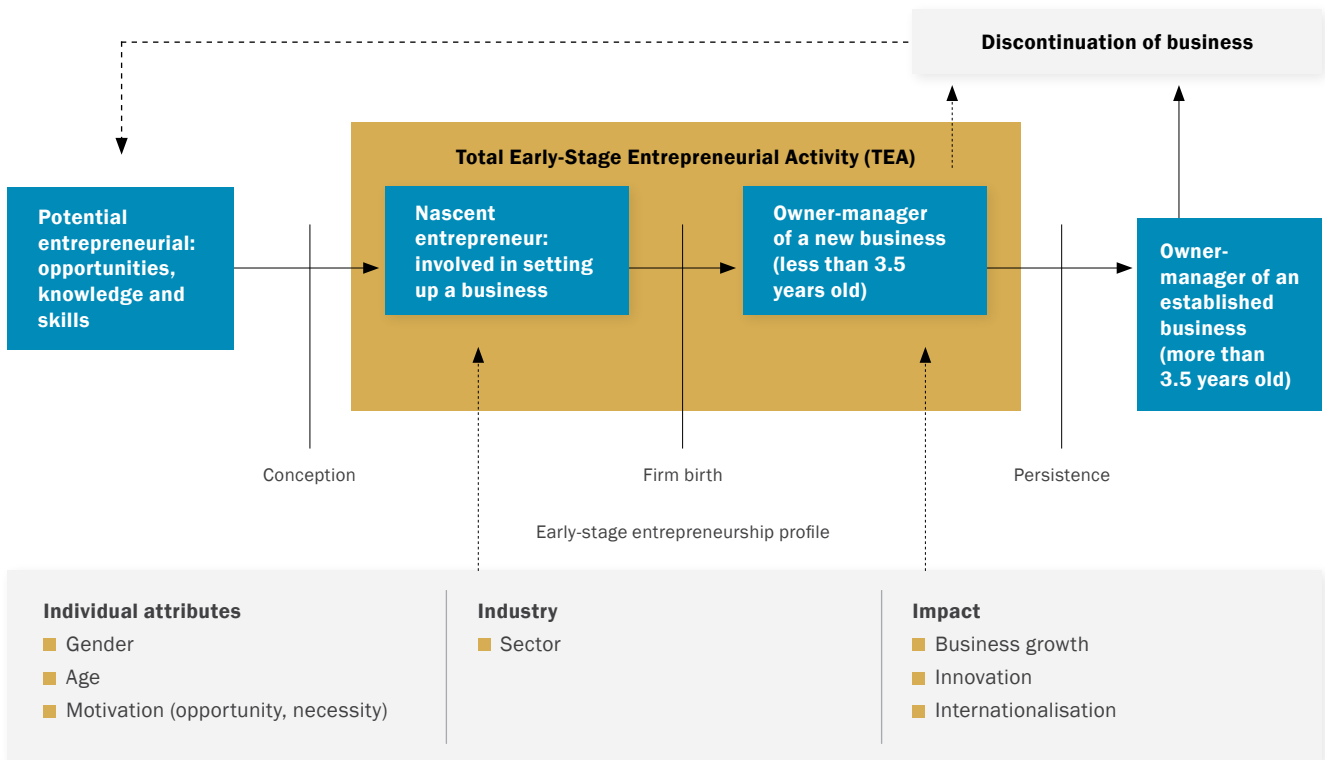


Figure 2.3: The entrepreneurial process and GEM operational definitions



Source: GEM 2016/2017

relate more specifically to the quality of the entrepreneurial ecosystem and include: entrepreneurial finance, government policy, government entrepreneurship programs, entrepreneurship education, research and development (R&D) transfer, commercial and legal infrastructure, internal market dynamics and entry regulation, physical infrastructure, and cultural and social norms.

As indicated in Figure 2.2, the GEM conceptual framework recognizes that entrepreneurship is part of a complex feedback system, and makes explicit the relationships between social values, personal attributes and various forms of entrepreneurial activity. It also recognizes that entrepreneurship can mediate the effect of the NFCs on new job creation and new economic or social value creation. Entrepreneurial activity is thus an output of the interaction of an individual's perception of an opportunity and capacity (motivation and skills) to act upon this and the distinct conditions of the respective environment in which the individual is located.

In addition, while entrepreneurial activity is influenced by the framework conditions in the particular environment in which it takes place, this activity ultimately benefits this environment as well, through the creation of social value and economic development.

GEM's approach is unique as it collects primary data on a global basis, collects data from individuals who are surveyed about a variety of key issues regarding entrepreneurial aspirations, attitudes, intentions and activities. It also collects data about the entrepreneurship phenomenon along the entrepreneurship cycle, from conception of entrepreneurial opportunities to its maturity or, alternatively, to its demise (Figure 2.3).

GEM's methodology includes a set of key entrepreneurship indicators which receive a ranking for each participating country. Overall, this group of indicators may be viewed as a dashboard representing a comprehensive set of measures that collectively contribute toward the impact entrepreneurship has on a society and the extent to which society supports this activity. The GEM methodology identifies five categories of indicators as follows.

Societal values and perceptions:

Good career choice: Percentage of the adult population (18-64 years' old) who believe that entrepreneurship is a good career choice.

High status to successful entrepreneurs: Percentage of the adult population (18-64 years' old) who believe that high status is afforded to successful entrepreneurs.

Media attention for entrepreneurship: Percentage of the adult population (18-64 years' old) who believe that there is a lot of positive media attention for entrepreneurship in their country.

Individual attributes of a potential entrepreneur:

Perceived opportunities: Percentage of the population (18-64 years' old) who see good opportunities to start a firm in the area where they live.

Perceived capabilities: Percentage of the population (18-64 years' old) who believe they have the required skills and knowledge to start a business.

Entrepreneurial intention: Percentage of the population aged 18 – 64 years (individuals involved in any stage of entrepreneurial activity excluded) who are latent entrepreneurs and who intend to start a business within three years.

Fear of failure rate: Percentage of the population aged 18 – 64 years perceiving good opportunities, who indicate that fear of failure would prevent them from setting up a business.

Entrepreneurial activity indicators:

Nascent entrepreneurs: those who have taken steps to start a new business, but have not yet paid salaries or wages for more than three months.

New entrepreneurs: those who are running new businesses that have been in operation for between 3-42 months.

Indicators describing the life cycle of a venture:

Total Early-stage Entrepreneurial Activity – TEA:

Percentage of the adult population between 18 and 64 who are in the process of starting a business (nascent entrepreneurs) or are owner-managers of a business which is younger than 42 months old.

Established business ownership rate: Percentage of the adult population between 18 and 64 who are currently owner-managers of an established business, i.e. owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months.

Business discontinuation rate: Percentage of the adult population aged between 18 and 64 (either nascent entrepreneurs or owner-managers of a new business) who have, in the past 12 months, discontinued a business, either by selling, shutting down, or otherwise discontinuing an owner/management relationship with the business.

Entrepreneurial Employee Activity – EEA: Percentage of the adult population aged between 18 and 64 who as employees have been involved in entrepreneurial activities such as developing or launching new goods or services, or setting up a new business unit, a new establishment or a subsidiary.

Entrepreneurial framework conditions:

The quality of the entrepreneurial framework conditions is

based on the average value of experts' perceptions, using a Likert scale ranging from 1 (highly insufficient) to 9 (highly sufficient), for the following entrepreneurial framework components:

- Entrepreneurial financing
- Government policies: support and relevance
- Government policies regarding taxes and bureaucracy
- Government entrepreneurship programs
- Entrepreneurship education at primary and secondary school stage
- Entrepreneurship education at post-school stage and entrepreneurship training
- Research & Development (R&D) transfer
- Commercial and legal infrastructure
- Internal market dynamics
- Internal market burdens or entry regulations
- Physical infrastructure
- Cultural and social norms

2.2 GEM METHODOLOGY

The yearly goal of GEM is to provide a comprehensive view of entrepreneurship across the globe. It focuses on measuring the attitudes of the population and the activities and characteristics of individuals involved in various phases and types of entrepreneurial activity. GEM aims at extracting comparative data from economies participating in the GEM report and thus employs a mutual research design for all participating countries. Each country participating in GEM collects annual data using two different surveys, the Adult Population Survey (ASP) and the National Expert Survey (NES).

Adult Population Survey (ASP)

The Adult Population Survey (ASP) measures the key entrepreneurship indicators described in Figure 2.3. Research teams in each participating economy administer and supervise the data collection. In each country, at least 2000 randomly selected adults (18 – 64 years of age) participate in ASP annually. The studies are conducted between May and July each year, using a standardized questionnaire provided by the GEM Global Team and translated in the national language of each economy.

In Cyprus, the survey was conducted by the Centre for Entrepreneurship of the University of Cyprus in collaboration with IMR LTD. A computer-aided telephone interviewing process was followed including 70% fixed-line numbers and 30% mobile numbers. Each phone number was selected at random and at least five contacts were made to each number drawn, before that number was dropped.

The 2000 respondents participating in Cyprus were individual who lived in both rural and urban areas controlled by the Republic of Cyprus. Men and women were equally represented in the sample. A multi-staged selection process was followed for sampling the respondents, in order to ensure that the geographical distribution of the sample was in line with the actual distribution of the targeted population. Quality assurance tests were conducted by the GEM Global Team to safeguard the uniformity of the statistical calculations across countries. Following this stage, individual countries gained access to the datasets.

National Expert Survey (NES)

NES gathers in-depth opinions from selected national experts regarding the factors that have an impact on the entrepreneurship ecosystem in each economy. Information is collected about the nine entrepreneurial framework conditions: financing, government policies, taxes and bureaucracy, government programs, school-level entrepreneurship education and training, post-school entrepreneurship education and training, R&D transfer, access to commercial and professional infrastructure, internal market dynamics, internal market burdens, access to physical and services infrastructure and social and cultural norms.

At least four experts from each of the entrepreneurial framework condition categories must be interviewed, making a minimum total of 36 experts per country. In order to construct a balanced and representative sample, the experts were drawn from entrepreneurs, government, academics, and practitioners in each economy.

Additional aspects such as regional area, gender, involvement in the public or private sector and experience level were also accounted for when selecting the sample. Respondents were requested to reflect on the factors that have an impact on the entrepreneurship ecosystem using a 1-9 Likert scale (1= highly insufficient to 9=highly sufficient) as well as provide responses to open-ended questions. Questions were translated to the national language of each country. For the 2017/2018 GEM Cyprus, NES collected the responses through the use of an online data collection tool. The majority of the national experts hold wide experience in areas related to entrepreneurship (mean experience 16 years). Out of the 44 respondents, 17 are females (39.5%) and 23 are males (60.5%). Of the respondents participating in the NES, 75 denoted to be entrepreneurs, 4 were investors, financiers or bankers, 11 were policy makers, 16 were business and support-service provider and 14 stated that they were educators, teachers and entrepreneurship researchers. Respondents were able to choose more than one categories of expertise³.

3 Respondents were able to choose more than one categories of expert specialization.

ENTREPRENEURIAL ACTIVITY IN CYPRUS IN 2017

3



This section reports on the rate of entrepreneurship in Cyprus in 2017/2018 following the APS model. This is the second year that Cyprus is participating in GEM and thus data from the 2016/2017 GEM Cyprus survey are also employed, where possible, to assist in the interpretation of the current findings on entrepreneurial activity. To enhance the interpretability of the results, this report also employs the average rates of European countries included in GEM 2017/2018 as benchmark rates. The report groups countries in broad European regional areas, following the approach of the 2017/2018 GEM Global report. Figure 2.1 includes a list of all the European countries covered by GEM 2017/2018.

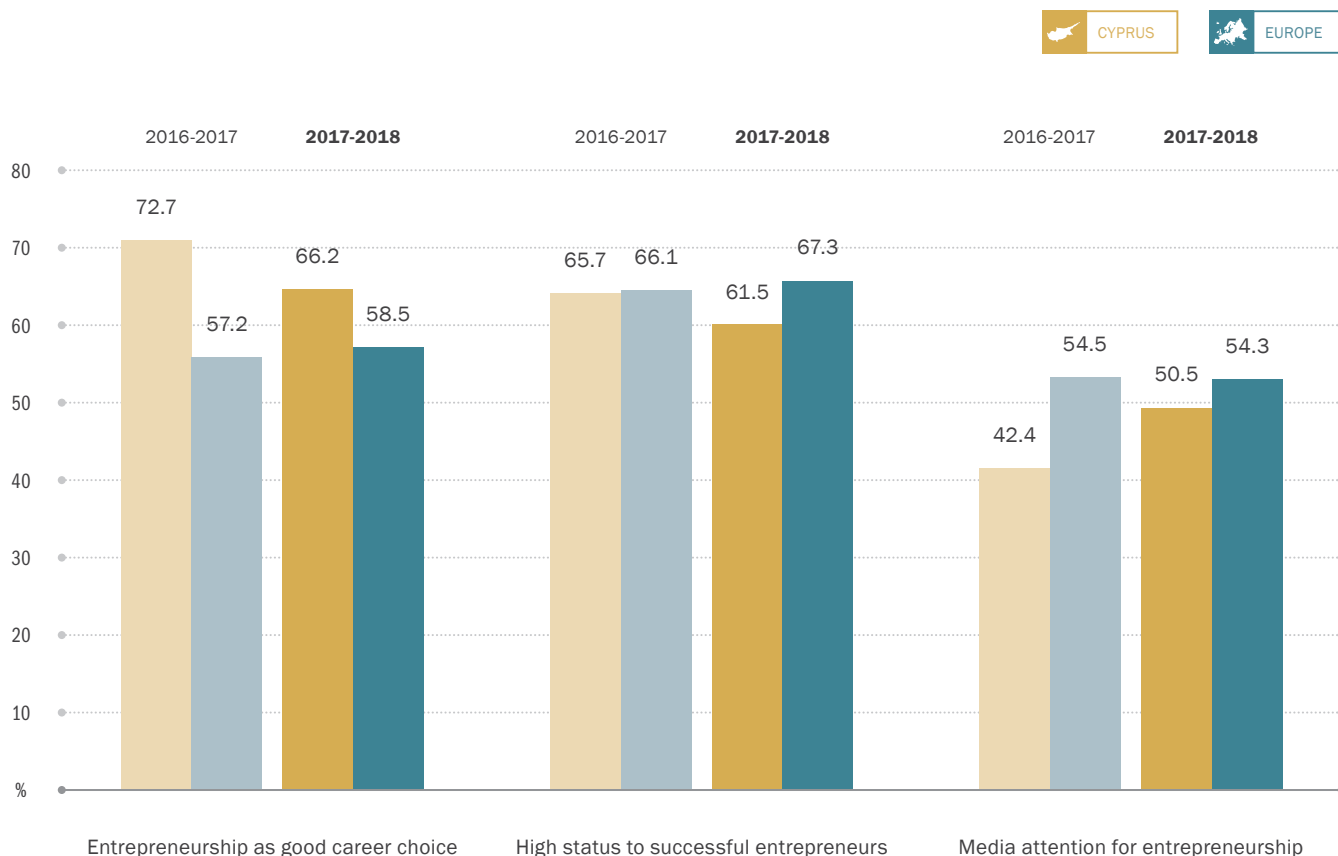
The ASP framework captures the status of the national entrepreneurial environment. This includes insights on the extent and different types of entrepreneurial activity, the profile of entrepreneurs and the impact of entrepreneurial activity at the national level. The rest of this section discusses the Cyprus national entrepreneurial environment in 2017.

3.1 SOCIETAL VALUES & PERCEPTIONS ABOUT ENTREPRENEURSHIP

Societal attitudes, beliefs and perceptions about entrepreneurship are not directly related to the entrepreneurial process. However, these factors can serve as proxies for the entrepreneurial culture of a country. Positive or negative societal perceptions about entrepreneurship can have a notable impact on entrepreneurial ambition and willingness to engage in entrepreneurial activity. GEM examines societal values about entrepreneurship by measuring the perceptions of individuals about entrepreneurship. In particular, it provides insights on

whether entrepreneurship is perceived as a good career choice, the status of successful entrepreneurs and the extent to which entrepreneurship receives adequate media attention. Figure 3.1 summarizes the results on societal values about entrepreneurship in both Cyprus and Europe, based on the 2016/2017 and 2017/2018 surveys. Overall, the European average for social values and perceptions on entrepreneurship remain relatively similar in the 2016/2017 and 2017/2018 surveys. However, there is a notable drop in corresponding values in Cyprus since last year's survey. For instance, in 2016/2017, 72.7% of the Cyprus sample considered entrepreneurship as a good career choice, whereas the corresponding average

Figure 3.1: Societal values about entrepreneurship in Cyprus and Europe



in Europe was 57.2%. Although the 2017/2018 average rate in Europe remains relatively stable (58.5%), there is a notable decrease in Cyprus' corresponding rate (66.2%). Similarly, in 2016/2017, 65.7% of the Cyprus sample population considered that successful entrepreneurs enjoy a high status, whereas the corresponding 2017/2018 rate is 61.5%. Compared to 2016/2017, in 2017/2018 media attention for entrepreneurship was 8% higher in Cyprus, whereas the corresponding rate in Europe remained stable. The above results could be attributed, at least in part, to the increased 'media attention for entrepreneurship' recorded in this year's survey. Increased media attention might have provided entrepreneurs the opportunity to share the obstacles, difficulties and often failures experienced in their entrepreneurial endeavors, in addition to their success stories. Such enhanced attention might have given the population at large a more pragmatic picture of how entrepreneurial endeavors unfold; it has thus possibly lowered the expectations and over-optimistic perceptions on entrepreneurship.

Exploring the entrepreneurial culture provides useful insights into a country's entrepreneurial intentions. In addition to this, GEM also collects data on self-perceptions about entrepreneurship as these can serve as indicators of national entrepreneurial intentions. Figure 3.2 summarizes self-perceptions about entrepreneurship in Cyprus and Europe for the time periods 2016/2017 and 2017/2018. As shown, in 2017/2018, about one in two adults in Cyprus (51%) believes that there are good opportunities to initiate entrepreneurial activity. Interestingly, last year's figure was 35.9%. A rise in "perceived opportunities" is also recorded in the European average rate of 41.4%, compared to 2016/2017. The improved perceptions regarding opportunities to initiate entrepreneurial activity could be attributed to the improved economic conditions in both Cyprus and Europe compared to last year.

Despite the above, the 2017/2018 figure for perceived capabilities for initiating entrepreneurial endeavors in Cyprus (46.4%), is lower than last year, when 52.4% of adults considered that they had the required skills and knowledge to start a business. The European average on the same indicator remained stable over the same period. Overall, compared to other European countries participating in GEM 2017/2018, Cypriots seem to be more optimistic about their capabilities to initiate entrepreneurial activity. This can potentially be attributed to the fact that the majority of entrepreneurs in

Cyprus have received tertiary education (see Figure 3.12) or even to aspects of self-perception influenced by culture and tradition. This positive perception about capabilities in Cyprus is also reflected in the direct measurement of entrepreneurial intentions. Entrepreneurial intention captures the expressed intention of the individual to initiate entrepreneurial activity in the next three years⁴. The entrepreneurial intention rate in Cyprus is higher than the corresponding benchmark rate of the rest of Europe in both 2016/2017 and 2017/2018. This could be related to the supportive national legal and tax framework as well as to the existence of highly skilled human capital. Despite the positive perceptions about opportunities, capabilities and entrepreneurial intentions recorded in the country however, a large percentage of the population expressed a fear of failure related to entrepreneurial activity. Specifically, in 2017/2018 more than one in two adults expressed such a fear (55.9%). We note that the reported rate is higher than the corresponding European average for both 2016/2017 and 2017/2018. This might signal that Cypriots are more risk-averse compared to the average European, although the risk-averseness of the population was not explicitly measured by the GEM APS.

3.2 TOTAL EARLY-STAGE ENTREPRENEURIAL ACTIVITY (TEA)

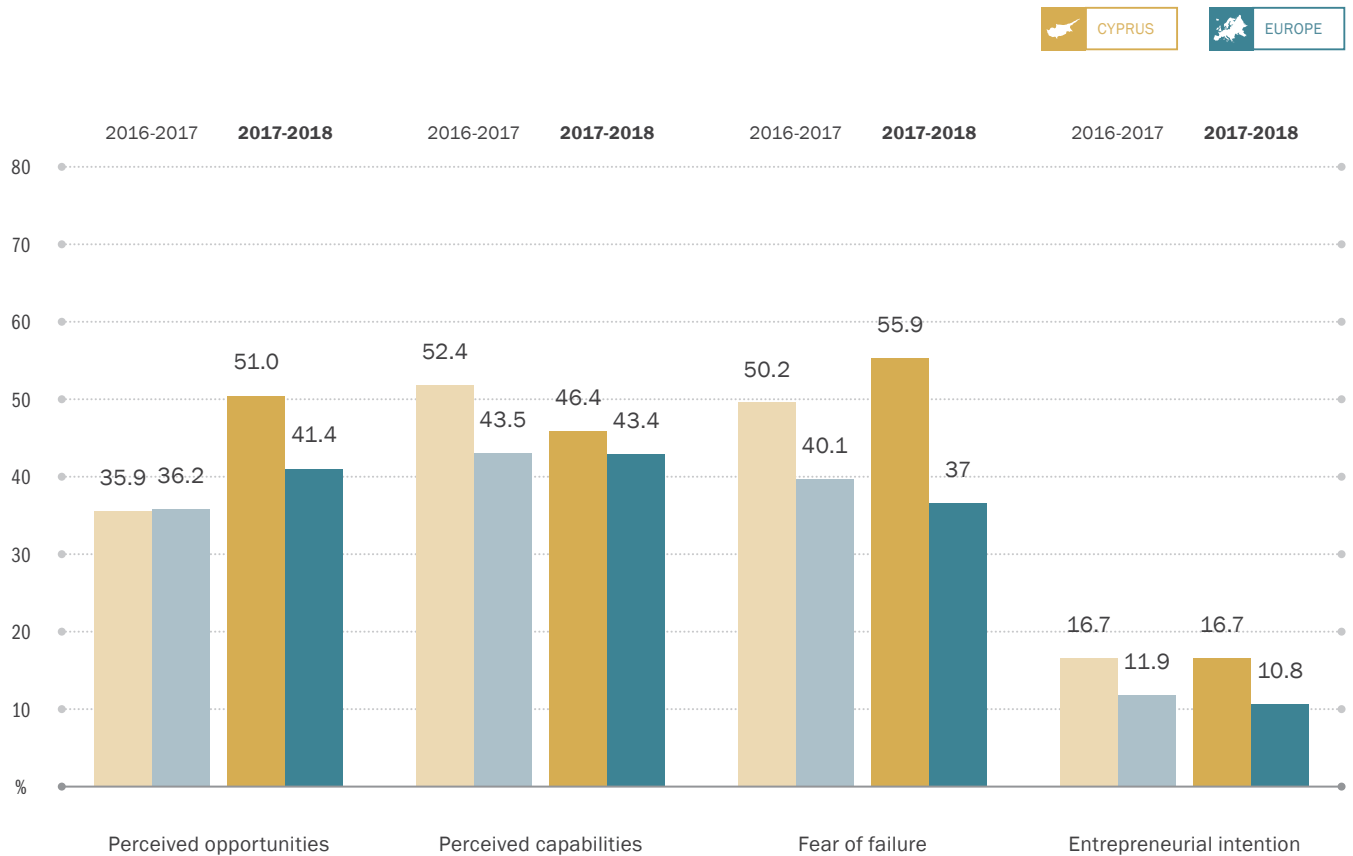
The Total Early-Stage Entrepreneurial Activity (TEA) Index is a measure of a country's early-stage entrepreneurial activity. The TEA Index includes both nascent entrepreneurs (currently actively working on starting a new business) and new business owners. The TEA index is important as it reflects on the new businesses that could later become established and hence it represents a country's entrepreneurial potential. In 2016/2017, 12.0% of Cypriot respondents aged between 18 and 64 are classified as TEA entrepreneurs whereas in 2017/2018, only 7.3% of the population were classified as such (Figure 3.3).

The difference in TEA index rates between the two time periods could be attributed to the constantly improving economic conditions in Cyprus over the past year. According to Eurostat⁵, there has been a decrease in the unemployment rates from 13.1% in 2016 to 11.1% in 2017. We consider that the increase in job opportunities and improved economic conditions has enhanced the perceived job security of the population. As a result, part of the population has abandoned entrepreneurial endeavors which were at a very early-stage and has switched attention towards more secure employment options. This conclusion is also supported by evidence reported later in this report, clarifying that the majority of entrepreneurs that have abandoned their entrepreneurial activity were nascent entrepreneurs rather than new business owners. Further, as already stated above, increased media attention has possibly brought to the fore some of the difficulties that entrepreneurs might incur as well as the required long-term commitment to enjoy the benefits of any entrepreneurial activity.

4 Individuals included in any stage of entrepreneurial activity were excluded.

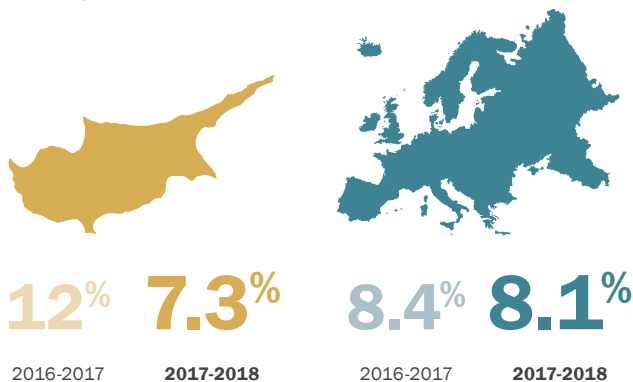
5 Eurostat Unemployment Statistic - http://ec.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistic

Figure 3.2: Self-perceptions about entrepreneurship in Cyprus and in Europe



The average TEA index rate across Europe was 8.4% in 2016/2017 and 8.1% in 2017/2018. Compared to other European countries participating in GEM 2017/2018, Cyprus ranks 11th in terms of its TEA Index. Figure 3.4 summarizes the TEA Index levels of the European countries participating in GEM 2017/2018 as well as selected countries from other geographical regions. The TEA Index is particularly high in Estonia (19.4%), Latvia (14.2%), Canada (18.8%), Thailand (21.6%) and Lebanon (24.1%). More information on the TEA level of other countries is included in Appendix 1.

Figure 3.3: Total Early-stage Entrepreneurship (TEA) in Cyprus and Europe



3.2.1 Nascent entrepreneurs

Nascent entrepreneurs are early-stage individuals currently active in planning a new venture. They have part-time or full-time involvement in this activity and will have at least partial ownership of the new business. The new business in this case has not paid any wages or salaries for the past three months. In Cyprus, in 2016/2017, nascent entrepreneurs represented 7.6% of the population, whereas in 2017/2018 a notably lower rate of 3.6% was recorded (Figure 3.5). Nascent entrepreneurial activity mainly concerns activity that is at a concept-definition stage. Given the immature level and the young age (i.e. limited effort committed so far) of such endeavors, it could be concluded that it is more likely for nascent entrepreneurs to abandon entrepreneurial activity for more secure employment options. In Europe, nascent entrepreneurship rates remained relatively stable from 2016/2017 to 2017/2018 with the average European rate being higher than the one recorded for Cyprus in 2017/2018. Cyprus is ranked 13th in terms of its nascent entrepreneurial activity. The highest rates of nascent entrepreneurship are recorded in Estonia (13.4%), Latvia (9.4%) and Slovakia (8.2%).

Concerning business ownership and nascent entrepreneurs in Cyprus, about one in two nascent entrepreneurs in Cyprus expects to have full ownership of the new venture (45.2%)

while about one in five expects the new venture to have two or three owners (21.9%). Conversely, just 8.2% expect four owners and 2.7% expect five. This year's expectations of nascent entrepreneurs on ownership are relatively aligned with last year's results. Overall, in 2016/2017, about half of the nascent entrepreneurs expected to have full ownership of the new venture (49.7%), 25.5% expected the new business to have two owners, 18.8% expected three owners while 6% expected more than three owners.

The motives of nascent entrepreneurial activity in Cyprus are more related to opportunity rather than necessity. In particular, 34.2% of nascent entrepreneurs are driven by the opportunity to increase income and 15.1% by the opportunity to reach greater independence. Despite the fact that a

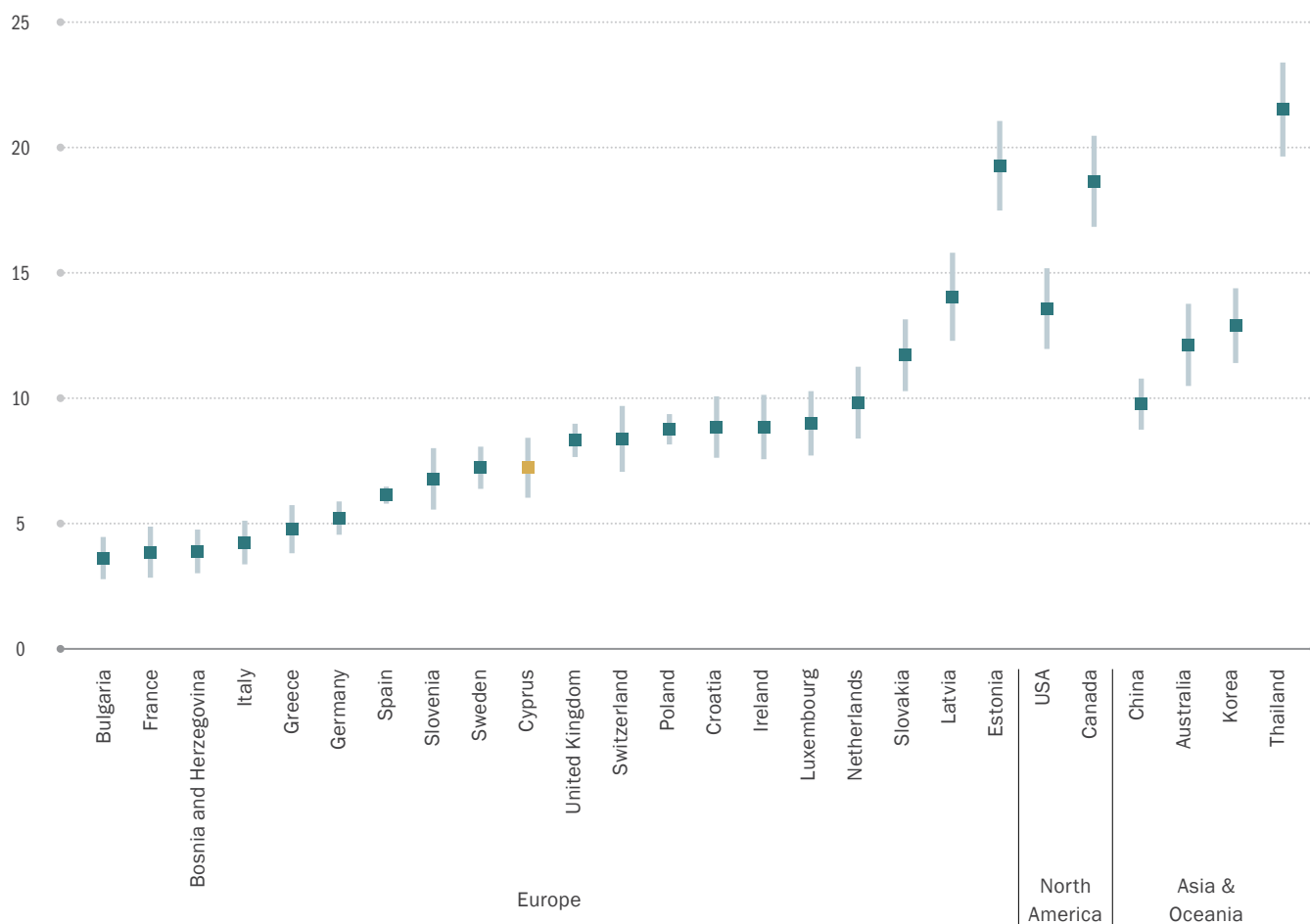
notable percentage of nascent entrepreneurs is driven solely by opportunity, 13.7% reported to be motivated by both opportunity and necessity. Also, a notable amount of nascent entrepreneurs is driven solely by necessity as indicated by the reported 37% rate.

3.2.2 New business owners with significant growth potential

In addition to nascent entrepreneurs, TEA also accounts for new business owners. New business owners are early-stage entrepreneurs involved as owners and managers of new firms that have been set up and which are younger than 42 months old. The new ventures have paid some salaries or wages. In 2016/2017, 4.5% of the adult population in Cyprus were identified as new business owners, whereas in 2017/2018 a slightly lower rate (3.8%) is recorded. Both rates exceed the corresponding averages of new business owners in Europe - 3.4% in 2016/2017 and 3.1% in 2017/2018 (Figure 3.6). Cyprus is ranked 6th among the GEM 2017/2018 European countries, in terms of new business owners. The highest new business owners' rates in Europe were recorded in Estonia (6.2%), The Netherlands (5.4%) and Latvia (5.1%).

6 The horizontal lines illustrate the margin of error. It is shorter in countries that included a larger number of responses. For example, Spain surveyed 22000 respondents for the 2016/2017 GEM report. Cyprus collected 2000 responses and its margin error is +/- 1.4%.

Figure 3.4: Total Early-Stage Entrepreneurial Activity (TEA) Index levels⁶



With regards to new businesses, 48.6% have one owner, 25.7% have two owners and 16.2% have three owners. A smaller amount of new businesses have more than three owners, as 2.7% of new businesses reported five owners, 1.4% reported seven owners, 1.4% reported eight owners, and 4.1% reported ten owners. These results are largely aligned with last year's results on new businesses owners, where 50% of the new business owners in Cyprus reported of having full ownership of their venture, 28.4% reported two owners, 14.8% reported three owners and 6.8% reported more than three owners.

The entrepreneurial activity of about one in three (32.9%) new business owners is driven by the opportunity to increase income. The "desire to reach greater independence motive" drives 13.7% of new business owners. However, 24.7% new business owners are driven by mixed opportunity and necessity motives whereas 28.8% is solely driven by necessity, implying that about one third of the entrepreneurial activity among new business owners results from having no other alternative career option. In 2016/2017, the most important reasons contributing to the decision of business owners to start a new business, from an opportunity-driven perspective, are their desire to reach greater independence (27.9%) and increase in personal income (23.3%). Concerning both opportunity and necessity motives, 16.6% of new business owners reported mixed-motives, whereas 34.5% associated their entrepreneurial activity solely to necessity motives. Compared to last year's results, in 2017/2018 the majority of opportunity-driven new business owners is driven by the opportunity motive to increase income, rather than to reach greater independence. Also compared to last year, fewer new business owners associate their entrepreneurial activity only to necessity motives. These results are encouraging and indicate the potential of Cyprus' new businesses to sustain.

3.3 ESTABLISHED BUSINESS OWNERS

GEM also accounts for established business owners. Established business owners are entrepreneurs who are involved in established firms as owners and managers. These firms are older than 42 months old and have already provided salaries or wages. In Cyprus, the rate of established business owners was 8.2% in 2016/2017 and 8.9% in 2017/2018 (Figure 3.7). This year, Cyprus is ranked 6th in Europe in terms of the rate of established business owners, while the rate recorded (8.9%) is higher than the European average rate (7%). The rate of established business owners is higher in Greece (12.4%), Estonia (11.3%), and Switzerland (10.5%).

Among established businesses in Cyprus, 74% have one owner, 16% have two owners, 4.4% have three owners, 4.4% have four owners and 1.1% have five owners. In 2016/2017, 67.6% reported one owner, 18.2% reported two owners, 5.9% reported three owners, and 8.3% reported more than three

owners. Compared to last year, in 2017/2018 there has been a remarkable increase in the sole ownership of established businesses in Cyprus.

The majority of established businesses in Cyprus is driven by opportunity rather than necessity motives. In particular, 26.8% of established businesses is driven by opportunity motives related to increase income, whereas 16.8% is driven by the opportunity motive to reach greater independence. Furthermore, 24.6% of established businesses is driven by both opportunity and necessity motives and 31.8% is driven only by necessity motives. In 2016/2017, most of the established business owners are motivated by positive reasons related to the desire to increase personal income (41.3%) and the desire for greater independence (33.7%). A further 9.4% was driven by mixed-motives whereas 36.9% of established business owners consider necessity as the only motive.

Figure 3.5: Nascent Entrepreneurs in Cyprus and Europe

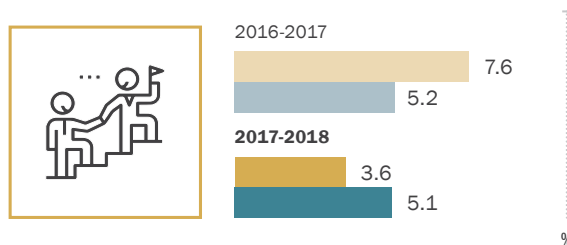


Figure 3.6: New business owners in Cyprus and Europe

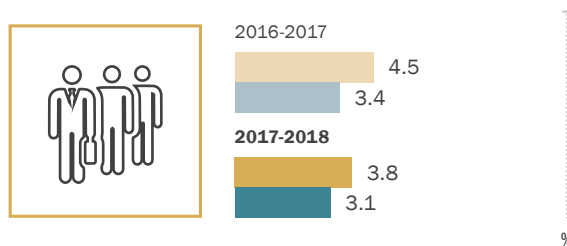
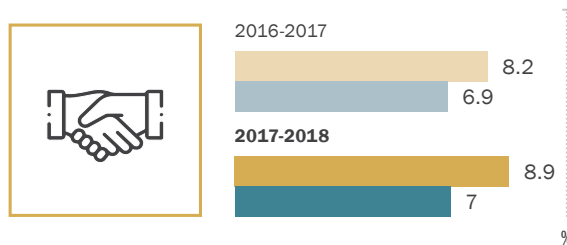


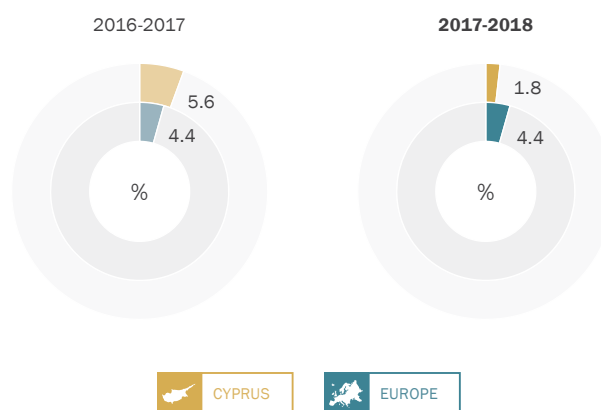
Figure 3.7: Established business ownership in Cyprus and Europe



3.4 EMPLOYEE ENTREPRENEURIAL ACTIVITY

Beyond the entrepreneurial activity conducted by individuals acting on their own account, there is also entrepreneurial activity recorded within organizations. Intrapreneurs are individuals who initiate and are involved in new business activities in the frame of their employment. In Cyprus, 1.8% is involved in intrapreneurial activity, whereas the corresponding European average rate is 4.4%. In 2016/2017, in Cyprus 5.6% of the adult employed population reported that they have been involved in new entrepreneurial activities for their employer in the past three years (Figure 3.8), which is higher than the corresponding European average rate of 4.4%.

Figure 3.8: Employee entrepreneurial activity in Cyprus and Europe



3.5 BUSINESS DISCONTINUANCE

Alongside the exploration of business activity both early-staged and mature, GEM also provides insights on business discontinuance. In 2017/2018, the rate of business discontinuance in Cyprus was 4.3%. This is higher than the corresponding European average rate (2.9%). While entrepreneurial activity is important for a country’s economy, it is also complex and its discontinuance may be associated to different reasons. Figure 3.9 outlines additional reasons for business discontinuance in Cyprus and in Europe. The most important reason leading to business discontinuance in both Cyprus and Europe is that businesses are not profitable. However, whereas the Cyprus rate stands at 39.8%, the respective European rate is notably lower (29.6%). A greater number of entrepreneurs in Cyprus had the opportunity to sell their businesses in 2017/2018 compared to 2016/2017. The rate of business discontinuance due to problems in getting finance has decreased compared to last year’s results. Also,

there is an increased rate of business discontinuance due to another job or business opportunity compared to last year. These insights support the view that overall, there is a continuous improvement in the financial conditions in Cyprus and signal that, compared to the previous year, there are more opportunities for businesses (e.g. selling the business or accessing finance) as well as for individuals (e.g. another job or business opportunity).

3.6 PROFILE OF ENTREPRENEURS IN CYPRUS

The GEM adult population survey derives insights on the entrepreneurial activity of individuals including information related to their profile such age, gender, education and motives.

Figure 3.9: Reasons for business discontinuance in Cyprus and Europe

Reason	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
Opportunity to sell	1.3%	4.3%	4.7%	5.3%
Business not profitable	46.3%	33.7%	39.8%	29.6%
Problems getting finance	18.8%	10.7%	7%	12.2%
Another job or business opportunity	8.8%	12.3%	12%	11.2%
Exit was planned in advance	2.5%	5.9%	3.6%	5.3%
Family or personal reasons	16.3%	16.6%	22.9%	18.4%
Government/Tax Policy/Bureaucracy	6.3%	7.7%	0%	11.5%

Age distribution

The GEM adult population survey sample size included adults between 18 to 64 years old. The data derived provide information on the extent to which each demographic group engages in early-stage entrepreneurial activity. Similarly to the results of the 2016/2017 survey, the highest prevalence of early-stage entrepreneurial activity in Cyprus in 2017/2018 is recorded among the 25-34 (10.9%) and 35-44 (10.1%) age cohorts. Moreover, 6.2% of the individuals in the 45-54 age cohort and 3.1% in the 18-24 age cohort were involved in TEA activity (Figure 3.10). The relatively low early-stage entrepreneurial activity among the youth (18-24 years old) could be attributed to the male compulsory military service policy followed in Cyprus as well as to the high involvement of youth in tertiary education. The decrease in the early-stage entrepreneurial activity of the 55-64 age cohort could be due to the fact that this cohort is closer to the national pensionable age (65 years), holds higher level of household savings or other income sources, and as a result it is less motivated to initiate entrepreneurial activity. The 25-34 and 35-44 cohorts hold the highest entrepreneurial activity which could be justified by the fact that these groups are currently in their early or mid-careers, have had the time to get educated and perhaps gain some work experience. Education and experience have allowed them to develop their skills and network, build confidence in their own abilities and gain access to financial resources. In Europe, the age distribution of entrepreneurial activity remains relatively aligned in 2016/2017 and 2017/2018.

Figure 3.10: Total Early-Stage Entrepreneurial Activity (TEA) rates by age group in Cyprus and Europe

Age Group	2016-2017	2017-2018
18-24 years	9.9%	3.1%
25-34 years	17.7%	10.5%
35-44 years	12.6%	11.6%
45-54 years	10%	6.2%
55-64 years	6.6%	3.5%
Total TEA 18-64 years	12%	7.3%

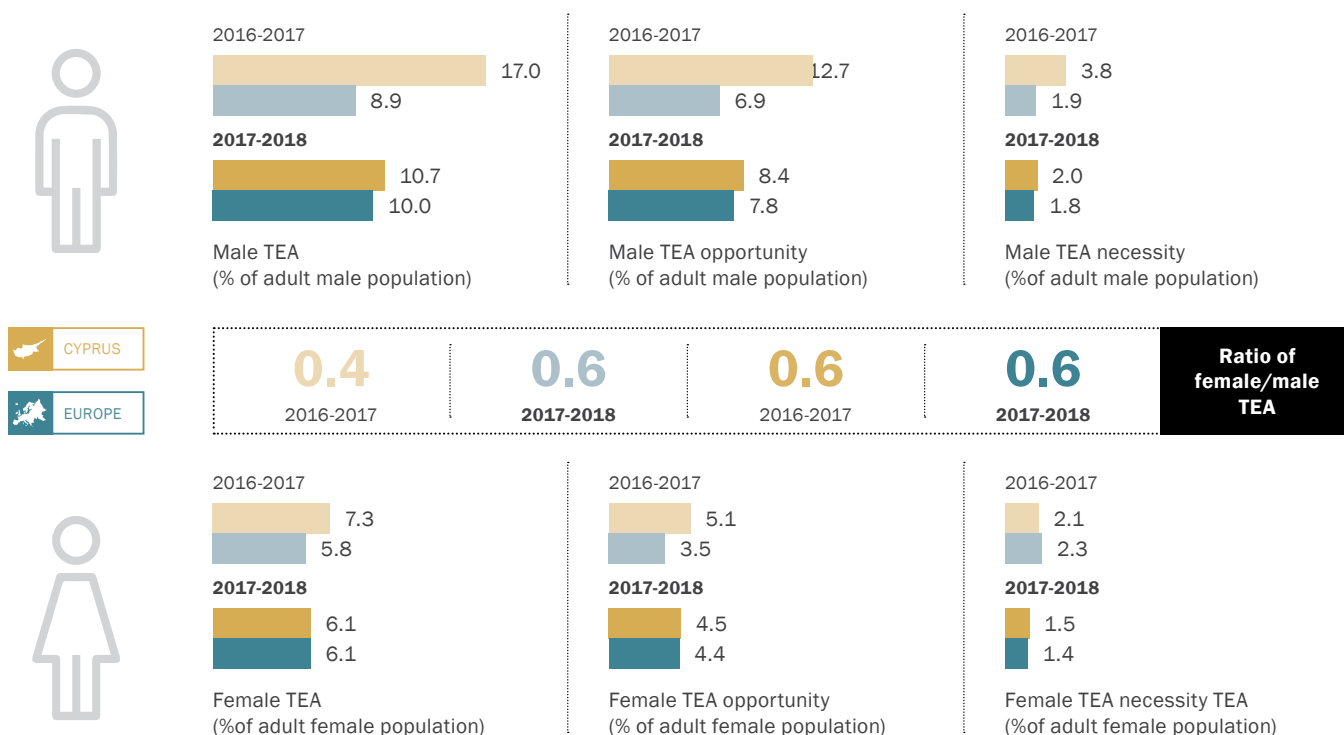
2016-2017
2017-2018

CYPRUS

EUROPE

Compared to last year's results, in Cyprus, all age cohorts show notably lower rates of entrepreneurial activity which can be justified given the lower TEA recorded in 2017/2018. However, some age cohorts in Cyprus have experienced a disproportional reduction compared to last year. In particular, the entrepreneurial activity of the 18-24 cohort in Cyprus has recorded a 60% reduction compared to last year's results. This could be justified if we consider the career stage of the particular cohort with respect to the constantly improving economic conditions in Cyprus. The majority of the

Figure 3.11: Total Early-Stage Entrepreneurial Activity (TEA) rates by gender and motivation in Cyprus and Europe



18-24 are young adults who have recently or are about to graduate and hold very limited work experience. Given the past economic conditions, higher unemployment rates and rather limited job opportunities, it is possible that a higher number of youngsters considered entrepreneurship as a viable career choice in the previous years. Due to the age cohort, such entrepreneurial groups were largely considered as part of nascent entrepreneurs in the 2016/2017 survey. This conclusion provides additional justification for the reduction of nascent entrepreneurship rate from 2016/2017 to 2017/2018.

Gender distribution and motives

Both the 2016/2017 and 2017/2018 survey results show that women in Cyprus and in Europe are less likely to be involved in early-stage entrepreneurial activity compared to men. Moreover, although the female to men ratio of involvement in TEA was 0.4 in Cyprus compared to 0.6 in Europe in 2016/2017, the two ratios have aligned at 0.6 in the latest survey. Figure 3.11 outlines the rates of male and female early-stage entrepreneurial activity in Cyprus and in Europe and the motives driving their entrepreneurial activity. In Cyprus, women are more likely to engage in entrepreneurial endeavors out of necessity compared to men and more men compared to women are likely to be involved in entrepreneurial activity because of opportunity motives. Similarly, in Europe, opportunity-driven entrepreneurship is higher for males than females and necessity-driven entrepreneurship is higher for females than males.

Education

In Cyprus, approximately 9.2% of postgraduate or doctoral degree holders and 9.9% of undergraduate/college degree holders are currently involved in TEA. The respectively European rates stand at 12.5% for postgraduate and doctoral degree holders and at 10.5% for undergraduate/college degree holders. In 2016/2017, in Cyprus a larger percentage of postgraduate or doctoral degree holders (14%) and undergraduate or college degree holders (12.9%) were involved in TEA, whereas in Europe the involvement of the two educational groups in TEA remained relatively unchanged over the same period. This is also reflected in the involvement of less educated groups in TEA in Cyprus. Last year, 8.2% of individuals with high-school education or lower were involved in TEA, whereas this year, their involvement is limited to 1.4%. About 10.1% of the individuals with high-school education reported being involved in TEA last year, whereas only 2.7% of this group reported being involved in TEA this year. The reduced amount of involvement in all educational categories clearly reflects the reduction in this year's TEA in Cyprus compared to last year. The lower involvement in TEA could also be related to the improved economic environment and the job market in Cyprus in the past year. Comparing the educational groups in Cyprus across the two years underlines that there has been a more significant reduction in relation to the groups with lower

levels of education. For example, the TEA involvement of individuals that have received high-school education or lower has been reduced by 83% from 2016/2017 to 2017/2018. Likewise, the college/undergraduate degree holders involved in TEA has been reduced by 23% from 2016/2017 to 2017/2018. This conclusion may be linked to the motives of the TEA entrepreneurs with respect to their level of education. Individuals with less educational qualifications are more likely to be involved in TEA because of necessity rather than opportunity and thus, once the economic conditions are improved, they are more likely to return to more traditional work settings.

3.7 ENTREPRENEURIAL IMPACT

GEM considers that entrepreneurship has a different impact in each country. Economic entrepreneurial development and growth in each country is a mix of industry sectors, job creation, level of innovation and international orientation. In this section, the impact of entrepreneurial activity in Cyprus is analyzed.

Industry

Both in Cyprus and Europe, the largest amount of TEA is recorded in the Wholesale and Retail sectors. In particular, in Cyprus, about one in two (45.4%) early-stage entrepreneurs relate their activity to the Wholesale and Retail sectors, whereas in Europe the corresponding average rate is 27%. The second most popular sector is Health, Education, Government and Social Services: 17.6% of the TEA in Cyprus and 18.3% of the TEA in Europe are related to this sector. The strong professional services expertise in Cyprus is also reflected in early-stage entrepreneurial activity as 11.6% is related to this sector, whereas the corresponding rate in Europe is 9.7%. However, compared to Europe, TEA in

Figure 3.12: Percentage of the population that received corresponding education and is involved in Total Early-Stage Entrepreneurial Activity (TEA)



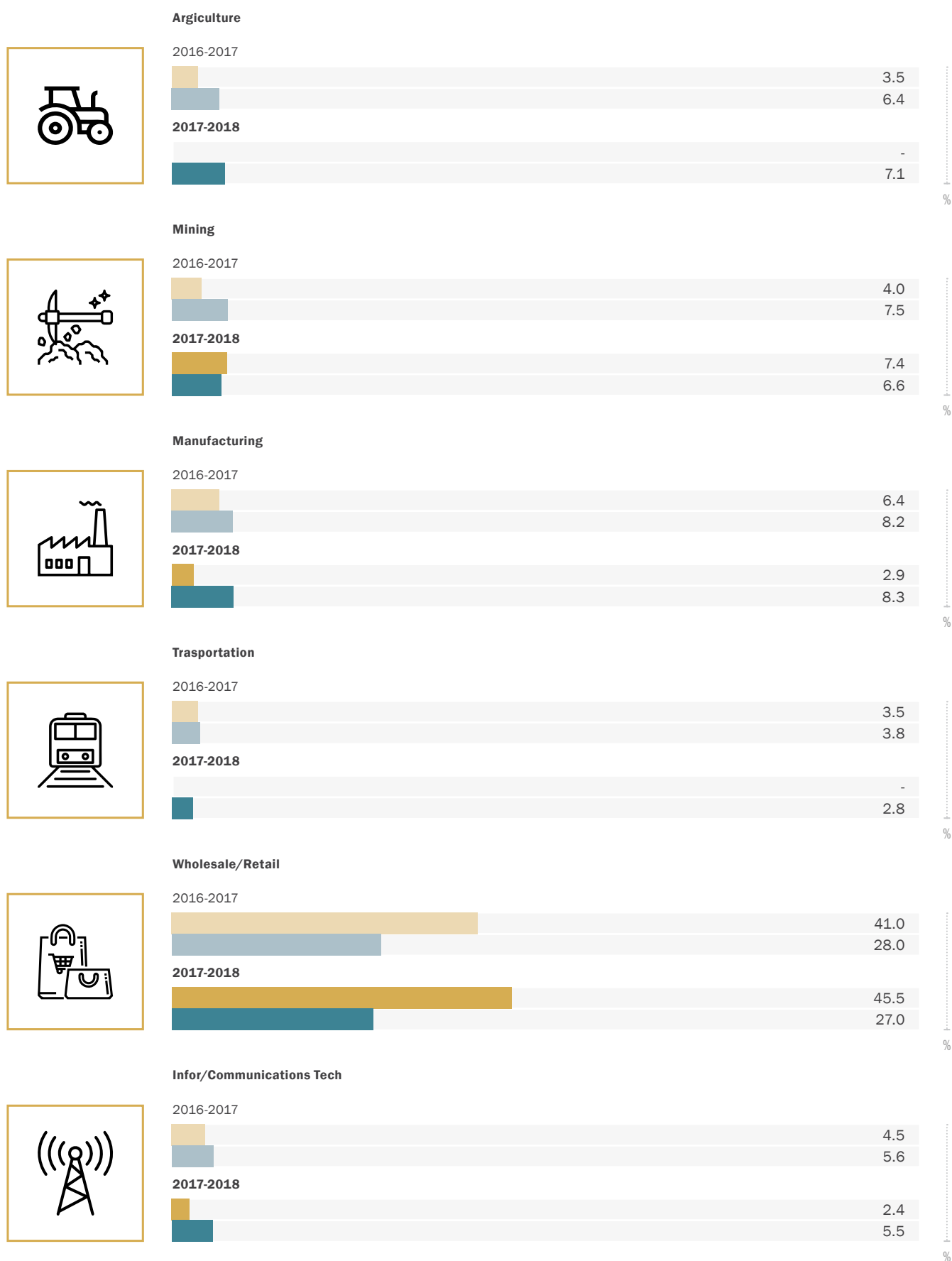
Some high-school education or lower	8.2%	5.7%	1.4%	5.3%
High-school education	10.1%	7.6%	2.7%	6.7%
College/ Undergraduate degree	12.9%	10.4%	9.9%	10.5%
Postgraduate degree/ Doctorate	14%	12.3%	9.2%	12.5%
	2016-2017		2017-2018	
	 CYPRUS		 EUROPE	

Figure 3.13: Total Early-Stage Entrepreneurial Activity (TEA) and industry sectors in Cyprus and in Europe



**TOTAL EARLY-STAGE
ENTREPRENEURIAL
ACTIVITY (TEA) AND
INDUSTRY SECTORS
IN CYPRUS IN
2017/2018**

45.5%

WHOLESALE AND RETAIL

17.6%

HEALTH, EDUCATION,
GOVERNMENT AND
SOCIAL SERVICES

11.6%

PROFESSIONAL SERVICE



Finance



2016-2017



2017-2018



Professional Services



2016-2017



2017-2018



Administrative Services



2016-2017



2017-2018



Health, Education, Government & Social Services



2016-2017



2017-2018



Personal/Consumer Services



2016-2017



2017-2018



Cyprus has lower involvement in other important sectors of the economy such as Information and Communication Technologies and Manufacturing: indicatively, only 2.4% of TEA is pursued in the Information and Communication Technology sectors (cf. 5.5% in Europe). Similarly, for the Manufacturing sector, only 2.9% of Cyprus' TEA is involved (cf. 8.3% in Europe). These results are to a large extent aligned with the 2016/2017 GEM results, highlighting that the dominating sectors of the TEA activity in Cyprus are Wholesale and Retail, Health, Education, Government and Social Services and Professional Services. In fact, compared to last year, these sectors have seen a slight increase in the TEA involvement. Figure 3.13 illustrates the industrial sectors in Cyprus and in Europe in which TEA has been recorded in both 2017/2018 and 2016/2017.

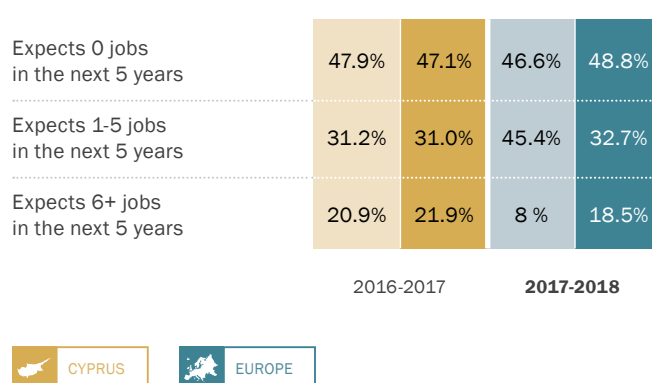
Job creation

A key priority of the European Union is to deliver growth with a strong emphasis on job creation and poverty reduction⁷. Whether existing entrepreneurial activity has the potential to create job opportunities is of great interest to policy makers and other stakeholders in the economy that are affected by dynamism in the job market. GEM questioned early-stage entrepreneurs about the number of employees (other than owners) they expect to have in the next five years or more. We consider the difference between existing and expected job positions to be an indicator of the growth expectations of existing early-staged entrepreneurial activity. In Cyprus, most of the early-stage entrepreneurs are not optimistic about new job openings. According to the 2017/2018 survey, 46.6% of early-stage entrepreneurs denoted that they are not expecting their entrepreneurial activity to create any jobs in the next five years. In 2016/2017, about one in three (31.2%) of the entrepreneurs in Cyprus expected that their entrepreneurial activity would create one to five jobs in the following five years and about one in five (20.9%) expected to create more than five jobs in the next five years. However, the results of the 2017/2018 survey show that about one in two entrepreneurs in Cyprus expects one to five new jobs in the next five years (a 14.3% increase compared to the previous year). However, in 2016/2017, 20.9% of the early-staged entrepreneurs in Cyprus expected six or more job openings in the following five years, whereas the corresponding rate in 2017/2018 has been reduced to 8%. The results show that early-staged entrepreneurs in Cyprus are becoming less optimistic about the expected growth of their entrepreneurial endeavors. As discussed earlier, the increased media attention has possibly assisted individuals (including entrepreneurs) in gaining a more realistic understanding of how entrepreneurial journeys unfold

The premature nature of early-stage entrepreneurial activity could be one of the reasons that most of the early-stage

entrepreneurs do not expect new job creations in the next five years. These results are aligned with last year's results as well as with the corresponding European average values, as illustrated in Figure 3.14. Industrial sector could be another reason for the low rate of expected job creation projected in the next five years. Most of the TEA activity in Cyprus is relevant to the Wholesale and Retail sectors and thus this might restrict entrepreneurs in expanding their activity. Other reasons that may deter entrepreneurs to remain small, could be the limited access to entrepreneurial finance or the use of sophisticated technology and communications that enable entrepreneurs to operate

Figure 3.14: Expected new job openings in Cyprus and Europe



on their own. Additionally, early-stage entrepreneurs may choose to remain small also because of their desire to avoid complexities related to tax and legal requirements. It should be noted that these growth expectations are entrepreneurs' projections and given the preliminary stage of their entrepreneurial activity, those expectations express growth potential that has, as of yet, not been tested. Hence part of them could be unduly optimistic.

Innovation and international orientation

Innovation and entrepreneurship are closely related concepts. Start-ups disrupt the market status-quo as they introduce new product-market combinations that create new value for users, make more efficient use of resources and eliminate firms with less attractive value propositions. The success of innovation is not only related to creating new products or services, but it is also related to the ability of the entrepreneurs to understand competitive offerings, find new market niches and commercialize their products or services efficiently. Therefore, innovation is vital for the success of new ventures, while the innovation capabilities of a country reflect the economy's ability to become competitive. In GEM 2017/2018, innovation in entrepreneurship is reflected in the extent to which new entrepreneurial ventures introduce products that are new to most of the customers and are

⁷ European Commission, Europe 2020 strategy, Priorities

Figure 3.15: Innovation and international orientation of entrepreneurial activity in Cyprus and Europe



offered by a limited amount of competitors. In Cyprus, 40.9% of TEA entrepreneurs consider that their product is new to all or some of their customers, and few or no other businesses offer the same product. The corresponding rate for Europe is 28.7%. In GEM 2016/2017, 36.7% of TEA shared the same belief that their product is new to all or some customers and that they have few competitors (Figure 3.15). The Cyprus' rate for product novelty and competition is higher compared to the corresponding European average and it is ranked 4th among the countries of the European region. Additionally, there has been a notable increase (4.2%) in the rate of TEA entrepreneurs who consider that their product is new to the majority of the customers and that they have few or no competitors offering the same product.

International orientation reflects the percentage of entrepreneurs who report that more than 75% of their sales comes from outside their economy. The 11% of TEA in Cyprus has international orientation for more than 75% of their sales. At regional level, the European average rate for international orientation is 9.5%. It should be noted that although entrepreneurs in Cyprus report a relatively

high level of international orientation, there is a low involvement of Cypriot entrepreneurs in sectors which are traditionally internationally oriented, such as Information Communication Technologies (ICT) companies. Indicatively, only 2.1% of TEA in Cyprus is related to technology companies. However, according to the TEA activity and industrial sector results discussed earlier in this section, Cyprus' TEA holds high involvement in the Wholesale and Retail sectors which encapsulates activities related to hotels and restaurants. The combination of these findings might signal that the higher level of international orientation reported for Cyprus is possibly related to the involvement of a large number of Cypriot entrepreneurs in the hospitality and tourism industry.

Concerning the use of technology in new entrepreneurial endeavors in Cyprus, 16.1% of TEA entrepreneurs report that their enterprise is using new technologies that are younger than a year old. The notably high use of new technologies in early-stage entrepreneurial activity could be justified by the high level of education recorded for TEA entrepreneurs in the country.

TYPICAL EARLY-STAGE ENTREPRENEUR IN CYPRUS 2017/2018

PRODUCT IS NEW TO ALL OR SOME
CUSTOMERS AND FEW/NO BUSINESSES
OFFER THE SAME PRODUCT

40.9%
OF TEA

ACTIVE IN THE WHOLESALE
AND RETAIL SECTORS

45.5%

OF TEA

JOB CREATION EXPECTATIONS

45.4%

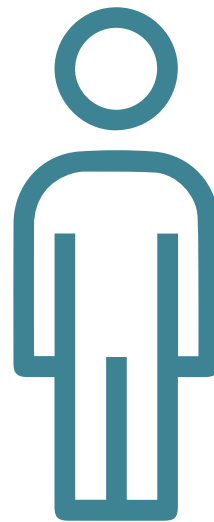
OF TEA

35-55 YEARS OLD

11.6%

INVOLVED IN TEA

MALE



8.9%

FEMALE



5.8%

INVOLVED IN TEA



OPPORTUNITY-DRIVEN

71.7%

OF TEA



NECESSITY-DRIVEN

27.0%

OF TEA

COUNTRY PROFILE - CYPRUS 2017/2018



Population: 1.1 million (2017)

GDP: \$19.3 billion (2015)

GDP per capita: \$25,930 (2017)

SME contribution to GDP: 72% (2015)

World Bank Ease Of Doing Business Rating (2017): Rank: 45/190

World Bank Starting a Business Rating (2017): Rank: 53/190

World Economic Forum Global Competitiveness Rating (2015): 4.0/7; **Rank:** 83/138

Economic Development Phase:
Efficiency-Driven

Composite Index

	Value
Entrepreneurial Spirit Index	0.03

Self-Perceptions About Entrepreneurship

	Value %
Perceived opportunities	51.0
Perceived capabilities	46.4
Fear of failure	55.9
Entrepreneurial intentions	16.7

Activity

	Value %
Total Early-stage Entrepreneurial Activity (TEA)	
TEA 2017	7.3
TEA 2016	12.0
Established business ownership rate	8.9
Entrepreneurial Employee Activity - EEA	1.8

Motivational Index

	Value %
Improvement-Driven Opportunity/Necessity Motive	1.6

Gender Equality

	Value
Female/Male TEA Ratio	0.65
Female/Male Opportunity Ratio	0.77

Entrepreneurship Impact

	Value %
Job expectations (6+)	8.0
Innovation	40.9
Industry (% in Business Services Sector)	17.6

Societal Value About Entrepreneurship

	Value %
High status to entrepreneurs	61.5
Entrepreneurship a good career choice	66.2

Strengths of Cyprus' Entrepreneurship Ecosystem

	Value
Physical infrastructure	6.6
Commercial and legal infrastructure	5.1
Internal market burdens or entry regulation	4.9

Source: GEM Global 2017/2018

4

ENTREPRENEURSHIP ECOSYSTEM



The National Expert Survey (NES) complements the information derived through the APS with additional insights on the entrepreneurship ecosystem of each country. NES invites experts to evaluate specific national conditions with respect to the entrepreneurship ecosystem. It emphasizes on the environmental features that are expected to have significant impact on the entrepreneurial attitudes and activities, rather than on the economic factors. NES encapsulates several Entrepreneurial Framework Conditions (EFCs) including entrepreneurial finance, government policies, taxes and bureaucracy, government programs, school and post-school entrepreneurship education and training, R&D transfer, access to commercial and professional infrastructure, internal market dynamics and market openness, and social and cultural norms. Figure 4.1 illustrates the EFCs included in NES 2017/2018. This section presents the informed opinions of Cyprus' national experts regarding the entrepreneurship ecosystem in Cyprus.

NES explores how EFCs shape the entrepreneurial ecosystem in each economy. The survey invites respondents to reflect on the conditions that foster (or constrain) entrepreneurial activity and development in their country. The data is analyzed to determine the mean score for each group of questions. Section 2 provides more information on the GEM NES methodology. Table 4.1 summarizes the mean scores for each of the nine entrepreneurial framework conditions in Cyprus and in Europe.

According to the results of the NES, the most important strengths of Entrepreneurship Framework Conditions in Cyprus are physical infrastructure and access to commercial and legal infrastructure. As perceived by local national experts, the physical infrastructure has improved since last year (6.6 out of 9 in 2017/2018, a 0.4 increase compared to 2016/2017), whereas the quality of commercial and legal infrastructure has remained stable and at relatively good levels (5.1 out of 9 in both 2016/2017 and 2017/2018). Cyprus' level of physical infrastructure and commercial and legal infrastructure scores are aligned with the corresponding European average rates. This provides additional indications concerning the quality of Cyprus' physical and commercial and legal infrastructure. Additionally, the internal market burdens or entry regulations have improved since last year (4.9 out of 9 in 2017/2018, a 0.6 increase compared to

2016/2017). Internal market burdens or entry regulations regard cost and easiness of new market entry as well as anti-trust legislation in each country. Cyprus' rate of internal market burdens or entry regulations in 2017/2018 is above the corresponding European average rate (4.9 out of 9 in Cyprus compared to 4.0 out of 9 in Europe).

Figure 4.1: Entrepreneurial Framework Conditions (EFCs)⁸



NES also identified certain conditions as the weaknesses of the entrepreneurship ecosystem of Cyprus. One such important weakness is entrepreneurial education at primary and secondary education levels (2.9 out of 9 in 2016/2017 and 3.1 out of 9 in 2017/2018). Other key weaknesses include the limited financial environment for entrepreneurship in Cyprus (3.3 out of 9 in both 2016/2017 and 2017/2018) and the lack of government support and initiatives through entrepreneurship programs (3.3 out of 9 in 2016/2017 and 3.4 out of 9 in 2017/2018). These categories can be considered as the main weaknesses of the local entrepreneurship ecosystem. The scores for each of

8 Global Entrepreneurship Monitor (GEM) Report 2017/2018

Table 4.1: Entrepreneurial framework condition scores

	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
Physical infrastructure	6.2	6.5	6.6	6.6
Commercial and legal infrastructure	5.1	4.9	5.1	5.2
Internal market burdens or entry regulation	4.3	4.2	4.9	4.0
Entrepreneurial education at post-school stage	4.6	4.6	4.5	4.8
Internal market dynamics	4.6	4.9	4.2	4.8
Government policies: taxes and bureaucracy	4.1	4.0	4.2	4.1
Cultural and social norms	4.0	4.7	4.1	4.5
Government policies: support and relevance	3.8	4.2	4.1	4.2
R&D transfer	3.7	3.8	3.9	4.0
Government entrepreneurship programs	3.3	4.3	3.4	4.6
Financial environment for entrepreneurship	3.3	4.4	3.3	4.5
Entrepreneurial education at school stage	2.9	3.1	3.1	3.4

(weighed average, scale: 1=highly insufficient, 9=highly sufficient)

these categories are lower than the corresponding European benchmark rates. Table 4.1 summarizes all entrepreneurial framework conditions scores in Cyprus and Europe for the past two years. Figures 4.2 and 4.3 provide a graphical representation for the rates recorded in 2016/2017 and 2017/2018 respectively.

4.1 STRENGTHS AND LIMITATIONS OF THE ENTREPRENEURIAL ECOSYSTEM IN CYPRUS

Physical Infrastructure

Cyprus has a constantly evolving system of advanced and modern infrastructure, including sophisticated road, air and sea transport solutions and services¹¹. These include two multi-purpose deep sea ports located in Limassol and Larnaca, and two modern international airports located in Larnaca and Paphos.

Good quality and affordable physical infrastructure contribute to the viability of new businesses. Cyprus' good physical infrastructure is considered as one of the top strengths of its entrepreneurial ecosystem. National experts perceive that there is a high quality of physical infrastructure in Cyprus such as roads, utilities, communications and waste disposal. Compared to last year, experts perceive that that such infrastructure has been improving (6.4 out of 9 in 2017/2018

compared to 5.9 out of 9 in 2016/2017). Concerning physical infrastructure, they perceive that new businesses are able to quickly gain good access to communications (telephone, internet, etc.; 7.2 out of 9 in 2017/2018) and good access to utilities (gas, water, electricity, sewer; 7.1 out of 9 in 2017/2018). The results also show that costs associated with communication services are considered as affordable for new or growing businesses (5.0 out of 9 in 2016/2017 and 5.8 in 2017/2018). Furthermore, these results indicate that communication services have become more affordable for new and growing firms in Cyprus since last year. Table 4.2 includes all the questions related to the Physical infrastructure and the corresponding rates as provided by national experts in Cyprus and in Europe.

9 Global Entrepreneurship Monitor (GEM) Report 2016/2017

10 Global Entrepreneurship Monitor (GEM) Report 2017/2018

11 Advanced Infrastructure, Cyprus Investment Promotion Agency (CIPA) website, found at: <http://www.investcyprus.org.cy/en/why-cyprus/top-reasons-to-invest-in-cyprus/well-developed-infrastructure>

Figure 4.2: Entrepreneurial framework condition scores for Cyprus and Europe in 2016/2017⁹

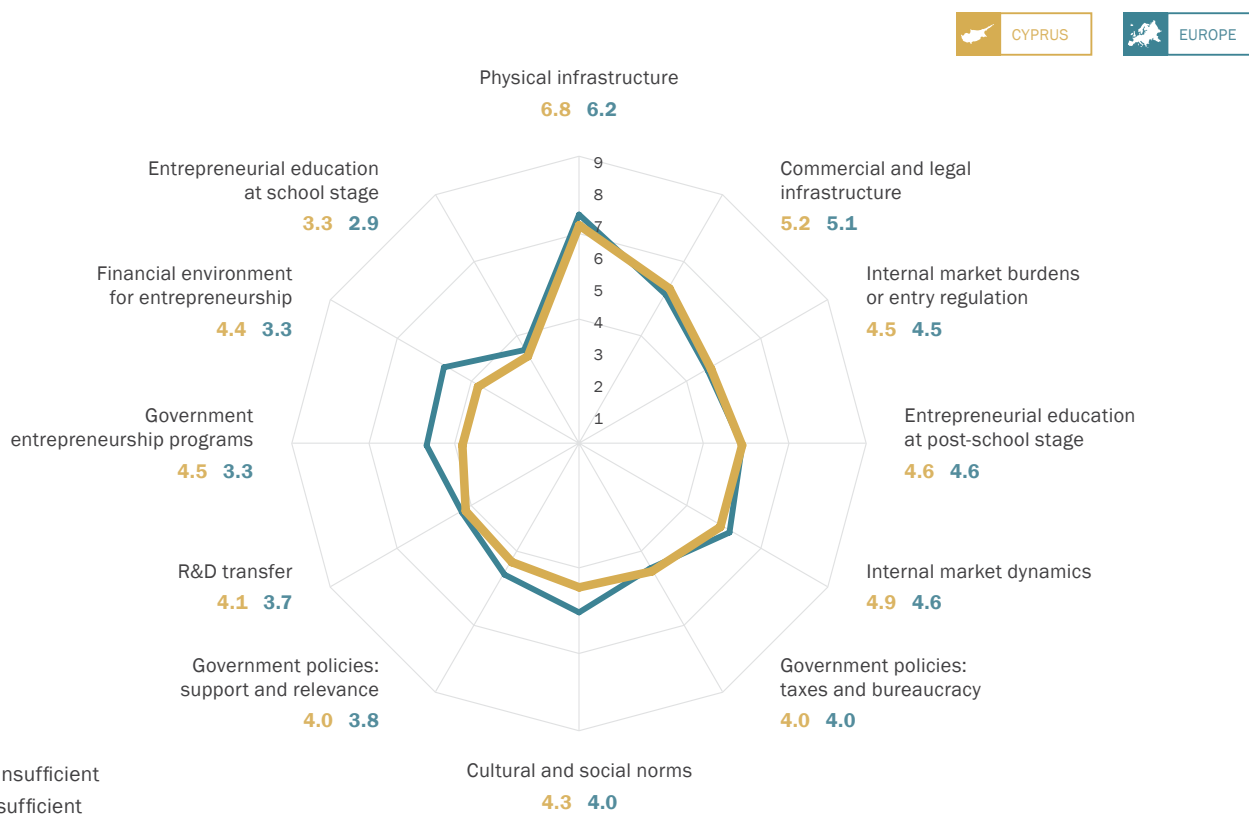
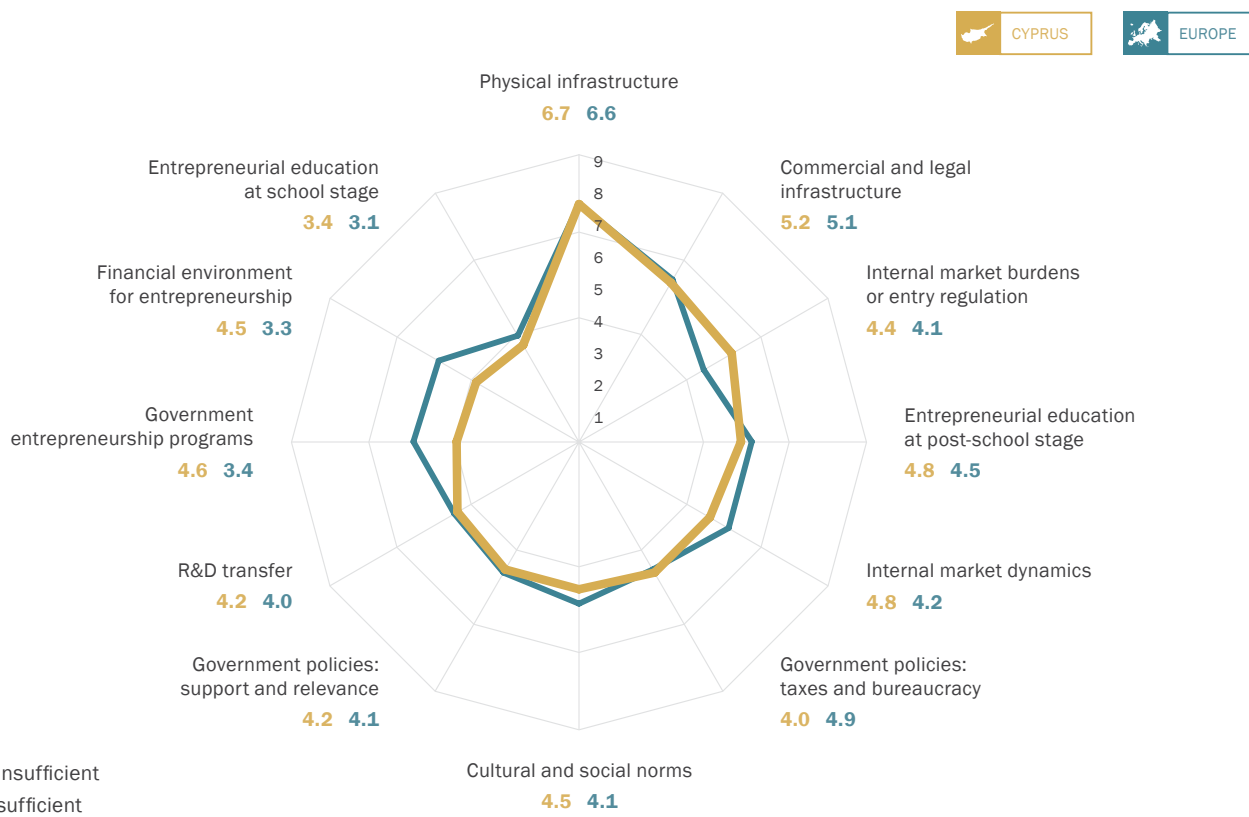


Figure 4.3: Entrepreneurial framework condition scores for Cyprus and Europe in 2017/2018¹⁰



Commercial and services infrastructure

Beyond the good physical infrastructure that is important for the execution of the activities of new enterprises, the commercial and services infrastructure can be considered as equally important. Cyprus holds a very high quality commercial and services infrastructure and comprises of a plethora of highly-trained, experienced and multilingual professionals that offer high-quality legal, accounting, auditing, consulting and other types of services at competitive rates. There are more than 2,700 registered advocates (i.e. approximately one registered advocate per 300 citizens) and

160 limited liability law firms¹⁷. Alongside top international accounting firms that are established in Cyprus and provide accounting services, there are also more than 120 accounting firms operating locally. The strong financial and banking sector in Cyprus is aligned with legislation adopting international best practices and has a simplified, effective, stable and transparent tax system.

National experts consider that new and growing firms can have easy access to high-quality professional, legal and accounting services (6.4 out of 9) as well as access to good banking services (5.9 out of 9). This reflects the capabilities

Table 4.2: Physical Infrastructure¹²

	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
The physical infrastructure (roads, utilities, communications, water disposal) provides good support for new and growing firms.	5.9	6.4	6.2	6.0
It is not too expensive for a new or growing firm to get good access to communications (phone, Internet, etc.).	5.0	5.8	7.0	6.7
A new or growing firm can get good access to communications (telephone, internet, etc.) in about a week.	7.2	7.2	7.0	6.9
New and growing firms can afford the cost of basic utilities (gas, water, electricity, sewer).	5.3	6.0	6.6	6.6
New or growing firms can get good access to utilities (gas, water, electricity, sewer) in about a month.	7.1	7.1	6.7	6.8

(weighed average, scale: 1=completely false, 9=completely true)

Table 4.3: Commercial and services infrastructure¹²

	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
Commercial and services infrastructure				
There are enough subcontractors, suppliers, and consultants to support new and growing firms.	5.1	5.2	5.9	5.9
New and growing firms can afford the cost of using subcontractors, suppliers, and consultants.	3.5	3.6	4.0	4.1
It is easy for new and growing firms to get good subcontractors, suppliers, and consultants.	4.9	4.5	4.7	4.7
It is easy for new and growing firms to get good, professional legal and accounting services.	6.3	6.4	5.9	5.8
It is easy for new and growing firms to get good banking services (checking accounts, foreign exchange transactions, letters of credit, and the like).	5.7	5.9	5.8	5.8

(weighed average, scale: 1=completely false, 9=completely true)

Table 4.4: Government Policies¹²

Government policies	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
Government policies (e.g., public procurement) consistently favor new firms.	3.4	3.1	3.8	3.4
The support for new and growing firms is a high priority for policy at the national government level.	4.4	4.5	4.9	4.7
The support for new and growing firms is a high priority for policy at the local government level.	3.4	4.3	3.5	4.5
New firms can get most of the required permits and licenses in about a week.	1.9	3.6	2.1	3.5
The amount of taxes is NOT a burden for new and growing firms.	6.1	4.0	6.5	4.1
Taxes and other government regulations are applied to new and growing firms in a predictable and consistent way.	5.3	4.4	6.6	4.5
Coping with government bureaucracy, regulations, and licensing requirements is not unduly difficult for new and growing firms.	3.2	3.9	4.2	3.9

(weighed average, scale: 1=completely false, 9=completely true)

of the highly-trained law, accounting and banking service professionals in Cyprus¹³. The high quality of human capital was also highlighted in the open-ended questions: “There is high-level of education across the youth. There is good quality of human capital in all sectors. The cost associated to human capital is low with respect to the quality human capital in Cyprus”. However, it was also noted that although there are sufficient subcontractors, suppliers and consultants to support new and growing firms (5.2 out of 9), subcontracting, supplying and consulting services are considered costly for new or growing firms (3.6 out of 9). Table 4.3 provides an overview of all the questions included in NES for measuring the commercial and services infrastructure condition.

Government policies

Government policies may play an important role in shaping, enhancing and strengthening the entrepreneurial activity of a country. Cyprus offers an attractive, transparent and stable tax regime and one of the lowest corporate income tax rates in the European Union (12.5%) and hence it can be regarded as a reliable and affordable host for new businesses. National experts perceive that from a taxation perspective, government policies are supportive for new entrepreneurial endeavors. In particular, they perceive that the amount of taxes is not a burden for the new and growing firms (6.1 out of 9 in 2016/2017 and 6.5 out of 9 in 2017/2018) and taxes and other government regulations are applied to new and

growing firms in a predictable and consistent way (5.3 out of 9 in 2016/2017 and 6.6 out of 9 in 2017/2018). They also consider that the support for new and growing firms is a high priority for policy at the national government level (4.4 out of 9 in 2016/2017 and 4.9 out of 9 in 2017/2018). Overall, the perceptions of the national experts on government policies related to entrepreneurship have notably improved from 2016/2017 to 2017/2018. Table 4.4 includes all the questions employed for measuring government policies condition.

Despite the fact that perceptions of government policies have improved since last year, national experts perceive that a large proportion of the factors shaping this condition require notable improvement. For example, it is perceived that the support for new and growing firms should be considered

12 Item average values are not weighted
 13 Cyprus Investor’s Guide, Cyprus Investment Promotion Agency (CIPA)
 14 Information provided by Dr. Eleni-Tatiani Synodinou, Associate Professor, Department of Law, University of Cyprus

Table 4.5: Procedures stages and time to complete for setting up a business in Cyprus¹⁴

Procedure	Time to Complete	Icon	Duration
Reserve the company name and get initial approval from the Registrar of Companies			1 - 5 days
Prepare the Memorandum and Articles of association by a Lawyer			1 - 2 days
Submit documents at the Companies' Section of the Department of Registrar of Companies and Official Receiver			2 days
Register at the Tax Department for Tax and VAT and obtain a Tax Identification Number			2 days
Register for Social Contribution at the Ministry of Labor, Welfare and Social Insurance			1 day

as a higher priority for policy at local government level (3.4 out of 9 in 2016/2017 and 3.5 out of 9 in 2017/2018) and while government policies could become more supportive for new firms (3.4 out of 8 in 2016/2017 and 3.8 out of 9 in 2017/2018). The process for setting up a business in Cyprus (Table 4.5), currently includes five procedures and requires approximately seven to twelve working days. However, experts consider that it is difficult for new and growing firms to deal with government bureaucracy, regulations, and licensing requirements (3.2 out of 9 in 2016/2017 and 4.2 out of 9 in 2017/2018). They also believe that in Cyprus, it is difficult to get most of the required permits and licenses in such a short space of time (i.e. about a week) (1.9 out of 9 in 2016/2017 and 2.1 in 2017/2018).

Entrepreneurial education and training

According to Eurostat, Cyprus holds a highly educated human capital compared to the rest of the countries in the European Union (EU). In particular, it is ranked third in the EU in terms of proportion of the population with tertiary education with regards to the 30 to 34 age group. The government has formulated several policies that regard the enhancement of education from an entrepreneurial perspective. For example, the Ministry of Education promotes entrepreneurial activities and competition at school and university levels to raise awareness on entrepreneurship, build creativity, critical thinking and other related skills and competencies to students of all ages (e.g. “Digital Entrepreneurship Competition”, “Student Enterprise”, “Spending Smart” etc.).

However, national experts stress the need to further improve entrepreneurial education. Reflecting on primary and secondary education in Cyprus, they consider that it does not include activities or courses that encourage creativity, self-sufficiency and personal initiative (3.0 out of 9 in 2016/2017, 3.2 out of 9 in 2017/2018), it does not provide

adequate instruction in market economic principles (3.0 out of 9 in 2016/2017 and 3.4 out of 9 in 2017/2018), nor does it provide adequate attention to entrepreneurship and new firm creation (2.0 out of 9 in 2016/2017 and 2.8 out of 9 in 2017/2018). Similarly, experts perceive that post-school entrepreneurial education is limited. In particular, they stress that at post-school level, there is limited business and management education (5.5 out of 9 in 2016/2017, 5 out of 9 in 2017/2018) and limited vocational, professional and continuing education (5.0 out of 9 in 2016/2017 and 3.9 out of 9 in 2017/2018). Likewise, they perceive that universities provide limited preparation to individuals for proceeding with entrepreneurial endeavors and growing new firms after their studies. Table 4.6 reflects on the perceptions of national experts about school and post-school education with respect to entrepreneurship in Cyprus and in Europe, in both 2016/2017 and 2017/2018. Although experts’ perceptions towards entrepreneurial education at school level have improved compared to last year’s results, their perceptions towards entrepreneurial post-school education remained stable or have decreased. Overall, it could be concluded that primary and secondary education in Cyprus provides limited orientation towards entrepreneurship and places limited emphasis on the development of the skills necessary for proceeding with entrepreneurial endeavors. As one of the experts noted, there is an “education gap - lack of education on entrepreneurship from early ages. Children need to be channeled towards creativeness-innovation-entrepreneurship-creation from early stages - away from the safety of an employee salary”.

Government entrepreneurship programs

According to the Ministry of Energy, Commerce, Industry and Tourism, a “One-Stop Shop” service has recently been set up in order to assist the acceleration and simplification of the process required for setting up a business. However, experts

Table 4.6: Entrepreneurial education¹²

	CYPRUS		EUROPE	
School education				
Teaching in primary and secondary education encourages creativity, self-sufficiency, and personal initiative.	3.0	3.6	3.2	3.6
Teaching in primary and secondary education provides adequate instruction in market economic principles.	3.0	3.3	3.4	3.4
Teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation.	2.0	2.9	2.8	3.1
Post-school education				
Colleges and universities provide good and adequate preparation for starting up and growing new firms.	4.5	4.3	4.5	4.4
The level of business and management education provides good and adequate preparation for starting up and growing new firms.	5.5	4.9	5.0	5.1
The vocational, professional, and continuing education systems provide good and adequate preparation for starting up and growing new firms.	5.0	4.6	3.9	4.7
	2016-2017		2017-2018	

(weighed average, scale: 1=completely false, 9=completely true)

consider that government assistance for new and growing firms which can be obtained through contact with a single agency, is limited (2.8 out of 9 in 2016/2017 and 2.9 out of 9 in 2017/2018). This is supported by the views of the open-ended questions stressing delays in reducing “bureaucracy related to the registration of new businesses” and in achieving “wide deployment of e-government services”. Similarly, it is viewed that the support provided to new and growing firms by science parks and business incubators is also limited (3.1 out of 9 in 2016/2017 and 3.2 out of 9 in 2017/2018). According to the national experts, there is a restricted number of government programs for new and growing businesses (3.9 out of 9 in 2016/2017 and 3.8 out of 9 in 2017/2018). Therefore, the need for government programs to support new business especially at early stages is highlighted: “The government must adopt urgently measures towards supporting startups at their early stages, at the time they mostly need help, but nobody dares to help them”. Concerning the help and assistance provided by government programs to new and growing businesses to find what they need, national experts view that the assistance available is limited (3.1 out of 9 in 2016/2017 and 3.2 out of 9 in 2017/2018). They also stress that the human capital of government agencies cannot sufficiently support new and growing firms in an effective manner (3.2 out

of 9 in 2016/2017 and 3.5 out of 9 in 2017/2018). According to the views of the national experts, civil servants lack the necessary skills as they often do not have previous experience in the private sector: “Lack of civil servants who have worked and were competitive in the private sector”. Table 4.7 includes the questions employed for measuring the government entrepreneurship programs condition with respect to the relevant mean values, and reflects on the item average values for Cyprus and Europe. The table regards both 2016/2017 and 2017/2018. Overall, the results concerning government entrepreneurship programs condition remained relatively stable across the two periods.

Access to finance

Easing and supporting access to finance is particularly important for the development of new firms and the growth of the economy. According to the results of the NES 2017/2018, access to finance is the second most important obstacle for entrepreneurial activity in Cyprus (Table 4.1). This is aligned with the results of the APS indicating that problems in acquiring finance is an important reason for business discontinuance (Figure 3.9). New and growing businesses are able to access relatively sufficient financial support by informal investors such as family members, friends or colleagues (4.4 out of 9 in 2016/2017 and 5.0 out of 9 in 2017/2018). Government also provides some kind of financial support mainly through subsidies such as the “Support Aid for Young Entrepreneurs”. Experts perceive that the sufficiency of government subsidies for new and growing firms is of a moderate level (4.3 out

15 Europe educational attainment statistics 2017, Eurostat, 20 February 2018

Table 4.7: Government entrepreneurship program¹²

Government entrepreneurship programs	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
A wide range of government assistance for new and growing firms can be obtained through contact with a single agency.	2.8	4.1	2.9	4.1
Science parks and business incubators provide effective support for new and growing firms.	3.1	5.3	3.2	5.5
There is an adequate number of government programs for new and growing businesses.	3.9	4.9	3.8	5.0
The people working for government agencies are competent and effective in supporting new and growing firms.	3.2	4.4	3.5	4.6
Almost anyone who needs help from a government program for a new or growing business can find what they need.	3.1	4.1	3.2	4.2
Government programs aimed at supporting new and growing firms are effective.	3.1	4.2	3.6	4.4

(weighed average, scale: 1=completely false, 9=completely true)

Table 4.8: Access to finance¹²

Access to finance	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
There is sufficient equity funding available for new and growing firms.	3.3	4.6	3.4	4.6
There is sufficient debt funding available for new and growing firms.	3.5	4.7	3.7	4.9
There is sufficient government subsidies available for new and growing firms.	4.8	5.0	4.3	5.1
There is sufficient funding available from informal investors (family, friends and colleagues) who are private individuals (other than founders) for new and growing firms.	4.4	4.8	5.0	4.9
There is sufficient professional Business Angels funding available for new and growing firms.	4.0	4.5	4.2	4.6
There is sufficient venture capitalist funding available for new and growing firms.	2.3	4.5	2.5	4.5
There is sufficient funding available through initial public offerings (IPOs) for new and growing firms.	2.3	3.5	2.4	3.5
There is sufficient private lenders' funding (crowdfunding) available for new and growing firms.	2.1	4.3	2.7	4.5

(weighed average, scale: 1=completely false, 9=completely true)

of 9) and that the ecosystem is able to provide business angel funding (4.8 out of 9 in 2016/2017 and 4.2 out of 9 in 2017/2018) at least to some extent. Beyond the partial access to finance fostered mainly through informal investors and partly from government policies and business angels, experts view that there is a lack of competent fund managers and proficient formal investors in the Cypriot ecosystem. National experts view that there is limited equity funding (3.3 out of 9 in 2016/2017 and 3.4 out of 9 in 2017/2018), debt funding (3.5 out of 9 in 2016/2017 and 3.7 out of 9 in 2017/2018) as well as venture capital funding (2.3 out of 9 in 2016/2017 and 2.5 out of 9 in 2017/2018). Funding available through initial public offerings (IPOs) (2.3 out of 9 in 2016/2017 and 2.4 out of 9 in 2017/2018) and private lenders' funding (crowdfunding) (2.1 out of 9 in 2016/2017 and 2.7 out of 9 in 2017/2018) available for new and growing businesses in Cyprus, is also very limited.

Overall, there is a slightly improved perception concerning access to finance from 2016/2017 to 2017/2018. However, the results regarding this condition show that the majority of national experts support the view that there is limited access to finance available in the entrepreneurial ecosystem in Cyprus. Table 4.8 summarizes the mean scores for the questions measuring access to finance.

Cultural and social norms

According to the results of the ASP presented in Section 3 of this report, the societal values on entrepreneurship in Cyprus are supportive. In particular, 66.2% of the adult population in Cyprus considers entrepreneurship to be a good career choice and 61.5% views that entrepreneurs are highly regarded with high status (see Figure 3.1). Although national experts consider that Cyprus' national culture is to some extent supportive, they still view that cultural support is lower than desired for

successful entrepreneurs who have achieved through their own personal efforts (4.6 out of 9 in 2016/2017 and 4.7 out of 9 in 2017/2018). Similarly, national experts perceive that self-sufficiency, autonomy, and personal initiative are partly supported by the national culture (4.5 out of 9 in both periods). At the same time, they view that there is a very low propensity to entrepreneurial risk-taking (3.2 out of 9 in 2016/2017 and 3.3 out of 9 in 2017/2018) and that there is limited encouragement for entrepreneurial creativity and innovativeness (3.6 out of 9 in 2016/2017 and 3.8 out of 9 in 2017/2018). Table 4.9 summarizes the average values for each item related to cultural and social norms for Cyprus and Europe. Overall, experts view that Cyprus' cultural and social norms towards entrepreneurship are not sufficiently supportive for entrepreneurs. As the experts highlighted, "Children are encouraged to follow more stable and secure careers. There is a lack of innovation and creativity culture that should be cultivated at family level". They also stressed the lack of sufficient support from the business community: "the Cypriot business community is not acknowledging the value of young entrepreneurs. They need to embrace the young entrepreneurs practically. Need to help them with their experience and business knowledge". The perceptions of national experts concerning cultural and social norms remained relatively unchanged between 2016/2017 and 2017/2018 and are to a large extent aligned with the perceptions of national experts across Europe.

Internal market dynamics and Internal market burdens or entry regulation

To measure market openness, GEM accounts for the internal market dynamics and internal market burdens or entry regulation in each economy participating in the study. In Cyprus, national experts provided average ratings for the adequacy of internal market dynamics (4.2 out of 9) and

Table 4.9: Cultural and social norm¹²

Cultural and social norms	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
The national culture is highly supportive of individual success achieved through own personal efforts.	4.6	4.4	4.7	4.8
The national culture emphasizes self-sufficiency, autonomy, and personal initiative.	4.5	4.4	4.5	4.6
The national culture encourages entrepreneurial risk-taking.	3.2	3.5	3.3	3.9
The national culture encourages creativity and innovativeness.	3.6	4.6	3.8	4.7
The national culture emphasizes the responsibility that the individual (rather than the collective) has in managing his or her own life.	4.2	4.3	4.2	4.6

(weighed average, scale: 1=completely false, 9=completely true)

Table 4.10: Internal market dynamics and burdens¹²

Internal market dynamics and burdens	CYPRUS		EUROPE	
	2016-2017	2017-2018	2016-2017	2017-2018
The markets for consumer goods and services change dramatically from year to year.	4.6	5.0	4.2	4.8
The markets for business-to-business goods and services change dramatically from year to year.	4.6	4.8	4.3	4.8
New and growing firms can easily enter new markets.	4.0	4.5	4.4	4.6
New and growing firms can afford the cost of market entry.	3.6	4.0	3.5	4.0
New and growing firms can enter markets without being unfairly blocked by established firms.	4.2	4.5	4.0	4.4
The anti-trust legislation is effective and well enforced.	4.8	4.8	4.9	4.8

(weighed average, scale: 1=completely false, 9=completely true)

internal market burdens or entry regulation (4.1 out of 9). In particular, it is considered that the change in markets of consumer goods and services is neither dramatic nor mild (4.6 out of 9 in 2016/2017 and 4.2 out of 9 in 2017/2018). It is also viewed that it is not easy for new and growing firms to enter new markets (4.0 out of 9 in 2016/2017 and 4.4 out of 9 in 2017/2018) and that the cost of market entry is likely to be not affordable by new and growing firms (3.6 out of 9 in 2016/2017 and 3.5 out of 9 in 2017/2018). Table 4.10 summarizes the questions employed for measuring internal market dynamics and internal market burdens or entry regulation.

Research and Development (R&D) Transfer

GEM NES also regards the connection between academia and industry. GEM considers that the transfer of the research results from academia to industry and the exploitation and commercialization of the research results is an important proxy of entrepreneurship. According to the results of the survey, experts perceive that compared to last year, there has been some progress regarding the capacity of science and technology to efficiently support the creation of world-class new technology-based ventures (3.6 out of 9 in 2016/2017, 4.4 out of 9 in 2017/2018). However, it is also viewed that there is limited transfer of research results from academia to new and growing firms in Cyprus in the last couple of years (3.1 out of 9 in 2016/2017 and 3.5 out of 9 in 2017/2018). Moreover, it is believed that the support provided to engineers and scientists to commercialize their results is limited (3.0 out of 9 in both years), despite the fact that the latest technology is affordable for new and growing firms (5 out of 9 in 2016/2017 and 5.3 out of 9 in 2017/2018).

Concerning technology access, national experts disagree with the view that new and growing firms have equal access to new research and technology as large firms (3.2 out of 9 in 2016/2017; 3.5 out of 9 in 2017/2018). They also disagree with the view that there are adequate government subsidies in place for new and growing firms to acquire new technology (4.0 out of 9 in 2016/2017 and 3.7 out of 9 in 2017/2018). National experts consider that there is limited support available for engineers and scientists to have their ideas commercialized through new and growing firms (3 out of 9). As elaborated by one of the experts, “there is lack of supportive structures and mechanisms of research and technology transfer”. Table 4.11 includes the questions employed for measuring research and development transfer with respect to the relevant rates for Cyprus and Europe.

NES complements our understanding of the entrepreneurial activity in Cyprus by retrieving additional information on the strengths and burdens of the entrepreneurial ecosystem in Cyprus as perceived by national experts. This section presented an overview of the NES results in Cyprus and in Europe and was able to provide a comparison between the insights derived in the 2016/2017 and 2017/2018 surveys. Overall, NES results support the view that the physical infrastructure and commercial and legal infrastructure remain the most important strengths of the local entrepreneurial ecosystem. The results also highlighted that the strongest burdens of this ecosystem are the entrepreneurial education provided at school stage, the lack of access to finance for startups and the limited government entrepreneurship programs. The following section outlines related policy making recommendations as arising by the results of the APS and the NES.

Table 4.11: Research and Development Transfer¹²

Research and Development Transfer




New technology, science, and other knowledge are efficiently transferred from universities and public research centers to new and growing firms.	3.1	4.0	3.5	4.0
New and growing firms have just as much access to new research and technology as large, established firms.	3.2	3.8	3.5	3.8
New and growing firms can afford the latest technology.	5.0	3.8	5.3	3.9
There are adequate government subsidies for new and growing firms to acquire new technology.	4.0	4.2	3.7	4.1
The science and technology base efficiently supports the creation of world-class new technology-based ventures in at least one area.	3.6	4.8	4.4	4.9
There is good support available for engineers and scientists to have their ideas commercialized through new and growing firms.	3.0	4.3	3.0	4.4
	2016-2017		2017-2018	

(weighed average, scale: 1=completely false, 9=completely true)



5



**EXISTING POLICIES
AND FUTURE POLICY
RECOMENDATIONS**

Cyprus considers entrepreneurship and innovation as one of the major driving forces of economic growth and beyond its economic impact, it foresees additional positive impacts socio-economic level. The National Policy Statement for the Entrepreneurial Ecosystem¹⁶ is a multi-annual plan aiming to orchestrate and enhance existing entrepreneurial activity in Cyprus. The National Policy aims to cultivate the entrepreneurial culture especially among the young generation, improve the business environment, update the relevant legal framework and provide additional funding opportunities for businesses.

The Republic of Cyprus already acknowledges the necessity to enhance the existing educational system with activities related to entrepreneurship. In particular, the Ministry of Education has formulated a series of activities aiming at orienting students of all ages towards entrepreneurship and assisting them in extending their creativity and design thinking skills. At the same time governmental and non-governmental organizations and networks support this effort through yearly entrepreneurial competitions. For instance, competitions such as the “Digital Entrepreneurship Competition”, the “Junior Achievement Cyprus”, “Ideodromio”, “Educating the smart city: generating smart ideas for my city” and “Company Programme” encourage the entrepreneurial involvement of students at school-level¹⁷. Additionally, soldiers, between 18-20 years old, have the opportunity to attend lectures on entrepreneurship and participate in Competitions alongside their military service. Universities have also enhanced their curriculums from an entrepreneurial

perspective. For instance, they offer certificates and minor degrees in entrepreneurship, workshops and seminars related to entrepreneurship. They also encourage and support students and researchers to participate in international competitions (e.g. Student Innovators Competition 2018, Innovation and Entrepreneurship Forum, NASA Space Apps challenge 2017, Climate-KIC), and boot camps (e.g., Climate Launchpad, European Innovation Academy), whereas makerspaces (e.g. at the University of Cyprus, Cyprus Youth Organization etc.) invite youngsters to experiment on their new ideas using cutting-edge equipment. The teaching portfolio of the Cyprus Pedagogical Institute, also includes training teachers on expanding their entrepreneurial and communication skills and introduces tools for the development of creative thinking, innovative ideas, participation and self-confidence among their pupils¹⁹.

The government has also put effort in modernizing the legal system associated to the establishment and operation of businesses in Cyprus. This includes the simplification of the legal procedures required to register a company, procedure to submit VAT and income tax documents as well as applying a more attractive tax income regime so as to provide tax incentives to individuals to invest in innovative and start-up companies. It has also initiated an effort to create a digital platform for the funding Schemes available to businesses and enabled the “Startup Visa program/scheme” aimed to attract entrepreneurs from third countries¹⁸ to develop and operate a startup of high growth potential in Cyprus. Additionally, it is currently in the process of refining the existing legal framework for the creation of spin-offs through public universities so as to boost the entrepreneurial activity of Universities’ staff. In relation to this, the Research Promotion Foundation in Cyprus developed a business plan to operate a Technology Transfer Office/ Centre to support the academic and research institutions in terms of exploiting their research results and secure their intellectual property rights.

National funding schemes are currently available to new businesses and SMEs. The Research Promotion Foundation announced in 2016 its new funding program for 2016-2020, “RESTART”, that is open to all public and private entities. It is multi-annual framework of programmes that supports Research, Technological Development and Innovation in Cyprus. Numerous calls aim at providing funding to create startups, support the protection intellectual property rights

16 Statement released by the Unit of Administrative Reform of the Presidency, formulated, in close cooperation with the Ministry of Energy, Commerce, Industry and Tourism (MECIT), and endorsed by the Council of Ministers on December 14th, 2015

17 Report on “Promoting Entrepreneurial Education” provided by Dr (c) Constandinos Georgiou, Inspector of Secondary Technical and Vocational Education - Ministry of Education and Culture, Mrs. Kalypso Apergi, Coordinator of In – Service Training Program for Entrepreneurship in Education - Cyprus Pedagogical Institute

and to boost SME R&D activities. The Ministry of Energy, Commerce, Industry and Tourism is running for several years now a funding scheme specifically designed to provide assistance to youngsters and women entrepreneurs to create their own new businesses.

POLICY RECOMMENDATIONS

Despite the notable initiatives by government and non-governmental organizations, additional actions are required to boost the entrepreneurial activity in Cyprus and its impact. In GEM Cyprus 2016/2017, the results of the Adult Population Survey (APS) and the National Expert Survey (NES) provided insights on the weaknesses of the entrepreneurial ecosystem in Cyprus and led to the derivation of numerous policy making recommendations. The results of GEM Cyprus 2017/2018 highlight that despite the progress recorded (e.g. ratio male and female entrepreneurs, more use of technology etc.), the weaknesses of the entrepreneurial ecosystem remain, to a large extent, similar across the two years. The similarity in the weaknesses identified across the two years, underlines the need for additional action and prompts that last year's policy recommendations remain to some extent the same for 2017/2018. The rest of this Section outlines the policy making recommendations arising by GEM2017/2018.

EDUCATION

The National Policy Statement for the Entrepreneurial Ecosystem includes numerous ambitious, but necessary actions related to education. GEM Cyprus extends this list of actions by suggesting additional policies related to entrepreneurial education. The results of NES 2016/2017 and 2017/2018 show that there is limited entrepreneurial training provided both at school and university level. Throughout the open-ended questions, the national experts urge for the need to modify the existing educational system and cultivate an entrepreneurial mindset from an early age. The alignment of results across the two years, underline the need to apply the policy making recommendations identified in last year's report and prompt for additional new policies. These include:

Similar to GEM 2016/2017:

- Promote Science, Technology, Engineering and Mathematics (STEM) training from a young age and especially towards female students.
- Refine school-level educational programs to include courses that cultivate entrepreneurial mindset. These

could be courses that boost team-working and risk-taking culture, support out-of-the box thinking and enhance financial education.

- Develop of life-long educational programs targeting graduates of different educational levels and backgrounds. Such programs should focus on developing the necessary soft-skills, technical and digital literacy skills.
- Enhance the education at all levels with courses and case studies emphasizing on female entrepreneurship.

New:

- Enhance existing entrepreneurship programs with hands-on training on developing and commercializing entrepreneurial ideas.
- Connect University level education and research with industry.
- Encourage Universities to offer additional modules on entrepreneurship and digital literacy. These modules could be mandatory for all academic programs and support the participation of students from different backgrounds in the same groups.
- Modify the structure of school-level training to assist individuals in identifying their capabilities and talents, and formulate the necessary procedures that will allow teachers to promote talented individuals towards additional entrepreneurial training from an early stage.
- Provide training to the local business community on how to invest in new business ideas and training on how to support their employees in their intrapreneurial activity.

GOVERNMENT PROCESSES

Although the APS results highlight that government, tax policies and bureaucracy do not have an impact on business discontinuance in Cyprus in 2017/2018, the NES results indicate that government procedures may be slowing down the progress of entrepreneurial activity in Cyprus. The perceptions of national experts as accounted in both NES 2016/2017 and 2017/2018, stress the deficiencies of the government in terms of providing permits and licenses quickly, and shaping policies (e.g. public procurement) that are in favor of new firms. GEM results demonstrate that such weaknesses persist across the 2016/2017 and 2017/2018 surveys and thus impose the urgent need for policy action. These may include:

Similar to GEM 2016/2017:

- Modernize and accelerate the procedures related to new businesses such as registering a company or patents, attracting foreign talent etc.
- Improve the efficiency of services provided by the "One-Stop Shop" service of the Ministry of Energy, Commerce, Industry and Tourism, and foster a wider dissemination of the service.

18 Countries outside the European Union (EU) and outside the European Economic Area (EEA)

- Enhance the use of technology in the government sector and deploy electronic government services for all services related to new and growing firms such as company registration online (including name choice).

New:

- Enable new firms to minimize the need for intermediaries (e.g. lawyers).
- Foster the transparency of public sector processes so as to eliminate fraud.
- Enable and foster the wide use of digital signature.

FINANCIAL SUPPORT

The results of the APS are encouraging as the rate of business discontinuance due to problems in getting finance has been reduced since last year. However, problems in getting finance is still a major issue for new entrepreneurial activity in Cyprus. This is also supported by the results of NES, as national experts consider that problems in accessing finance is one of the most important burdens of entrepreneurial activity and underline that lack of access to finance is one of the entrepreneurial framework conditions that inhibit entrepreneurial activity in Cyprus. The NES results are aligned across the last two years in which the GEM survey is being conducted in Cyprus, thus signaling for urgent policy making action in this respect. Persisting policy making

recommendations as well as new policy recommendations regarding financial support include:

Similar to GEM 2016/2017:

- Establish or attract investment funds for startups of different maturity levels including pre-seed, seed and more mature businesses that seek to access Series A/B investments. The Government could collaborate with private investors so as to provide funds, manage the advisory board and also administrate the assessment and monitoring committees.
- Extend funding schemes available for translating inventions and research results into commercial products.
- Legalize and/or foster other forms of funding such as crowd-funding.

New:

- Develop additional incentives that will attract foreign investors and promote investment in sectors that demonstrate a potential for growth.
- Update the legal framework and administrative processes of evaluating proposals for financial support.
- Encourage the creation of more angel investors from the local business community
- Provide tax-incentives and other benefits to large businesses for providing early-stage pre-seed funding



to new businesses in their area.

- Enhance funding schemes to provide small scale financial support (e.g. for businesses at the ideation stage that seek for proof of concept, getting access to lawyers and other experts etc).
- Simplify the application procedure for government programs related to new businesses, increase the number and frequency of calls for such programs and accelerate the evaluation process.
- Extend existing funding schemes and training programs targeted to women so as to foster the reintroduction of women that have been on long maternity/child-care leaves in the labor force and orient them towards entrepreneurship.

new enterprises, and encourage the media to promote successful female entrepreneurs.

- Enhance the criteria of national funding calls on entrepreneurship to acknowledge for previous unsuccessful entrepreneurial attempts.
- Formulate policies to support the availability of open data.
- Extend the maternity leave policies to better support female entrepreneurship.
- Boost the incentives provided to airlines to connect Cyprus with the rest of world to foster the closer the collaboration with entrepreneurs, investors and mentors from other countries, and contribute towards transforming Cyprus into the innovation hub between Europe, Middle-East and Africa.

BUSINESS SUPPORT

The results of the APS show that the majority of new entrepreneurs in Cyprus are not particularly optimistic about the growth and job-creation potential of their business. This may be attributed to the relatively small size of the market in Cyprus and the limited, although increased, orientation of new business towards international markets and high-tech products. Despite the fact that compared to last year, the gender ratio of entrepreneurial activity in Cyprus has improved, the results indicate that there is still a notable gender gap on new entrepreneurial activity in Cyprus. These results lead to a number of policy making suggestions including the:

Similar to GEM 2016/2017:

- Support the closer collaboration between academia and industry so as to exchange know-how, co-use of R&D infrastructures and prototyping facilities.
- Modify existing regulation to foster the generation of spin-off companies throughout universities and research centers.
- Create a pool of mentors from the public and private domain that hold hands-on experience and establish relevant procedures for providing easy and quick advice to new and small enterprises.


New:

- Introduce the position of the Chief Scientific Officer or similar, to horizontally coordinate activities relevant to scientific research, innovation and entrepreneurship at national level.
- Establish collaboration at national level with countries that are more active on entrepreneurship e.g. Estonia.
- Create a single information point that will consolidate information on all national activities related to entrepreneurship.
- Promote female entrepreneurship by providing additional incentives e.g. female participation as a parameter for enhancing the funding possibility for

CONCLUSION

Cyprus' participation in the Global Entrepreneurship Monitor enables both the monitoring of the entrepreneurial trends across the years as well as the cross-country comparison entrepreneurial indexes. The results Adult Population Survey (ASP) and the National Expert Survey (NES) conducted this year, shed light on the advantages and burdens of the entrepreneurial ecosystem in Cyprus and contribute to the derivation of related policy making recommendations. GEM 2017/2018 extends the policy making recommendations included in GEM Cyprus 2016/2017 and categorizes them based on their nature into: Education, Government Processes, Financial Support and Business Support. These policy making recommendations can provide guidance and serve as a reference point for the government and contribute on the shaping of the future entrepreneurial and business landscape of the country.

Table A: Entrepreneurial Activity Type in selected countries, GEM 2017/2018 – Percentage of Population Aged 18 – 64 years

 Region		Nascent entrepreneurship rate	New business ownership rate	Total Early-stage entrepreneurial activity (TEA)	EEA	Established business ownership rate	Discontinuation of businesses (% of TEA)
Europe	Bosnia and Herzegovina	2.5	1.4	4.0	0.5	1.4	1.3
	Bulgaria	1.8	2.0	3.7	0.5	6.5	1.3
	Croatia	6.1	2.9	8.9	4.8	4.4	4.0
	Cyprus	3.6	3.8	7.3	1.8	8.9	4.3
	Estonia	13.4	6.2	19.4	9.1	11.4	4.4
	France	2.9	1.1	3.9	3.9	3.6	3.3
	Germany	3.4	2.0	5.3	5.7	6.1	1.6
	Greece	2.3	2.6	4.8	0.9	12.4	5.1
	Ireland	5.8	3.3	8.9	5.5	4.4	3.3
	Italy	2.7	1.7	4.3	2.4	6.0	2.1
	Latvia	9.4	5.1	14.2	4.4	7.7	4.2
	Luxembourg	6.7	2.6	9.1	8.0	3.3	3.2
	Netherlands	4.7	5.4	9.9	7.6	8.6	3.1
	Poland	6.7	2.2	8.9	3.2	9.8	2.8
	Slovakia	8.2	3.8	11.8	2.6	10.0	4.2
	Slovenia	4.0	3.0	6.9	6.0	6.8	2.3
	Spain	2.8	3.5	6.2	1.4	7.1	1.9
	Sweden	5.3	2.1	7.3	6.2	4.2	2.5
Switzerland	4.7	3.9	8.5	4.8	10.5	1.1	
United Kingdom	4.4	4.2	8.4	8.0	6.7	2.6	
North America	Canada	11.3	8.1	18.8	8.2	6.2	6.9
	USA	9.4	4.6	13.6	7.6	7.8	4.0
Africa & Middle East	Egypt	6.5	7.0	12.3	2.2	5.7	10.2
	Israel	8.4	5.1	12.8	8.6	3.3	4.8
	Lebanon	8.6	16.0	24.1	1.4	33.2	6.6
Asia & Oceania	Australia	6.4	5.9	12.2	7.8	9.0	3.8
	China	3.7	6.4	9.9	1.4	6.8	2.8
	Korea	6.2	6.9	13.0	1.9	11.4	2.7
	Thailand	10.6	12.1	21.6	4.5	15.2	9.2

AUTHORS

Ariana Polyviou holds a PhD in Management of Information Systems (Athens University of Economic and Business), MSc in Human-Computer Interaction (University College London) and BEng in Computer Science (University of York). Ariana is a research fellow at the Centre of Entrepreneurship (C4E) of the University of Cyprus. In the past, she has been a postdoctoral fellow at the Department of Business and Public Administration of the University of Cyprus and a visiting researcher at the Department of Management of London School of Economics and Political Science (LSE). She has received several awards and scholarships for her research and she has been as a Marie Skłodowska-Curie fellow during her doctoral studies. Her research interests are relevant to business analytics, digital business strategy, digital transformation, IT decision making in organizations and entrepreneurship. Her research is published in the proceedings of leading conferences in the field of Information Systems and she has received the best paper award at the 2015 Mediterranean Conference in Information Systems. She has taught at the University of Cyprus, Cyprus University of Technology, Open University of Cyprus and Athens University of Economics and Business. Her teaching portfolio includes undergraduate and postgraduate courses on e-commerce, entrepreneurship and innovation, new business models and management of information systems. She has participated in numerous research projects funded by the European Union. She has served as conference chair, member of the program committee, track chair and associate editor in several international academic conferences. She has also been an evaluator for research proposals submitted under the H2020 framework of the European Commission.

Pantelitsa Eteokleous works as an Operation Manager at the Centre for Entrepreneurship (C4E) of the University of Cyprus since January 2017. She previously worked as a research officer in the Research and International Relations Service of the University of Cyprus since April 2010. She holds a Bachelor in Public and Business Administration (University of Cyprus) and Master Degrees in European Law (University of Edinburgh) and European Studies and Diplomacy (University of Macedonia). In 2016, she received her PhD from the University of Leeds in the field of marketing/ management. Her research interests concentrate on the fields of social responsibility, ethics, environmental marketing, and international marketing. Her work has appeared in the International Marketing Review Journal and proceedings of several well-known Marketing Conferences (e.g., the Academy of Marketing Science Annual Conference and European Academy of Marketing). She was also a consortium fellow in the 3rd AIM- AMA Sheth Foundation Doctoral Consortium and worked as a special scientist in the department of Public and Business Administration (University of Cyprus) teaching the undergraduate course "Marketing Research". She participated in a number of European funded projects in the field of education and training.

Marios D. Dikaiakos is Professor of Computer Science at the University of Cyprus. He serves as founding Director of the Centre

for Entrepreneurship of the University, since January 2015. He was Head of the Computer Science Department between 2010-2014. He is also the founding Director of the Laboratory for Internet Computing (2001-today). Dikaiakos received a Ph.D. in Computer Science from Princeton University (1994). He has been a principal institutional investigator or principal investigator for numerous projects funded by the European Union and the Research Promotion Foundation of Cyprus, has published over 170 papers in books, international scientific journals and refereed conference proceedings, and was in charge of the development of several research software systems released internationally. He has co-authored papers that received awards in the 2016 IEEE International Conference on Big Data and in the 2014 International Conference on Service-Oriented Computing.

He is Associate Editor of the Computing journal of Springer and has served as: program chair, co-chair and program committee member in numerous international scientific conferences; independent evaluator of European academic and research institutions; reviewer and evaluator for research proposals submitted to the E.U. and to several national European science foundations, and independent observer of proposal evaluation exercises of the E.U. under Framework Program 7. He is a Senior Member of the Association for Computing Machinery (ACM) and was a member of ACM's Distinguished Speakers Program (2012-2015). More details can be found under: <http://www.cs.ucy.ac.cy/mdd/>.

Kassinis George is an Associate Professor of Strategy at the Department of Business & Public Administration of the University of Cyprus, where he teaches strategic management to professional MBA and undergraduate students. He was educated at Princeton University (MA, PhD), the Massachusetts Institute of Technology/MIT (Master in City Planning/MCP) and Cornell University (AB and BS). His research focuses on the strategic choices organizations make in dynamic environments and the implications of these choices on competitiveness and performance. Specific research interests include: corporate governance; sustainability; social entrepreneurship; corporate social responsibility; energy; health care management; social networks; industrial ecology. He taught at Princeton and MIT as a graduate teaching fellow, held research positions at Princeton and consulted for the World Bank and a variety of private, public-sector, and non-profit organizations, in Cyprus and abroad. He is a founding member of the research Group on Organizations and the Natural Environment (GRONEN), serves on the editorial boards of various academic journals including Organization & Environment (Sage), chairs the board of directors of the University of Cyprus Centre for Entrepreneurship (C4E), and serves on the board of the Research Promotion Foundation (Cyprus). His work has been published in leading journals, including The Academy of Management Journal, Strategic Management Journal, The Journal of Business Ethics, The Journal of Business Research, Industrial and Corporate Change, Production and Operations Management, and in edited volumes and handbooks.

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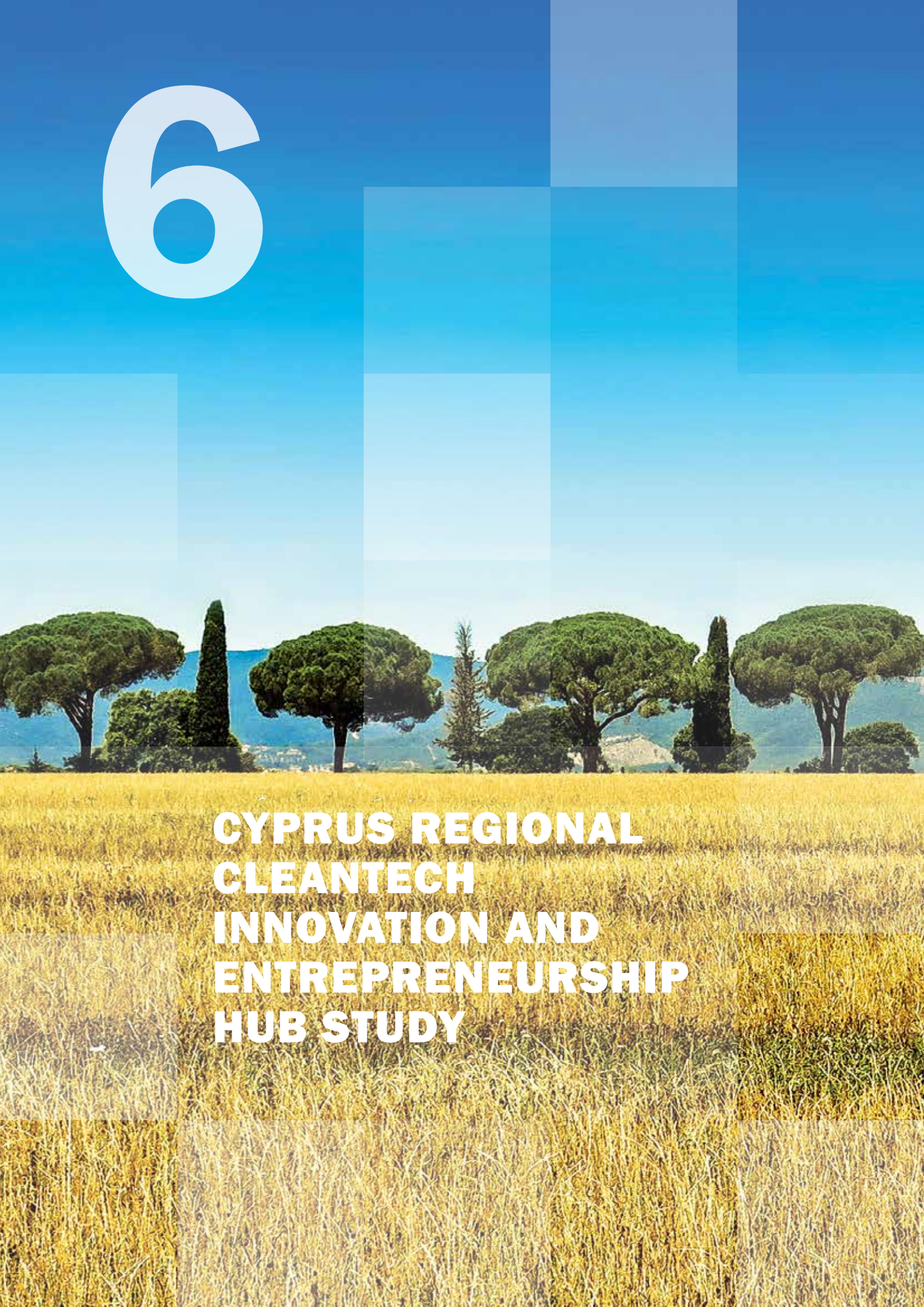
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6



**CYPRUS REGIONAL
CLEANTECH
INNOVATION AND
ENTREPRENEURSHIP
HUB STUDY**



AUTHORS

KARAPATAKI CHRISTINA
YIATROS STYLIANOS
CHARALAMBIDES G. ALEXANDROS

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DISCLAIMER

The information and views set out in this report are those of the authors and do not necessarily reflect the official opinion of the EIT or Climate KIC. The EIT does not guarantee the accuracy of the data included in this study. Neither the EIT, Climate KIC, nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

EXECUTIVE SUMMARY

Over the past five years, there has been significant growth in entrepreneurship activities in Cyprus with networking events, entrepreneurship competitions, startup accelerators and angel financings forming the backbone of the entrepreneurship activities on the island. The entrepreneurship ecosystem is at its early stages of development with government and university stakeholders currently evaluating their role and activities in this space. This study focuses on the cleantech (also known as climate-innovation) sector and provides a roadmap for actions that the various local stakeholders (government, academia, private sector) should take to make Cyprus a regional cleantech innovation and entrepreneurship hub.

The aim of this cleantech study is to (a) investigate and document best practices from around the world, (b) discuss ways in which Cyprus can adapt best practices from other countries to its own economy and, (c) lay down a path with specific actions that must be taken for Cyprus to become a regional Cleantech Innovation and Entrepreneurship Hub for the Middle East and North Africa (MENA) region. By investigating entrepreneurship and innovation programs in seven countries, we have distilled the following five best practices that have applicability to the Cyprus ecosystem.

#1 Independent Innovation Agency

#2 Innovation Funding Mechanisms

#3 Positive Entrepreneurship Culture

#4 Promote Local Startups

#5 Attract External Startups

Recommendations are made throughout this report for initial steps that can be taken to advance Cyprus' entrepreneurship ecosystem; however, it is recognized that the international best practices evaluated here, have taken decades to develop and Cyprus needs a long-term (15 to 20-year) roadmap to reach a similar level of maturity. Particular focus is placed on the key role that Higher Education Institutions, local utility providers and local business accelerators can exercise on promoting the development and adoption of cleantech innovation. Drawing from examples from abroad, we provide concrete recommendations on how local resources can be leveraged to promote Cyprus as a testing and validation hub for energy-related innovation in the MENA region.

Even though this study focuses on the cleantech sector, many of the recommendations made can be applied more generally

to the innovation ecosystem and are necessary steps for the development of the right entrepreneurship environment in Cyprus, which will benefit not only cleantech, but all technology sectors.

1. INTRODUCTION

Cyprus has an opportunity to position itself as a regional cleantech hub in the Middle East and North Africa (MENA) region. Its prime geographic location for harnessing renewable energy resources such as solar and wind, as well as the recent discovery of natural gas, enables Cyprus to explore an "all of the above" energy strategy and a transition to an energy mix with lower greenhouse gas (GHG) emissions. Furthermore, the need for cleantech/climate innovation is made inevitable since Cyprus is an island in a region where climate change increases the risk of drought and water shortage. Establishing the foundation to promote clean energy technology innovation, as well as meeting the European Union climate targets, can present an opportunity for Cyprus to become a cleantech hub generating cleantech innovation and job growth in the region. In order to successfully achieve this goal, there will be a need to rapidly adopt and integrate existing cleantech solutions in Cyprus' energy mix and develop new cleantech solutions that are specific to the Middle East and North Africa (MENA) region. New companies will need to be formed to promote cleantech innovation and the local entrepreneurship culture will play a critical part in the success of this effort. This study explores how Cyprus can set the foundations for a successful entrepreneurship ecosystem with particular focus on cleantech innovation.

In recent years, there has been significant growth in local entrepreneurship activities with networking events, entrepreneurship competitions, startup accelerators and angel financings forming the backbone of the entrepreneurship activities on the island (Global Entrepreneurship Monitor, 2017). Currently, various stakeholders, including the Government of Cyprus, are investigating and applying measures to promote innovation (such as a startup visa and tax incentive schemes) but none are focused on cleantech innovation. The aim of this cleantech study is to (a) investigate and document best practices from around the world, (b) discuss ways that Cyprus can adapt these practices to its own ecosystem, and (c) lay down an action-specific path which will enable Cyprus to become a regional Cleantech Innovation and Entrepreneurship Hub for the MENA region and attract both foreign direct investments and talent in the said region. Recommendations are made throughout for initial necessary steps to advance Cyprus' entrepreneurship ecosystem; however, it is recognized that these international best practices have taken decades to develop and Cyprus needs a long-term (15 to 20-year) roadmap to reach a similar level of maturity. In this report, cleantech is broadly defined to include core sectors such as renewable energy and energy efficiency, but it also includes sustainability technology,

resource conservation, water management, transportation innovation and other technologies that minimize negative effects on the environment.

1. Cleantech Innovation

Venture capital (VC) investment in small, early-stage companies, has played an important role in accelerating the commercialization of game-changing new clean energy technologies around the world. VC, unlike other forms of external finance, can fund startups that face substantial technology risk. Innovative startups in the energy space have high technical risk, require high capital intensity and long development timelines, therefore they depend critically on VC funding to grow their businesses and develop their technologies. Such funding has been essential to the growth of well-known cleantech firms such as Tesla, Nest, and Solar City. The global cleantech industry received a much-needed boost at the United Nations Climate Change Conference (December 2015), where 195 countries adopted the first-ever universal, global climate deal. The agreement sets a global action plan to avoid dangerous climate change by limiting global warming to well below 2°C. Currently, 172 countries have signed the agreement and began adopting it within their own legal systems (UNFCCC, 2017). Mission Innovation, a global initiative of 22 countries and the European Union that aims to dramatically accelerate global clean energy innovation, was also announced in the same month. As part of the initiative, participating countries have committed to seek to double their governments’ clean energy research and development investments over five years, while encouraging greater levels of private sector investment in transformative clean energy technologies (Mission Innovation, 2017).

Looking forward, commercializing new, innovative, clean energy technologies to grow the economy and slow climate change, will require a diverse set of public and private stakeholders leveraging funding sources from both. The high-level focus by the European Commission to address climate change, provides an opportunity to public stakeholders in EU member countries (like Cyprus), to use European level resources and funding to promote their cleantech ecosystem.

2. The Energy & Climate Opportunity in Cyprus

More than 90% of Cyprus’ energy needs are currently met by fossil fuel imports while the country spends more than 8% of its GDP on fossil fuel costs. This presents a national security risk and high susceptibility of the local economy to international fossil fuel prices and market shocks. Cyprus has no electrical or natural gas interconnections with other countries and has been ranked by the European Commission as one of the most vulnerable EU countries in terms of energy dependency and security of energy supply (European Commission, 2013). The EuroAsia Interconnector has been designed to establish the first electricity corridor between the eastern Mediterranean and the EU, ending the energy isolation of Cyprus, Crete and Israel, and contribute

Figure 1: 2015 Cyprus Energy mix for electricity generation (OEB, 2015)

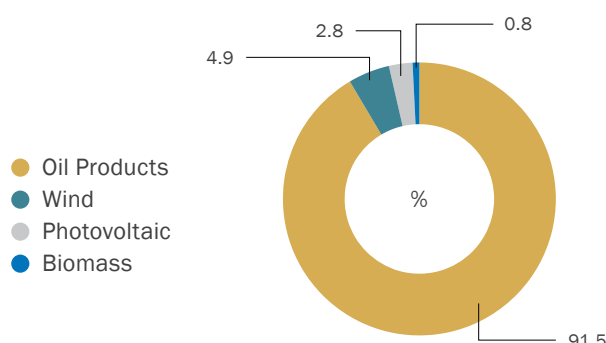
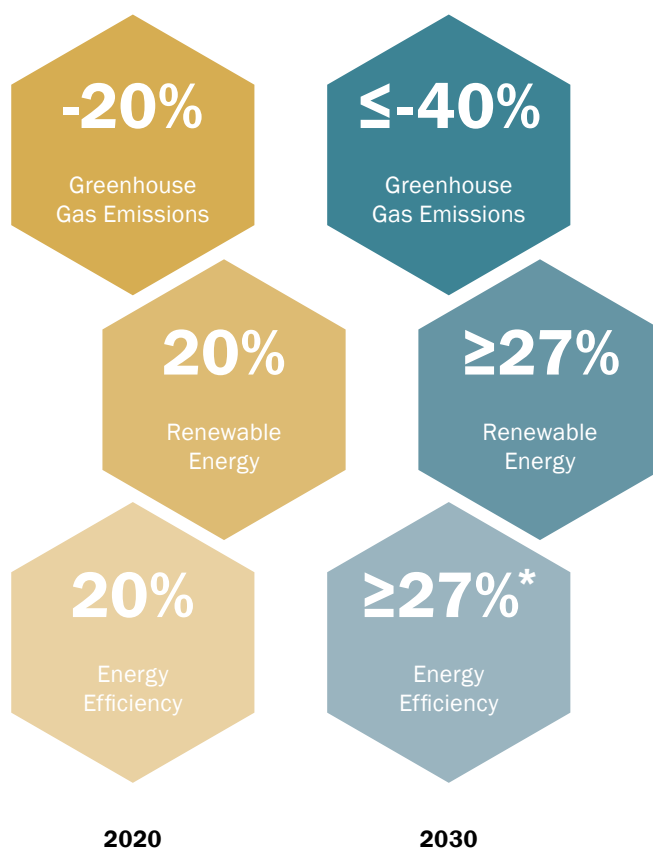


Figure 2: EU Agreed Headline Targets under 2030 Framework for Climate and Energy (European Council, 2014)



significantly to energy supply and security in the region. The EuroAsia Interconnector is supported by the European Commission and received approval from the Energy Regulatory Authorities of Cyprus and Greece in October 2017. Interconnections between Cyprus and Crete and between Cyprus and Israel are expected to be commissioned in 2021 and 2022 respectively (EuroAsia, 2017). Like any large infrastructure project, this is subject to technical risks and potential delays.

Cyprus' energy isolation has created an impetus for the country to develop policies to facilitate transition to renewable energy generation, in order to diversify the existing energy mix. It is important to note that there have been recent discoveries of hydrocarbon resources in Cyprus which will also help reduce the energy dependency risk. Based on Cyprus regulation 2009/28/EC, which was enacted into law in 2013, Cyprus is obliged to achieve the following targets with regards to renewable energy consumption:

13%

renewable energy in gross final energy consumption by 2020

10%

renewable energy in final energy consumption of transport by 2020

16%

renewable energy in electricity generation by 2020

In late 2015, the contribution of Renewable Energy Sources (RES) for electricity generation in Cyprus amounted to 8.5% of total electricity generation (Figure 1) and local agencies state that they are on track to meet the 2020 goals outlined above. However, the Cyprus 2020 goals are still not as aggressive as those set by the EU for the same period of time (Figure 2). Should it continue burning heavy fuel oil and diesel for power generation at current rates, Cyprus will incur carbon emission penalties after 2020, to be imposed by the European Commission (European Commission, 2017).

The key energy systems that will contribute to the higher RES penetration in Cyprus have been outlined in the 2015 Smart Specialization Strategy for Cyprus (DG EPCD, 2015) and involve solar thermal technologies, solar photovoltaic systems, concentrated solar power generation systems and innovative applications of RES in sectors such as tourism and agriculture. Cypriot Institutions, including the University of Cyprus (UCY), Cyprus University of Technology (CUT), The Cyprus Institute (Cyl), Cyprus Research Promotion

Foundation (CRPF), the Electricity Authority of Cyprus (EAC) and Cyprus Energy Regulatory Authority (CERA) participate in various research projects tackling the above challenges and work on initiatives to increase the RES penetration in Cyprus through technology innovation. Further to Cyprus' own targets, the European Union (EU) has also agreed to aggressive targets based on the 2013 Framework for Climate and Energy. By 2018, EU member states must make climate change commitments in support of new, more ambitious EU 2030 targets, shown in Figure 4, which include 40% cuts in greenhouse gas emissions from 1990 levels. These climate action plans need to be implemented by member states by 2020 and achieved by 2030.

Cyprus will need to further revise the existing 2013 national plans for RES penetration in order to adopt even more aggressive RES penetration targets in the local energy system and align with the 2030 EU climate targets. As mentioned earlier, multiple local stakeholders are carrying out studies to enable high renewable energy penetration in the Cyprus energy system, stating ambitious goals. According to the IRENA study conducted on the Cyprus energy system, renewable energy could provide up to 40% of Cyprus' total electricity supply and generate up to 22,000 jobs by 2030 (IRENA, 2015).

3. Need for Cleantech Innovation in Cyprus

The 2030 EU climate targets described in Section 1.2 will require substantial changes to the Cyprus energy infrastructure and energy generation mix. Solutions such as switching to natural gas and liberalizing renewable power generation are two major changes that will be required in order to achieve these goals; however, other entrepreneurship solutions (both technological and business model solutions) are also needed. Cyprus' national grid system faces certain intrinsic and technical limitations that affect RES penetration and the reliability of the energy system such as the lack of interconnections to the trans-European electricity networks, a limitation to the amount of intermittent renewable energy that can be connected to the electricity system, and a lack of RES installations with storage capabilities. To tackle these problems, the country is exploring ways to introduce smart grids in the national network and is looking for projects that could facilitate energy storage. Key stakeholders such as universities and electricity authorities are currently undertaking research to resolve many of these limitations. Some of the solutions include: (i) Smart grids infrastructure in the national network to facilitate both net metering and net billing; (ii) Energy storage projects to facilitate integration of intermittent renewables; (iii) The EuroAsia interconnector; (iv) Microgrid infrastructure for remote locations (solar + storage for small scale residential systems); (v) Demand response solutions; (vi) Infrastructure for fully electric or hybrid vehicles; and, (vii) Combining sustainable energy production opportunities with cyclical industries such as tourism and agriculture.

The above is not an exhaustive list, but it is important to note

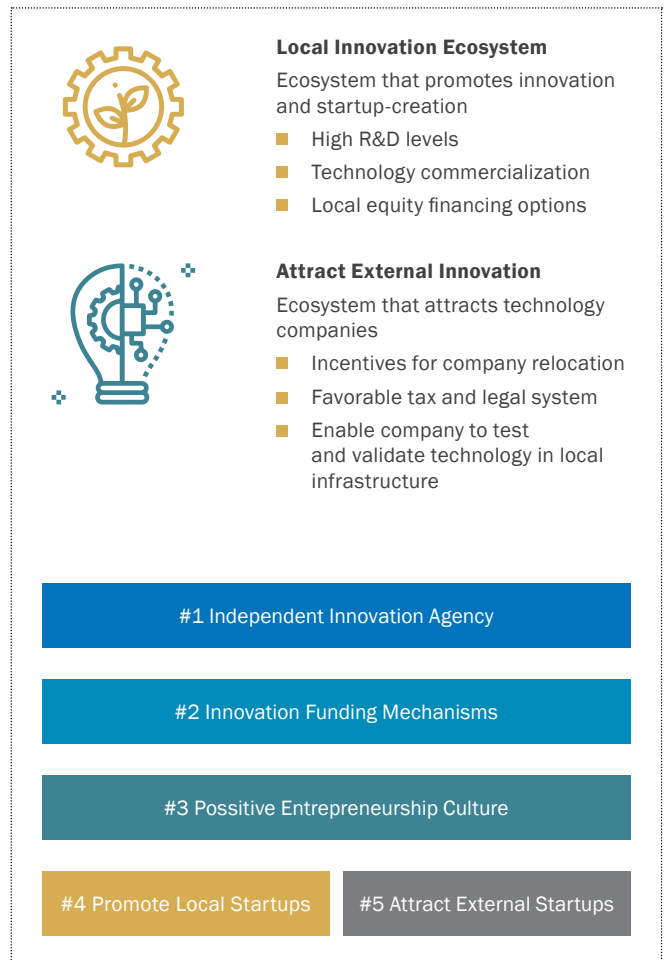
that many of the solutions currently being contemplated, have been implemented abroad and can be adapted to the Cyprus ecosystem through new, innovative startup companies. Cyprus needs to promote new energy technology adoption by introducing the right incentives and regulatory framework both in order to develop the local innovation ecosystem and also to attract innovation from abroad. This report will outline best practices of how other countries have developed their cleantech entrepreneurial ecosystems. The process of locally fostering an entrepreneurship culture and creating local startups is a process that takes decades of development. Given that the Cyprus entrepreneurial ecosystem is still in its early stages of development and that cleantech innovation is needed during the aggressive timelines described above, Cyprus needs to put strong emphasis on attracting external cleantech innovation.

In this article, the best practices of how startups have been attracted to set up operations in foreign countries and how some of those schemes could be adopted in Cyprus will be outlined. Cyprus' isolated utility grids and market economics can present a suitable testing ground for new clean energy/climate innovation technologies. As mentioned above, Cypriot institutions already participate in various research projects creating a vibrant innovative culture. It is important to promote the transition of these research activities into commercialization efforts. This transition could be assisted by incentivizing energy technology startups from abroad to relocate and use Cyprus as a test, validation and certification ground for their energy-based innovations.

2. BEST PRACTICES APPLICABLE TO CYPRUS

In this section, you will find a detailed analysis of the five best practices (Figure 3) identified, along with a discussion on how they can be adapted to Cyprus, as well as recommendations for initial implementation steps. The first three best practices involve building a solid foundation for an entrepreneurship ecosystem and apply to both developing the local innovation ecosystem as well as attracting external innovation from abroad. These three best practices are (1) establishing an independent innovation agency responsible for all innovation activities in the country; (2) setting up innovation funding mechanisms through which startups can receive funding; and, (3) creating a positive entrepreneurship culture through education, training and media. The fourth (4) best practice is specific to local innovation and relates to promoting local startups abroad by helping them connect with international partners or clients and providing resources in order to enable them to market their product abroad or receive investment from foreign investors. The fifth (5) best practice involves attracting foreign companies and foreign entrepreneurs to your country in order to accelerate knowledge transfer in setting up successful startups and jumpstart the local entrepreneurship culture, by exposing local people to successful foreign entrepreneurs.

Figure 3: Five best practices with applicability to Cyprus



2.1 Best Practice #1: Independent Innovation Agency

All countries that have ranked highly on innovation potential in the GCII report (GCII, 2016), have a centralized approach to innovation and have a single central innovation agency managing all innovation activities. The Innovation Agency has dedicated resources to support startups and small to medium enterprises (SMEs) which are at the early stages of company development.

The typical structure for such an organization includes the following characteristics:

- **State Owned** – The Innovation Agency is fully owned by the government and is allocated an annual budget.
- **Independent and Autonomous operations** – The Innovation Agency has decision-making authority with regards to innovation activities and funding schemes to promote local business creation. In many cases, they recruit independent experts for technology evaluation and selection of companies that will end up benefiting from funding schemes. Furthermore, the board members of such organizations, even though potentially appointed by

government bodies, do not work for the government.

- **For profit / Evergreen funds** – Funding that is distributed for company creation is aimed at generating for profit businesses. Some Innovation Agencies are enabled to acquire equity in the companies they support, while others are only enabled to provide grants and business support. In either case, profit generated from running investment or debt activities is returned into the Innovation Agency’s budget, which acts as an evergreen fund to support innovation activities on an ongoing basis.

The Innovation Agency is not responsible for policy formulation but rather provides guidance and helps promote the innovation policy and regulations of their country. Summarizing across the activities seen in other countries, key responsibilities of such Innovation Agencies include: (i) guide country’s innovation policy & raise awareness; (ii) create value by stimulating profitable business development; (iii) provide financing support schemes for innovative businesses; (iv) provide support services such as training and networking opportunities; and, (v) reduce administrative burden for innovation schemes & company creation.

2.1.1 Applicability for Cyprus

During a recent study conducted by the World Economic Forum, access to financing and inefficient government bureaucracy were identified as the top two most problematic factors for doing business in Cyprus (Figure 4). This first best practice attempts to address the latter of these problems.

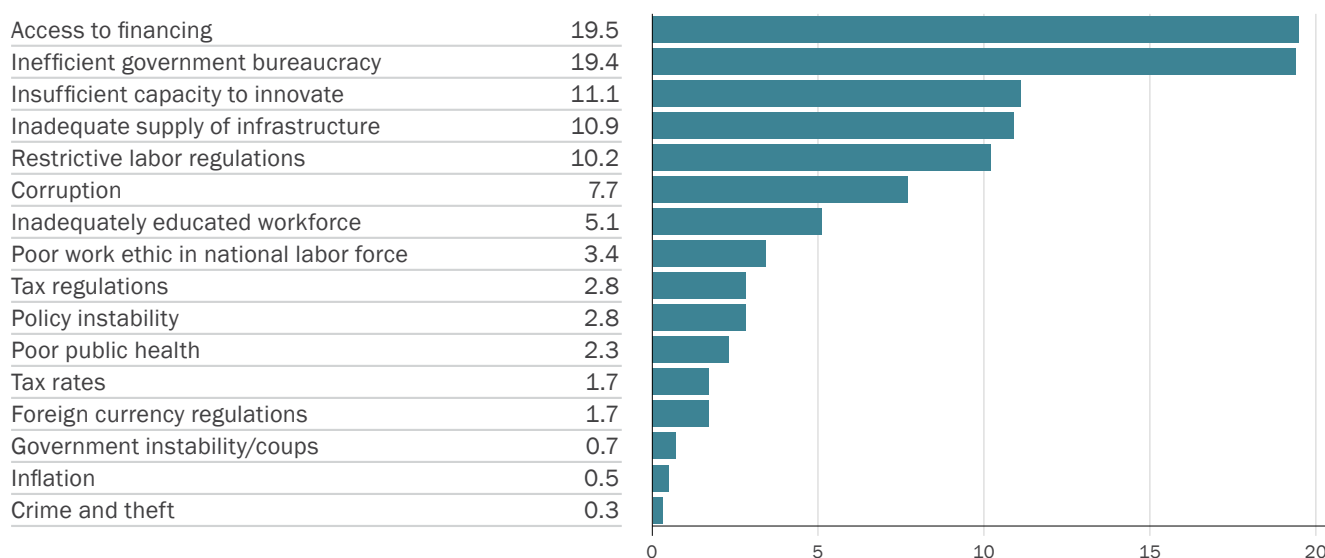
Cyprus has declared a National Policy Statement for the Entrepreneurial Ecosystem in December 2015, which was recently endorsed by the Cyprus Council of Ministers.

There are currently multiple government agencies working on innovation initiatives which include, among others, the Directorate General for European Programmes, Coordination and Development (DGEPCD), the Cyprus Investment Promotion Authority (CIPA), the Cyprus Research Promotion Foundation (CRPF) and the Cyprus Unit of Administrative Reform under the Office of the Presidency, leading to a fragmented set of policies and funding mechanisms as seen in the non-exhaustive list of entrepreneurship schemes announced in 2017:

- Young and Women Entrepreneurship Programme (€8M programme) sponsored by the Cyprus Ministry of Energy, Commerce, Industry and Tourism (MECIT)
- Scheme for Development of New Innovative Products and Services (€10M scheme) sponsored by the Cyprus Ministry of Energy, Commerce, Industry and Tourism (MECIT)
- Innovation Vouchers is a scheme run by CRPF that offers SMEs €2,500 and €5,000 vouchers to cover advisory services, techno-economic studies and R&D expenses in order to advance their business
- Services to support SMEs introducing innovative new products into the market. Services include evaluation of the existing business and support in developing a business plan and path to market. This support is offered through CRPF and the Cyprus Employers & Industrialists Federation (OEB)
- Grants for Social Enterprises have been proposed but are not approved yet. If approved, they will be implemented by the Ministry of Labour.

The proposal to coordinate all innovation activities under a single, well-funded and empowered Innovation Agency will serve in both optimizing the use of government resources and making it easier for early stage companies

Figure 4: Most problematic factor for doing business in Cyprus (World Economic Forum, 2017)



in Cyprus to take advantage of the relevant incentive schemes. There is also a critical need to reduce administrative timelines for evaluation of startups/SMEs. Efficient evaluation and deployment of capital is an important factor for startups and SMEs which are typically cash-flow constrained and heavily depended on timely funding from these financing schemes in order to grow their business. A specialized Innovation Agency will also provide the opportunity for staff to be trained and focused on innovation initiatives and entrepreneurial thinking, as well as target the evaluation of technology-based startups which currently do not get extensively funded by Cyprus government agencies. An alternative evaluation mechanism would be to hire external consultants who are experienced in the field and can evaluate this type of technology-based startup proposals. There have been ongoing discussions in Cyprus for such activities to be centralized under the Deputy Ministry for Growth and Competitiveness reporting directly to the President; however, such a body has not yet been approved.

2.2 Best Practice #2: Innovation Funding Mechanisms

All countries that rank highly on innovation in the GCII ranking have government schemes to provide initial capital to startups and SMEs. These schemes are traditionally managed by an independent Innovation Agency as discussed in Section 2.1. As shown in Figure 4, access to financing is a key issue for doing business in Cyprus. There is a lack of financing from both public and private sources and there are very limited sources for equity-based venture funding. Currently, the only sources of local private financing are through the Cyprus Business Angels (CyBAN) or local accelerators and incubators. The public sector can play an instrumental role in increasing availability of financing for early stage startups companies. Commercialization of university technologies stand to particularly benefit from government support.

Typical (sector-specific) financing schemes can include:

- Grants (non-dilutive funding for market or product validation)
- Innovation loans with matching funding opportunities (i.e. financing 50% of project requirement, if the remaining 50% of funding is sourced from private sources either as cash or in-kind contributions)
- Loans at favourable terms (low interest rates, long payback periods and payback grace periods)
- Equity financing with matching co-investment mechanisms (typically done through Fund of Funds, which will be discussed in detail in this Section)

An alternative approach is to create financial incentives (tax breaks for cleantech R&D and initial pilots, subsidize cost of R&D personnel etc.) but those are typically appropriate for more mature companies.

2.2.1 Applicability for Cyprus

Cypriot SMEs generate 72% of the value in the national economy and employ 83% of the workforce (EIB, 2017). Equity financing is limited and commercial bank loans are the predominant source of financing for Cyprus SMEs. Commercial bank loans are not suitable for financing high risk technology-based startups, since the only collateral businesses can typically offer is intellectual property and they have minimal, if any, revenue during the early stages of development. During a recent study assessing financial instruments in the country, it was determined that demand for equity is growing and is estimated to be €30-35M annually (EIB, 2017). Lack of experience and local skepticism on equity financing means there could be additional hidden demand. The supply of venture financings from local sources (mainly Cyprus Business Angels and local accelerators) was estimated to be less than €10M annually. Risk sharing loans have been available in Cyprus since 2008 through the JEREMIE program and later the Cyprus Entrepreneurship Fund (CYPEF). However, the financial intermediaries selected to distribute these risk-sharing loans, have been commercial Cyprus banks. As described above, commercial banks are not the best suited entities to evaluate and finance technology-based startups due to the lack of near-term revenue stream, high risk technical development and lack of assets in tech startups. In contrast, the funds from the JEREMIE program in Greece included both risk-sharing loans and equity investments and were hence managed by both local commercial banks and local venture capital funds. Other Cyprus government financing schemes that do not depend on commercial banks have recently been put in place and are described in Section 2.1.1.

The Cyprus DG EPCD, in collaboration with EIB, has been assessing the potential of financial instruments on the island, such as the EFSI Fund of Funds described above in the case study for Greece (EIB, 2017). There have been discussions for establishing a financial instrument to support all SMEs, with focus on startups, through financial intermediaries (venture capital funds) such as what is shown in Figure 5. The instrument needs to have an obligation to co-invest in new venture capital funds alongside private investors, in a very similar structure to how Equifund operates. There is also recognition that there is a need for an active fund management team, located in Cyprus, to identify potential financial intermediary companies (venture funds) and mobilize private co-investors to also support these newly formed venture funds. It is also recommended that an external evaluator (such as a consulting or financial advisory firm) is hired to assist the management team and ensure transparency. A structure similar to the Greece Equifund (Figure 5) has already been presented by Cyprus DG EPCD and the EIB in their joint report about assessing the potential use of financial instruments in Cyprus (EIB, 2017). Given that many of the available European

schemes are active for the period 2014-2020, timing is critical in order to enable Cyprus to benefit from these financing opportunities and promote venture capital formation. Due to the short timeline and the lack of legal, regulatory and administrative infrastructure within Cyprus to manage these activities, the country should rely upon the administrative capacity of the EIB Group.

2.3 Best Practice #3: Positive Entrepreneurship Culture

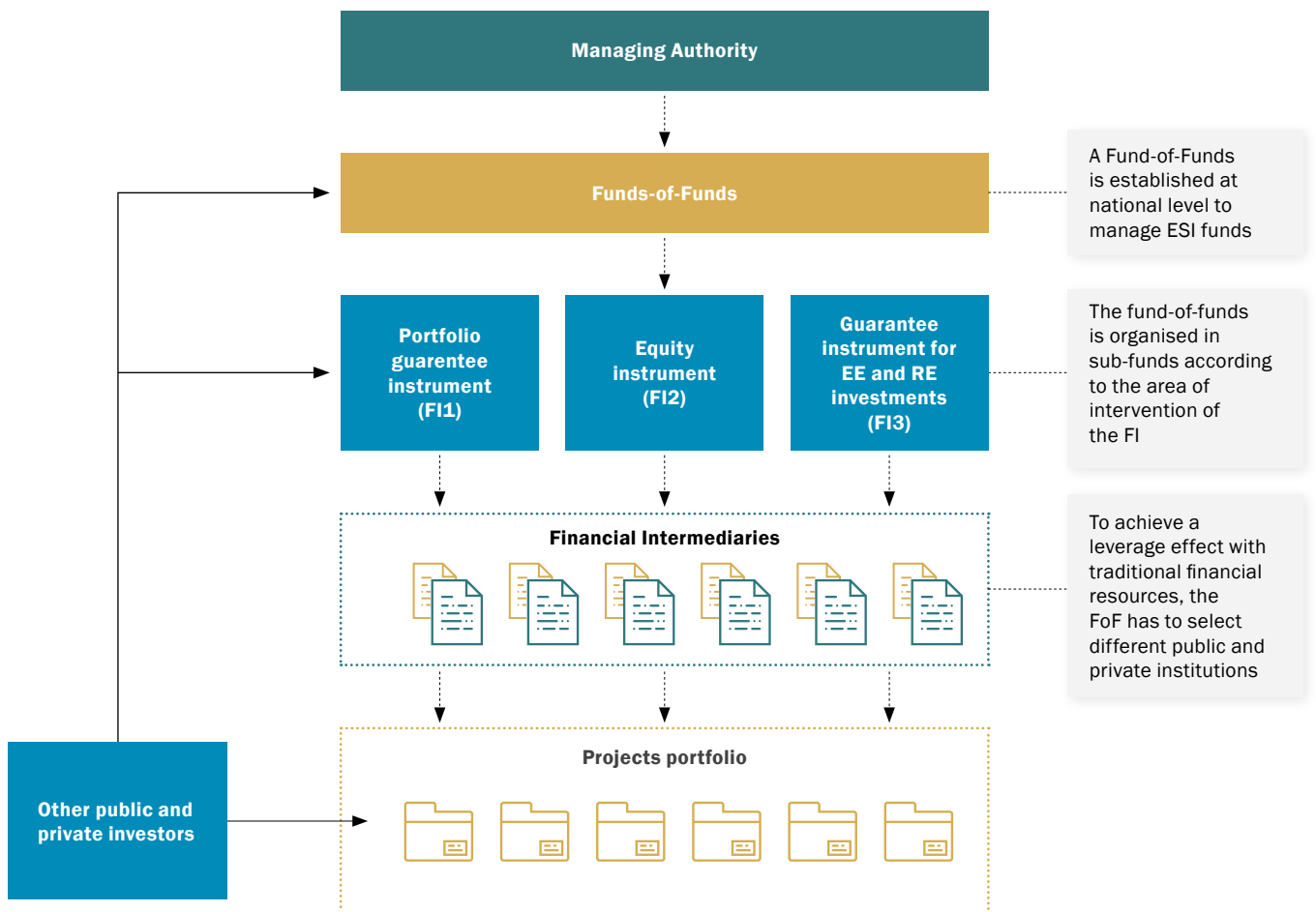
An extremely important element for creating a new entrepreneurial ecosystem is promoting of a positive entrepreneurship culture. Countries that rank highly in terms of innovation and entrepreneurship also foster a culture where entrepreneurship is an accepted profession. If a startup does not succeed in developing into a stand-alone business, the experience is seen as incredibly valuable knowledge instead of being considered a mark of failure. This culture is incredibly pronounced throughout the United States and Israel. Four focal points for this best practice target Education, Inventors, Local Accelerators and Incubators as well as Media, Public Awareness and Innovation Culture. For Education it is necessary to have entrepreneurship courses at both secondary education and university level, to combine

university activities and support nation-wide business idea/plan competitions, support vocational training programs for young professionals to acquire entrepreneurship skills and promote the formation of Technology Transfer Office(s) through establishing regulations for the commercialization of university research. Along the same lines, academics should be empowered to pursue activities related to the commercialization of research and supported to found or contribute to university spin-outs through grants and loans, as well as given financial incentives to promote patenting activities in public universities. Furthermore, local accelerators and incubators that focus on specific technological themes should be supported, while high level government and media support should be given to entrepreneurship activities.

2.3.1 Applicability for Cyprus

In Cyprus, studies have shown that there is high entrepreneurial intention, since greater than 70% of the population believe entrepreneurship is a good career choice ((Global Entrepreneurship Monitor, 2017). This has been achieved with relatively limited representations of entrepreneurship in the local media. However, it is

Figure 5: FoF Governance options for Cyprus (EIB, 2017)



important to convert this high level of entrepreneurial intention into company creation activities. Unfortunately, in 2017 only 17% of the population considered starting a company (Global Entrepreneurship Monitor, 2017). The culture is not ready to support entrepreneurship activities and about 50% of the population stated that their main reason for not starting a company is fear of failure. Out of the five best practices, promoting entrepreneurial culture is the one that can be most easily addressed in Cyprus since many activities are already taking place through public and private stakeholders:

- **Ministry of Education**

- Digital Entrepreneurship Competition, Student Enterprise competitions
- Cyprus Junior Achievement Award
- Military activities – free series of entrepreneurship lectures for soldiers in the military

- **Cyprus Universities**

- Offering certificates, workshops and/or minor degrees in entrepreneurship
- Support students and researchers to participate in national and European business competitions
- Cyprus Entrepreneurship Competition, European Innovation Academy, Start Up Weekend
- Centre for Entrepreneurship (C4E), University of Cyprus
- Innovation & Technology Transfer Office (INTENT) at Cyprus University of Technology
- Centre for Entrepreneurial Development and Research, UCLAN Cyprus
- Law currently in discussion in Cyprus Parliament for commercializing university research from public universities and creation of spin offs

- **Cyprus Research Promotion Foundation (CRPF), RESTART funding program 2016-2020**

- **Local accelerators and incubators**

- Chrysalis LEAP, Climate Launchpad
- IDEA Bank of Cyprus Incubator
- Gravity Ventures

2.4 Best Practice #4: Promote Local Startups Abroad

Countries with small domestic markets such as Israel and Ireland have established their entrepreneurship activities with a focus on external markets and exports. This has been a critical element in growing their innovation economy and enabling the formation of scalable technology companies. Startups with a focus only on the domestic market would have a very limited market size and eventually valuation, thus not attracting foreign



venture capital for growth. Training scholarships and funding schemes in Israel and Ireland are often conditional on business plans focusing on sales and expansion strategy in international markets. In addition to targeting larger markets abroad, incentivizing local startups in order to establish relationships with customers and investors abroad, enables a large amount of knowledge transfer. The local startups are able to interact with entrepreneurs in countries where entrepreneurship is more widely spread and learn from their experiences. There are a few schemes that can be put in place to promote local startup expansion to international markets. These schemes are usually managed by the local Innovation Agency, proposed in Best Practice #1, and include:

(i) Trade missions: Government-sponsored trips for startups to meet potential clients abroad, (ii) Innovation Agency develops relationships with international clients and provides introductions to SMEs, (iii) Innovation Agency develops catalogue of local startups and funding needs that is distributed to key innovation organizations, potential clients and corporate organization abroad, (iv) Innovation Agency provides funding, typically in the form of a grant, for startups selected to participate in trade trips (typically 3-6 months) to work, perform customer surveys and train in international markets, (v) Innovation Agency provides funding, typically in the form of a grant, but also the relevant connections for startups to travel and join international accelerator programs abroad. Networks such as InnoEnergy and Incubate Energy can be a conduit to provide these opportunities for EU and US markets, and (vi) Attract foreign direct investment, that invest in local startups and help them expand operations abroad.

2.4.1 Applicability for Cyprus

Cyprus' nascent entrepreneurship ecosystem, particularly in cleantech innovation, means that there is a very limited number of mature startups that can benefit from exposure abroad. The limited size of the sector also means that the cost of efforts to promote startups abroad may not be justified at this point. There have been some efforts from the Cyprus – US Chamber of Commerce (and Cyprus Trade Chambers in other countries) to develop a strategy for collaboration and promotion of startups. In December 2016, the Cyprus-US Chamber of Commerce held an event where they invited six Cyprus startups to present to US based, high net worth Cypriots (Figure 6). Many of the investors in the room had acted as business angels and investors in Cypriot-owned startups in the past. Due to this being the first event of its kind, only startups that were already revenue making and were able to independently finance the cost of the trip had the opportunity to attend. Many managed to secure follow-up meetings with investors and introductions to potential corporate partners. More recently, CIPA and CRPF jointly funded three Cypriot start-ups to attend the popular Web Summit held in Lisbon, Portugal in November 2017.

Figure 6: Event held in New York in December 2016 to promote Cypriot startups



2.5 Best Practice #5: Attract External Startups

Many countries have created an ecosystem that attracts foreign startups and immigrants setting up companies in their country. In nascent entrepreneurship ecosystems, it is important to create success examples and have access to experienced entrepreneurs who can train other local entrepreneurs. One way to achieve this, is to create legal and tax incentives for startups and experienced entrepreneurs to relocate.

Here is a list of some of the major plans adopted in other countries:

- **France:** Established the French Tech visa and set up Europe's largest incubator Station F in 2017
- **Ireland:** Implemented tax and legal incentives for favorable relocation of corporations
- **Denmark:** Provides favorable health and education benefits and Visa for Relocation of founders
- **United States:** Set up the International Entrepreneur Rule to enable foreign entrepreneurs to start companies in the US

In this section, we will focus on the initiatives undertaken by France over the last year to attract foreign entrepreneurs and propel France into becoming Europe's tech hub.

2.5.1 Applicability for Cyprus

The Cyprus business environment is advanced in this category since there is a favorable tax and legal regime for setting up companies, with the local corporate tax of 12.5% being one of the lowest in the European Union (matching the corporate tax rate of Ireland, and only beaten by Bulgaria that has a corporate tax of 10%) (Tax Foundation, 2016). In 2017, the Cyprus Unit of Administrative Reform working under the Office of the President initiated two schemes in order to attract foreign entrepreneurs and investors in Cyprus (Reform, 2017). One is the Startup Visa program in 2017, allowing foreign, non-EU founders and entrepreneurs to apply and receive a 2-year residency permit as well as support in setting up their businesses in Cyprus, for up to 150 awardees annually. The second program is a tax incentive for investors (individuals or funds) who invest in innovative small and medium-sized enterprises. Lastly, Cyprus also has a favorable tax treatment for income that is generated through royalties from patents (intellectual property) or the licensing of software.

However, in order for Cyprus to attract cleantech startups, there needs to be a technical competitive advantage that will make it a more desirable destination, specifically for clean energy startups. One such advantage would be to allow cleantech startups to use university facilities or local energy infrastructure (i.e. transmission and distribution grid) or advanced certification labs for testing and validation of their technology in Cyprus. One of the largest challenges cleantech startups face is independent technology validation in real-world testing environments. Being able to certify the technology and share results with prospective investors, customers and corporates partners is an extremely valuable benefit. Such testing and demonstration projects can also help facilitate knowledge transfer and provide access to innovative technology to Cyprus stakeholders. One such example in Cyprus is the Research Center for Sustainable Energy, FOSS, of UCY, which has testing facilities for photovoltaics (PV) systems and power systems and regularly provides

testing and validation services to 3rd party customers. Full certification is a costly activity, therefore startups and 3rd parties choose to undergo this type of testing at the early stages of their product development cycle. FOSS has set up collaborations with local partners such as the Electricity Authority of Cyprus (EAC) and the Cyprus Energy Regulatory Authority (CERA), as well as private corporations such as Honeywell and Q-Cells. Over the past 2 years, various startups used FOSS to test their technology. These startups were from Sweden, UK, Austria and Israel, and they typically find out about FOSS' capabilities through personal contacts of the researchers of participation in joint projects (UCY FOSS, 2017). According to their website, the vision of the FOSS' center is to create a test-bed and living lab in the areas of energy and sustainability and to be a major driver to facilitate commercialization of innovation in energy-related fields in Cyprus, Europe and MENA.

On a similar note, in 2016, CERA decided to examine, evaluate and license applications for innovative renewable energy technology of a total installed electrical power of up to 200kW. This scheme will enable new emerging technologies to test and validate their performance on an existing, isolated grid (CERA, 2016). Lastly, the Ministry of Energy, Commerce, Industry and Tourism (MECIT) established the Applied Energy Laboratory (AEL), a state organization, that is a testing and certification laboratory for solar thermal systems. It assists manufacturers to improve their products while providing testing and certification reports. The main purpose of AEL is to provide certification but it is possible that startups could use the facilities to evaluate the performance of solar thermal technologies. We have not been able to verify AEL's recent activity.

3. SPECIFIC CLEANTECH SCHEMES WITH APPLICABILITY IN CYPRUS

In this section, we will discuss two cleantech specific schemes in the United States that are sponsored by government resources and are geared towards supporting cleantech innovation. Both of them have been developing for a number of years and have sufficiently more resources than what is available in Cyprus for cleantech innovation. However, we believe they can be used as guidelines for the type of activities that can take place in universities or incubators in Cyprus to promote cleantech entrepreneurs.

3.1 Lab-Embedded Entrepreneurship Programs

The Lab-Embedded Entrepreneurship Programs (LEEPs) take top entrepreneurial scientists and engineers and embed them within United States national laboratories to perform early-stage research and development that may lead to the launch of energy or manufacturing businesses in the future (DOE, 2017a). The program was set up by the Department

of Energy's (DOE) Energy Efficiency and Renewable Energy (EERE) division, in order to provide an institutional home for innovative postdoctoral researchers to build their research into products and train to be entrepreneurs. In addition to access to scientific tools and work/lab facilities, the program trains innovators to develop entrepreneurial acumen and skills, while introducing them to the ecosystem of partners needed to facilitate commercial and investment opportunities. The dual focus on early-stage R&D and entrepreneurial development provides innovators with the platform they need to take their ideas from the lab and onto the commercialization pathway.

Cyprus does not have national labs in the same way the United States do, but it does have public universities that conduct a significant amount of energy research and are publicly funded. Getting ideas from programs such as LEEP, could help authorities in Cyprus develop an equivalent scheme adapted for local resources. A two-year Cyprus scheme could be designed to support university post-doctoral researchers who have hard science ideas that can be turned into products. The scheme can involve a living stipend, access to university labs and mentorship by professors from the business schools at the university. The scheme can be open to local researchers or individuals who are incentivized to relocate and continue their work in Cyprus. CPRF, which is the organization that supports research in Cyprus, already has grants that support innovation; however, these tend to be limited to the R&D phase, and not the commercialization phase. In order for this scheme to be successful, as shown by LEEP, a dedicated management team is needed to run the program; at the same time, focus needs to be placed on admitting motivated researchers with a strong ambition in commercializing their work.

3.2 Elemental Excelsator

Elemental Excelsator (EEx) is a Hawaii-based accelerator program for cleantech startups founded in 2012. It supports startups that work across systems which affect infrastructure, the environment, and quality of life, including energy, water, agriculture, and transportation systems. It focuses on "place-based innovation" which means it looks at challenges of a specific place and then works with the community and startups to solve these challenges using innovative solutions. Startups that are chosen to participate can choose whether they want to relocate to Hawaii but they are encouraged to spend at least 6 weeks there. EEx has connections and can provide the most value to startups who see Hawaii or Asia Pacific as strategic growth markets. When it first began in 2012, EEx (then called Energy Excelsator) was heavily focused on technologies that could provide innovative solutions for the Hawaiian energy system. Hawaii, being a collection of islands, has no fossil fuel resources and depends on importing all the fossil fuel it needs. Electricity in Hawaii costs at least 2.5 times more than it does in continental US (EIA, 2017), meaning young energy companies can compete economically, and the government is motivated to become less oil dependent.

In addition, Hawaii's environment provides the opportunity for solar, wind and tidal alternative energy sources while Hawaii's military bases provide locations to test new energy technology systems (Techcrunch, 2013). Furthermore, Hawaii has a target to achieve a 75% clean energy goal by 2030 and a target of 100% renewable portfolio standard by 2045, making it the ideal testing ground for green tech startups (Venture Beat, 2013). Initial funding for EEx was provided by the US Department of Defense Office of Naval Research (who was both an investor and a customer for the technical solutions), the US Department of Energy and Hawaii's State Energy office. One of the initial corporate partners was Hawaiian Electric.

Certain parallels can be drawn between the Hawaiian and the Cyprus energy systems. Cyprus currently also depends heavily on oil imports to cover its energy needs (until it develops the fossil fuel resources found within its economic zone), it is an ideal location for wind and solar energy deployments and has placed aggressive goals for renewable energy deployment. Lastly, the isolated nature of both national grid systems allows them to be used as testing grounds for new technologies and military bases in both locations can be early technology adopters. Cyprus does not have significantly different electricity prices compared to the EU, although in 2017 electricity prices were about 20% higher than the Euro area average for non-household electricity (Eurostat, 2017). The important benefit that Cyprus could present is that new technology solutions such as smart metering, net billing, electric vehicle charging infrastructure etc. have not yet been integrated at scale on the island and this can present an opportunity for young companies wanting to prove their solution in a market that is not yet exposed to these types of technologies.

There is currently no equivalent effort that could provide this level of connections and support in the Middle East and North Africa (MENA) region. This presents an opportunity for an area like Cyprus to fulfil that role and create a parallel effort to promote cleantech innovation in the MENA region.

5. CONCLUSIONS

The aim of this cleantech study was to (a) investigate and document best practices from around the world, (b) discuss ways that Cyprus can adapt best practices from other countries to its own economy, and (c) lay down a path with specific actions that must be taken for Cyprus to become a regional Cleantech Innovation and Entrepreneurship Hub for the Middle East and North Africa (MENA) region. Particular focus was placed on the key role that universities, local electricity authorities and local accelerators can have on promoting the development and adoption of cleantech innovation. It is important to note that many of the international best practices evaluated in this report have taken decades to develop and Cyprus needs a long-term 15 to-20-year roadmap to reach a similar level of maturity. The recommendations made in this report should

be viewed as part of this long-term strategy. By investigating entrepreneurship and innovation programs in seven countries, we distilled the following five best practices that have applicability to the Cyprus ecosystem.

Even though this study focuses on the cleantech sector, some of the recommendations and suggestions made can be applied more generally to the innovation ecosystem and are necessary steps to develop the right entrepreneurship environment in Cyprus, which will benefit not only cleantech but all technology sectors. This strongly applies to Best Practice #1: Independent Innovation Agency and Best Practice #2: Innovation Funding Mechanisms. We analyzed the organizational structure and programs that were adopted by Innovation Norway, Enterprise Ireland and Enterprise Greece in their respective countries. All three countries formed an independent Innovation Agency that manages local innovation activities and created funding mechanisms for local startups to de-risk and develop their products. Through these schemes, they were able to leverage public funding and attract private funding in financing local startups. Best Practice #1 and Best Practice #2 are seen as fundamental backbones to developing an innovation economy and promoting entrepreneurship. The relevant authorities in Cyprus need to initiate detailed workshops with organizations such as Innovation Norway, Enterprise Ireland and Enterprise Greece in order to develop a plan for an equivalent Innovation Agency in Cyprus.

#1 Independent Innovation Agency

#2 Innovation Funding Mechanisms

#3 Positive Entrepreneurship Culture

#4 Promote Local Startups

#5 Attract External Startups

Best Practice #3: Creating a positive entrepreneurship culture through education, training and media, is also not specific to cleantech but is a necessary step to developing a local entrepreneurship ecosystem. This is an area where activities in Cyprus are already advanced. Over the past five years, there has been significant growth in local entrepreneurship networking events, entrepreneurship competitions and startup accelerators. Expanding on the positive progress already made in this space, renders recommendations in Best Practice #3 the easiest to achieve. Particular focus is placed on the key role that academia and local accelerators can have on promoting the development and adoption of cleantech innovation and entrepreneurship culture in general. An argument is made in favor of combining entrepreneurship activities across all Cyprus universities,



supporting university entrepreneurship through government funding and patenting incentives, and supporting inventors in academia to commercialize their research by establishing the relevant regulatory framework. More exposure to entrepreneurial activities can also be given through the local media by highlighting existing accelerators and incubators or local vocational training courses. Many of the existing private accelerators are at the stage where they can start forming partnerships with similar institutions abroad, such as InnoEnergy, to promote knowledge transfer and expand training opportunities.

Out of the five best practices presented in this report, Best Practice #4: Promoting local startups is the most challenging and the one that is not able to show much progress until the other four best practices are addressed. In most cases, Cyprus startups, particularly in the cleantech sector, are not yet advanced enough to benefit from connections with international partners or clients. However, everything described in this report is a long-term effort, therefore some actions can be taken to initiate and cultivate international relationships that will be useful in the future. Working with groups such as the Economic Diplomacy unit in the Cyprus Ministry of Foreign Affairs can help accelerate relationships with international innovation organizations. The last best practice, Best Practice #5: Attracting external startups, involves attracting foreign companies and foreign entrepreneurs to your country in order to accelerate knowledge transfer in setting up successful startups and jumpstart the local entrepreneurship culture by exposing local people to foreign entrepreneurs. This is particularly important to enable and accelerate cleantech innovation in

Cyprus. The current Cyprus energy mix is heavily depended on fossil fuel imports and aggressive climate targets for renewable energy penetration are being put in place both by the Cyprus government and the European Commission. In order to meet those targets, both conventional energy technologies and innovative cleantech startup solutions will be necessary. Given that the Cyprus entrepreneurial ecosystem is still in its early stages of development and that cleantech innovation is needed during an aggressive timeline, Cyprus needs to put strong emphasis on attracting external cleantech startups.

Cyprus' isolated electricity grid and favorable wind and solar conditions for deploying renewable energy technology make Cyprus a suitable testing ground for new clean energy technologies. Cypriot bodies are already participating in various research projects creating a vibrant innovative culture, and as discussed in the report, multiple organizations are either already offering or could provide access to testing facilities. This could be developed into a unique advantage designed to attract energy technology startups to relocate and use Cyprus as a test, validation and certification ground for their energy-based innovations. In this report, we discussed two key cleantech programs that helped develop a similar environment in the United States.

Creating an active entrepreneurship ecosystem, offering relocation incentives for cleantech startups and providing access to a testing ground for clean energy technologies will help promote Cyprus as a regional Cleantech Innovation and Entrepreneurship Hub for the Middle East and North Africa (MENA) region.

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