
eit Climate-KIC
Funded by the European Union
PLANETech
Climate Change Technologies
Portugal's State of Climate Tech 2022
Innovation towards a better planet
BGI
Sustainable Ventures

An initiative of EIT Climate-KIC and PLANETech
https://www.climate-kic.org/
https://www.planetech.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.

Building Global Innovators (BGI) is a deep-tech accelerator and an innovation consulting firm based in Lisbon (Portugal). It was born from the MIT Portugal Innovation and Entrepreneurship Initiative (IEI) – launched to support Portugal's goal to strengthen its capacity in business education, technological innovation, and entrepreneurship. The initiative was born out of a collaboration between ISCTE-IUL, MIT Deshpande Centre for Technological Innovation, MIT Entrepreneurship Centre, and MIT's School of Engineering. BGI has supported more than 390 startups of which 2 unicorns, having raised over €400M in capital. These results led to BGI being distinguished as one of the top 50 accelerators in the world. BGI has been strengthening its ties with the European Institute of Innovation & Technology (EIT), working with 7 of its Knowledge & Innovation Communities (KICs). To date, BGI delivers not only several acceleration programs (for startups working in different industries and at different development stages), but also open innovation programs (working closely with corporates), education programs (including Hackathons and summer/ winter schools), and other initiatives aiming at developing innovation. BGI is the lead member of EIT Climate-KIC Portugal Hub.

Informa D&B is a company that leads the supply of information and knowledge about the business universe in Portugal and Spain, helping customers base their business decisions for over 115 years. Informa D&B's mission is to produce essential, credible and innovative information to support the business decisions of its customers while helping them reduce risk and find their own customers. The information produced by Informa D&B is used in Portugal by 95% of financial institutions, 45% of corporations and 21% of SMEs, serving more than 450 thousand users, who consult more than 3 million reports on companies every year. The company is also part of the D&B Worldwide Network, the world's biggest information network on businesses and other organizations..

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.

Executive Summary

This is the first edition of the of the Portugal's State of Climate Tech report, a national micro-analysis of technology-based startups fighting climate change and/or counteracting its effects, originating from Portugal. This report is an attempt to provide an overview of the ecosystem, identify the TOP10 performing startups in Portugal, highlighting the aspects that make them successful.

The TOP10 were selected by a combination of the total capital raised, total revenues, capital-to-revenue ratio, jobs created, and time-to-market of scaleups founded in the period of 5 years, spanning between 2017 and 2021. The report starts with an overview of our methodology. The companies selected for this report cut across 5 major climate challenge areas based on PLANETech's Climate Challenge Map [Figure 1]that describes the main challenges to successful climate change mitigation and adaptation, across all activities of our daily life and natural ecosystems - 22 challenges in total (Figure 1). In our analysis we combine a number of challenges, grouping together startups that address Low Carbon Buildings & Green Construction (termed Low Carbon & Green Construction) and also Novel Materials and Clean Manufacturing (termed Novel & Clean Materials and Manufacturing). Our mapping thus addresses 20 challenges in total.

Below are some of the key highlights of the report:

- **Over 70 climate tech startups** were founded between 2017 and 2021, in Portugal.
- The TOP10 climate tech startups have **raised** a total of **€ 31.6M** and generated **€ 20M** in revenues, between 2017 and 2021.
- The TOP 10 **raised 93% of the total investment** sums in climate tech startups between 2017-21.
- The TOP10 cohort featured 5 startups from the Built Environment challenge area, reflecting the predominance of this challenge area on the total dataset of climate tech startups.
- The **Built Environment** makes up **42%** of the startups, **84% of the investments** and **72% of the workforce**.
- **Sustainable Mobility and Transport** is the challenge with more climate tech startups, whereas Clean Energy Systems is the challenge that was found to raise more investment capital.
- There is a **pressing gender and geographic imbalance** both in the full dataset and in the TOP10 climate tech startups.

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.

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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.

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

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)

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

The companies were collected from BGI's database and from Crunchbase. For this report, we considered all the emerging ventures founded in Portugal between the 1st of January 2017 and 31st of December 2021, i.e. any company that has been operating for less than or equal to 5 years.

This retrieved an initial sample of 520 ventures, which were then screened for climate tech startups and categorized according to the expected addressed climate challenge areas: (i) Built Environment, (ii) Materials & Manufacturing (iii) Land Use, (iv) Nature, or (v) Digital. This screening rendered a total of 75 startups selected for further analysis. The climate challenge areas match the challenges identified in PLANETech's Climate Challenge Map.

It is important to note that a startup often addresses more than one climate challenge. The analysis in this report relates to the main climate challenge targeted by the startup.

Sources

The information on the startups/scaleups identified as matching the 20 climate challenge areas was retrieved from BGI database, Informa DB and Crunchbase. Information regarding revenues and number of employees was obtained from Informa DB, while information regarding Capital raised was obtained from Crunchbase and manually curated using information from media news. The detailed information on each of the TOP10 startups was collected from each startup website and social media channels, as well as from available online interviews and news pieces.

Startup ranking

The startups/scaleups were then ranked based on 5 factors:

- Total funding (TF)
- Total Revenue (TR)
- Total Employees (TE)
- Capital turnover Ratio (CR)
- Time to Market (TM)

A standardised score was first calculated for the chosen factors for each. This z-score evaluates the distance from the mean using standard deviations and allows each startup/scaleup to be compared with each other. Weights were then assigned to each factor. The objective of the weighting process was to indicate the importance of each factor in the ranking. The weighting process was based on industry research and is BGI's proprietary knowledge. The startups were then ranked based on the final rank score to determine the hierarchy of the Top 10 Portuguese climate tech startups/scaleups

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

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 in the first "Israels State of Climate Tech 2021", and was updated in the 2022 edition.
The PLANETech Climate Challenge Map presents the main challenges to successful climate change mitigation and 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.

Innovation EcoSystem in Portugal

Our analysis rendered 75 startups that work towards climate change adaptation and mitigation. About 41% of the startups found were addressing the Built Environment, i.e., where we live (Figure 2). Included in this category are startups tackling Clean Energy Systems, Sustainable Mobility and Transport solutions, Low Carbon and Green Construction, and Eco-efficient Water Infrastructure (Figure 3). Among these, sustainability in transportation is the most common challenge addressed by startups, making up approximately 42% of the Built Environment startups and 17% of the full dataset of climate startups. Among the other challenge areas, Materials and Manufacturing is the second most well-represented climate challenge area (27% of the total dataset), with the startups involved in Circularity and in Novel and Clean Materials and Manufacturing composing 23% of the startups in our dataset. The full distribution of the startups across the challenges is represented in Figure 4.

% of startups in Portugal per each challenge area

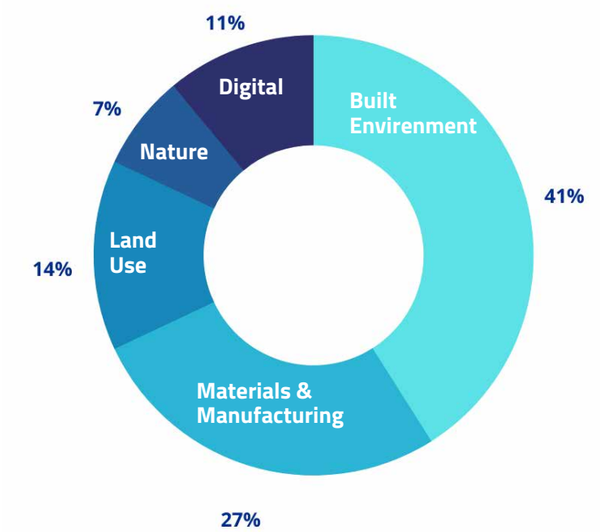


Figure 2 - Percentage of climate tech startups in the Portuguese ecosystem dedicated to each Climate Challenge area

% of startups in Portugal in built environment challenge area

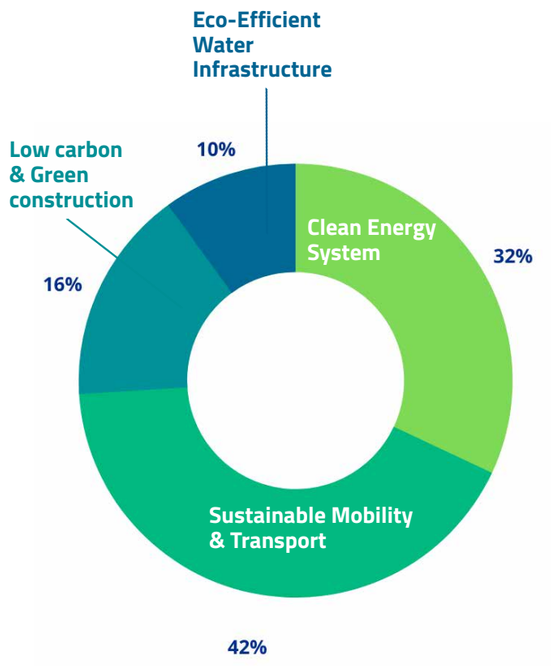


Figure 3 - Distribution of the climate tech startups included in the Built Environment challenge area according to specific challenge domains.

Number of startups per challenge

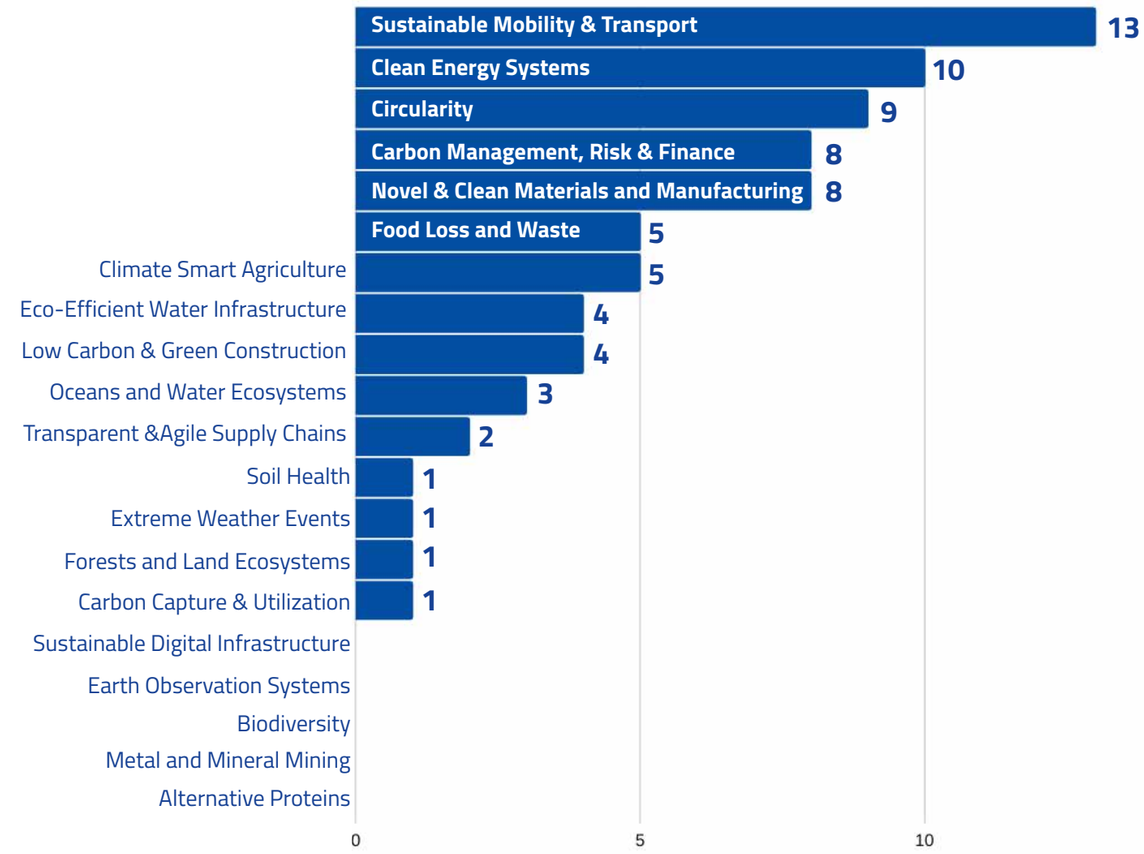
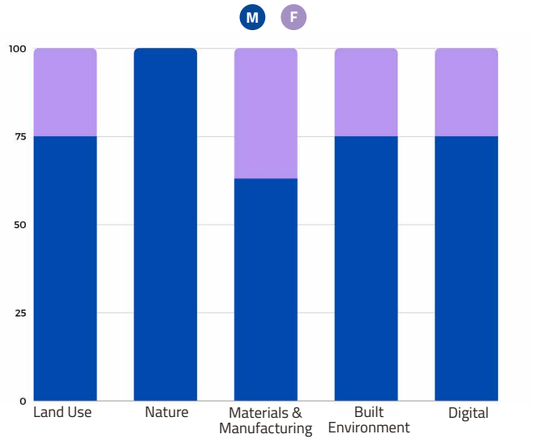


Figure 4. Distribution of the startups by climate challenge area addressed.

The Portuguese startup ecosystem in Climate technologies is responsible for employing about 300 people, with a gender balance clearly shifted towards hiring more male employees (Figure 5). In a clearly male-dominated environment, it is still possible to observe some differences between challenge areas, with Nature startups being the most gender-imbalanced and Materials and Manufacturing ventures the ones in which women make up the biggest proportion (still below 40%).

Employee gender distribution per challenge area



Number of employees per challenge area

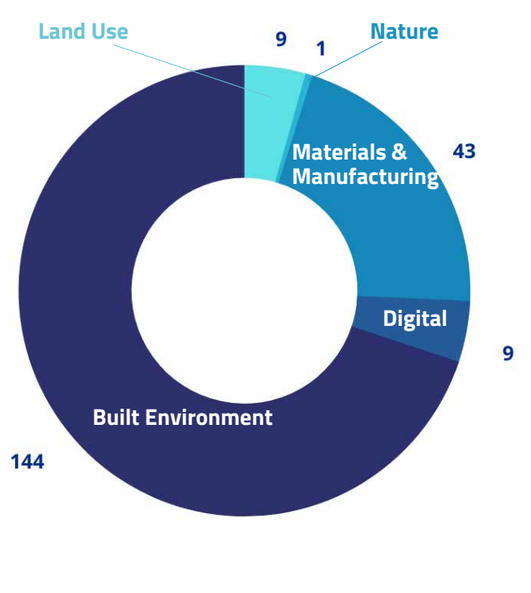


Figure 5. Number of employees and gender distribution by climate challenge area

Geographic distributions of startups HQ in Continental Portugal

The geographical distribution of the headquarters for these startups is shown in figure 6. Lisbon is home to 30% of the startups considered in this dataset, while Porto follows closely with 24%. Coimbra, home of the oldest University in Portugal, stands as the third city with more startups focusing on climate change. Not surprisingly, this shows that Portugal's largest urban centers of Lisbon and Porto are also its biggest innovation catalyzers when it comes to cleantech and sustainability, proving to be attractive regions for entrepreneurs and startups tackling climate problems.

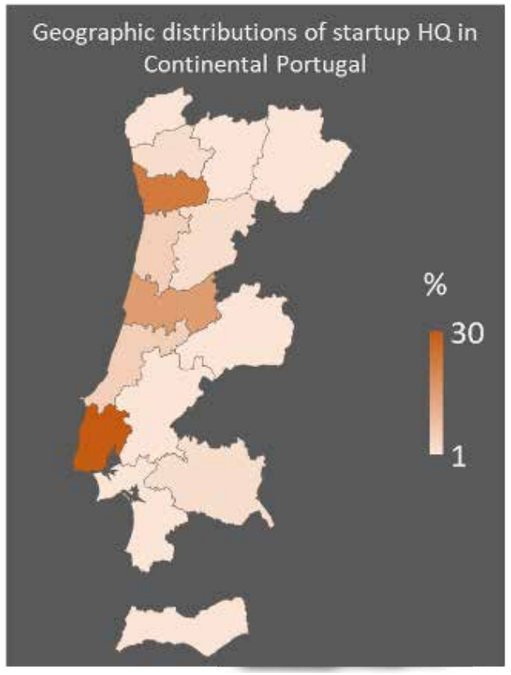


Figure 6. Geographical distribution of the climate tech startups

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Percentage of climate tech startups founded per year

When it comes to the creation of new climate tech startups, Portugal has clearly been witnessing a slight-but-steady decline ever since 2017, with a more abrupt fall in 2020, the year in which the COVID-19 pandemic had more devastating consequences. Although there was a clear inflection in 2021, the numbers are still clearly behind those of 2017-2019, it is already possible to observe an increase in the number of climate startups founded (Figure 7). In fact, the creation of new climate tech startups follows the global trend, except for this inflection observed for 2021.

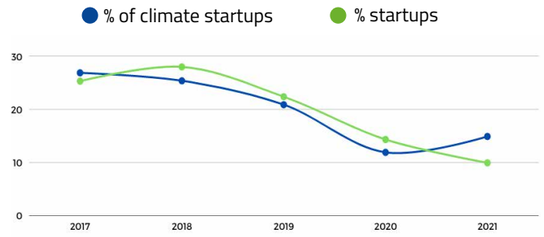

Figure 7. Percentage of climate tech startups created per year, during the period between 2017 and 2021, in comparison with the full dataset of startups created in this time period.

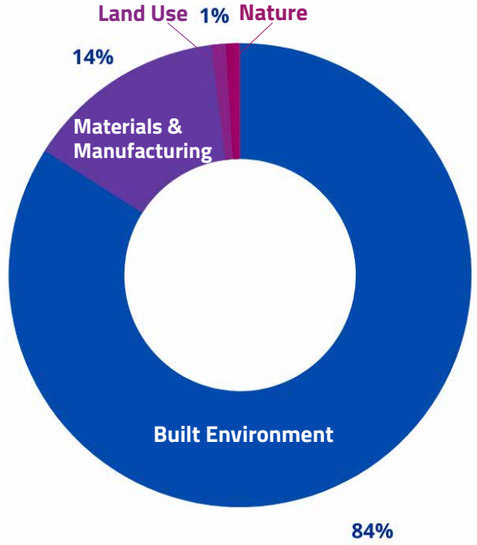

Figure 8 .Capital raised by startups according to each challenge area as a percentage of the money raised by the full dataset of climate tech startups

Funding raised by startups in each challenge area (as % of total).

The startups included in this study were collectively responsible for raising approximately € 34M in funding from 2017 to 2021. From this amount, more than 80% was raised by startups from the Built Environment challenge area (Figure 8). Importantly, startups focusing on the development of Clean Energy Systems account for most of the funds raised (€ 22M, corresponding to almost 64% of the total). Startups focusing on the Digital challenge area did not seem to have raised capital during this time period.

TOP 10 Climate startups

Based on our ranking criteria described in the methodology section, the Top 10 performers in the startup Climate tech Ecosystem in Portugal are listed in this table.

		Climate Challenge	Challenge Area	Website	HQ Location	Founded year
1	FUSION FUEL	Clean Energy Systems	Built Environment	fusion-fuel.eu	Lisboa	2018
2	D-LOOP	Sustinable Mobility & Transport	Built Environment	daloop.io	Porto	2019
3	TESSELO	Climate Smart Agriculture	Land Use	tesselo.com	Lisboa	2017
4	tblx	Sustainable Mobility & Transport	Built Environment	tblx.io/	Lisboa	2018
5	Chemitek	Novel & Clean Materials and Manufacturing	Materials and Manufacturing	chemitek.pt	Braga	2018
6	SMARTEX	Circularity	Materials and Manufacturing	www.smartex.ai	Porto	2018
7	InfiniteFoundry 3D Digital Plant	Extreme Weather Events	Nature	infinitefoundry.com	Porto	2017
8	i-charging	Sustainable Mobility & Transport	Built Environment	i-charging.pt	Porto	2019
9	FLOWCO	Circularity	Materials and Manufacturing	www.flowco.pt	Porto	2018
10	HUNTER	Sustainable Mobility & Transport	Built Environment	hunterboards.com	Lisboa	2019

Our TOP10 is composed of 50% of startups from the Built Environment challenge area reflecting the same trend identified in the total startups created in the last 5 years. Contrasting with the geographic distribution of the 75 companies mapped in this study, which is led by Lisbon, the TOP10 shows a predominance of companies based in the Northern region of Portugal, also the most industrialised. Undoubtedly, the TOP10 are imbalanced in gender distribution, more than 90 % of the founders are men. Approximately 75% of the founders are Portuguese.

Who is behind the top 10

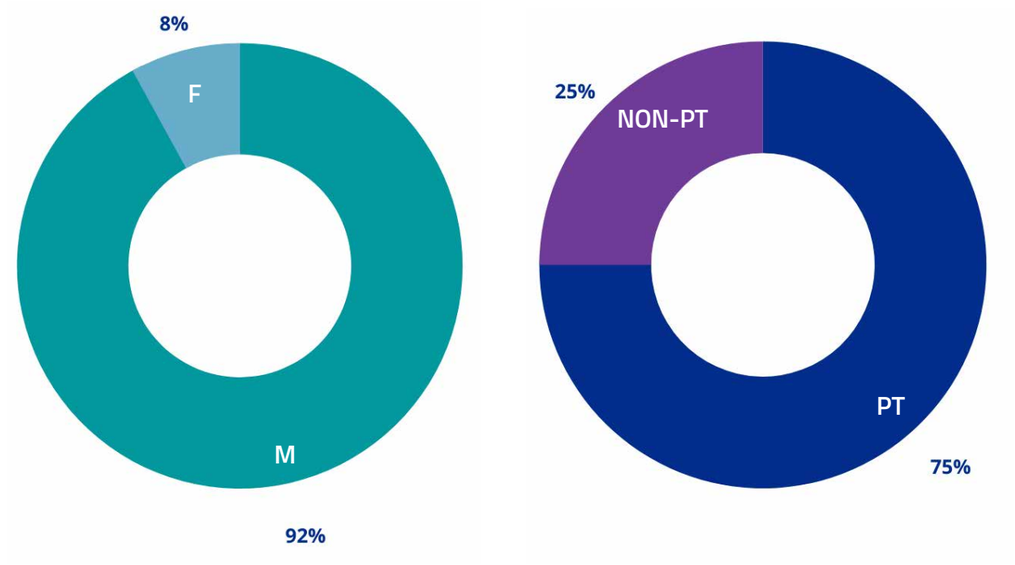

Figure 9. Gender and nationality distribution of the TOP 10 startups' founders.

Our TOP10 reached a total combined revenue of € 20M and, together, they employ almost 200 people, more than 65% of the total number of people employed by the full dataset of climate tech startups.

Together these ten companies have raised € 31.6M, which represents 93% of the total investments raised by the ecosystem of climate tech startups in Portugal in the period 2017-21. Most of the investment on these startups came from the United States, with Portuguese ventures getting a modest second place, gathering only 25% of the total capital invested in the TOP10 (Figure 10). This is also in line with what we observe across other areas, namely digital [2].

However, it is important to note that the top ranked startup alone raised € 21 M from the US on a Post-IPO Equity round, greatly contributing to the results obtained. If we were to exclude Fusion Fuel from this analysis, Portuguese Ventures would be responsible for 74% of the investment capital raised by the TOP10.

Investor distribution by country

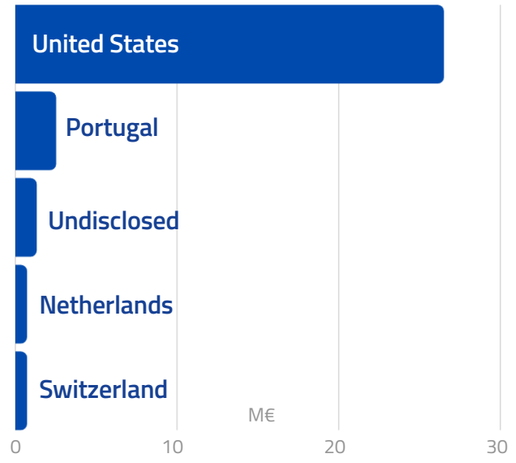

Figure 10. Capital investments in the TOP10 startups, by country.

Meeting the top performers[1]

Fusion Fuel is making zero-emissions green hydrogen commercially viable and accessible. Founded by João Wahnon and Pedro Cunha, it started by developing Hevo-Solar technology, a photochemical green hydrogen generator that enables the decentralised production of green hydrogen from solar energy. Through its proprietary microelectrolyzer technology, Fusion Fuel is able to capture and utilize the thermal energy generated by CPV solar modules to enhance the efficiency of the electrolysis process and produce green hydrogen at costs meaningfully cheaper than today's conventional electrolyzers. The company began a merger process with the U.S. fund HL Acquisitions (SPAC) and, through this transaction, the Fusion-Fuel group raised 21 M€ in a Post-IPO Equity round. The company was listed on the Wall Street Exchange on the Nasdaq index in December 2020.Fusion Fuel's mission is to provide the world with innovative green hydrogen solutions that accelerate the transformation of the global energy sector and enable the sustainable reduction of carbon emissions, by producing hydrogen using renewable energy at highly competitive costs without any associated carbon emissions. The company estimates to produce up to 764 tons of green hydrogen per year, to be used in the transportation sector and in energizing Sines industries.

Daloop, formerly known as GoWithFlow, is headquartered in Porto (Portugal) and was founded in 2019 by André Dias (CTO & Founder). André holds a master of science degree (MSc) in Aerospace engineering both from the Instituto Superior Técnico in Portugal and L'ISAE-SUPAERO in France. Jane Hoffer (CEO) is a, startup expert, known for successfully funding and selling startups. Jane holds a degree in Electrical engineering from Texas AM University. Daloop offers a complete SaaS solution for managing the complexity of eMobility businesses and services. The company has raised a total of $5.5M of funding over three rounds. Their latest funding was raised on Aug 1, 2019 from a Seed round. According to our data, by the end of 2021 Daloop already employed 44 people! Daloop essentially helps society in general to transition towards low or no-emissions vehicles. This means helping organisational fleets transition away from combustion engines and providing Charge Point Operators (CPOs) and Electric Mobility Service Providers (EMSPs) with the technology developed and the crucial support they need to deliver their own products and services. The company's goal for this decade is to connect as many assets as possible to their software, which will prevent an enormous amount of CO2 from entering the atmosphere.

Tesselo was founded in 2017 by its CEO Rémi Charpentier, CTO Daniel Wiesmann, and CSO Michael Flaxman, in Lisbon. Rémi holds a master's degree in Computer Science (2003; Concordia University) and in Business Administration, Strategy and Marketing (2006; ESSEC Business School). Daniel holds a PhD in Sustainable Energy Systems (2012; Instituto Superior Técnico). Michael is a Ph.D. in Landscape Planning (2003, Harvard University). Tesselo hass developed an artificial intelligence-based geospatial system designed to provide satellite imagery. The company's platform specialises in remote sensing analysis, land cover mapping, and sustainability and processes it to generate clear imagery and better analysis, enabling clients to utilise easy-to-use continuous environmental monitoring tools to get real-time data. This provides solutions in managing land resources in more efficient, conscious and effective ways. Tesselo has raised a total of $476.3K in funding over 2 rounds. Their latest funding was raised on Nov 1, 2021 from a Seed round. Tesselo is now operating with 7 employees.

Lissabon, tb.lx is a Lisbon-based DTB Tech & Data Hub, founded in 2018. The company was rebranded as tb.lx in 2019. This subsidiary of Daimler Trucks & Buses focuses on creating global connectivity services for a sustainable future of transportation and connects data ecosystems and unlocks mobility patterns in big data that lead to new customer-centric products.With a people-centric culture, tb.lx is challenging the status quo of work, pioneering hybrid working models and company culture, and creating the workplace of choice for talents in product and engineering. Lissabon, tb.lx employed, by the end of 2021, 53 people. Actually, Christian Lessing, CEO of Lissabon, tb.lx claims that this company culture is one of the key success points of the company. In his words "Our company culture breathes sustainability - it is lived by all of our employees and is an important part of our daily work.". The Digital Product Studio expands in the areas of product development and software engineering and offers 70 new openings until the end of 2023.

Chemitek, a startup from Esposende, was founded in 2018 by César Martins (CEO), Expert in Contaminants Removal with a Master degree in Micro/Nano Technologies from Minho University. The company offers innovative solutions, more sustainable and environmentally friendly than conventional products, for cleaning and maintenance in industrial sectors such as Automotive, Naval and Degreasing. Chemitek positions itself as a customer-centric, innovative and sustainable chemical company. Chemitek is already commercializing 30 products, 2 of them proprietary of the company. ChemiTek has raised € 1.8M in seed capital, in two rounds. After acquiring its first customers in Northern Europe and demonstrating that their product led to an improvement of up to 4% in the performance of the solar panels, ChemiTek has a 500 m2 production facility with a capacity of 10 tons per day, and is present in more than 60 countries.

Founded in 2019 by Antonio Rocha (CTO), Gilberto Loureiro (CEO) and Paulo Ribeiro (VP of Engineering), Smartex has developed a machine-vision-driven software that makes fabric production more efficient in preventing waste. Their solution uses Artificial Intelligence and Machine Learning to ultimately prevent textile waste at its source, offering real-time inspection for Circular Knitting Machines. Through this cutting-edge technology, Smartex is able to reduce defective production to close to 0%. The company estimates that its product has been able to save around 300 000 kg of fabric, which translates into less 650 000 kg of CO2 emissions and savings of +30 million litres of water, helping one of the most polluting industries in the world achieve a greater level of sustainability. Smartex has been gaining increasing recognition, being the PITCH winner of 2021's WebSummit. Although still not considered in our analysis focusing on the 2017-2021 period, by the time of the writing of this report the company already raised $24.7M in a Series A investment round to expand the business strategically to new geographies, increase the team and develop product lines. The European Commission has recognized Smartex as fundamental for Industry 4.0 projects in textile factories.

Infinite Foundry was founded in 2017 by André Godinho Luz, while he was still a student at Instituto Superior Ténico, Lisbon. It's 3D Digital Twin of a city can map the entire urban landscape including buildings, vegetation and water bodies, to support city management. This technology allows to manage transportation, prepare for flooding or other extreme climate events and warn about high pollution levels.The company has raised € 500k in seed capital and grants. With HQ in Porto and an office in São Paulo (Brazil), the company provides cloud based services to develop 3D digital twins of products and environments, saving up to 80% in development time and cost as inefficient physical prototyping is eliminated. At the memento, InfiniteFoundry has already 3 products on the market, one focused on industrial plants, other in cities and a third one that creates a 3D Digital Twin of athletes for virtual training, increased performance and improved skills for competition. In 2020 Infinite Foundry, was one of the winners of the 2020 "University Startup World Cup", in the "Smart City Growth Stage" category, as well as of the 5th edition of the IoT Challenge, a technology competition promoted by Altice.

FLOWCO® was officially founded in 2018 and has its headquarters in Porto. Founded by José de Almeida, Sebastião Ataíde, Rodrigo Melo e António Vale, four architects, this startup dedicates its efforts to ensuring circularity, creating products inspired by ecological sustainability. With more than 10 products in the market already, FLOWCO is well-know for Goma, an eco-tile made from shoe soles, and Gorila, a flooring for training areas made from end-of-life tires or cork waste. FLOWCO also collaborates with industries by contributing to solve waste problems, pushing brands towards more sustainable products, and innovating materials for designers. In 2020, FLOWCO raised an investment of € 100k from Portugal Ventures. Nowadays, FLOWCO harbours a small industrial unity capable of processing more than 50 tons of waste per month!

The startup i-charging focuses on developing electric vehicle charging solutions, was founded in 2019 by a team with a track record in innovation and management of technological companies and strong links to the institutions of the Portuguese Scientific and Technological System.The company based in Porto, launched in 2020 its star product - the ultra-fast blueberry electric vehicle battery charger, based on patented technology, that has reached several European countries and the Asian market - notably in Hong Kong, Macau and the Greater Bay Area.While its technological innovation received the German Innovation Award 2022 "for outstanding innovation achievement" in the category Excellence in Business to Business - E-mobility" and the E-mobility Awards 2021 in the category EV Charging Equipment, the brand focus on product design, has also been recognised by several awards, including the German Design Award 2022 in the category of - Excellent Product Design - Public Design.

Founded in 2019 by four young Portuguese, Hunter Boards is an urban luxury tech company focused on the micro-mobility space. Its first product is the Hunter Board, the world's first electric skateboard able to reduce the user's risk of falling. Entirely made of space aluminium, the innovative skate has been technologically compared to Tesla by publications such as The Verge or Input Mag. Although all Hunter products are designed and made in Portugal, sales have reached over 20 markets, most prominently the USA, that represents about 80% of its sales. The company has raised € 720k in seed capital in two rounds.Two of the co-founders - Pedro Andrade, and Miguel Morgado, were distinguished by Forbes in its "under30 Europe 2021" ranking. The sale of the first 50 units in an online operation in 2020, which had more than 6000 subscribers worldwide, caught the attention of the international press and the skateboard was named one of the 100 best inventions in the world in 2020 by Time magazine.

[1] *Information on this section was retrieved from Crunchbase, LinkedIn, and online news media.*

Final remarks

Is unequivocal that our climate system is warming, and science proves it. According to the environmental organisation ZERO [3], due to its geographical characteristics, Portugal is among the European countries with the greatest vulnerability to the adverse effects of climate change. Desertification, drought, forest fires, coastline erosion, storms, and decreased agricultural productivity are among the most eminent deleterious effects pointed out by this association. It is mandatory for our generation to increase low-carbon technologies and mitigate climate change.

It is estimated that Sustainability will be a US$12 Trillion a Year Market by 2030. The green technology and sustainability market size is expected to grow from USD 8.7 billion in 2019 to USD 28.9 billion by 2024, at a Compound Annual Growth Rate (CAGR) of 27.1% [4]. Accenture estimates the value of implementing a circular economy to be US$4.5 trillion globally.

In terms of Land Use, which accounts for less than 1% of all start/scaleup capital raised in Portugal (particularly, Climate Smart Agriculture, Soil Health, Alternative Proteins, Food Loss and Waste), the challenges are many. Starting with the question on how to feed 10bn people planet by 2050. In Portugal, the agrifood sector plays a very important role: agriculture and food production, processing and commerce represents almost 10% of the national GAV (gross annual value), 13,8% of the total number of active companies and 12,7% of employment [5]. The sector is definitely in need of a technological boost, that still is not foreseen in the present report. Climate change, the COVID-19 pandemic and the threats posed by war conflicts brought us clear indications that it has become urgent to take action. Therefore the development, implementation, and dissemination of climate technologies are of major importance to improve the available information, increase agrifood productivity, and streamlining supply chains.

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The world desperately needs to reduce carbon emission/ global warming, water and land scarcity. We need alternatives, from animal based and industrial food (with health impacts on cancer, heart diseases, diabetes) to more healthy foods. It is undeniable that the sector has been slow to adopt new tech-based yet sustainable solutions as highlighted by EIF report[6]. In 2019, 24% of the GHG in the EU were caused by Agriculture, Forestry and other land use. Viable solutions are now available or in development which replicate, simulate or substitute for animal protein.

Consumers behavior is shifting towards "conscious consumption". There's a need for waste reduction/ efficiencies improvement. New set of digitalization-driven technologies in areas such as precision farming, sustainable packaging and blockchain-based food tracing. Digital technologies for smart production can make agri-food production more efficient and sustainable by reducing the use of fertilizers and chemicals to protect crops. Packaging innovations can reduce waste with biodegradable materials and new contact materials that increase the shelf life of food. All of these present significant opportunities for Climate entrepreneurs to tackle. And the world will need them.

This report aimed to provide an overview of the climate-focused startups in Portugal, as well as to identify the strong and weak points of this ecosystem. The methodology employed allowed us to rank the startups based on 5 factors: Total funding (TF), Total Revenue (TR), Total Employees (TE), Capital turnover Ratio (CR), and Time to Market (TM). These factors were then weighted according to the importance of each factor in the ranking, based on industry research. This weighting factors are BGI's proprietary knowledge and have been used several times before in the production of the ScaleUp Portugal Reports [2]. This process is therefore subject to some subjectivity, since different stakeholders might value differently the factors considered. Another point of subjectivity on this report that we would like to highlight is the categorization of the startups into the climate challenge areas and specific challenge domains. One clear example of this is the low number of startups (3) associated with ocean ecosystems found in our report. This does not mean that the ocean ecosystem is being underexplored in the technology development in Portugal.

Instead, 4 other startups were found that aim to reduce ocean plastic contamination and use it for production of wearables (categorized as Circularity) or valorise it towards energy production (categorized as Clean Energy Systems). One startup can in fact cross more than one challenge domain. Although we are aware of the possible subjectivities of our methodologies, this report aimed at its purpose of evaluating the ecosystem and assessing top performing startups, according to our parameters and classification.
We found a total of 75 tech-based climate startups founded between 2017 and 2021, in Portugal.

Collectively, these startups raised approximately € 34M in investments and collected € 30M in revenue. These startups employ 300 people, mostly in the urban cities of Lisboa, Porto, and Coimbra. The TOP 10 climate startups in Portugal have raised a total € 31M and collected € 20M, which represents 93% of the total capital raised and approximately 67% of the total revenues of the full dataset of startups. Comparing to our last ScaleUp Portugal 2021 report [2], climate tech startups have raised € 21M more than in the 2016-2020 period [2], strongly influenced by the capital raised by our top performing startup, Fusion Fuel. It is important to state that the investment information is limited to the information shared on Crunchbase and on the media, and thus the values can be higher than the ones presented in this report.

Our report clearly identifies the Built Environment challenge area to be the most prominent in all parameters analysed. Greatly contributing to this are startups focusing on Clean Energy Systems and Sustainable Mobility and Transport. These two areas have been also been pointed out by Fortune [7] as the industries to watch. Among the Clean Energy Systems is the production of green hydrogen. As recently pointed by Euronews, Portugal is betting hard to position itself as the major exporter of green hydrogen, with both EDP, Galp Energia among other players planning to build green hydrogen plants in the same industrial hub of Sines [8]. This is in accordance with our report, that points Fusion Fuel as the TOP climate startup in Portugal, from 2017 to 2021. In fact, Portugal established in 2020 a National Strategy for hydrogen, with the aim to foster hydrogen suppliers and the consumers, in the main economy sectors, creating conditions for a true hydrogen economy in Portugal.

Sources

[1] PlaneTech Challenge Maps. Available at: https://www.planetech.org/challenge-areas (Accessed: 11/11/2022).
- Israel's State of Climate Tech 2021 and
- Israel's State of Climate Tech 2022 Available at https://www.planetech.org/resources

[2] BGI – Building Global Innovators. ScaleUp Portugal Report. Available at: https://www.scaleup-portugal.tech (Accessed: 11/11/2022).

[3] The Portugal News (2021). Portugal one of the most vulnerable to climate change. Available at: https://www.theportugalnews.com/news/2021-08-13/portugal-one-of-the-most-vulnerable-to-climate-change/61659 (Accessed: 11/11/2022).

[4] ReportLinker. Global market 2022-2026 (2021). Available at: https://www.reportlinker.com (Accessed: 11/11/2022).

[5] Novobanco. O setor alimentar e os impactos do Covid19 (2021). Available at https://www.novobanco.pt/institucional/mercados-financeiros/estudos-e-analises/gps/research-economico-e-setorial/o-setor-agroalimentar-e-os-impactos-do-covid-19 (Accessed: 21/11/2022).

[6] European Investment Bank. Feeding future generations: How finance can boost innovation in agri-food (2019). Available at https://www.eib.org/en/publications/feeding-future-generations (Accessed: 11/11/2022).

[7] Fortune. These are the biggest trends in clean tech in 2021, investors say (2021). Available at: https://fortune.com/2021/02/16/clean-tech-trends-investing-venture-capital-green-investment-trends-climate-change-electric-vehicles-hydrogen-agriculture (Accessed: 11/11/2022).

[8] Euronews. Portugal seeks to become major exporter of green hydrogen (2021). Available at: https://www.euronews.com/next/2022/11/11/portugal-energy-hydrogen (Accessed: 11/11/2022)

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