

Croatia'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>





Foreword

Extreme heat, fires, and severe weather events are something we live with, and they will only get worse. Drought hit Europe in 2022, strongest than ever, and European rivers almost vanished in some parts. The mean summer temperature deviation for summer in Croatia in 2022 was in red for the whole country, with up to 3,2 °C higher than average in some regions. The forecasted annual drought damage is 350 million euros. The impact of climate change came much faster than all scenarios predicted and is unequivocally recognized as an all-encompassing threat to the global economy and humanity.

The need for adaptation and resilience build-up is present along the value chain, and it must be systemic, tackling all relevant areas. Innovations are at the core of the EU missions, and the new tool EU introduced to tackle the greatest challenges humanity currently faces. Climate emergency is brought to the top of the public priorities, and this drive needs to be harnessed for change across different parts of our population. In the end, however, it is all about what we do on the bottom of the value

chain, on the ground. Concrete actions are needed to battle the climate crisis, and the major component is the implementation of innovative technologies.

There is a common opinion that can often be heard in Croatia that Croatians work best when under pressure and when the real threat exists. A reflection of that can be seen in climate-related innovative technologies. In the past few years, as awareness of the climate crisis became stronger, the number of Startups and SMEs working in this field increased, and it does so on a yearly basis. Many of these technologies are in the early stage, some on the idea level, but the „ground“ started to rise to the challenge. It is the decision-makers, business, government, and local and regional leaders who guide the development to steer and use innovation to increase resilience and economic growth. Those two work together well.

This report presents the state of a part of the Croatian climate tech ecosystem, still relatively young but full of potential.

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 EIT Climate KIC RIS Hub Croatia was established in June 2018. During the years the Hub changed its members, and currently it is composed of [North-West Croatia Regional Energy Agency \(REGEA\)](#), [University of Zagreb \(University Technology Transfer Office\)](#), and [Terra Hub](#) (NGO). The aim of the consortium is to promote and set up a net-zero carbon economy and resilient society through building a systematic climate innovation ecosystem and catalysing systemic change involving all layers of society.



University of Zagreb



Executive Summary

Technological innovations play a crucial role in the global challenge to mitigate and adapt to climate change. The Republic of Croatia has recognized that and is actively supporting research and development projects with calls for funding to help create and commercialize innovation or establish long-term supplier relationships/value chains between companies.

One of the most important findings of this report is that Croatia has a stable growth of Startups. Moreover, in the scope of the IRI 2 call for proposals, 55 co-financed projects were Climate-related with co-funding of 71.693.680,04 EUR, 32% of all granted co-funding.

The report proved the importance of Calls for proposals like the one analyzed by surveying Croatian climate tech companies. Namely, 83% of participants are interested in cooperating to create market solutions, while 42% would appreciate help with product development. Given the positive results that the co-financing schemes had until now on Climate Tech, it is expected that even more Startups and Climate-related projects will emerge.

CROATIA CLIMATE TECH ECOSYSTEM AT A GLANCE



74+

Startups &
Growing
Companies



55

Co-funded project
through IRI 2 call
for proposals



71.693.680,04 EUR

32%

all Co-funded projects are
Climate Tech projects

79%

Maximal
co-funding



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



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)

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).

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

For the analysis done in the scope of this report, the PLANETech Climate Challenge Map was used. This map was used in the first "Israel's State of Climate Tech 2021" report, 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. 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.

Figure 1 presents the [PLANETech Climate Challenge Map](#) with the climate challenge areas and their explicit challenges. More information can be found on the PLANETech website (PLANETech, 2022).

The mapping of the climate tech ecosystems was done by identifying companies whose activities address at least one of the challenges in the Climate Challenge Map.

Built Environment Where we live

Clean Energy Systems
Sustainable Mobility & Transport
Low Carbon Buildings
Green Construction
Eco-Efficient Water Infrastructure

Materials & Manufacturing Things we make

Novel Materials
Clean Manufacturing
Circularity
Transparent & Agile Supply Chains
Carbon Capture & Utilization

Land Use How we impact our land

Climate Smart Agriculture
Soil Health
Alternative Proteins
Food Loss & Waste
Metal & Mineral Mining

Nature What we need to revive

Forest & Land Ecosystems
Oceans & Water Ecosystems
Extreme Weather Events
Biodiversity
Earth Observations

Digital The digital space

Sustainable Digital Infrastructure
Carbon Management Risk & Finance

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

Two types of companies were mapped:

- 1. Climate tech Startups**

European Startup Network defines Startups as independent organizations, which are younger than five years and are aimed at creating, improving, and expanding scalable, innovative, technology-enabled products with high and rapid growth (European Startup Network (ESN), n.d.). Following that definition and given that the latest analysed year in this document is 2021, Startups are companies established in 2016 or later.
- 2. SMEs that received co-funding** through Increasing the development of new products and services resulting from R&D activities - Phase II Call. Those projects were the most recent ones. They started in 2021 and varied from one year to three years in duration.



Financing Opportunities in Croatia

The Republic of Croatia is actively supporting research and development projects. The calls for funding mostly encourage the cooperation of small and medium-sized enterprises (SMEs) either with each other, research institutions (mostly faculties, but also others), or integrator SMEs. The Calls aim to help create and commercialize innovation or establish long-term supplier relationships/ value chains with other companies. Some calls valuable for the development of Startups and Small and Medium Enterprises (SMEs) can be seen in the Table 1. The projects were part of the European structural and investment funds 2014-2020.

After 2020 there were fewer calls due to the transition to the new financial period 2021-2027, for which the European Union budget is the largest so far. It amounts to € 1,824.3 billion, of which almost € 25 billion will

be available for the Republic of Croatia (compared to 10,7 billion from the former financial period). Thus, it is expected that the amount of co-funding will be even more immense than it was until now.

In this Report, next to the number of Climate Tech Startups in Croatia, the number of SMEs that got co-funded from the "Increasing the development of new products and services resulting from research and development activities - Phase II" (IRI2) call was presented. The reason for choosing that call is that most projects co-financed in the scope of it started in 2021. There are likely more climate projects from earlier calls that were not included in the mapping, but the goal of this report was to map the latest projects in order to establish a base dataset for monitoring the growth of similar types of projects in the years to come.

The topic of the call for proposals	Call opened	Call closed	Call for proposals value, EUR
Increasing the development of new products and services resulting from R&D activities	04.05.2016.	31.12.2019	99.335.989 €
Innovations of newly established SMEs	09.05.2016	31.12.2016.	8.552.457 €
Commercialization of innovations in entrepreneurship	30.11.2017	31.12.2017.	15.139.442 €
Innovation vouchers for SMEs	21.05.2018	30.06.2021	6.640.106 €
Innovations of newly established SMEs – Phase II	14.12.2018	30.09.2019	19.920.319 €
Innovations in S3 areas	28.06.2019	15.11.2019	84.196.547 €
Increasing the development of new products and services resulting from R&D activities - Phase II	11.12.2019	29.06.2020	207.363.679 €
Integrator	02.03.2020	15.09.2020.	14.577.065€

Table 1 - European Structural and Investment funds open calls for proposal in the period 2014-2020 relevant for SMEs and Startup

Financing Opportunities in Croatia

Croatia has 22 Climate Tech Startups and 52 SMEs that received funding in the scope of the IRI 2 call for proposals (Figure 2). Most co-funded projects and Startups were in the explicit challenge of Sustainable Mobility & Transport. Some of the more exciting projects are development of a sailing ship with zero emissions and an eco-catamaran made of natural materials with an environmentally friendly drive. The challenges with the next highest number of companies are Clean Energy Systems and Climate Smart Agriculture, that also have the highest number of Startups (5 each). Most of the mapped Startups have exciting

solutions. For Clean Energy Systems, a good example would be Wingo Ltd, which produces tables with integrated heating that could be used for heating the terraces during winter more efficiently than traditionally with infrared lights. Another example for the Climate Smart Agriculture challenge is Go Green Ozonator (from the Startup Greener), which successfully suppresses pests in greenhouses by dissolving ozone in water and using artificial intelligence. The Ozonator is added to existing greenhouses and automatically works to target pest control while reducing the need for pesticides.

Number of start-ups/SME per Challenge

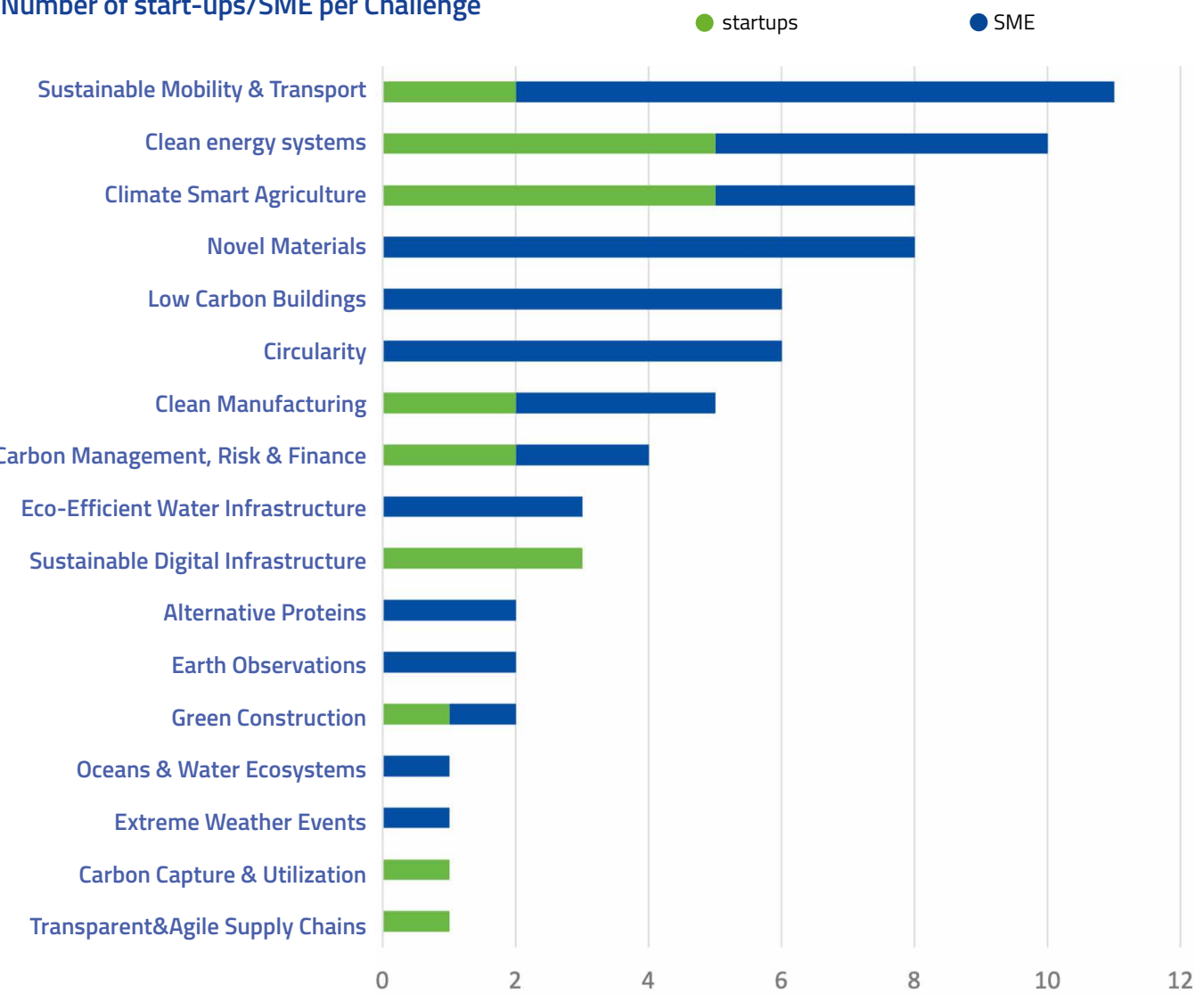


Figure 2 - Number of Startups and SMEs per challenge

Number of climate tech start-ups

Croatia has a stable growth of Startups. The most considerable number of new Startups was in 2018, followed by 2017 and 2019, while only two new Startups were identified in recent years (Figure 3).

Out of 22 identified Startups, 3 got financing in the scope of the IRI 2 Call. Altogether there were 55 co-financed Climate related projects with co-funding of 71.693.680,04 EUR, that is, 32% of all granted co-funding (which amounted to 224.496.387,11 EUR) (Figure 4).

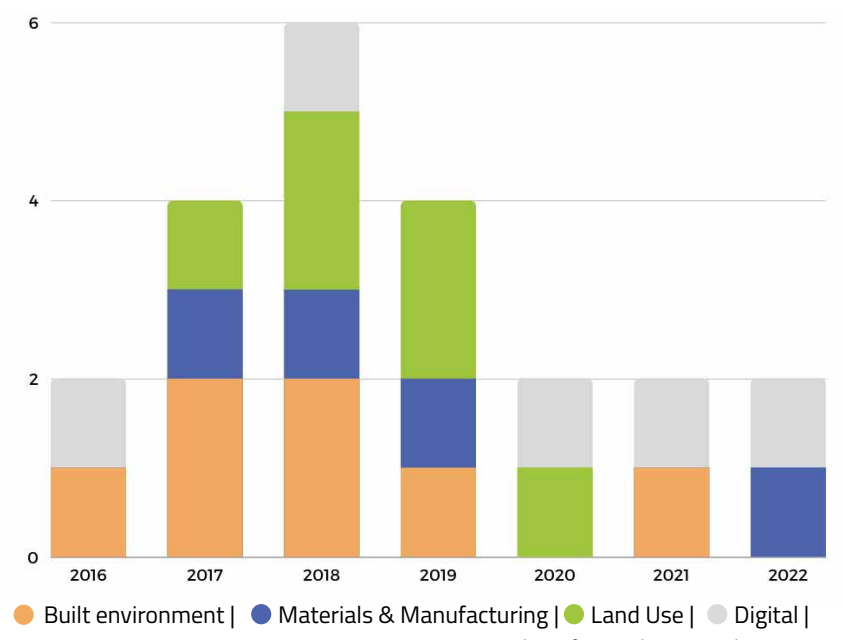


Figure 3 - Number of new Climate Tech start-ups

Co-funding IRI2 (EUR) per climate challenge

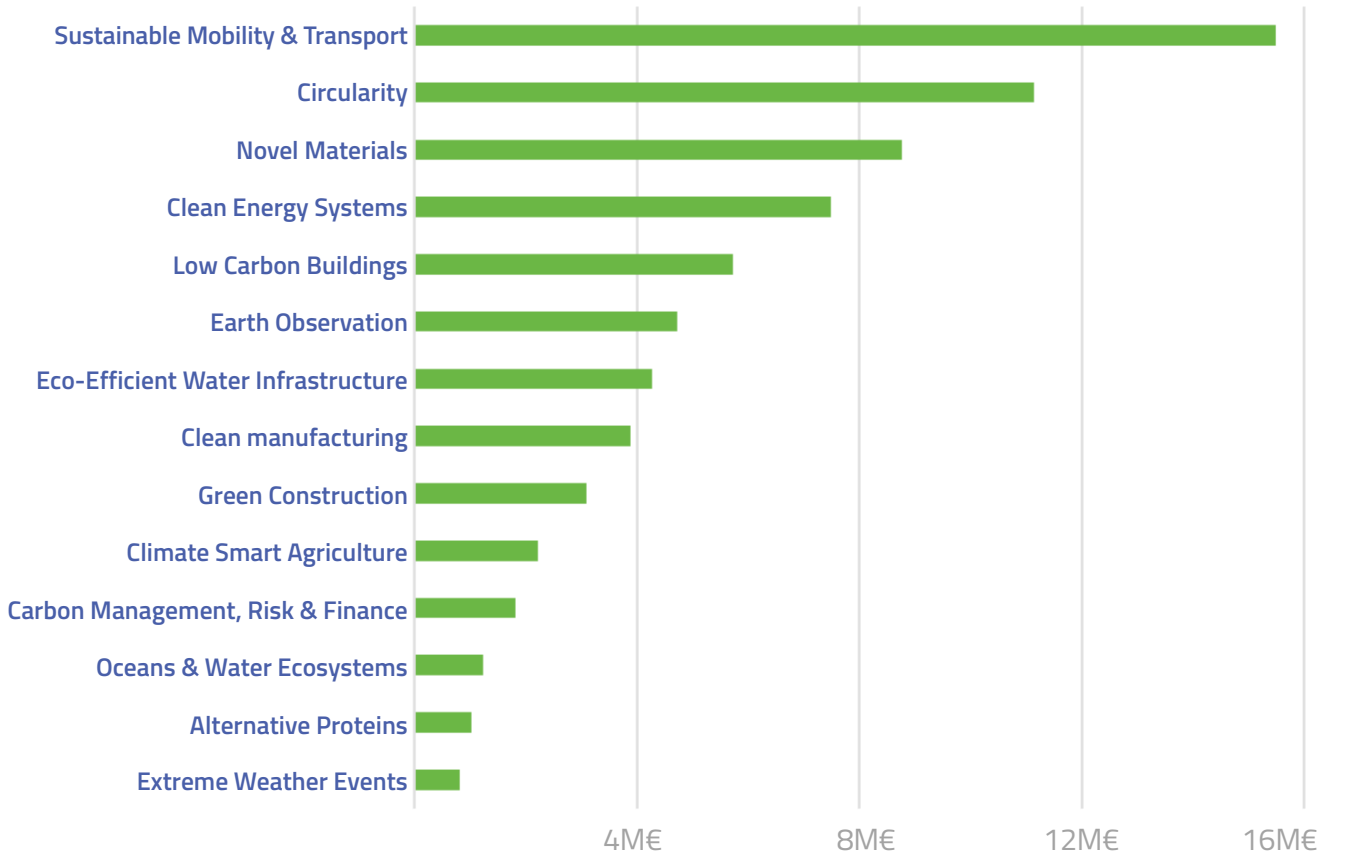


Figure 4 - Co funded IRI2 climate projects by challenge type



Figure 5 - Average co-funding per challenge area, IRI 2, EUR

The amount and percentage of co-funding varied from project to project. Materials and Manufacturing is the challenge area with the highest amount of co-funding for a single project, amounting to 3.973.126,46 EUR. Built Environment follows closely, with the highest amount of 3.839.737,29. On the other hand, the challenge area with the highest average co-funding per project is area of Nature. The average amount of co-funding per challenge area can be seen in Figure 5. Below, the challenge areas are presented in more detail.

Built Environment

- 32 companies, of which 7 are Startups
- 27 financed projects in the IRI 2 call
- 36.057.453,06 EUR Co-funding
- Highest co-funding: 3.839.737,29 EUR
- Lowest co-funding: 154.558,54

Rita Solar Ltd

System for establishing a stable electrical distribution network (GRIDS)rk (GRIDS)

- The only Startup that got co-financing in the Built Environment challenge area
- 413.149,26 EUR Co-financing
- The whole project is 532.258,35 EUR (77,3% co-finance rate)
- Partners: IRI Ltd, University of Split, Faculty of Electrical Engineering, Mechanical Engineering, and Naval Architecture
- The GridS project is a research project on the possibility of applying an innovative concept of microgrid management, which would implement advanced management techniques and be applicable globally. The project aims to examine the technology for managing the production and consumption of electricity, which would be based on predictive algorithms, and to validate the same in a relevant environment.

Materials & Manufacturing

- 21 companies, of which 4 are Startups
- 17 financed projects in IRI 2 call
- 23.790.453,17 EUR Co-funding
- Highest co-funding: 3.973.126,46 EUR
- Lowest co-funding: 170.532,15 EUR

ALUFLEXPACK NOVI Ltd: ARES - Development of a new product from recycled alloys

- Highest co-funding in the challenge area: 3.973.126,46 EUR
- The whole project is 16.811.755,20 (23,63 %co-funding rate)
- The project responds to the recognized requirements of the aluminum foil market in the packaging industry and wants to develop an innovative product to reduce resource consumption and waste production. Furthermore, it wants to increase efficiency and production capacities and innovative technologies and processes for processing and packaging food of high quality. Project activities include strengthening the capacity of the company Aluflexpack Novi Ltd for research, development, and innovation towards the development of a new product for the global market: Aluminum foil for the production of coffee capsules from recycled alloy.

Land Use

- 10 companies, of which 6 are Startups
- Four financed projects in IRI 2 call
- 3.251.200,61 EUR Co-funding
- Highest co-funding: 1.159.899,12 EUR
- Lowest co-funding: 256.904,35 EUR

Purić Ltd: Development of an autonomous robotic fleet system for recognition and ecological treatment of weeds - cRobot

- Highest co-funding in the challenge area: 1.159.899,12 EUR
- The whole project is 1.773.029,08 EUR (65,4 % co-funding rate)
- The project's goal is to develop an autonomous robotic fleet system for the recognition and ecological treatment of weeds on agricultural land, which works with the help of artificial intelligence in a way that detects weeds on crops and removes them in a targeted manner. An autonomous robot for the ecological treatment of weeds on crops will reduce the use of herbicides, improve crop quality and increase the number of stalks per hectare, and influence cost optimization and quick return on investment.

Nature

- Four companies, no startups
- Four financed projects in IRI 2 call
- 6.773.393,73 EUR Co-funding
- Highest co-funding: 2.787.138,95 EUR
- Lowest co-funding: 809.919,52 EUR

SMART SENSE d.o.o.: Smart Sense - 5G Autonomous Drone System

- Highest co-funding in the challenge area: 2.787.138,95 EUR
- The whole project is 3.656.838,27 EUR (76,2 % co-funding rate)
- Partners: MONTELEKTRO Ltd, KONČAR - INSTITUT ZA ELEKTROTEHNIKU d.d.
- Smart Sense - 5G autonomous drone system aims to solve the problem of surveillance and border protection, early detection of fires, and measurement of air quality and electromagnetic non-ionizing radiation to collect real-time information in the desired area using autonomous drone flight. The idea of the project is to develop and implement a 5G gateway on a commercial drone with an electric motor and equip it with a hardware-software environment that will enable it to fly autonomously. Compacting the sensors and cameras will enable the collection of informati

Digital

- 7 companies, of which 5 are Startups
- Three financed projects in IRI 2 call
- 2.891.107,05 EUR Co-funding
- Highest co-funding: 1.202.293,70 EUR
- Lowest co-funding: 618.885,77 EUR

MEDIAToolKIT Ltd: A system for monitoring cyberspace and informing about disasters and threats in real-time based on artificial intelligence - AIDWAS

- The only co-funded Startup in the challenge area
- 1.069.927,59 Co-funding
- The whole project is 1.772.696,65 EUR (60,4% co-funding rate)
- Partners: the University of Zagreb, Faculty of Electrical Engineering and Computing, Degordian Ltd
- The project aims to develop a System for monitoring cyberspace and informing about disasters and threats in real-time based on artificial intelligence using natural language processing and machine learning. The project will result in a new service on the Software as a Service (SaaS) model for the global market that will provide clients with relevant information in real-time about threats and disasters, which will contribute to increasing the safety and protection of society, infrastructure, and the environment. It will enable a timely response by governmental and non-governmental organizations. protection and rescue services, security services, crisis communication agencies, etc.

Starting a company in Croatia

To understand better the possibilities of starting a company in Croatia, a questionnaire was sent to all mapped Climate Tech companies. Results are based on 13 answers received from the companies, out of which are 5 Startups. Participants were not obligated to answer all of the questions. An interesting observation is that all companies use different sources of money to start their business. Two

companies used funds offered by the Republic of Croatia to support a small business,, showing that the initiative is meaningful for establishing Startups. Only one company used Crowdfunding, and one got its whole budget through grants. Finally, only one company was established by using only private funding (Table 2).

Amount in € to start	Primary sources of financing	Other sources	Private money, %
350.000,00	Crowdfunding; Startup Incubator; Accelerator, Private budget	71%	29%
100.000,00	Private budget		100%
500.000,00	Private budget; Small business support; Startup Incubator		
100.000,00	Private budget; credit or loan	20%	80%
500.000,00	Private budget; Small business support	50%	50%
250.000,00	Grants	100%	
500.000,00	Private budget; Small business support	100%	

Table 2 - Price for starting the company and sources of finance

Further questions are intended to show what young companies need to strengthen their market position. On the question, "Are you interested in cooperating to create market solutions?" 83% of participants said Yes, and only 17% said No. Furthermore, on the question "Do you need help with product development?"; 58% of participants said No, while 42% said Yes. This proves the importance of Calls for proposals like the one analyzed in the scope of this report (Figure 6 & 7).



Figure 6 - Question from the questionnaire: Are you interested in cooperating in creating solutions for the market?'

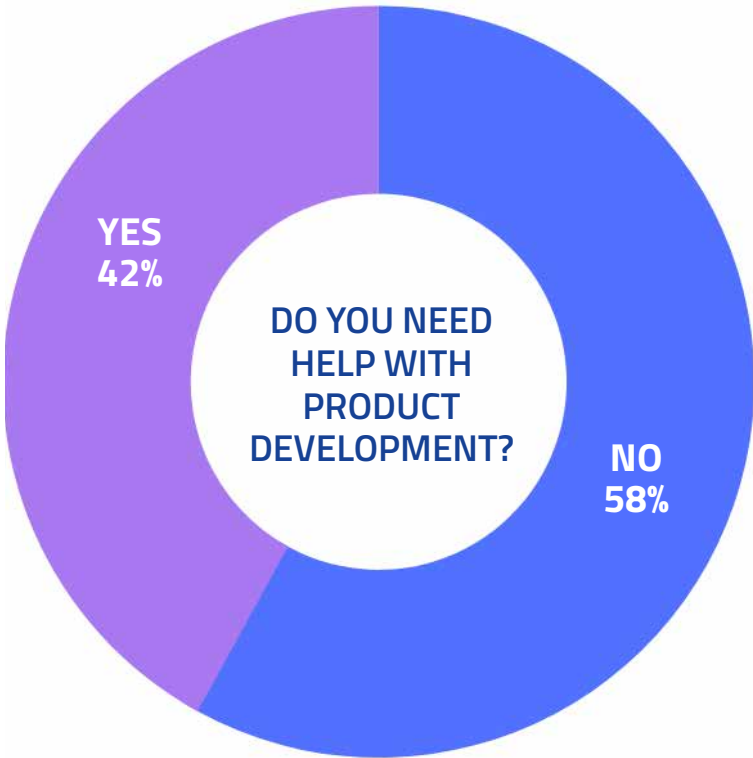


Figure 7 - Question from the questionnaire: Do you need help with product development?

Last but not least, companies were asked what kind of help would be helpful to them, and the answers were the following:

- Mentoring
- Financing
- Clients and partners
- Connecting and mentoring / business consulting
- Cooperation with complementary technical professions and knowledge
- Help in marketing products and finding new market segments
- A good, robust, functional, and diverse ecosystem



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Looking ahead

Although not high, Croatia has a stable growth in the number of Climate Tech Startups. Next to that, quite a number of SMEs are working on Climate-related innovations that they can offer to the market, and even more are upgrading their business to become more circular.

The questionnaire results prove that the Support for small businesses that the Republic of Croatia offers is helping establish new Startups. Further insights that show the needs of young companies and Startups suggest that the previous calls for funding were on track with the market's needs. They were focused on encouraging the cooperation of small and medium-sized enterprises (SMEs) either with each other, Research institutions (mostly faculties, but

also others), or integrator SMEs to introduce innovation on the market.

Given the positive results that the co-financing schemes had until now on Climate Tech, it is expected that even more Startups and Climate-related projects will emerge. This is because the new financial period implies even more available funds. Republic Croatia only needs to continue the excellent trend of supporting innovation projects.

Finally, it is interesting to observe that not many companies work within the nature challenge area, which focuses on what we need to revive. To tackle climate change successfully, more Startups and projects will need to arise in that area.

