

Cyprus's State of Climate Tech 2022

Innovation towards
a better planet

An initiative of EIT Climate-KIC and PLANETech

<https://www.climate-kic.org/>

<https://www.planetech.org/>

Coordinator:

Dr. Beatriz Camacho Ávila, *Ecosystem Manager for Regional Innovation Scheme in Southern Europe, EIT Climate-KIC*

Methodology:

Dr. Tamar Moise, *Head of Climate Programs, PLANETech*

Design:

Francisco Checa

Contact information:

eitris@climate-kic.org

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<https://eit.europa.eu/our-activities/eit-regional-innovation-scheme>



Contributors

PLANETech is a nonprofit climate tech innovation community – a joint venture of the Israel Innovation Institute and Consensus Business Group. PLANETech aims to lead the Israeli and global climate tech ecosystem in tackling climate change via a combination of approaches. This is done by modifying business focus and technologies towards climate change challenges, supporting the deployment and implementation of innovative climate technologies, and by building a global network for climate tech innovators while promoting Israel as a world center for climate change technologies.



EIT Climate-KIC is the EU's climate innovation initiative, working to accelerate the transition to a zero-carbon and resilient world by enabling systems transformation. EIT Climate-KIC was established in 2010 and is predominately funded by the European Institute of Innovation and Technology (EIT), a body of the European Union. The Regional Innovation Scheme (RIS) is the EIT Climate-KIC flagship initiative active across Southern and Central Eastern Europe countries. The EIT RIS is designed as a long-term initiative to strengthen the national and regional innovation ecosystems of countries that are moderate and emerging innovators, based on the EU Innovation Scoreboard. EIT Climate-KIC RIS programme offers a concrete way to design, build and deliver mission-oriented portfolios of interconnected programmes on skills development and learning, entrepreneurship, and innovation to catalyse fast decarbonisation, deliver future-proof jobs, generate new markets aligned to 1.5° and drive forward adaptation and resilience.



The Cyprus EIT Climate-KIC Hub has been working under the Regional Innovation Scheme of EIT Climate-KIC since 2016 and consists of three partners – **the Cyprus University of Technology (CUT)**, **Cyprus Energy Agency (CEA)** and **Chrysalis LEAP**. CUT is the academic partner, focusing mainly on education, innovation, policy and demonstration. CEA is a non-for-profit NGO with focus on training, policy and sustainable projects facilitation. Lastly, Chrysalis LEAP is a cleantech accelerator focusing on start-up training and business idea acceleration and entrepreneurship. All three partners are working closely, sharing projects, initiatives and utilizing their personnel's expertise according to the needs of the Hub. National and international collaborations and synergies have been formed between the Hub and municipalities, NGO's, private companies as well as research centers and institutions enabling a more systemic approach to providing a solution to a challenge.



Foreword



Alexandros Charalambides,
EIT Climate-KIC Cyprus Hub Coordinator
Associate Professor, Cyprus University of Technology

Over the past 10 years, various actions have been uptaken in order to promote entrepreneurship and innovation in Cyprus, both by the public and the private sector. A Deputy Ministry focusing on Innovation was formed. A Chief-Scientist was appointed. The Cyprus Research Promotion Foundation was renamed to Cyprus Research and Innovation Foundation. Accelerators and Incubators, like Chrysalis LEAP, IDEA, Gravity, CyprusSeed, etc were formed. Angel Networks like the Cyprus Business Angels Network and funds like the Kinisis Ventures Fund were established. All these actions are an indication that Cyprus is taking the necessary steps towards the right direction.

In the field of cleantech innovation and entrepreneurship, the Cyprus University of Technology, Chrysalis LEAP and the Cyprus Energy Agency, have been working closely with EIT Climate-KIC to bring various activities to Cyprus.

Over the past 10 years, the EIT Climate-KIC Cyprus Hub partners have been educating students, training and mentoring entrepreneurs, accelerating startups, advising the Government, and managing innovation projects, all with the overall aim of making Cyprus a carbon neutral island by encouraging green, highly skilled employment and boosting societal resilience. Given the fact the small size of Cyprus and the immaturity of the innovation ecosystem in Cyprus, it is not expected that Cyprus will harvest the fruits of its labor within the near future.

This study is a good first step in mapping the climate tech startups in Cyprus and will be a valuable tool for follow up studies, in an attempt to understand what startups need to grow, and what else can be done. We are sure, that the right support, both from the public and the private sector, Cyprus can play an important role in the global climate tech innovation arena.



Introduction

European Institute of Innovation and Technology

The European Institute of Innovation and Technology (EIT) was created in 2008 and contributes to achieving the four key strategic orientations of the Horizon Europe Strategic Plan:

- strengthening sustainable innovation ecosystems across Europe
- fostering the development of entrepreneurial and innovation skills in a lifelong learning perspective and supporting the entrepreneurial transformation of EU universities
- bringing new solutions to global societal challenges to the market
- creating synergies and added value within Horizon Europe.

Since its establishment, the EIT has gradually established itself as a unique instrument addressing societal challenges through the integration of the Knowledge Triangle (KT). The EIT operates mainly through Knowledge and Innovation Communities (KICs). There are currently

nine KICs that operate in the areas of climate change, digital transformation, energy, food, health, raw materials, urban mobility, added-value manufacturing, and cultural & creative industries.

The EIT Regional Innovation Scheme (RIS)

Against the backdrop of persisting regional disparities in European innovation performance, the EIT launched a Regional Innovation Scheme (RIS) in 2014 to widen its outreach to emerging and moderate innovator countries, according to the European Innovation Scoreboard (EIS). The EIT RIS is steered by the EIT and implemented by its KICs. The overarching objective of the EIT RIS is to contribute to the advancement of the innovation performance of these countries and their regions by strengthening the capacity of their innovation enablers and actors and linkages among them (such as business accelerators, incubators, startups, businesses, educational and research institutions, etc.) through the dissemination of the KT approach.

The establishment of the so-called RIS Hubs is a central element of the EIT RIS' place-based approach. Article 2 (4) of the EIT Regulation provides that RIS Hubs are "physical hub, established by a KIC and forming part of its structure, in a Member State or in an associated country targeted by the RIS and that serves as focal point for the KIC's activities and for the mobilisation and involvement of local knowledge triangle actors in the activities of the KIC". KICs engage local organisations to serve as EIT RIS Hubs.

Besides the primary functions mandated by the EIT and a common strategic approach, each KIC has designed its Hubs structure and goals according to its own mission and strategy. EIT Climate KIC, one of the nine existing EIT KICs, adopted the EIT RIS as a strategic instrument to target climate resilience needs and foster regional development. Over eight years of implementation, we have worked across 20 countries in Southern, Eastern, and Central Europe and the Western Balkans region, with 13 active Hubs, involving 83 place-based organisations and investing over EUR 26 million, leveraging more than EUR 6.3 million of co-funding.

The Collaboration with PLANETech

Together with EIT Climate KIC, the RIS Hubs gather assertive regional outreach and experience in co-designing capacity-building programmes, supporting entrepreneurs, liaising with local, regional and national authorities and connecting to wider society. Within their mission of being innovation community catalysts, a pioneer collaboration with Israeli organisation PLANETech was planned in 2022.

The [Israel's State of Climate Tech 2021](#) report, written by PLANETech and the Israel Innovation Authority and published a few weeks before COP26, was the first report to portray the climate tech ecosystem of any



PLANETech's team, Dr. Tamar Moise (Head of Climate Programs) and Deborah Kreis (Global Partnerships Manager) during the EIT Climate-KIC RIS Hubs days (June 2022)



Some Hub members learning how to use the PLANETech Climate Challenge Map during the EIT Climate-KIC RIS Hubs days (June 2022)

country. As detailed in the Methodology section, this report provided the PLANETech Climate Challenge Map, an original classification tool that presents the main challenges to successful climate change mitigation and adaptation, across all activities of our daily life and natural ecosystems. Based on the findings of this report, the Israeli government approved a ILS 3 billion program to promote technological innovation in the field of climate change. This report has been a fundamental step towards building a solid climate tech ecosystem in Israel, a country with the largest number of startups per capita (about one per 1,400 inhabitants).

Considering this successful practice and the urgent need of national stakeholders (policymakers, investors, businesses, researchers...) to know the size, components and challenges of their climate tech ecosystems, some RIS Hubs decided to be part of a pilot intended to replicate this Israeli report in Southern Europe. The pilot has provided capacity-building sessions by PLANETech for the RIS Hubs, sharing their methodology on data compilation and report writing. It has included online (June 6th) and in-person sessions during the EIT Climate-KIC RIS Hubs days (June 21st-24th; Valencia).

Our goal was to provide a unique asset that provides a deep dive into the local climate tech ecosystems in different Southern European countries and also serves as an engaging tool for all the innovation ecosystem players of the KT by providing valuable insights.



Methodology

Identification of startups and sources

Available data regarding Cypriot start-ups is scarce; there have been a few efforts to create a database (<https://ecosystem.thetechisland.org/intro>)(1) & (2) and a report (Mapping Cyprus Entrepreneurial Ecosystem) (3) gathering information on Cypriot start-ups but each one with its limitations. These two sources were not used in the development of this present report because 1) they included start-ups not related to climate innovation/ cleantech, 2) they are self-reported, 3) some of the entities named within are companies and not start-ups and 4) some start-ups were not of Cypriot origin. Due to the above reasons, it was decided to gather information through a survey. Cypriot start-ups working under the umbrella of climate cleantech innovation were identified through an online questionnaire that was sent to all

Alumni of Chrysalis LEAP (Accelerator), to the Cyprus University of Technology network and to personal networks.

The survey included questions regarding the goals of the start-up, its main climate challenge areas, founding year, number of employees, financials (grants, equity, revenue), and at what stage is their product/service.

PLANETech Climate Challenge Map

The report's methodology section provides an overview of the PLANETech Climate Challenge Map. This map was used in the first "Israel's State of Climate Tech 2021" report (4), and was updated in the 2022 edition (5). The PLANETech Climate Challenge Map presents the main challenges to successful climate change mitigation and



Figure 1 - PLANETech Climate Challenge Map (source: Israel's State of Climate Tech 2022).

adaptation, across all activities of our daily life and natural ecosystems. The climate challenges are associated with five main areas: The Built Environment (5 challenges), Materials & Manufacturing (5 challenges), Land Use (5 challenges), Nature (5 challenges), and Digital (2 challenges). In total, there are 22 challenges (Figure 1). This entails a broad and all-encompassing approach rather

than focusing on specific economic sectors and services. When focusing on challenges, solutions can be facilitated by innovations from varied technologies that target the areas listed below each challenge. The challenges target the reduction of emission sources, enhancement of carbon sinks, as well as community, nature, and infrastructure resilience.

Mapping of Climate Tech Start-ups

The mapping of Cypriot climate tech start-ups identified 10 start-ups that provide solutions to climate challenges.



Fornelia is a startup that specializes in solar cookers that also work at night. Their product is a pure hardware product and therefore a non-digital solution, currently offered in two main sizes of high-efficiency solar ovens, both using a trough parabolic solar concentrator. With Zero Fire Risk and Zero Emissions the Fornelia ovens can cook for up to 10 people with the same or even less cooking time required compared to regular cooking! Their mission is to lead the world in the creation, development and manufacturing of the most efficient, advanced, cost-effective and affordable green renewable energy solutions.



PHOEBE RESEARCH & INNOVATION

PHOEBE develops innovative monitoring and control systems and services for industrial systems and critical infrastructures. The company's vision is to make smart technologies accessible to industrial operators, and its mission is to design cloud- and edge/fog- based software and hardware solutions by combining state-of-the art research in the areas of monitoring and control, coupled with artificial intelligence and machine learning, towards addressing challenges related to resource efficiency, waste reduction and security enhancement.



ISA Energy Ltd is an innovative project developer, systems integrator and technology partner with offices in Nicosia, Cyprus and in London, United Kingdom. They lead the design and development of projects with a broad 'ecosystem' and lifecycle approach; regenerating the environment and communities in the Eastern Mediterranean impacted by climate change, and working in line with UN Sustainable Development Goals and EU Green Deal targets. Clients including national and international energy companies, municipalities, and industrial, waste, water, power generation and transportation customers.



The use of hydrogen in existing ship engines in combination with the heavy fuel oil used can lead to at least a 20% reduction in both air emissions (CO and Soot) and fuel consumption. HES is comprised of a hydrogen production unit coupled with leak detectors and safety automations. The unit consists of an electrolysis cell where hydrogen is produced, a water tank with an electrolyser and piping that connects the unit to the manifold of the engine. The unit can be installed on board any ship (steam boiler, power generator, auxiliary engine or ship main engine) using fossil fuels for energy production. Every 6 months of continuous operation the unit must be serviced and HES can accomplish this task. The unit is small in size (2x3x1m), and thus can be implemented in any engine room.



Hot Water Control is offering a smart hot water controller for electric hot water storage heaters that will provide adequate hot water depending on the user's needs thanks to a smart adaptive algorithm. This will provide

significant savings compared to conventional usage of electric hot water storage heaters. The system is designed to be easily retrofitted to any existing electrical hot water storage tank by a simple replacement of the existing wall switch with their controller. The unobtrusive design is intended to appeal to a broad range of homeowners.



Low Carbon Buildings



Petaparsec rents high performance computing resources specialized for research and development in deep learning. They have already achieved carbon neutral operation of their business using passive

cooling and 100% wind power but they want to take things a step further by recycling the waste heat of the computer infrastructure in a circular economy. Petaparsec aims to re-purpose 60 degree Celsius water ejected by their solar powered servers in Cyprus to operate laundering for the hospitality industry.



Clean Manufacturing



Circularity



Sustainable Digital Infrastructure



The Mighty Kitchen

Founded in 2019, based in Larnaka, Cyprus, The Mighty Kitchen revolutionizes alternative meat products through food science and materials chemistry to produce delicious, fibrous, plant-based poultry and other meat products and ingredients. The Mighty Kitchen's team comprises a complementary blend of food scientists, engineers, and seasoned entrepreneurs. The Mighty Kitchen aims to evolve food culture by infusing old-world flavours into food options that positively impact the environment, elevate human health, and improve animal welfare globally. Their initial product range includes chicken-like strips, nuggets and tenders and gyros.



Alternative Proteins



Ask WiRE provides the infrastructure, including energy related aspects (i.e. EPC data), on which real estate related financial products and services

are developed. Each property is different, thus further investigation is required to customise a product or service. Ask WiRE is building the digital profile of all properties across Europe, allowing users to assess multiple properties or tailor their products and services to a specific property, unlock automation of standardised processes, and facilitate online transactions. This facilitates banks, insurance companies, real estate investors, retailers, and others meet consumer demand for online transactions, develop new sales channels, and comply with regulatory requirements.



Extreme Weather Events



Earth Observations



Embio Diagnostics offers an inexpensive monitoring biosensor device for testing specific pesticide residue levels anywhere. The

monitoring device is portable and easy to use in any location and in any step of food-production chain before the fruits and vegetables are consumed. The low cost of each analysis allows the monitoring of large number of samples in a daily basis. The detection process takes only few minutes to generate the result 'Above' or 'Below' the MRL (maximum residue level). The device will allow users to raise the number of screened samples, while monitoring the pesticide level will ensure that less (and legal) pesticides are used on the food product consumed.



Climate Smart Agriculture



A purpose-driven ethical lifestyle brand for shoppers who care about people & the planet – promoting the use of environmentally friendly products that are alternatives to

plastic and help to prevent waste. Let's Make Cyprus Green is a non-profit organisation on a mission to spread awareness to the public about the negative human impact on the planet, in particular the harm caused by excessive and improper disposal of waste, and the use of plastic.



Circularity

Main challenge areas chosen by Cypriot Start-Ups

Each start-up was asked to choose up to 3 challenge areas that best described their work. Figure 2 shows the prevalence of each challenge area amongst the start-ups. Circularity and Clean Energy Systems were the most common, with 5 and 4 startups addressing this challenge respectively. Sustainable Mobility and Transport and Earth Observations are addressed by 3 startups.

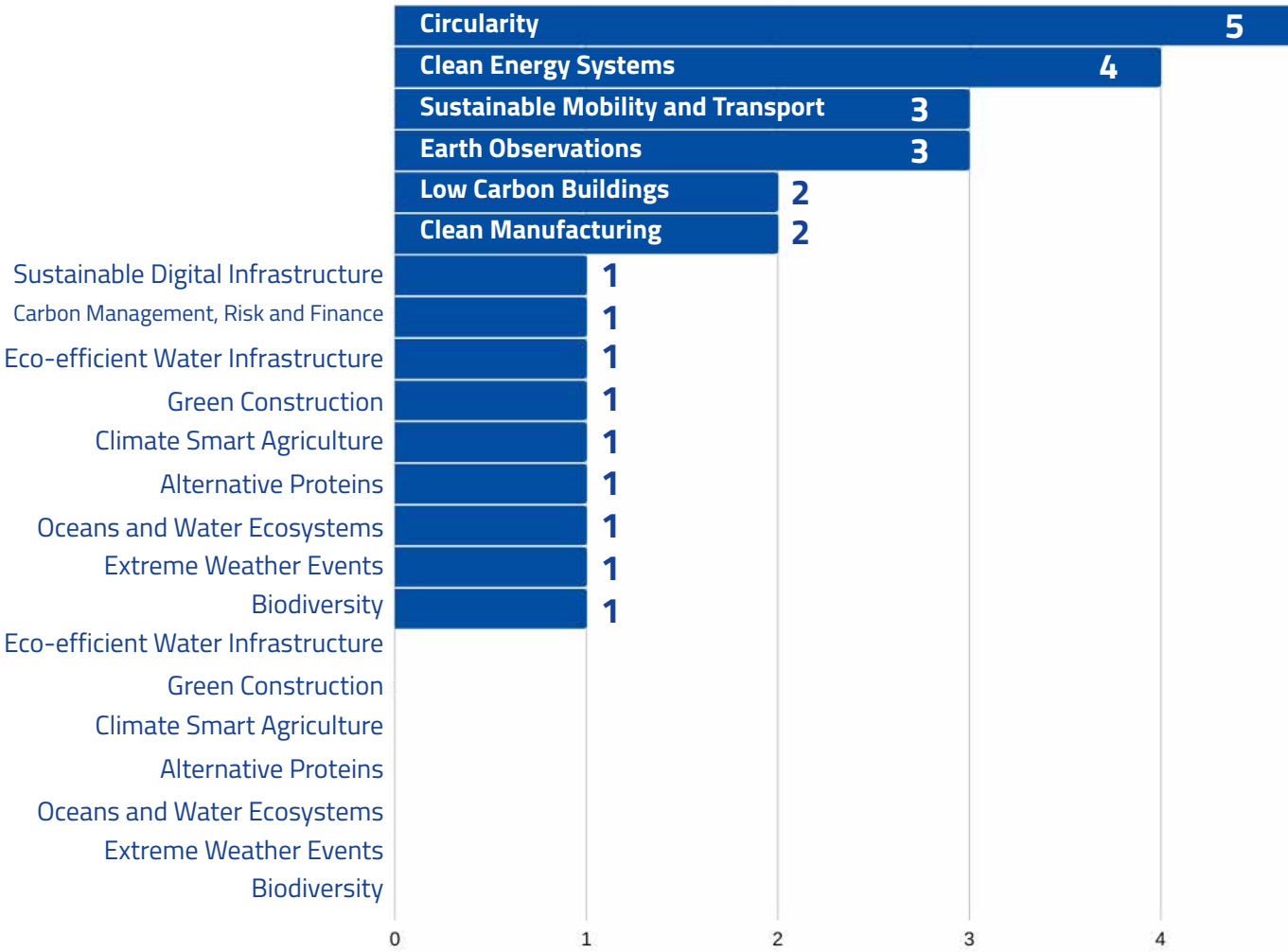


Figure 2: Main challenge areas chosen by Cypriot Start-Ups (total number of start-ups: 10)

Foundation year of the start-ups

The startups are mostly young and still small in size. The majority were founded within the last 5 years (7/10) (Figure 3) and 60% consist of only 0-5 employees (Figure 4). No company has more than 25 employees.

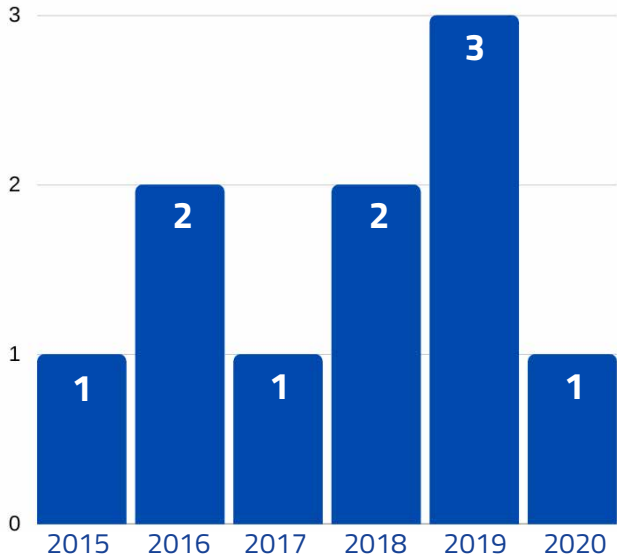


Figure 3: Foundation year of the start-ups

50% of the start-ups have released their service/product on the market (but none of their products are widely commercially available), while the rest of them find themselves either in the early or pre-commercial stage. No start-up is in the research stage. (Figure 5)

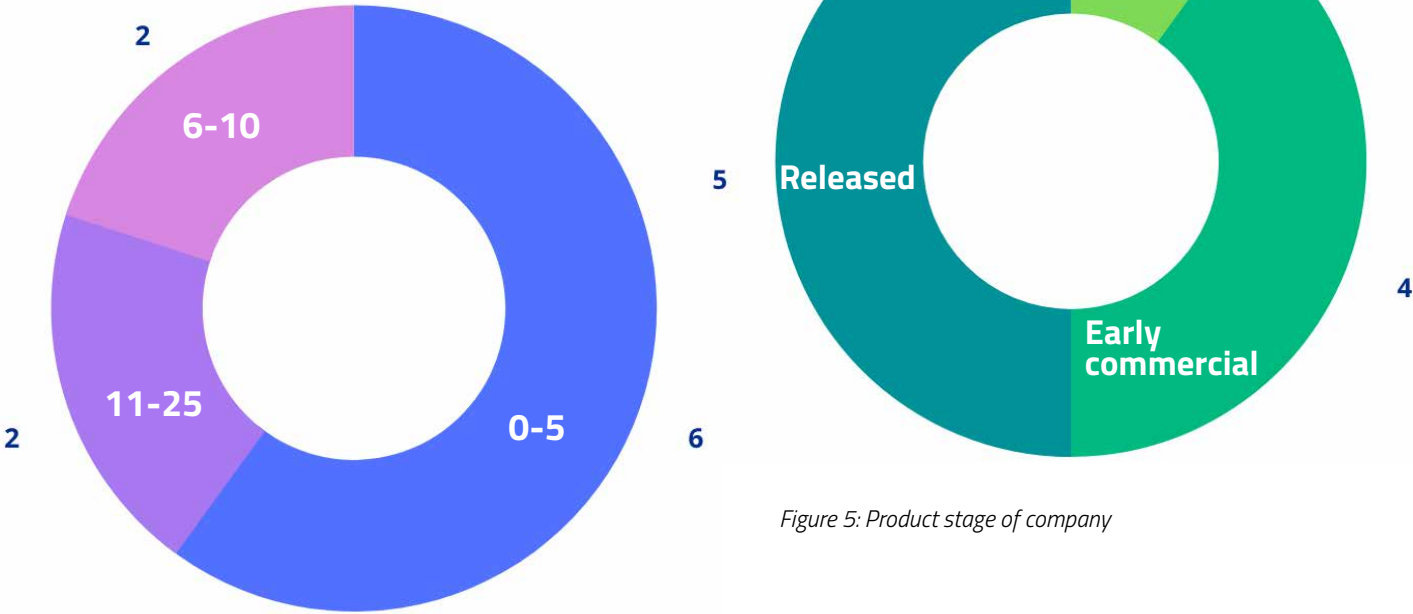


Figure 5: Product stage of company

Figure 4: Number of employees per start-up

Capital Investments

As it is indicated below, 10 startups are showing a revenue, however 60% of those are only within the 1-100k€ range. This result (i.e. low amount of revenue) is correlated with the replies given in the Product/Service Stage Question, where 50% of the startups have indicated that their product is commercially available, but not widely to the market. Only 1 startup has indicated a revenue of 501k-1m€, as they are operating in a broader sector.

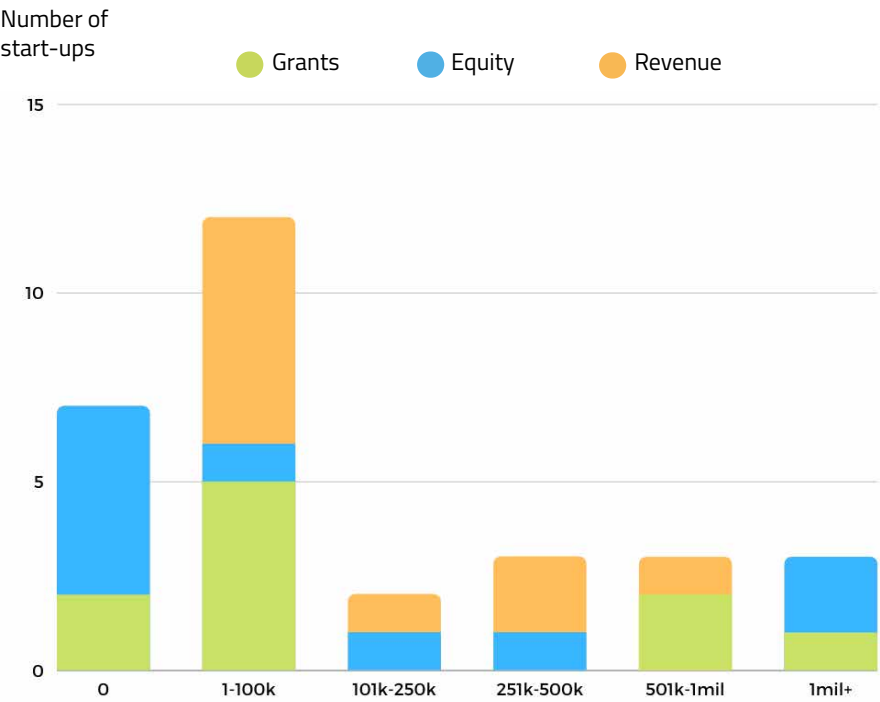


Figure 6: Capital Investments and Revenue of the start-ups

Sources of funding

Regarding the type of grants 80%, of the companies stated that at some point in their start-ups life they have received funding from private investments such as angel investments, venture capitals etc. 60% stated that they have also received funding from national competitive or non-competitive grants while 40% of the start-ups received EU competitive or non-competitive grants. 60% of the start-ups received funding and participated in EIT Climate-KIC Accelerators.

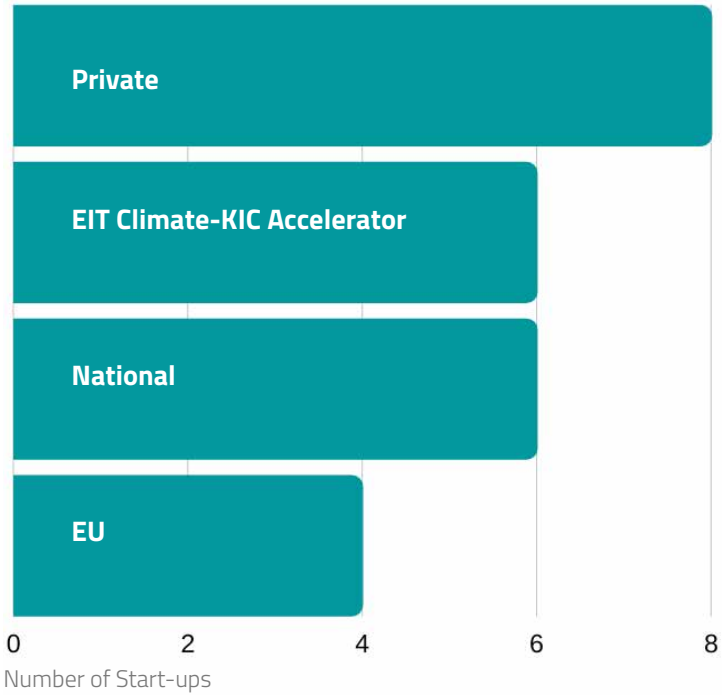


Figure 7: Sources of funding

Looking ahead

This mapping demonstrates that the climate tech innovation ecosystem in Cyprus is still in early stages. It is comprised of a small number of companies, which, although all have revenue from their activities, for the most part have yet to scale. The EIT Climate-KIC Accelerators have played a pivotal role for the majority of the startups.

Looking ahead, and based on the results of this study, the Cyprus EIT Climate-KIC Hub will focus more on activities aiming towards the government in order (a) to attract more start-ups in Cyprus, (b) to enable the creation of such start-ups and (c) to further educate students in the field of entrepreneurship.

The results gathered from this report will be utilized in other projects of the Hub, such as MICIE (Mediterranean Island Cleantech Innovation Ecosystems) and ARSINOE (Climate resilient regions through systemic solutions and innovations), in order to link these start-ups with the challenges faced in their respective industries.



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