CYPRUS REGIONAL CLEANTECH INNOVATION AND ENTREPRENEURSHIP HUB STUDY
The Cyprus Regional Cleantech Innovation and Entrepreneurship study was commissioned by the Cyprus University of Technology (CUT) and received financial support by Climate-KIC through the EIT Regional Innovation Scheme (EIT-RIS) in Cyprus.

The author would like to thank the Cyprus EIT-RIS partners (CUT, Chrysalis LEAP and the Cyprus Energy Agency) and the following individuals and/or organizations for their help in collecting all the necessary information for this report:

Cyprus University of Technology - Dr. Alexandros Charalambides
Presidency, Unit of Administrative Reform, Cyprus – Mrs. Irene Piki and Mrs. Elena Damianou
Ministry of Energy, Commerce, Industry and Tourism, Cyprus – Mr. Constantinos Karageorgis
Cyprus Investment Promotion Agency – Mrs. Natasa Pilides and Mr. Marios Giorgoudis
Cyprus Employers & Industrialists Federation – Mrs. Anthi Charalambous
Ministry of Foreign Affairs, Cyprus – Mrs. Frances Lanitou
Mr. George Saveriades
Directorate General for European Programmes, Coordination and Development
Cyprus Research Promotion Foundation
Enterprise Greece – Mrs. Demetra Pragalou
Innovation Norway – Mr. Pål Aslak Hungnes
Enterprise Ireland – Mrs. Paula Maguire
Cleantech Group – Mr. Chris Sworder

DISCLAIMER

The information and views set out in this report are those of the author 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 sector and provides a roadmap for actions that the various 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 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. By investigating entrepreneurship and innovation programs in seven countries we distill the following five best practices that have applicability to the Cyprus ecosystem.

Best Practices Applicable to Cyprus

§ Ecosystem that promotes innovation and startup creation
¤ High R&D levels
¤ Technology commercialization
¤ Local equity financing options

§ Ecosystem that attracts technology companies
¤ Incentives for company relocation
¤ Favorable tax and legal system
¤ Enable company to test and validate technology in local infrastructure

Local Innovation Ecosystem

Attract External Innovation
#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 in this report have taken decades to develop and Cyprus needs a long-term 15-20 year roadmap to reach a similar level of maturity. Particular focus is placed on the key role that universities, local electricity authorities and local accelerators can have on promoting the development and adoption of cleantech innovation. Drawing from examples from abroad we are giving 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 to develop the right entrepreneurship environment in Cyprus, that will benefit, not only cleantech, but all technology sectors.
# Table of Contents

EXECUTIVE SUMMARY .................................................................................................................. 3  
Table of Contents .......................................................................................................................... 4  
1 Introduction ................................................................................................................................... 5  
1.1 Cleantech Innovation .................................................................................................................... 5  
1.2 The Energy & Climate Opportunity in Cyprus ........................................................................... 7  
1.3 Need for Cleantech Innovation in Cyprus .................................................................................. 9  
2 Cleantech Innovation: Top Country Performers ............................................................................. 11  
3 Best Practices Applicable to Cyprus ............................................................................................... 14  
3.1 Best Practice #1: Independent Innovation Agency ............................................................... 15  
3.1.1 Applicability & Recommended Actions for Cyprus .......................................................... 18  
3.2 Best Practice #2: Innovation Funding Mechanisms ............................................................ 20  
3.2.1 Applicability & Recommended Actions for Cyprus .......................................................... 22  
3.3 Best Practice #3: Positive Entrepreneurship Culture ............................................................ 25  
3.3.1 Applicability & Recommended Actions for Cyprus .......................................................... 30  
3.4 Best Practice #4: Promote Local Startups Abroad ............................................................... 32  
3.4.1 Applicability & Recommended Actions for Cyprus .......................................................... 33  
3.5 Best Practice #5: Attract External Startups .............................................................................. 35  
3.5.1 Applicability & Recommended Actions for Cyprus .......................................................... 37  
4 Specific Cleantech Schemes with Applicability in Cyprus .......................................................... 39  
4.1 Lab Embedded Entrepreneurship Programs .......................................................................... 39  
4.2 Elemental Excelerator ............................................................................................................. 42  
5 Conclusions ................................................................................................................................. 44  
6 References .................................................................................................................................... 46
1 Introduction

Cyprus has an opportunity to position itself as a regional cleantech hub in the Middle East and North Africa (MENA) region. Cyprus’ 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 transition to an energy mix with lower greenhouse gas (GHG) emissions. 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 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. In this study, we explore how Cyprus can set the foundation for a successful entrepreneurship ecosystem with particular focus on cleantech innovation.

In the recent 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. 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 the actions that are taken are not focused on cleantech innovation. With the current study, we will document what actions are needed over the next 15-20 years to promote Cyprus’ entrepreneurship ecosystem but also what actions can allow Cyprus to focus on the cleantech ecosystem and attract both foreign direct investments and talent in the MENA region.

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 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. 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 in this report have taken decades to develop and Cyprus needs a long-term 15-20 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 broader themes such as sustainability technology, resource conservation, water management, transportation innovation other technologies that minimize negative effects on the environment.

1.1 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. Venture capital, unlike other forms of external finance, can finance 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.

From 2010 to 2016, $55 billion has been invested in cleantech startups worldwide (Cleantech Group, 2016a) with the United States leading in terms of investments amount compared to any other country.
Figure 1: United States – Total Cleantech Investment and Deal Volume 2011-2016 (Brookings, 2017)

Part of the reason that helped promote the substantial cleantech VC investment in the United States shown in Figure 1, is the existence of a large number of incubators and accelerators that promote the development of clean technology (Figure 2). Incubators tend to work with early-stage start-ups over 1-2 years providing office space, financial and marketing services, venture capital and angel investor introductions, and a network of local business leaders, industry experts and mentors. Accelerators provide rigorous 3-4 month programs preparing startups for venture funding and commercialization. These organizations benefit both the entrepreneurs and investors since they allow startups to be more capital-efficient by utilizing pre-existing labs and networks. For investors, these organizations are pre-vetting cleantech startups to construct cohorts of the most promising startups for future deal-flow. The growth in the US is a blueprint and shows the importance of incubators and accelerators in instigating the formation of early stage companies in new entrepreneurship ecosystems and specifically helping enable investments in the cleantech sector.

Figure 2: Cleantech focused Innovation hubs in the US 2005 – 2016 (Cleantech Group, 2016b)

The global cleantech industry received a much-needed boost in December 2015, at the United Nations Climate Change Conference, 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 was also announced in December 2015. Mission Innovation is a global initiative of 22 countries and the European Union that aims to dramatically accelerate global clean energy innovation. 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 both 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.

1.2 The Energy & Climate Opportunity in Cyprus

More than 90% of Cyprus’ energy needs are currently met by fossil fuel imports and Cyprus spends more than 8% of the country’s 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). For this reason, 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 will vastly contribute 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. The interconnection between Cyprus and Crete is expected to be commissioned in 2021 and the interconnection between Cyprus and Israel is expected to be commissioned in 2022 (EuroAsia, 2017). Like any large infrastructure project this is subject to technical risks and potential delays.

Cyprus’ energy isolation has created an impetus for Cyprus to develop policies to 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 3) 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 2020 (Figure 4). After 2020, Cyprus will incur carbon emission penalties, to be imposed by the European Commission, if it continues burning heavy fuel oil and diesel for power generation at current rates (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 bodies, including the University of Cyprus (UCY), Cyprus University of Technology (CUT), The Cyprus Institute (CyI), Cyprus Research Promotion Foundation (CRPF), Electricity Authority of Cyprus (EAC) and Cyprus Energy Regulatory Authority (CERA) are participating in various research projects tackling the above challenges and working 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 implement 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 get in-line with the 2030 EU climate targets. As mentioned earlier multiple local stakeholders are carrying out studies for enabling 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).
1.3 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:

- Smart grids infrastructure in the national network to facilitate both net metering and net billing
- Energy storage projects to facilitate integration of intermittent renewables
- The EuroAsia interconnector
- Microgrid infrastructure for remote locations (solar + storage for small scale residential systems)
- Demand response solutions
- Infrastructure for fully electric or hybrid vehicles
- 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 that are 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 to both develop the local innovation ecosystem and also attract innovation from abroad (Figure 5). 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 report, we will outline 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. Cyprus’ isolated electricity grid and market economics can present a suitable testing ground for new clean energy technologies. As mentioned above, Cypriot bodies are already participating 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 Cleantech Innovation: Top Country Performers

The Cleantech Group recently published the Global Cleantech Innovation Index 2017 (GCII) (Cleantech Group, 2016), ranking the cleantech innovation potential of 40 countries. The ranking shown in Figure 6 was used as a guideline to select which countries should be reviewed to determine best practices for cleantech innovation applicable to Cyprus.

<table>
<thead>
<tr>
<th>2017 Rank</th>
<th>Country</th>
<th>2017 Score</th>
<th>Inputs to Innovation</th>
<th>Outputs of Innovation</th>
<th>General Innovation Drivers</th>
<th>Cleantech-Specific Innovation Drivers</th>
<th>Emerging Cleantech Innovation</th>
<th>Commercialised Cleantech Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Denmark</td>
<td>4.07</td>
<td>3.80</td>
<td>4.34</td>
<td>3.04</td>
<td>4.55</td>
<td>3.49</td>
<td>5.19</td>
</tr>
<tr>
<td>2</td>
<td>Finland</td>
<td>3.96</td>
<td>3.25</td>
<td>4.66</td>
<td>2.60</td>
<td>3.69</td>
<td>6.19</td>
<td>3.13</td>
</tr>
<tr>
<td>3</td>
<td>Sweden</td>
<td>3.66</td>
<td>3.36</td>
<td>4.35</td>
<td>3.69</td>
<td>3.03</td>
<td>4.73</td>
<td>3.98</td>
</tr>
<tr>
<td>4</td>
<td>Canada</td>
<td>3.76</td>
<td>3.30</td>
<td>4.23</td>
<td>3.29</td>
<td>3.30</td>
<td>5.13</td>
<td>3.33</td>
</tr>
<tr>
<td>5</td>
<td>USA</td>
<td>3.59</td>
<td>3.30</td>
<td>3.88</td>
<td>3.43</td>
<td>3.18</td>
<td>5.46</td>
<td>2.31</td>
</tr>
<tr>
<td>6</td>
<td>Israel</td>
<td>3.56</td>
<td>2.94</td>
<td>4.19</td>
<td>2.70</td>
<td>3.18</td>
<td>5.90</td>
<td>2.41</td>
</tr>
<tr>
<td>7</td>
<td>UK</td>
<td>3.37</td>
<td>2.97</td>
<td>3.77</td>
<td>2.92</td>
<td>3.02</td>
<td>4.97</td>
<td>2.58</td>
</tr>
<tr>
<td>8</td>
<td>Germany</td>
<td>3.33</td>
<td>2.47</td>
<td>4.18</td>
<td>2.31</td>
<td>2.64</td>
<td>4.58</td>
<td>3.78</td>
</tr>
<tr>
<td>9</td>
<td>Norway</td>
<td>2.90</td>
<td>3.23</td>
<td>2.58</td>
<td>2.63</td>
<td>3.82</td>
<td>2.21</td>
<td>2.95</td>
</tr>
<tr>
<td>10</td>
<td>Switzerland</td>
<td>2.69</td>
<td>3.04</td>
<td>2.74</td>
<td>3.14</td>
<td>2.94</td>
<td>2.68</td>
<td>2.79</td>
</tr>
<tr>
<td>11</td>
<td>South Korea</td>
<td>2.86</td>
<td>2.19</td>
<td>3.64</td>
<td>2.39</td>
<td>2.03</td>
<td>3.55</td>
<td>3.53</td>
</tr>
<tr>
<td>12</td>
<td>Japan</td>
<td>2.75</td>
<td>2.51</td>
<td>3.00</td>
<td>2.49</td>
<td>2.53</td>
<td>3.50</td>
<td>2.49</td>
</tr>
<tr>
<td>13</td>
<td>France</td>
<td>2.75</td>
<td>2.30</td>
<td>3.20</td>
<td>1.93</td>
<td>2.67</td>
<td>4.64</td>
<td>1.75</td>
</tr>
<tr>
<td>14</td>
<td>Singapore</td>
<td>2.71</td>
<td>2.04</td>
<td>3.99</td>
<td>2.78</td>
<td>1.30</td>
<td>2.43</td>
<td>4.34</td>
</tr>
<tr>
<td>15</td>
<td>Netherlands</td>
<td>2.71</td>
<td>2.71</td>
<td>2.70</td>
<td>3.07</td>
<td>2.35</td>
<td>2.58</td>
<td>2.62</td>
</tr>
<tr>
<td>16</td>
<td>Ireland</td>
<td>2.64</td>
<td>2.63</td>
<td>2.64</td>
<td>2.92</td>
<td>2.35</td>
<td>3.41</td>
<td>1.87</td>
</tr>
</tbody>
</table>

Figure 6: Global Cleantech Innovation Index 2017 (Cleantech Group, 2016)

We focused on countries which ranked highly and had very high metrics in terms of emerging cleantech innovation. Figure 7 shows the results for Israel, United States and United Kingdom that fit those characteristics and are in the top 10 GCII rankings. Cleantech specific innovation drivers for these countries included government policies through high public spending in cleantech research and development (R&D), availability of private financing, robust renewables infrastructure and an active local cleantech industry. Some of the characteristics that these countries had in common included: addressing growing demand for renewable energy, connecting startups with multiple commercialization channels to increase likelihood of success and increasing international engagement across the cleantech ecosystem. According to the GCII report, Israel has relatively low public drivers for innovation but has access to US cleantech funds and investors that enables it to compare favorably with the US.

Figure 7: Cleantech Driver results for Israel, United States and United Kingdom (Cleantech Group, 2016)

Nordic nations performed strongly on the GCII ranking due to government-backed cleantech innovation.
drivers (high public R&D expenditure relative to GDP, cleantech supportive policy, country’s market attractiveness for renewable energy investment, cleantech cluster organizations) therefore we chose Norway as another country to analyze. Also, Norway being a large hydrocarbon producer and exporter is frequently evaluated in Cyprus as a case study for how Cyprus can monetize its hydrocarbon resources, therefore we wanted to discuss it here as a case study for its entrepreneurship practices.

Greece scored low in the GCII ranking (34th out of 40 countries) due to lack of public support for the national innovation system, limited private sources of capital and risk-averse investment culture. However, Greece has secured European Union funding to promote the formation of venture capital funds in Greece through public-private partnerships. Compared to other countries the venture funding is small, but compared to Cyprus there are areas where these methods can be adopted to attract the same type of venture funding in Cyprus.

Two additional European countries were selected for this report. Ireland ranked highly for general innovation but also is very focused on exports and promoting its startups abroad. This is due to the fact that Ireland has a small domestic market therefore in order to attract value from their technology innovation they are promoting their local companies to market their products internationally. Cypriot firms also need to market internationally in order to achieve scale which is why Ireland was reviewed in this report. Lastly, France was selected due to its recent activities to attract foreign startups and innovation from other countries to relocate locally to France. This is an approach that, as mentioned in Section 1.3, can help Cyprus meet the cleantech innovation targets in an accelerated timeline.

In many cases, there were multiple innovation initiatives and organizations that support startup formation and entrepreneurship in each of the countries mentioned above. Table 1 lists the key innovation organizations that were reviewed in this study and the government body to which these innovation organizations either directly report to or have affiliated operations with. Throughout this report we will use examples from the innovation organizations listed in Table 1 to support the best practices that are applicable to advance Cyprus’ entrepreneurship ecosystem.
<table>
<thead>
<tr>
<th>Innovation Agency</th>
<th>Affiliated with or Reports to:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>United States</strong></td>
<td><img src="image" alt="Energy Efficiency &amp; Renewable Energy" /> US Department of Energy</td>
</tr>
<tr>
<td><strong>United Kingdom</strong></td>
<td><img src="image" alt="Innovate UK Knowledge Transfer Network" /> Department for Business, Energy &amp; Industrial Strategy, United Kingdom</td>
</tr>
<tr>
<td><strong>Israel</strong></td>
<td><img src="image" alt="Israel Innovation Authority" /> Ministry of Economy, Israel</td>
</tr>
<tr>
<td><strong>Ireland</strong></td>
<td><img src="image" alt="Enterprise Ireland" /> Department of Business, Enterprise and Innovation in the Government of Ireland</td>
</tr>
<tr>
<td><strong>Greece</strong></td>
<td><img src="image" alt="Enterprise Greece Invest &amp; Trade" /> Ministry of Economy and Development, Greece</td>
</tr>
<tr>
<td><strong>France</strong></td>
<td><img src="image" alt="La FRENCH TECH" /> Ministries for Economy, Finance and Foreign Affairs, France</td>
</tr>
<tr>
<td><strong>Norway</strong></td>
<td><img src="image" alt="Innovation Norway" /> Ministry of Trade and Tourism, Norway Ministry of Education and Research, Norway</td>
</tr>
</tbody>
</table>

*Table 1:* Innovation organizations discussed in this report
3 Best Practices Applicable to Cyprus

In Section 3, you will find a detailed analysis of the five best practices (Figure 8) identified along with a discussion on how they can be adapted to Cyprus and 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 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 to enable them to market their product abroad or receive investment from foreign investors. The fifth 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 8: Five best practices with applicability to Cyprus
3.1 Best Practice #1: Independent Innovation Agency

All countries that have ranked highly on innovation potential in the GCII report, 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 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 they may be 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:

- Guide country’s innovation policy & raise awareness
- Create value by stimulating profitable business development
- Provide financing support schemes for innovative businesses
- Provide support services such as training and networking opportunities
- Reduce administrative burden for innovation schemes & company creation

**Highlighting examples from abroad:**

**Innovation Norway**

Norway provides high levels of public funding and support to innovation activities and contributes the highest % of GDP to cleantech research and development (0.075%) in Europe (Cleantech Group, 2016). It also enjoys high levels of venture capital and private equity investments in local cleantech companies.

In the early 1990’s innovation activities in Norway and debt instruments were handled by state-owned banks. In order to streamline activities there was a decision to set up one organization for all innovation actors. This would allow easier access for businesses to make use of innovation schemes, help promote innovation in Norway further and help local companies expand in foreign markets (Innovation Norway, 2017).

Innovation Norway in its current structure is a state-owned, for-profit organization that was formed in 2004 through the merger of the Export Council, Tourism Council and Regional Development Fund. It currently reports to the Ministry of Trade and Industry, as well as the Ministry of Education and Research, while acting in close collaboration with the Research Council of Norway (Figure 9). It currently employs about 750 professionals worldwide and 60% of the companies Innovation Norway supports are less than 5 years old. The key objectives of Innovation Norway are to (a) create more successful entrepreneurs, (b) create more enterprises with growth capacity and (c) creative more innovative business clusters.
To achieve its core objectives, Innovation Norway has a variety of services it provides to local Norwegian companies ranging from advisory services (i.e., market research), training services, promotional and branding services, networking services but most importantly financing services.

With regards to financing services, Innovation Norway does not do direct equity investments but it offers the following variety of schemes:

- **Seed funding and pre-seed funding for Norwegian university startups**
- **Startup grants for Norwegian companies**
  - Small initial grants (up to 100,000 kr) for companies to conduct a market study or hire an expert consultant. Typically, these funds are used to prepare the company for discussions with key customers and determine whether a certain market is appropriate for their product.
  - If the initial grant yields successful results, there is a follow-on funding scheme where the company can secure a loan from Innovation Norway (up to 800,000 kr)
- **Innovation loans and grants for Norwegian companies**
  - These tend to be larger funding opportunities (1M+ kr) used to remove technical risk and develop technical prototypes in order to attract private financing from investors.
  - In many cases, there is a requirement for companies to secure matching financing from the private sector in order for Innovation Norway to be able to provide the grant/loan. This matching financing can be in cash or in-kind services.
- **Fund of funds investments**
  - Innovation Norway invests in local, private venture funds to support the local venture funding ecosystem. This is the only case where Innovation Norway obtains equity ownership.
- **SkatteFUNN** – this scheme is an indirect funding scheme. Support takes the form of a tax deduction for part of the costs related to R&D activity. This program is run by The Research Council of Norway.

The financing schemes by Innovation Norway are seen as a supplement to other financing available through the private sector in Norway. Only 1-2% of commercial loans in Norway fund risky technology ventures, therefore Innovation Norway is critical in the funding of local startups.
Innovation Norway undertakes the evaluation, selection and negotiation of these financing activities in-house. However, external researchers and consultants are retained to issue annual conclusions on the performance of the companies that were initially funded by Innovation Norway.

**Enterprise Ireland**

Enterprise Ireland was set up in 1988 to support indigenous sectors and help Irish companies expand in foreign markets. They work closely with a sister organization, IDA Ireland, which is tasked with attracting foreign direct investment. Enterprise Ireland is the government agency responsible for developing Irish businesses globally. They report to the Department of Business, Enterprise and Innovation and work closely with research institutions across the country. Their aim is to get new businesses to start in Ireland, innovate and scale abroad in international markets. They focus on companies that have the potential to export or are already exporting. Their organizational structure involves the creation of regional offices (31 Local Enterprise Offices exist in Ireland) which are tasked to help local companies. They are able not only to provide grants but also obtain equity in startups. Profits generated out of these investments are returned to Enterprise Ireland and used to finance other Irish companies.

Currently Enterprise Ireland has a staff of about 350 people with 10 offices in Ireland and 33 international offices. Their budget is on the order of €385M/year (Enterprise Ireland, 2017). In 2016, they worked with 5,000 Irish companies and about 100 of those companies (2%) were startups. As a result of the 2017 activities, about 200,000 people were employed in private companies and 10,000 net jobs were created (Enterprise Ireland, 2017a).

To support local companies Enterprise Ireland has the following programs:

- **National Entrepreneurship Development Program**
  - Program is run annually with Irish Institutes of Technology, to support 90-100 entrepreneurs and provide training through an entrepreneurship boot-camp
- **Provide funding for local incubators and accelerators, and typically help co-locate these incubators/accelerators at local universities**
- **Company Start Funds (CSFs)**
  - Financing for activities such as in-house R&D, training activities, hiring key manager/expert consultants
- **Funding for High Potential Startups (HPSUs)**
  - Enterprise Ireland selects HPSUs based on the potential to become exporting businesses which have 10 staff and €1M sales within 3 years of starting up.
  - 100 high potential startups are selected per year
    - Equity investment is up to €250k, but companies need to secure matching funding from private investors
    - Enterprise Ireland provides a range of non-financial aid such as training resources
- **Direct Equity Investments**
  - Direct new and follow-on equity investments targeted towards early stage companies that are used to get startups ready to raise funding from private investors. In 2017, over €30M was invested in new and existing client companies of Enterprise Ireland, alongside investments from Irish and international VCs.

Further to the schemes outlined above, individuals interested in entrepreneurship can participate in events, training sessions or seek counseling from the Local Enterprise Offices across Ireland. In 2017, there were more than 8,000 participants in the core business development programs and more than 350 participants in the entrepreneurship programs (Enterprise Ireland, 2017a).
3.1.1 Applicability & Recommended Actions 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 10). This first best practice attempts to address the latter of these problems.

![Most problematic factors for doing business](image)

**Figure 10:** Most problematic factor for doing business in Cyprus (World Economic Forum, 2017)

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.

Certain funding schemes for entrepreneurship already exist in Cyprus. Below we list some of the schemes that were recently announced during 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 above list reinforces that entrepreneurship schemes in Cyprus are managed by multiple organizations and agencies. Coordinating all innovation activities under a single, well-funded & empowered Innovation Agency will help both in optimizing the use of government resources and help make it easier for early stage companies 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 dependent 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 (Υφυπουργείο Ανάπτυξης) reporting directly to the President but such a body has not yet been approved.

Recommended actions:

1. **Initiate detailed discussions with Innovation Norway and/or Enterprise Ireland**

   Both organizations have offices in international locations and are accustomed to educating host countries about their activities in promoting innovation and entrepreneurship. Having full day workshops to understand topics such as how the organizations are structured, how they report and coordinate with the local government, and what their evaluation and success metrics are will help inform discussions and gain support in Cyprus for setting up a local Innovation Agency.

2. **Local stakeholders to participate in the MIT Regional Entrepreneurship Acceleration Program**

   The MIT Regional Entrepreneurship Acceleration Program (REAP) is a two-year learning engagement, which helps regions accelerate economic growth and promote social progress through innovation-driven entrepreneurship. Partner regions form multi-disciplinary teams from 5 key stakeholder groups (government, risk capital, universities, entrepreneurs and corporates) and work with MIT faculty and the broader MIT REAP community to build and implement a custom regional strategy for enhancing their innovation ecosystems. The MIT REAP program enables regional team members to learn from MIT experts, catalyze regional action, and leverage global best practices through cross-regional collaboration.

   Each regional team chooses their own custom objective and begins implementation of this project over the two years. Evaluating how to set up a country-wide Innovation Agency and bring all Cyprus innovation initiatives and incentives under one organization is a challenging project that would be appropriate for this type of innovation engagement program. The structure approach will enable the relevant Cyprus stakeholders to develop an action based strategy for change based on global best practices.

   Participation in such a program comes with a cost and needs to be budgeted in future government activities in order to take place. Financial and personnel support from the relevant Cyprus ministries is critical in order for an activity like this to take place successfully.
3.2 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 3.1.

As shown in Figure 10, 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 more appropriate for more mature companies.

Highlighting examples from abroad:

Some examples of financing mechanisms have already been outlined in Section 3.1 based on the financing activities of Enterprise Ireland and Innovation Norway. However, in this section the most applicable discussion for Cyprus is the use of European Structural and Investment Funds 2014-2020 (ESIF) to support SME activities through Fund of Funds (FoF). Greece and the UK have successfully used these mechanisms to promote their innovation activities. The funds are managed by the European Investment Bank (EIB) through its subsidiary European Investment Fund (EIF). **EIF was created by the EU in the 1990s and it invests in venture capital funds which subsequently invest in entrepreneurs, allowing them to pursue their startup ventures.** EIF selects financial intermediaries (such as a venture capital fund) and is typically an anchor investor, contributing as much as 40% of the capital in a venture capital fund. Funding from the EIF comes with rules about where venture capital firms can invest and be located. In certain countries, a National Promotion Bank (NPB) can work directly with EIB to facilitate these activities and select the financial intermediaries but in the case of Cyprus working directly with the EIB and EIF will expedite the plan roll-out.

**Enterprise Greece**

Enterprise Greece was established in the 1990s to supervise growth and development in sectors such as tourism and ICT (Information and Communication Technology), and provide incentives for company formation and growth (Enterprise Greece, 2017).

Currently, there are 21 active venture funds incorporated in Greece with €1.2 billion under management (Enterprise Greece, 2017a). Greece was able to achieve this by introducing favourable tax and legal environments for deploying venture capital in startups and, more importantly, for investing capital in venture capital funds. In 2002, Greece introduced law 2992/2002 for AKES (stands for Αμοιβαίων Κεφαλαίων Επιχειρηματικών Υπηρεσιών in greek). It enabled the creation of venture capital firms, whose purpose was to finance new startups and SMEs through equity capital. In 2004, they passed an additional law 3299/2004 which enabled companies to provide funding into venture capital firms. Both of these changes were done as
an expansion of existing regulations from 1988 and 1993 that only allowed activities in the field of ICT. The above legal infrastructure promoted the formation of venture capital and private equity funds in Greece. In addition, Greece provides tax incentives for private equity and venture capital when investing through the AKES. Management fees are exempt from VAT in Greek companies, gains from the sale of shares or stock options are tax exempt and unit holders’ participation in the funds are not subject to tax.

In 2001, the first “fund of funds” program was established in Greece called TANEO (called Ταμείο Ανάπτυξης Νέας Οικονομίας in greek) that matched public funds with funds from private investors to create venture capital funds. Through the creation of 11 TANEO funds from 2001 to 2014, €280M have been directed to Greek SMEs. The European instrument that assisted financially in the formation of the TANEO funds was JEREMIE (Joint European Resources for Micro to Medium Enterprises). JEREMIE was set up to deploy part of the EU Structural Funds through new risk finance initiatives for SMEs. It is important to note that in addition to the TANEO management team, an external consultant, was also involved in the selection process of which venture funds would be supported by TANEO (TANEO, 2017).

More recently, Greece established the PA (Partnership Agreement for the Development Framework) 2014-2020 (Εταιρικό Σύµφωνο για το Πλαίσιο Ανάπτυξης- ΕΣΠΑ 2014-2020 in greek). PA constitutes the main strategic plan for growth in Greece with the contribution of significant resources originating from the European Structural and Investment Funds (ESIF) of the European Union. The PA is called upon to help attain the national targets within the Europe 2020 Strategy. Through the PA, Greece established many incentive schemes for startups that can finance expenses relating to basic research and development, innovation activities and supporting actions such as participating in relevant conferences.

The combination of the venture friendly regulations, history of the local VC industry and the establishment of the PA, allowed Greece to establish a new Fund-of-Funds programme (Equifund) managed by EIF as part of the ESIF FoF program (Figure 11). Equifund was launched in Dec 2016 and is a €320m fund with €200m contributed by the PA, €60m directly from EIF and €60m from the EIB (Figure 11). The fund is managed by the EIF, and aims to boost entrepreneurship and create a lasting impact on local businesses, by attracting private funding to all investment stages of the local equity market, ranging from early stage startups to mature expansion companies. Equifund will be instrumental in unlocking the equity potential in the Greek market.

![Figure 11: Equifund Structure (EIF, 2017)](image-url)
Alternate Economy Minister Alexis Charitsis said recently, "The creation of the new Venture Capital Fund, Equifund, seeks the coupling between innovative and dynamic Greek SMEs, which experience difficulty in accessing funds on the one hand, and investors, domestic and international, on the other, who wish to invest in such operations, and they recognize the potential and prospects of the country, but because of the size of firms, they are unable to identify and approach them".

Under this new programme, EIF is looking to invest in private-sector led, market-driven Venture Capital and Private Equity fund managers across Europe, focusing onto Greek companies, and aims to leverage a total of over €1 billion through matching contributions from the private sector. Equifund will support technology transfer funds in Greece and will also kick-start investments into accelerator funds (EIF, 2017).

A tendering process was initiated in 2017 to identify the intermediary venture capital and private equity funds that will invest in Greek companies. The proposals that were submitted exceeded expectations. There were 52 proposals submitted, out of which 10-15 will be selected as the intermediary funds. Six funds have already been selected and publicly announced (Enterprise Greece, 2017). The investment period has been set up to 2023, with a re-investment period extending to 2028. The three main areas of investment of the Equifund platform are (a) investment in research and innovation, (b) overall business investment in companies in the early stages and (c) general business investment companies in the development stage.

**Innovate UK**

The UK has successfully been using EIF funding to promote venture capital activities for many years, with the first EIF operation in the UK taking place as early as 1996.

EIF investments in the UK cover the full range of the equity spectrum, from technology transfer to mezzanine and lower-midmarket private equity funding. In recent years EIF has also invested into a number of venture capital funds in the UK to support the commercialization of research. In 2015, EIF's equity participations in the UK amounted to £655.8M, which was expected to mobilize €2.87B in capital. That year, EIF invested in 16 funds, out of which 11 are multi-country funds also investing outside the UK. Several of the transactions also benefit from the support of the European Fund for Strategic Investments (EFSI), which is at the heart of the Investment Plan for Europe. Among the range of resources managed by EIF is the UK Future Technologies Fund (UK FTF), a technology focused fund-of-funds launched by EIF together with the UK Government in 2010. UK FTF invests into venture capital funds targeting ICT, life sciences and advanced manufacturing sectors, and is by now fully invested (EIF, 2015).

The EIF has been an important backer of British venture capital and accounted for more than 1/3 of investment in UK based venture capital funds between 2011-2015, with €2.3B invested in 144 venture funds supporting over 27,700 SMEs. (Financial Times, 2017).

Due to Brexit, the continuation of this program is uncertain but there is no doubt it has been an important factor in the development of British VC fund formation.

**3.2.1 Applicability & Recommended Actions 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 in Cyprus 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 business 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 Cyprus 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 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 3.1.1.

The Cyprus DG EPCD in collaboration with EIB has been assessing the potential of financial instruments in Cyprus, 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 12. 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 12) 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).

![Diagram of FoF Governance options for Cyprus](image)

**Figure 12:** FoF Governance options for Cyprus (EIB, 2017)

Given that many of the available European schemes are active for the period 2014-2020, timing is critical to enable Cyprus to benefit from these financing opportunities and promote venture capital formation in Cyprus. 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.
Recommended Actions

Given the availability of European resources for the promotion of innovation, and their particular focus in the low carbon economy, Cyprus should attempt to provide the right legal structure and mechanisms to spur the formation of venture capital activities in Cyprus. The Fund-of-Funds mechanism described above is a path forward for achieving this goal.

There needs to be a two-pronged approach, (1) establishing the regulatory framework (if not already in place) to promote the formation of venture capital funds and establishing incentives for investors, such as limited partners, to invest in venture capital funds and (2) attracting European financing similar to the activities undertaken in Greece. Ideally, this work would be undertaken by an organization like the Innovation Agency described in Section 3.1 but given the timelines involved this is not possible in this particular case.

Given the timing of the available European schemes such as EFSI, the most appropriate path for Cyprus would be to pursue a Fund-of-Funds scheme managed by the EIB Group. In addition to this, in order to attract the relevant intermediary venture capital funds to the FoF scheme, particular attention needs to be paid to the activities these VC funds would be allowed to undertake. Typical FoF are limited to only investing in a particular country. In Cyprus, due to the nascent entrepreneurship ecosystem it is important that this definition is broadened to include not only Cypriot startups but startups that may be based abroad but can either relocate or collaborate with local Cyprus businesses.

The initial recommended action is to initiate discussions with Enterprise Greece and other relevant Greek bodies to:

1. Determine whether tax and legal incentives that have already been applied in Greece would also be beneficial for the Cyprus economy or perhaps are already in place

2. Exchange learnings from the process for setting up Funds of Funds schemes in Greece (TANEo and Equifund)

3. Explore the possibility of collaboration so that Cyprus startups could have the possibility to raise financing through the already established Greek venture funds
3.3 Best Practice #3: Positive Entrepreneurship Culture

An extremely important element for creating a new entrepreneurial ecosystem is promoting 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.

Focus on Education
- Entrepreneurship courses taught at High school and University level
- Combine University Activities & Support country-wide business plan competitions
- Support Vocational training programs for young professionals to learn entrepreneurship skills
- Promote the formation of Technology Transfer Office(s) through establishing regulation allowing academic institutions to commercialize university research

Focus on Inventors
- Empower academics to pursue activities that allow them to commercialize their research
- Support inventors founding and/or joining university spin-outs through grants/loans
- Promote patenting culture in public universities – includes establishing the right legal framework and providing financial incentives to promote patenting activities

Focus on Local Accelerators and Incubators
- Support local accelerators and incubators focusing on specific technology themes

Focus on Media, Public Awareness & Innovation Culture
- Provide high level government and media support of entrepreneurship activities

Highlighting examples from abroad:

Innovate UK and SETsquared Partnership ➔ Promoting Education and Inventors

Innovate UK is the UK’s innovation agency. Innovate UK is an executive, independent, non-departmental public body, sponsored by the Department for Business, Energy & Industrial Strategy in the UK. It was initially established in 2007 as the Technology Strategy Board, an independent body, and launched its first collaborative R&D funding competition. Recently after that it launched the Small Business Research Initiative supporting early stage business in the UK.

The organization currently has 300 staff and works across the UK. Innovate UK works with people, companies and partner organizations to find and drive the science and technology innovations that will grow the UK economy - delivering productivity, new jobs and exports. Innovate UK's aim is to keep the UK globally competitive in the race for future prosperity (Innovate UK, 2017).

Innovate UK drives growth by working with companies to de-risk, enable and support innovation. Some of their responsibilities include:
- determine which science and technology developments will drive future economic growth
- meet UK innovators with great ideas and fund the strongest opportunities
- connect innovators with the right partners they need to succeed
- help our innovators launch, build and grow successful businesses
Since 2007, Innovate UK committed over £1.8 billion to innovation, matched by a similar amount in partner and business funding, and helped 8,000 organizations with projects estimated to add more than £16 billion to the UK economy and create nearly 70,000 jobs (Innovate UK, 2017a). It has also run sector specific innovation programs such as Energy Catalyst, Low carbon vehicle demonstrator and CO2 retrofit for the future supporting cleantech innovation.

The UK has multiple entrepreneurship and innovation initiatives supporting funding startups through public and private capital, and large universities have Technology Transfer Offices such as Imperial Innovations (now called Touchstone Ventures), Oxford Innovation and Cambridge Enterprises. These universities support mainly local university spin-offs but also run some UK-wide competitions.

A partnership called SETsquared Partnership was established in 2003 to support areas that had lower than expected technology start-up rate compared to areas such as Cambridge or Silicon Valley. This type of pooling university resources is an approach that can be used in Cyprus.

The SETsquared Partnership is the enterprise collaboration between five leading research-intensive universities: Bath, Bristol, Exeter, Southampton and Surrey. Funded by the Higher Education Innovation Fund, the SETsquared Partnership focuses on entrepreneurial activity and new business creation for the five university partners. Innovate UK has also supported a number of the SETsquared programs that promote company creation. None of the universities have individual technology transfer offices but rather rely on the collective services of SETsquared with business incubation centers at each university. Some of its key services include promoting student entrepreneurship, helping inventors commercialize research and running accelerator programs. 80% of the companies they incubate are from the external business world, 20% originate from within the five universities.

Between 2003 – 2015, SETsquared had supported over 1,000 hi-tech startups to develop and raise more than £1bn of investment, as well as contributing over £3.8bn to the UK economy with further £15bn contribution estimated over the next 10 years. The partnership currently supports 265 companies across its centers and has created over 9,000 new jobs (SETsquared, 2015).

**United States - Incubate Energy ➔ Promoting Accelerators**

The US ecosystem is quite robust. An entrepreneurial spirit is ingrained in the culture and there is a focus on cleantech startup investments. In 2016, VC cleantech investment was $5.24 billion in 455 deals (Brookings, 2017). Even though this was a 30% reduction from the investment made in 2011, the United States is leading in terms of venture funding in cleantech startups compared to Europe.

The university system and US Department of Energy (DOE) national laboratories offer world-class resources for critical research into new clean energy technologies. Strong regional clusters, centered around established incubators and accelerators, provide developmental support and facilitate the path to commercial deployment in collaboration with investors and corporate partners. Programs such as the DOE Advanced Research Projects Agency-Energy (ARPA-E) and the DOE loan guarantee program (LGP), which support technologies too risky for bank financing have provided critical seed money in diverse technologies including solar, wind, natural gas, fusion, bio-engineered fuels. ARPA-E has already demonstrated early success. With 330 projects completed, ARPA-E project teams have thus far been published 1,328 times; reported 1,493 subject inventions; been issued 208 patents; created 56 new companies; and attracted more than $1.8 billion in follow-on, private-sector funding for 74 projects (BPC, 2017). Other US based “technology-to-market” programs for national labs will be described in Section 4.1.

The DOE, in collaboration with US National Renewable Energy Laboratory (NREL) and the Electric Power Research Institute (EPRI), funded and launched Incubatenergy Network in 2015. The Incubatenergy Network is a US based organization that is accelerating the transition to a sustainable economy through national coordination of incubator resources supporting entrepreneurs focused on clean energy innovation and
deployment. The network includes 14 organizations, mainly accelerators spread across the US (see Figure 13) and has supported more than 500 companies to date. The network has focused on building connections among leading US incubators, strengthening national support systems, and documenting the services, best practices, and benefits provided.

Figure 13: Incubatenergy Members (DOE, 2017)

The companies participating in the network have opportunities to leverage resources from all the incubators participating in Incubatenergy. The companies also have opportunities to participate in many collaborative research studies, pilot projects, and field demonstrations with EPRI and utilities. Since the start of the Incubatenergy Network, at least a dozen companies have collaborated with EPRI and utilities on research and pilots. Utilities are engaged as development and demonstration partners and increasingly as investors.

In addition to its current members, the Incubatenergy Network and KIC InnoEnergy in Europe are partnering to explore the value of sharing company referrals across the two geographical regions, beginning to create a “network of networks” for extending coordination among energy innovation ecosystems around the world (see Figure 14). Through these partnerships the network allows clean energy entrepreneurs to more easily access resources and new markets by making connections to innovation ecosystems around the globe.
The companies supported by Incubatenergy have had a significant impact on the US cleantech ecosystem (see Figure 15) and by collaborating with InnoEnergy it plans to expand their activity to EU Networks. Incubatenergy has been a successful example of how pooling resources nationwide can help elevate the impact of cleantech companies.
Israel Innovation Authority ➔ Promoting Incubators

Israel Innovation Authority is a public entity that is responsible for Israel’s innovation policy and acts as an independent and impartial organization. It was formerly known as the Office of the Chief Scientist and it reports to the Ministry of Economy. In 2016, it was rebranded to enable expansion of activities beyond research and development (R&D). Israel spends more money on R&D as a proportion of its economy with 4.25% of GDP than any other country in the world (OECD, 2016). The key objectives of the Israel Innovation Authority are to elevate the economy through technological innovation and maintain Israel’s position at the forefront of global innovation.

A crucial program set up by the Israel Innovation Authority is the Technological Incubators Program. First set up in 1991, the program was in part designed to provide new immigrants from the former USSR, one-third of which were skilled engineers and scientists, with the capital and resources to become successful entrepreneurs. It has since expanded into 24 incubators which are mostly privatized through public tenders. The Technological Incubators Program targets disruptive, early-stage ideas that are deemed too risky for private investors. Startups are incubated for two years with funding of $500,000 to $800,000. The government takes no equity and provides 85% of the budget as a grant, which will only be paid back as 3-5% royalties when, and if, the startup generates revenues. The incubator operator invests only 15% of the budget and keeps up to half the equity. In return, they are expected to provide strong mentorship and access to their partners to help the startups success. (Forbes, 2017)

The program is intended to let the free market take the lead in identifying the most promising entrepreneurs and most disruptive technologies. By funding the riskiest part of the innovation process, the program helps startups survive their most vulnerable phase and scale up to receive private sector capital. Of over 1,500 companies that graduated from the incubators, 60% have attracted private investments of $3.5 billion and 40% are still in operations. Given that the government has invested around $650 million in the program, it has achieved five to six times leverage from private dollars.

France, United States and Israel ➔ Promoting Media, Public Awareness & Entrepreneurship Culture

Promotion of entrepreneurship activities from top levels of government officials can help spur the society into action and support entrepreneurship activities. Some key examples were seen in France and the US in recent years.

French President Emmanuel Macron made headlines in 2017 with his strong support of entrepreneurship and promotion of schemes such as the French Tech Visa, the new incubator Station F and the French Tech Ticket, a program designed for entrepreneurs’ form all over the world who want to create their startups in France. These schemes will be discussed in Section 3.5. In December 2017, President Macron also awarded grants to 18 US scientists working on climate change to relocate and continue their research in France (The Guardian, 2017).

President Obama also took very active steps to promote American Entrepreneurship by raising awareness of the benefits of entrepreneurship. In 2011, he launched the “Startup America” initiative, a national campaign to help promote high-growth entrepreneurship across the country. The new initiative aimed to help encourage private sector investment in job-creating startups and small firms, accelerate research, and address barriers to success for entrepreneurs and small businesses. He publicly expressed his support for innovation and startup companies throughout his presidency and in 2015 he hosted the first ever White House Demo Day exhibiting startups from across the US. The President’s consistent call to action to companies, nonprofits, universities, investors and others provided a platform for stakeholders to celebrate and accelerate high-growth entrepreneurship throughout the country.

Israel has long been known as “Startup Nation”. Many factors have contributed in its success of fostering startups and attracting foreign venture capital to the country, however one of the key reason is the culture.
Israel also had a large influx of immigration from Soviet Jews that fled after the fall of USSR and influx of Jewish scientists that fled from Germany during World War II. This contributed to a culture of diversity and grit. Israelis are also proud of a trait called “chutzpah”, which describes the courage to think independently and challenge the status quo. This results in the generation of new ideas and more innovative products and technologies. The culture of “chutzpah” creates a certain risk-taking and can-do attitude. Failure is not considered bad, it is considered an opportunity to get back up and learn from your mistakes. With no stigma of failure, an Israeli will continue trying until he succeeds.

Development of research and innovation culture to young researchers and scientists, as well as the general population, can help drive the growth of entrepreneurial ventures in a society. Positive media coverage of nationwide business plan competitions and local accelerators can help raise awareness and intrigue the interest of future entrepreneurs.

3.3.1 Applicability & Recommended Actions 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. This has been achieved with relatively limited representations of entrepreneurship in the local media. However, it is 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 researcher to participate in national and European business competitions
  - Cyprus Entrepreneurship Competition, European Innovation Academy, Start Up Weekend
  - Center 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
Recommended Actions:

In order to promote the creation of technology-based startups, such as the ones in cleantech, there needs to be more support given to academic and research institutions.

1. Combine entrepreneurship activities across all Cyprus universities and support University entrepreneurship through government funding and patenting incentives

Combining university commercialization activities under one organization will enable a more efficient allocation of resources and inventors from any Cyprus university will have equal opportunities at commercializing their work. Since the government already supports the public Cyprus universities, a certain allocation of the existing funding can be earmarked to support innovation activities. This can be part of a broader government strategy to support entrepreneurship.

There is currently limited incentive for academics in Cyprus to file patents and protect their inventions. This can be addressed through training programs on the value of intellectual property or more grants that subsidize the cost of patent filing such as the ones given by CRPF. The right mechanisms need to be put in place to first evaluate whether the invention is protectable and could be monetized before filing a patent. Grouping those activities under one organization that liaises and support all the universities can help minimize the legal resources needed for this activity. Furthermore, in order for patent filings to have value and inventors to be incentivized to protect their inventions, there also need to be policies and regulations in place that empower academics and inventors to commercialize their research. The relevant regulation to enable commercialization of academic research is currently under consideration at the Cyprus Parliament.

2. Support local incubators and accelerators

As described above Israel had incredible success by rolling out a Technology Incubator Program and providing financial aid for incubators to set up in Israel in order to support the development and growth of local startups. “Lack of technical support and coaching, which could allow the start-ups to enhance their business concept and financial model” has been identified by the EIB (2017) report as a reason why even if financing was available in Cyprus, local companies would not be able to grow. An initial step would be to support existing Cyprus incubators and accelerators with financing and targeted advertising raising awareness for their activities. More specifically the Cyprus government can be instrumental in connecting inventors from academia to local accelerators and incentivizing them to form startups and participate in accelerator programs. Another path would be to have the local accelerators and incubators evaluate the startup applications that are submitted to existing Cyprus government financing schemes. This would achieve two objectives: (1) speed up the evaluation of startup applications by government organizations, and (b) provide the accelerators/incubators “first look” in young Cyprus startups that may be desirable candidates to join their programs. Lastly, a recommendation addressed directly to the local accelerators and incubators is to attempt to join or at least network with international cleantech networks such as Incubatenergy and InnoEnergy described above, in order to benefit from knowledge transfer and training schemes.

3. Local Training Programs and Media

An initial step would be for the government to promote and support entrepreneurship programs in high schools, universities and even the army. This is currently taking place in limited locations on a voluntary basis, but could be standardized as part of the curriculum if this was a strategy the Ministry of Education wanted to pursue to promote entrepreneurship. The Ministry of Education also offers government sponsored, vocational training programs on multiple subjects that are open to the public. An entrepreneurship or business plan writing course could easily be added and offered to the public as a new vocational training course. Lastly, there is an acute need to raise awareness of financing options such as equity financing and promote those as an acceptable alternative to commercial bank financing. There is a cultural fear to pursue this avenue that can only be addressed through training and positive exposure to successful entrepreneurship stories in the media.
3.4 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 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 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 (see Section 3.1):

International schemes can include:
- **Trade missions**: Government sponsored trips for startups to meet potential clients abroad
- Innovation Agency develops **relationships with international clients** and provides introductions to SMEs
- Innovation Agency develops **catalogue of local startups** and funding needs that is distributed to key innovation organizations, potential clients and corporate organization abroad.
- 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
- 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 described in Section 3.3 can be a conduit to provide these opportunities for EU and US markets.
- **Attract foreign direct investment**, that invest in local startups and help them expand operations abroad

**Highlighting examples from abroad:**

**Israel Innovation Authority**

In the case of Israel, the effort of targeting international markets was seen as essential in creating technology companies that can eventually scale and help raise the country’s GDP. Today high-tech exports comprise 45% of Israel’s total exports, amounting to $18.4B per year (Forbes, 2016).

For several decades after its founding in 1947, Israel’s economy was heavily dominated by the public sector and trade was greatly restricted. Since the late 1980s, the government has actively created policies to leverage the private sector. One key government program is Yozma which was established in 1993. Yozma invested around $80 million for 40% stake in ten new venture capital funds. To further attract foreign investors, the program offered them insurance covering 80% of the downside risk and gave the option to buy out the government’s share at a discount within five years. Yozma was the catalyst for the Israel’s venture capital industry. It provided much-needed early-stage funding for Israeli companies to bring their products to market. By 1999, Israel was only second to the U.S. in private equity capital as a share of GDP and 70% of its growth came from high-tech ventures (Forbes, 2017).
Israel’s venture capital sector has always had a foreign flavor. In recent years, 85% of funding has come from non-Israeli firms, and that figure continues to grow. In 2016, foreign investment in Israel almost doubled from $6.5 billion to $11.1 billion (Forbes, 2017). Foreign investors have traditionally been American or European, but there has been growing interest from Asia, especially from China.

The Israel Innovation Authority heavily promotes collaborations and R&D agreements with foreign countries as well as incentive programs for collaborations with multinational corporations. The support for international cooperation projects is carried out through the EU Framework Program for Research and Innovation or bi-national funds that finance joint projects of Israeli and foreign companies. Their target audiences are:

- Foreign clients: R&D companies, multinational corporations
- Israeli clients: Israeli companies, as well as academia and research institutes that are looking for comprehensive assistance in penetrating foreign markets
- Foreign governments and foreign funding agencies seeking to establish cooperation agreements with the Israeli government (on whose behalf the Authority operates)

The Israel Innovation Authority also assists with “matching” between partners in Israel and abroad to create joint R&D projects, as well as organizes meetings between Israeli and foreign companies and investors, and facilitates participation in conferences and exhibitions abroad (Israel Innovation Authority, 2017). This is achieved with trade offices in 33 countries and collaboration between the Israel Innovation Authority and the Ministry of Economy and the Foreign Trade Administration office. The officials stationed at the Trade Offices in foreign countries frequently meet with multinational companies and develop important relationships and connections. They provide yearly catalogues of Israeli startups, facilitate introductions and organize fully funded trips for the Israeli startups to come and present in foreign countries. In certain cases, they also facilitated fully funded trips for foreign investors and company representatives to visit Israel and network with local startups.

Lastly, in order to encourage the creation of Multinational Corporations-Startup partnerships in Israel, the Israel Innovation Authority (IIA) has established a dedicated Global Enterprise Collaboration Program. Within this program, both the IIA and the multinational commit to equally invest in pre-selected R&D projects, conducted jointly by the multinational and an Israeli company. The multinational can invest in cash or in kind. The multinational benefits from the risk-sharing of the R&D investments since the IIA subsidizes 50% of the development, receives preferential access to know-how and technologies which are not otherwise readily available, and receives assistance in identifying partners. The startup, and in extension IIA, benefits from improved prospects of successfully marketing and supporting the developed product or service internationally.

3.4.1 Applicability & Recommended Actions 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 15). 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.

**Recommended Actions:**

Out of the five best practices presented in this report, promoting local startups abroad is the one that is not able to progress until the other four practices are addressed. However, there are still some limited steps that can be taken to prepare for the future.

1. **Government support of schemes like the one done by US-Cyprus Chamber of Commerce to support travel of early stage startups abroad for presentations and meetings**

   Supporting 3-4 startups per year to participate in this type of events is probably the right level of engagement at this point in time.

2. **Set up startup exchange partnership with cleantech accelerators in other countries**

   Networks such as InnoEnergy and Incubate Energy described in Section 3.3 can be a conduit to provide these opportunities for EU and US markets. Setting up relationships with those organizations can help pave the way for startups that are located in Cyprus to be able to travel and take advantage of their training and incubation programs. This is a long-term strategy since as mentioned earlier Cyprus cleantech startups are probably not yet at the right stage to benefit from this engagement. Cyprus cleantech startups have already participated in programs such as Climate KIC (i.e Pioneers in Practice, Climate Launchpad) and heavily benefited from the experience.

   If this program gets underway, particularly if it is government funded, it is extremely important that the startups that participate in these exchanges are required to share their learnings and present back to the Cyprus ecosystem the training that they have experienced.

3. **Work with the Economic Diplomacy unit in Cyprus Ministry of Foreign Affairs (MFA) to cultivate relationships with international innovation organizations**

   The MFA works worldwide representing Cyprus in foreign countries. Making them aware of the entrepreneurship activities in Cyprus and asking for their support in approaching foreign governments and Innovation Agencies can prove a valuable tactic.
3.5 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 setting 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 to propel France into becoming Europe’s tech hub.

Highlighting examples from abroad:

France – La French Tech

President Macron said in 2017, "I want France to attract new entrepreneurs, new researchers, and be the nation for innovation and start-ups" (CNBC, 2017). This type of high level support and the initiatives recently launched by La French Tech, a publicly funded initiative, are geared towards making France a global technology hub by attracting foreign entrepreneurs.

La French Tech is a movement “for entrepreneurs, by entrepreneurs” that is backed by the French Tech Initiative, an innovative public policy created by the French Government in 2013. The French Tech Initiative makes public schemes designed to help start-ups easier to understand and more coherent. It does not create any sort of new organization or new public tool, but is supported by the French Tech Mission, who works closely with the relevant departments of the Ministries for Economy, Finance and Foreign Affairs and the Commissariat-General for Investment. Its partners are national operators who, under the joint “French Tech” banner, coordinate their respective activities designed to help start-ups, including the Caisse des Dépôts (the French state-controlled financial institution), Bpifrance (France's public investment bank) and Business France (Republique Francaise, 2017).

La French Tech in 2015 adopted a three-pronged approach aimed at shaping its international activities:

- The creation of French Tech Hubs within major international innovation regions. A “French Tech Hub” provides a focal point for the French entrepreneurial ecosystem in these regions to boost the development of French start-ups seeking to establish a presence internationally and make France more attractive to local entrepreneurs and investors. There are currently more than 20 hubs worldwide (see Figure 16).
The French Tech Ticket, a program designed to encourage foreign entrepreneurs to create their startups in France. This program comprises of a grant for the entrepreneur and support for the setting-up of their business, a residence permit and a place in an incubator. The French Tech Ticket was officially launched in May 2015. In 2017, 70 foreign start-ups (160 entrepreneurs from 42 countries) were selected and placed in one of France's 41 business incubators starting January 2017. They received a €45,000 prize to launch; an accelerated, simplified process for obtaining a residence permit enabling them to live and work in the country; and 12 month dedicated office space. To be eligible the founders must be ready to live in France for a year and work full time on their startup.

The French Tech Visa, a simplified fast track procedure for three types of international tech talent to obtain a residence permit known as “Talent Passport”, was launched in 2017. The French Tech Visa is open to three categories of tech talent - startup founders, employees, and investors - and allows them to live and work in France. The openness’s to all three categories is incredibly important. Besides attracting foreign startups it allows local startups to attract foreign skilled employees in specialization areas that may not be well developed in France yet and enables skilled investors to relocate to France. The visa is valid for four years on a renewable basis and extends to immediate family members.

In addition to the above programs, the world’s largest startup campus, Station F, has also opened its doors in France in 2017. The campus is 34,000 sq meters and can host more than 1000 startups. Station F is focused on fostering entrepreneurs from diverse backgrounds and will host companies from 26 international programs. The French government is working with the city of Paris to build nearby housing starting in 2018. This is all part of France’s efforts to foster homegrown entrepreneurship and build an incubating tech culture like that of California’s Silicon Valley.

Another major aspect that dictates whether foreign entrepreneurs will relocate to a particular country is the tax system. France has high wealth taxes and capital gains taxes, that are unpopular with both entrepreneurs and investors. Many other countries have taken steps to create favorable tax regimes in order to attract corporations to their economies.
3.5.1 Applicability & Recommended Actions 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 a local corporate tax of 12.5% being one of the lowest in the Europe 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 business in Cyprus for up to 150 awardees annually. The second program is a tax incentive for investors (individuals or funds) that 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 (ie. 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 approximately 5 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.
Recommended Actions:

1. Document and Evaluate all possible local stakeholders that can provide testing facilities for cleantech startups

As mentioned above there are already some energy focused testing and validation centers in Cyprus such as UCY FOSS and AEL. Similar testing capabilities probably exist within the local EAC, CERA and TSO (Transmission System Operator) but those were not investigated in detail during this study. Identifying and evaluating all the available facilities that could enable Cyprus to become a cleantech testing hub in the MENA region is the first step to determining whether this could develop into Cyprus’ competitive advantage. Establishing communication with local electricity providers and transmission & distribution agencies on what collaboration opportunities they can provide to local or foreign startups would be the first step in this exercise. In addition, one could approach the private wind power and solar PV companies that have set up their operations in Cyprus. They could also act as a potential partner to startups both as a testing location but also as an advisor for how to navigate local permitting requirements. Private solar and wind operating companies would benefit from getting access to cutting edge technology in their field.

Lastly, the ancillary benefit of documenting and evaluating the above organizations, is that Cyprus authorities will be able to advertise these testing capabilities to external startups (perhaps through the Cyprus Startup Visa program) and be able to provide the startups access to relevant local corporate partners, energy authorities and decisions makers.

In summary, some of the initiatives that can help promote Cyprus as a suitable testing ground for clean energy technologies includes:

- Access to electricity grid infrastructure for testing and validation
- Favorable conditions (ie. ease of permitting, low cost lab access) for testing renewable and grid based energy technologies
- Provide connections to decision makers in government and industry

2. Host Foreign Startups at Cyprus Universities

Local universities and academic institutions, such as UCY, CUT and CyI, can act as host locations for cleantech startups and provide them not only workspace but access to scientific laboratories. Regardless of whether this is funded as a government initiative in public universities or not, in order to be successful these institutions will need help advertising their capabilities to startups abroad through the relevant Cypriot innovation organizations.

3. Review and Advertise Cyprus Startup Visa

The existing Cyprus Startup Visa is an incredibly valuable step in attracting foreign entrepreneurs. The program was initiated in June 2017 and is already being marketed by CIPA. Initial applications were limited with only 4 applicants deemed acceptable and 1 visa being granted to date. Working with the MFA or by setting up partnerships with cleantech incubators and accelerators abroad will help create a more targeted advertising campaign to an audience that is likely to apply.
4 Specific Cleantech Schemes with Applicability in Cyprus

In Section 4, 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.

4.1 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 (DOE) Energy Efficiency and Renewable Energy (EERE) division 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 (Figure 17). 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.

There are currently three LEEP programs active at US national labs:
- Cyclotron Road at Lawrence Brekeley National Laboratory, Brekeley, California
- Chain Reaction Innovations at Argonne National Laboratory, Argonne, Illinois
- Innovation Crossroads at Oak Ridge National Laboratory, Oak Ridge, Tennessee

They all follow a similar process and focus on recruiting top energy innovators (scientists or engineers) and enabling them to develop their technology ideas. The inaugural program was Cyclotron Road which was founded in 2014. Cyclotron Road’s mission is to empower hard science innovators to advance their ideas from concept to viable first product and bridge the funding gap that exist during that stage of technology development (Figure 18).
Cyclotron Road receive applications annually with 150+ applicants resulting in a Cohort of 10-12 hard science innovators every year. The innovators selected to join the Cohort receive a 2-year fellowship with a living stipend and health insurance, access to world-class research facilities and expertise, and business mentorship. In exchange they need to dedicate their full-time efforts to the development of their product. Approximately 50% of the fellows come from academia, and the other 50% comes from industry or startups. The cost to support Cohort 1 was approximately $4M but has resulted in $15M foundational research funding and initial private investments from external sources (Figure 19).
Cyprus does not have national labs in the same way as the United States but it does have public universities that do a significant amount of energy research and are publicly funded. Getting ideas from programs such as LEEP, could help authorities in Cyprus to 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 but they 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, you need a dedicated management team to run the program and you need to focus on admitting motivated researchers with a strong ambition in commercializing their work.
4.2 Elemental Excelerator

Elemental Excelerator (EEx) is a Hawaii-based accelerator program for cleantech startups founded in 2012. They support startups that work across systems that affect infrastructure, the environment, and quality of life, including energy, water, agriculture, and transportation systems. They focus on “place-based innovation” which means they look at challenges of a specific place and then work 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 Excelerator) 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 and 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), US Department of Energy and Hawaii 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 (these topics were discussed in more detail in Section 1.2). 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 location 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 that want to prove their solution in a market that is not yet exposed to these types of technologies.

Elemental Excelerator has now expanded globally and supports place-based innovation in Asia Pacific regions, such as Japan, Philippines and New Zealand (Figure 20).
Startups that are selected to participate in EEx receive up to $1M in funding, access to mentors and connections to decision makers at utility companies in Hawaii and Asia-Pacific region. EEx was able to achieve this by collaborating and establishing corporate partnership with groups such as DENSO, Hawaiian Electric and General Electric. Startups are encouraged to complete demonstration projects in Hawaii with local corporate partners and are able to use the demonstration results to validate their technology to prospective investors and customers. EEx operates as a non-profit with cohort companies providing 1-6% of equity as a donation. Over the past 6 years EEx has shown tremendous growth with 42 portfolio companies, 22 demonstration projects primarily in Hawaii, and $15m awarded to portfolio companies which resulted in $342M follow-on funding (Elemental Excelerator, 2016 & 2017). Figure 21 shows the impact that portfolio companies participating in EEx have had in Hawaii and the Asia Pacific region.

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 15-20 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.

<table>
<thead>
<tr>
<th>#1 Independent Innovation Agency</th>
<th>#2 Innovation Funding Mechanisms</th>
<th>#3 Positive Entrepreneurship Culture</th>
<th>#4 Promote Local Startups</th>
<th>#5 Attract External Startups</th>
</tr>
</thead>
</table>

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, that 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 a fundamental backbone 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.

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 quite 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, makes the 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 stages 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 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 developed 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.*
6 References

BPC (2017), What’s So Special about ARPA-E?, Bipartisan Policy Center, November 2017

Brookings (2017), Cleantech venture capital: Continued declines and narrow geography limit prospects, Brookings Institute, May 2017

CERA (2016), Cyprus Energy Regulatory Authority, Decision to license and evaluate innovative renewable energy generation solutions, Decision number: 1494/2016, May 2016

Cleantech Group (2016), Global Cleantech Innovation Index (GCII) 2017


Cleantech Group (2016b), Part I: Cleantech focused innovation hubs incubators and accelerators funnelling early stage startup pipeline

CNBC (2017), French President Macron launches tech visa to make France a ‘country of unicorns’, CNBC, June 2017

Cyclotron Road (2016), Annual Report 2016

DG EPCD (2015), Smart Specialization Strategy for Cyprus, Directorate General for European Programmes, Coordination and Development, March 2015


DOE (2017a), Lab-Embedded Entrepreneurship Programs, https://energy.gov/eere/technology-to-market/lab-embedded-entrepreneurship-programs

EIA (2017), State Electricity Profiles, Data for 2015

EIB (2017), Assessing the potential use of Financial Instruments in Cyprus – Final Report


Enterprise Greece (2017), Primary research and interview calls with Enterprise Greece, Investment Attraction Directorate

Enterprise Ireland (2017), Primary research and interview call with Manager FOI & Government Relations, Policy, Government Relations & Secretariat

Enterprise Ireland (2017a), Enterprise Ireland End of Year Statement 2017

EuroAsia (2017), A Trans-European Energy Infrastructure Project: The EuroAsia Interconnector, EuroAsia Interconnector, October 2017

European Commission (2013), European Economy: Member States’ Energy Dependence: An Indicator-Based Assessment, April 2013


Eurostat (2017), Electricity prices statistics

Financial Times (2017), UK tech investors face loss of significant funding after Brexit

Forbes (2016), Secrets to Israel’s Innovative Edge, Forbes Magazine, June 2016

Forbes (2017), What Makes Israel’s Innovation Ecosystem So Successful, Forbes Magazine, Jan 2017


Innovate UK (2017a), Ten Years Shaping the Future Report

Innovation Norway (2017), Website http://www.innovasjon.no/ and interview calls with Senior Advisor at Innovation Norway

IRENA (2015), Renewable Energy Roadmap for the Republic of Cyprus

Israel Innovation Authority (2017), Israel Innovation Authority website, http://www.matimop.org.il/


OEB (2015), Cyprus RES Market, Cyprus Employers & Industrialists Federation

OECD (2016), OECD Data, Gross domestic spending on R&D


SETsquared (2015), The future’s bright for UK innovation as SETsquared is named best in world, SETsquared website, November 2015


Techcrunch (2013), Energy Excelerator, The Accelerator for Clean Energy Startups, Receives $30M from the Navy

The Guardian (2017), Macron awards US scientists grants to move to France in defiance of Trump, December 2017

UCY FOSS (2017), University of Cyprus, Research Center for Sustainable Energy, Website and primary research through interview calls, http://www.foss.ucy.ac.cy/facilities.php

UNFCCC (2017), United Nations Framework Convention on Climate Change, Paris Agreement – Status of Ratification

Venture Beat (2013), Hawaii’s Energy Excelerator pours $5M into innovative cleantech startups

World Economic Forum (2017), Executive Opinion Survey 2017