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D3.1

Needs Analysis on CIRCUIT Intervention Areas – Circular Economy Current Status

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Chapter 1

Introduction

1 Introduction

The purpose of this deliverable is to provide insight on the current conditions that pertain towards supporting the transition to Circular Economy (CE) and offers an overview of the context that pertain for supporting youth entrepreneurship in both countries i.e., Greece and Bulgaria. It gathers and presents relevant good practices on sustainability and CE discussing the opportunities for transiting to CE and sets respective pathways. Results derived by a survey conducted to understand the perceptions and awareness levels on CE approaches in both countries and provide recommendations for boosting the transition towards CE.

1.1 CIRCUIT Project Summary and Objectives

The aim of CIRCUIT (Promoting Circular Economy Incubator for Youth) project is to accelerate the transition of Greece and Bulgaria towards Circular Economy and bring an innovative and pioneering approach to deal with complex problems of this field. This will be achieved amongst other initiatives and through the promotion of entrepreneurship on circular economy. CIRCUIT focuses on improving entrepreneurship SME (small-to-medium enterprise) support systems by facilitating the economic exploitation of new ideas and promoting the creation of new tools i.e., through business pre-incubators, incubators, Labs and info-points, supporting the capacity of young people and engage them in innovation processes. CIRCUIT'S overall objectives are:

a) the promotion of entrepreneurship and innovation to the entrepreneurs of the CB area,
b) young entrepreneurs' stimulation on circular economy by supporting them to meet the new technologies of this field,
c) the enhancement of the CB regions' role by creating an entrepreneurial system on circular economy in the area.

The project's main objectives are:

a) strengthening entrepreneurship culture on circular economy and networking for the promotion of new circular business models,
b) improve the competitiveness of existing SMEs, while supporting the emergence of new collaborative business schemes,
c) improve the regions' authorities and stakeholders' capacity regarding entrepreneurship on circular economy,
d) provide actual support to male and female entrepreneurs through training, consulting, mentoring services,
e) increase awareness of the local population and authorities towards entrepreneurship on circular economy,
f) Promote the CB cooperation, networking, common exports, common business schemes, etc.

1.2 Relation to other activities in CIRCUIT

Relation to other activities of CIRCUIT will be highlighted with specific emphasis on the connection with WP 4 and 5.

1.3 Structure of the deliverable

After the introductory 1st Chapter, in Chapter 2, the context of the entrepreneurial ecosystems is presented for both countries, Greece and Bulgaria. The various existing mechanisms or measures for supporting youth entrepreneurship are also described in detail providing also a list of entities which provide business support services i.e., accelerators, incubators, co-working spaces, etc.

Chapter 3 provides on overview of Circular Economy and sustainability good practices identified in Greece and Bulgaria and offers insight on the prospects of the circular economy for youth entrepreneurs.

Chapter 4 presents the opportunities for transiting to Circular Economy elaborating on enabling conditions and hindering factors.

Chapter 5 presents pathways to promote circular entrepreneurship and offers insights on how to assess economic impact by providing examples of indicators and tips for small business.

Chapter 6 describes the methods used for identifying how the circular economy concept is currently perceived by people and their attitude in integrating CE aspects in entrepreneurial choices.

Finally, Chapter 7 summarizes this report, and provides recommendations for policy orientation and future work.

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Chapter 2

Youth Entrepreneurship

2 Setting the Youth Entrepreneurship Context in Greece and Bulgaria

The goal of this chapter is to provide an overview of the entrepreneurial ecosystems in Greece and Bulgaria and identify relevant supporting mechanisms for young entrepreneurs, i.e., acceleration programs, incubators, national grants, etc. It is divided in two main parts: a) supporting mechanisms for youth entrepreneurship in Greece, and b) supporting mechanisms for youth entrepreneurship in Bulgaria.

2.1 Mechanisms Supporting Youth Entrepreneurship in Greece

Since 2010, Greece has performed significant economic and fiscal adjustments restructuring its economy[1]. Amidst of the fiscal programs implemented (1st Program in May 2010, and 2nd Program, in March 2012), the Greek government also made efforts to continue to support and develop entrepreneurship, which was mainly based on a very introverted business environment and internal consumption. i.e., the net value of the investments and net exports were much lower than the European average[2]. Start-up entrepreneurship in Greece started to develop mainly since the begining of the crisis in the Greek economy. In fact, the crisis acted as a lever not only for the creation of new enterprises but also for their massive multiplication. Since 2010, a year in which only 16 start-ups were founded, the Greek ecosystem has proceeded to a record year in 2020, a year at which Greek startups have managed to raise €455 millions, an increase that was over 71% compared to 2019 (€266 millions invested in Greek start-ups) showing that the Greek ecosystems is nowadays showing signs of increasing its maturity. Greek companies that have received the largest funding are presented in Table 1.

Table 1 The 10 Greek companies having received the largest funding

Company	Funding received
Balena	€ 26 M
Blueground	€ 64.1 M
Epignosis	€ 47.8 M
Hellas Direct	€ 40 M
NETDATA	€ 28.7 M
PERSADO	€ 54.5 M
Skroutz	undisclosed
Softomotive	€ 20.7 M
Viva wallet	€ 96 M

[1] European Commission. Financial Assistance to Greece (accessed online on 30th May 2022 at: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/financial-assistance-eu/which-eu-countries-have-received-assistance/financial-assistance-greece_en#enhanced-surveillance-framework-for-greece

[2] Sidiropoulos, Z. (2017). The development of start-up entrepreneurship in Greece supported by modern financing methods.

Workable	€ 69.6 M

The distribution of the capital raised per sector during 2020, indicates that Fintech and the e-commerce attracted the major funding i.e., 600% and 300% respectively, whilst sectors such as education, agriculture, and travel declined considerably (see Figure 1).

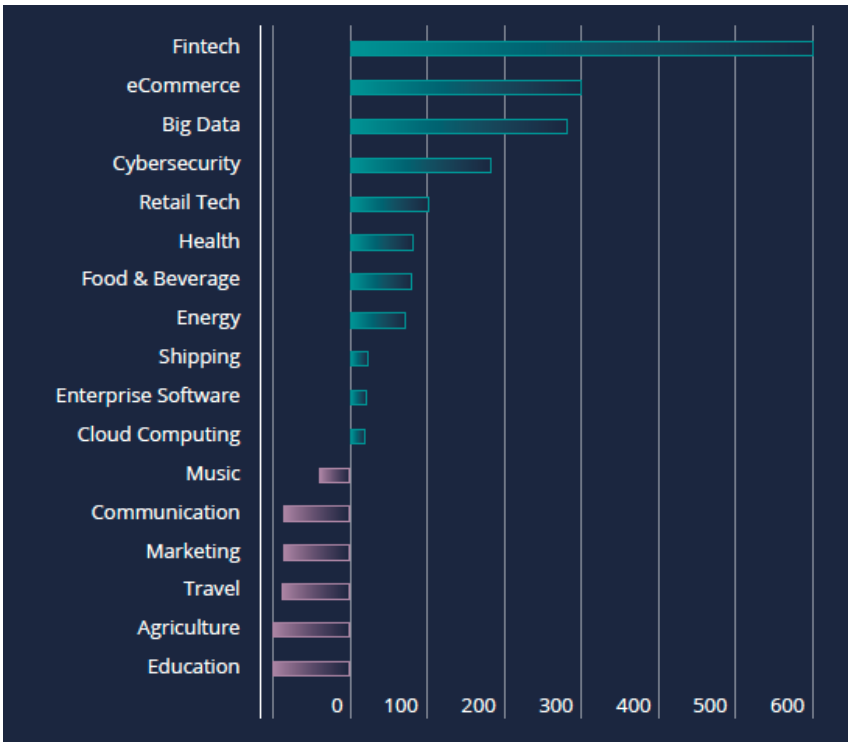

Figure 1. % Change in the funds invested by industry (Source: GreekTech in 2020 and prediction for 2021[3])

Its worth's noting that investments (53%) were mainly directed to companies founded before 2010, while the environment for younger companies proves to be more dynamic showing younger companies with less than 4 years of operation receiving 33.47% of total funds. Only 13.5% of funds was channeled to companies with 5 to 10 years of operation. This shows that younger entrepreneurs are getting access to large scale investment funds compared to companies that were founded about a decade ago.

Startups also played a crucial role in creating job opportunities in Greece. For example, Beat, efood, and skroutz are among the fastest growing employers of the country. The number of employees in the Greek start-ups increased from 5000 in 2019 to 7000 in 2020. The growth rate of employment remained high especially for the sectors of Cybersecurity, Ecommerce, Music, and Retail Tech during the pandemic, while sectors such as sports and travel, which were heavily affected by the pandemic indicated a decrease (see Figure 2).

[3] Endeavor-impact-report 2021.

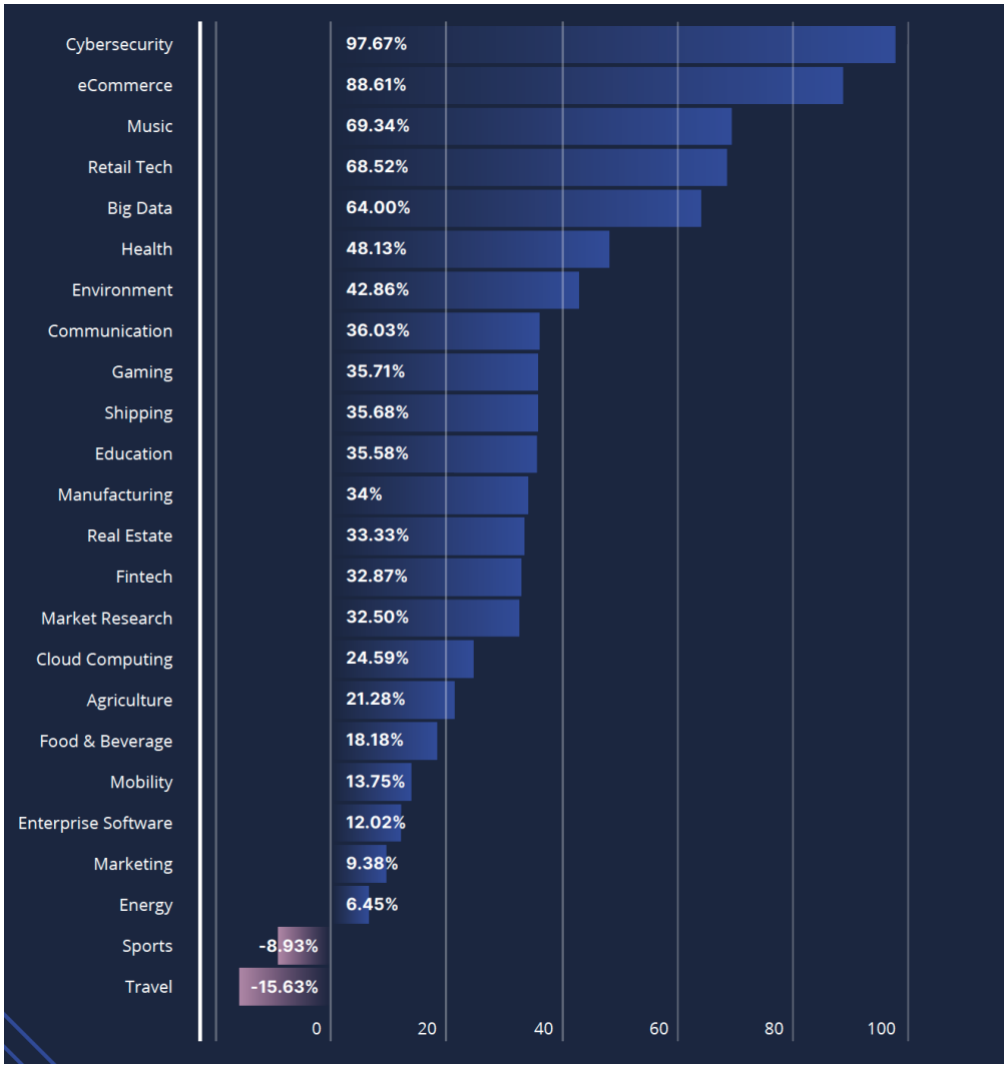

Figure 2 Employment growth per sector (Source: GreekTech in 2020 and prediction for 2021[4]).

2.1.1 Supporting Mechanisms and Measures for the Greek startup ecosystem

Several supporting mechanisms have been developed in Greece in the recent years with the aim to support the youth entrepreneurship ecosystem. Those mechanisms include incubators, accelerators, co-working spaces and competition and hackathons. A description of those mechanisms is provided below and an extensive list of entities for each category is provided in the Appendix.

Incubators: Several startup incubators have been created in Greece in the past years, supporting nascent entrepreneurs and setting up a strong and promising path towards a technologically driven economic growth. Incubators are a particularly important part of every startup ecosystem and provide support to early-stage startups, helping them grow and receive their first seed funding opportunities.

[4] Endeavor-impact-report 2021.

Accelerators: Accelerators are the next step in the startup ecosystem, with an aim to attract more mature startups and advance their growth. Many of them offer mentoring, pitching events, or even access to capital and market. The new additions to the Greek accelerator environment show the constant growth of already established startups and the rapid development of new ones, proving that Greece continues to push innovation forward.

Co-working spaces: Startup teams and new entrepreneurs rely constantly in creative working and collaboration with other startuppers or organizations. It is of a great importance that venues in Greece can provide office space and meeting rooms, while facilitating collaboration and creative working. Such spaces are the so-called co-working spaces that have been multiplied in number over the past years, especially in Greece. This year, a significant increase of co-working spaces was seen outside the big cities, in smaller rural cities and islands, a sign that innovation and startups are now starting to break the barriers of the big urban centres and are finding opportunities across the country.

Competitions and Hackathons: Networking is without a doubt one of the most valuable resource a startupper can have. Innovation events, competitions and hackathons provide a great opportunity for knowledge transfer, hands-on experience, contact with potential investors and VCs as well as creating meaningful relationships and cooperations with fellow startuppers. Athens is still leading the Greek innovation and startup scene, as the majority of investor and startup events take place in the capital. Thessaloniki is following along, as there has been a massive increase of innovation centers and hackathons in the city. Patras and Crete are also enjoying a lot of startup activities, proving that there are remarkable startups all over the country. As expected, most of these events moved to an online environment due to the pandemic, but we can safely say that physical events are slowly starting to make their comeback.

2.1.2 Other supporting measures and mechanisms in Greece

In the US and in Western Europe it is a standard practice to motivate employees by rewarding them with company equity[5]. These types of rewards are supported by relevant legislation that supports transparency. Until 2021 granting stock options to employees in Greece was not supported in a clear and straightforward way and it incurred excessive costs for both the company and the employee. However, a recent tax legislative amendment by the Greek government, enables giving out equities to employees without treating such activities as employment income, nor as a payment in kind. Instead, a flat 15% capital gains tax is applied on the value of the stock at the time of the 'exercise' of the stock option.

In addition, with a new legislative act[6] angel investors are now able to claim 50% of their capital contribution in a startup, as income-tax deductible. The upper capital contribution limit is €300.000,

[5] EIT Digital and Foundation. Start-ups in Greece. Venture Financing Report 2021/2022 accessed online on 30 May 2022 at https://thefoundation.gr/wp-content/uploads/2021/12/Startups-in-Greece-2021-by-EIT-Digital-and-Foundation.pdf

[6] Greek Legislation 4712/2020 accessed online on May, 30th 2022 at: http://www.et.gr/idocs-nph/search/pdfViewerForm.html?args=5C7QrtC22wHUdWr4xouZundtvSoClrL8NFVwjN9oWbZ5MXD0LzQTLWPU9yLzB8V68knBzLCmTXKaO6fpVZ6Lx3UnKl3nP8NxdnJ5r9cmWyJWelDvWS_18kAEhATUkJb0x1LIdQ163nV9K--td6SIudH4rs_dGRFLGzA5rQZx6raH_bTX-TjpWEaTJKFUpmY8

with maximum investment in three different startups per tax year and a €100.000 investment amount limit per startup.

2.2 Mechanisms Supporting Youth Entrepreneurship in Bulgaria

Youth entrepreneurship has been under the spotlight of both the Bulgarian educational system and the civil sector society organisations for quite some time now. It is supported by various initiatives[7] both within the educational system (primary and secondary schools, higher education) as well as by various state, private and non-governmental organisations and institutions that are investing money, resources and expertise to support young people with bold and added-value ideas that could turn into a successful and sustainable business venture. However, many deficiencies still need to be addressed to achieve a higher uptake of entrepreneurship education and support among young people in Bulgaria. Particular focus should be placed on local community-driven initiatives and priority support for innovative and green economy projects, focusing on topics such as green entrepreneurship, circular economy, digitalisation, energy transition and decentralisation, etc. [8] Support should be provided in two main directions: education and capacity building; and financial support to youth enterprises and entrepreneurial efforts. The section below offers a brief overview of the existing education and most prominent instruments and initiatives providing financial support for youth entrepreneurship in Bulgaria.

2.2.1 Education and training - Youth entrepreneurship in the traditional education system

Education in Bulgaria is overseen by the Ministry of Education and Science. Since 2012, compulsory education includes two years of preschool education (usually starting around age 5) before children start primary school. Education is compulsory until the age of 16. Education at state-owned schools is free of charge, except for the higher education schools, colleges and universities. Pre-primary education (preschool education) involves children between 3 and 6/7 years old who attend kindergarten optionally, with the requirement that children must attend two years of preschool education prior to starting school. Elementary education (grades 1-7) includes primary school (grades 1 - 4) and junior high school/ middle school (grades 5-7). Secondary education comprises selective/comprehensive high schools and vocational schools. Students can enrol in high school after successfully completing grades 7 or 8. Higher education is offered by Universities, Colleges and Specialized Higher Schools. As in most countries worldwide, universities have three stages: Bachelor's (undergraduate), Master's (graduate), and Doctoral degrees. The undergraduate stage lasts for at least four years, and the graduate stage lasts five years after completing secondary education or one year after obtaining a bachelor's degree.

In primary schools, entrepreneurship is taught as part of the general subject "Technologies and entrepreneurship". Primary school pupils are offered education in basic concepts, knowledge

[7] 3.9 Start-up Funding for Young Entrepreneurs | YouthWiki. (2021). Retrieved from Europa.eu website: https://national-policies.eacea.ec.europa.eu/youthwiki/chapters/bulgaria/39-start-up-funding-for-young-entrepreneurs

[8] https://epi-bg.org/images/EYE_Project/Enable_Youth_Entrepreneurship_Recommendations-FINAL.pdf

and skill related to technologies and entrepreneurship, understanding of the various professions, the concepts of leadership and labour market, motivation, entrepreneurial spirit and community awareness.

Entrepreneurship is mostly taught in secondary schools in Bulgaria. Primarily as a part of official subjects and curricula and in the form of out-of-class activities. Since 2018 there has been a compulsory subject, "Technology and Entrepreneurship", in both the primary and secondary school curricula. The curriculum regarding entrepreneurship is constructed by disciplines:

- "Market Economics" and "Information Technology" (9th grade);
- "Market Economics", "Information Technology" (10th grade);
- "Entrepreneurship - Training Company", "Geography and Economics", "Information Technology" (11th grade);
- "Marketing and Advertising", "Entrepreneurship", "Enterprise Accounting", "Geography and Economics", "Information Technology" (12th grade)

There are flexible teaching plans and content that include key entrepreneurship-related topics and competencies, such as key economic concepts; company management; practical assignments; business communication and ethical norms; leadership strategies; global economy tendencies, etc.

In vocational and technical schools, economic and financial education is part of the general subjects related to economics and entrepreneurship. These classes are mandatory. In higher education, many universities offer specialised majors related to business and entrepreneurship that aim to provide students with practical skills in business management and entrepreneurship in the context of sustainable development, community–based entrepreneurship and development and innovation. Students graduate as either bachelor's or master and have the opportunity to start and develop their own business; become managers at a different level in various business organisations; perform business information and consulting activities; participate in national and international projects; do research, etc. Apart from the existing entrepreneurship profiles, according to an OECD report of 2014, the entrepreneurship level of Bulgarian universities[9] is far from satisfactory as this is mostly resulting from the existing gap between science and business, coming from the lack of mutually beneficial cooperation between Higher Educatioon Institutions (HEI) and the entrepreneurship ecosystem.

2.2.2 Other support options

In order to effectively develop young people' competencies, entrepreneurship education cannot take place in an isolated school environment. It requires working in partnership with external organisations to provide different types of training.

There are various in-school and out-of-school training initiatives and instruments targeting youth entrepreneurship in Bulgaria. These are organised mostly by civil society and non-profit organisations, working independently or in close cooperation with education providers (i.e.

[9] OECD, Promoting Innovation & Entrepreneurial Mind-sets through Higher Education, 2014, retrieved from http://www.jabulgaria.org/uploads/files/article_521/files/HEInnovate_BGR_executive_summary_BG_final.pdf

secondary schools, universities, etc.). Here is a brief overview of the main stakeholders and initiatives in the field:

Junior Achievement Bulgaria (JA Bulgaria) [10] educates and inspires young Bulgarians to value free enterprise, business, and economics to improve the quality of their lives. It prepares them to succeed in a global economy. JA Bulgaria offers 24 educational courses and business programs and has over 33,000 students throughout Bulgaria. Since its inception, more than 160,000 students, 1197 student companies and 3740 business mentors have benefited from JA Bulgaria programs. JA actively supports schools and teachers in the process of expanding the theoretical and practical education in entrepreneurship in educational institutions in Bulgaria. JA coordinates various out-of-class activities and initiatives such as innovation camps, Global Money Week Events, Smart Finance, Personal Finance, etc.

Reach for change[11] Bulgaria is part of the international network of the Reach for Change Foundation, which was established in Sweeden in 2010. In Bulgaria, RCB organises the social entrepreneurship contest PROMYANATA, which is looking for people and organisations with an entrepreneurial spirit and strong motivation who have found a solution to a major social problem facing children and youth in Bulgaria. It focuses on areas such as access to high-quality education and better educational achievements; employment; access to services; digital solutions; etc. The competition selects a total of five finalists who join a specialised mentoring and capacity-building program (an Incubator).

Start It Smart[12] is an entrepreneurship organisation founded in 2009 that was created with the goal of spreading and developing the entrepreneurship mindset in Bulgaria while supporting young people in starting and developing their own businesses. Start It Smart is the founder of the first pre-accelerator educational program in Bulgaria – **Start It Smart | Pre-Accelerator** and of many other projects with which we support and inspire entrepreneurs with workshops, events, consulting services, pitching competitions, trainings, mentorships, etc. A big part of their members are entrepreneurs. Through their club initiatives, they support each other and share skills and know-how, brainstorm on different cases, share ideas, and give each other mentorships.

Cleantech Bulgaria[13] is a business network focused on clean technologies, innovation, and sustainable development. It is one of the key stakeholders in the field of green entrepreneurship and circular economy. Its mission is to increase the potential for innovation and sustainable economic growth in the fields of clean technologies, bio-technology and environmental innovation. It connects SMEs and large enterprises, experts, NGOs, entrepreneurs, government and international institutions. Cleantech Bulgaria is the official exclusive partner of the two largest public-private partnerships in the EU in the fields of climate change and sustainable energy – Climate-KIC and InnoEnergy. **Climate-KIC Accelerator**[14] is the largest and most successful pre-seed accelerator for

[10] https://www.jabulgaria.org/
[11] https://bulgaria.reachforchange.org/
[12] https://www.startitsmart.com/en/
[13] https://cleantech.bg/
[14] https://cleantech.bg/

green technologies and business solutions in Europe. A unique program suitable for young companies, professionals and even unincorporated teams of entrepreneurs with the ambition to launch sustainable business solutions, clean technologies and innovations in the field of climate. The program is part of the initiatives of the largest public-private partnership in Europe in the field of climate - Climate-KIC and works in a network with 24 other EU countries, investing over 9 million euros since 2011, in more than 1,200 startups with a return of over 20 times. In Bulgaria, the Accelerator is implemented by Cleantech Bulgaria. In Bulgaria, in its three editions, the program has invested in 24 teams, attracted over BGN 1 million in additional funding and launched a number of innovative products on the market.

BCause Foundation[15] is an expert organisation, a recognised leader with more than 20 years of experience at national and international level (since 1995). It encourages young people, organisations and communities to transform their lives by developing the giving culture and social investment. BCause Foundation has a Rinker Entrepreneurship and Training Center set up to promote education, lifelong learning and support entrepreneurship and business development in Bulgaria. Rinker's Challenge (since 2014) - a unique startup entrepreneurship program for Bulgaria that includes racing and modular training. The winners receive a grant of up to BGN 20,000 and one-year support from mentors. The competition is held annually. Apart from training, youth entrepreneurship skills and capacities are developed and promoted through various competitions for young people, both pupils and students. Here is information on the current initiatives:

- International Fair of Training Companies "TF FEST-Young entrepreneur."
- National competition "Best Business Idea."
- National Accounting Competition
- National Review for Young Researchers "Energy, Economics and Mathematics modelling."

There are also many Internet-based educational options, privately owned or sponsored by financial companies– sites, social networks groups/pages, webinars, videos, etc.

2.2.3 Financial support for youth entrepreneurship

There are various sources of finance that young entrepreneurs and stakeholders working with young people could use to foster their entrepreneurial endeavours or entrepreneurship capacity-building or training programmes and initiative. These are mostly coming from the European Union and international donors, such as America for Bulgaria Foundation, the EEA and Norway, etc.

European Structural and Cohesion Funds

The ESCF - the framework for the management of EU structural and investment funds in Bulgaria in the programming period 2021-2027covers support from five funds: a) European Regional Development Fund (ERDF), b) the European Social Fund (ESF), c) the Cohesion Fund, d) the European Agricultural Fund for Rural Development (EAFRD) and e) the European Maritime and Fisheries Fund

[15] https://www.bcause.bg/

(EMFF), etc. The support is provided in the framework of six operational programmes and seven cross-border, transnational and interregional cooperation programmes. Youth entrepreneurship and young people are at the focus of most operational programmes, including the Rural Development Programme 2021-2027 which is funded by the EAFRD. A particular focus of youth entrepreneurship is available in the Operational Programme "Innovations and Competitiveness".

Fund of Funds [16]

The Fund of funds manages BGN 1.2 billion under four operational programs: a) OP "Human Resources Development ", b) OP "Innovation and Competitiveness ", c) OP "Environment "and d) OP "Regions in Growth ". The Fund's main activity is the structuring and management of financial instruments co-financed by the European Structural and Investment Funds during the 2014-2020 programming period. The Fund of funds selects financial intermediaries - banks, funds, credit and other financial institutions. In turn, the elected financial managers mobilise additional private capital and significantly increase the public resource that they provide to the final recipients.

Innovation Capital[17]

Innovation Capital is a EUR 21.1 million venture capital fund with the mandate to provide access to equity and quasi-equity funding to Bulgarian startup companies. Their vision is to focus on key high-priority sectors in the local economy with high potential for disruptive and scalable innovation and to support their transformation through professional innovation management in high-potential startup and scale-up businesses. They offer three main investment tracks as part of their financial portfolio. Their Acceleration programme is suitable for young people. It is suitable for companies at the idea stage or recently founded companies with revenue below EUR 10,000. To apply and participate, a basic business plan needs to be provided with estimates about market size, revenue growth and competitive advantages. Selected projects and companies with some skin in the game will be invited to a Pre-Acceleration program. The best performers will be awarded with equity investment, which could be doubled at the end of an intensive 3-month acceleration program. Mind that teams with advanced development and validation of their projects will be tolerated in the selection process.

NV3[18] is a venture capital fund investing in tech startup companies and successor of NEVEQ I and NEVEQ II, veterans within the venture capital industry in Bulgaria and the region. NV3 operates from Sofia, Bulgaria, and invests in fast-growing tech companies, which aspire for the leading position in their domains on the local and/or global markets. The leading investor in the fund is the Fund of Funds in Bulgaria with a commitment of EUR 19.1 million provided by the operational program "Innovation and Competitiveness 2014 – 2020", co-financed by the European Structural and Investment Funds.

Acceleration and Star-up Financing Fund[19]**.**I

[16] https://www.fmfib.bg/en
[17] https://www.innovationcapital.bg/
[18] https://www.newvision3.com/
[19] https://www.fmfib.bg/bg/fi/21-dyalovi-i-kvazidyalovi-investitsii/10-fond-za-uskoryavane-i-nachalno-finansirane

It supports the entrepreneurship and growth capacity of small and medium-sized enterprises. It improves young and developing entrepreneurs' access to funding and supports the transition of the Bulgarian economy to a knowledge-based economy. Projects are funded under the Innovations and Competitiveness Operational Program with resources from the European Regional Development Fund and national resources.

Vitosha Venture Partners[20]

Invests between EUR 25,000 and EUR 1,000,000 in early-stage and growth-stage companies that are based in or related to Bulgaria. It is aimed at resourceful founders, ideas that matter, and strong execution, and focuses on leveraging our investment experience, global network, and market access, helping turn entrepreneurs into champions. The Vitosha Accelerate programme consists of a revolving program with cycles that take place throughout the year. Each cycle is a three-month timeline. There are over 50 world-class mentors. The individually tailored program, weekly touch points, in-person and online. They offer daily support for strategy, team, business development, and follow-on funding. It is open year-round, accepting applications and selecting approximately 10 companies per year for investment and program participation.

Eleven[21]

It is an early-stage VC investing in technology companies in Southeast Europe. Eleven is one of the leading early-stage VCs in Southeast Europe, investing in startups since 2012. With 150 collective investments over 9 years, Eleven's team has been instrumental in catalysing the regional startup ecosystem. Eleven supports tech companies in five priority verticals - Fintech, Healthcare, Future of Work, Future of Food and Ecomtech. Some of the startups that Eleven has backed include Payhawk, Gtmhub, Dronamics, SMSBump, Kanbanize and Nitropack.

LaunchHub Initiative[22]

It is a seed fund supporting the most promising entrepreneurs and digital startups in Southeastern Europe. Since 2012, LAUNCHub has invested and committed 7.5 million euro in 60 startups from 10 countries in the SEE region, including Bulgaria, Romania, Macedonia, Croatia, Greece, Slovenia, Ukraine, Austria and Switzerland. Launchhub has welcomed over 200 founders into its portfolio family. The LAUNCHub team works with various founders to assist in many ways other than the investments granted. The initiative acts more like a team member and an engaged partner by offering startup teams access to a network of experts, tech vendors, successful entrepreneurs and investors.

ABLE Mentor[23]

It is an individual mentoring program established in 2013 by a group of friends united by their membership in the Association of Bulgarian Leaders and Entrepreneurs - ABLE. The initial concept behind the ABLE Mentor program, which was developed and tested in the second term of 2013,

[20] https://www.vitosha.vc/
[21] https://www.11.vc/
[22] https://launchub.com/
[23] https://www.ablementor.bg/

includes visits by volunteer professionals to pre-selected schools. The aim is to hold five consecutive meetings in each school, during which students from 10th and 11th grade will be acquainted in detail with topics such as "Entrepreneurship as a tool for solving problems", "Career guidance", "Academic orientation", and others. This approach did not work, and the program underwent a complete change of its concept at the end of 2013. This is how the idea of individual mentoring and taking the participants out of the classrooms was born. The first program, goals and deadlines are announced, and a campaign is launched to attract mentors and students. The campaign was a success - more than 40 students were involved, and over 80 mentors are applying to volunteer.

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Chapter 3

Circular Economy and Sustainability

3 Identification of Sustainability and Circular Economy Good Practices

This chapter provides an overview of the sustainability and circular economy good practices in Greece and Bulgaria and offers insight on the opportunities that the CE principles offer to youth entrepreneurs in both countries.

3.1 Sustainability and Circular Economy Good Practices in Greece

In Greece the adoption of circular economy principles within novel business models contribute to the pursuance of the development targets defined in the New National Action Plan on Circular Economy[24]. This further supports Greece's economic strategy in its key quest to "Green" the economy in a way that creates jobs, especially for women and youth, and supports long-term equitable and inclusive growth based on sustainable resource management, promotion of SMEs, fair and efficient value chains, innovation and investment in ICT and state-of-the-art technologies, and strengthening of the "social economy" potential. The New Action Plan focuses on areas with increased resource use and higher dynamics, such as electronics, batteries, vehicles, packaging, plastics, textiles, construction, food, water and nutrients and its long-term goals include:

- moving up the waste hierarchy by focusing on preventing waste and improving recycling
- supporting circular entrepreneurship by promoting "industrial symbiosis" and business clusters
- supporting circular consumption patterns of re-using, re-storing and re-pairing rather than
- buying new products, especially for electrical and electronic devices
- enhancing multi-stakeholder partnerships across industry, academia, and civil society
- monitoring progress towards a circular economic model through SMART (specific, measurable, achievable, relevant, and time-bound) indicators.

To successfully achieve the objectives, good practices, innovative processes and 'learning from experience' examples must be adopted. Good practices that are implemented towards a sustainable and resilient entrepreneurial model should embody the following characteristics[25]:

1. promote and support the circular economy**.**
2. be natural resources-related, emphasizing the utilization of renewable resources, plant and animal by-products, biodegradable materials and their efficient use.

[24] New National Action Plan on Circular Economy, Ministry for the Environment, Energy and Climate Change, November 2021.

[25] Ellen MacArthur Foundation (2015). Towards the circular economy: business and economic rationale for an accelerated transition. McKinsey & Company (https://emf.thirdlight.com/link/ip2fh05h21it-6nvypm/@/preview/1?o)

3. promote sustainable consumer choices embracing sustainability in synergy with economic growth.
4. be environmentally friendly, economically attractive and achievable.
5. lead to the reduction, recycling, and reuse of waste, directly or indirectly, based on the waste hierarchy established by the EU.
6. promote new business models and principles for use in standards that refer to sustainable ways of supplying raw materials
7. encourage the redesign of supply chains, with a view to resource efficiency and circularity.
8. involvement and commitment of many different groups of people i.e., joint actions (discussions / cooperation / synergies / business activities) between different stakeholders, such as: industries, companies, local and regional actors as well as consumers.
9. foster practices that can be easily adopted and /or applied in different geographical areas.

Sustainability and circular economy good practices identified in Greece are presented in the New Action Plan and in the Circular Stakeholder Platform[26],, where information is provided by the stakeholders themselves. These good practices are applied in the specific key areas of:

(i) production,
(ii) waste management
(iii) secondary raw materials and
(iv) innovation and investments

and are presented below:

Production

- Production of straw made naturally of wheat: The Staramaki straw[27] is made from the stalk that is left over when wheat grains are harvested. The European Commission's announcement in 2020 on the future banning of several single-use plastic products has highlighted the need for more sustainable alternatives. “Staramaki” is produced by a social cooperative KoinSep in Kilkis, northern Greece. The most widely produced local product wheat is used to create a viable eco-friendly alternative to single use plastic straws. At the same time, they create employment opportunities and promote social cohesion, as well as local and regional development.
- Promotion of sustainable construction with full inclusion of concrete in a circular economy: The Titan Greece is one of the largest cement plants in Greece and produces building materials under a circular economy model at various stages of the production process and

[26] https://circulareconomy.europa.eu/platform/
[27] https://www.staramaki.gr/en

has created synergies (industrial symbiosis) with other industries[28]. Its products are 100% recyclable, constituting a key driver of the circular economy, in terms of both the full lifecycle of a building or infrastructure project and the possibility of upcycling waste/by-products such as cement.

- Designing and implementing a novel technique for air pollution abatement: The project Better Life with MgO[29] is based at a pilot plant belonging to the mining and industrial company Grecian Magnesite (Gerakini site), which treats the flue gases generated by kilns that run on high sulphur content-fuels. The magnesium oxide, a non-hazardous alkaline reagent, is being used economically and effectively as a desulphurization reagent in the sector, in a process that minimizes cross-media effects and respects circular economy principles, such as utilization and valorization of solid waste.

Waste Management

- Transformation of urban waste into valuable products: New urban processes "from bio-waste to bio-based products" starting from different feedstocks, waste derived from municipal wastewater and waste treatment plants and sewage sludge are established in theWaysTUP![30] project resulting in the production of food and feed additives, flavours, insect protein, coffee oil, bio-ethanol, bio-solvents, polyxydroxyalkanoates, ethyl lactate, long chain dicarboxylic acid, bio-plastics and bio-char.
- Bioenergy and organic soil fertilizers from livestock[31], agricultural crops, and organic waste. The biogas unit in Lagkada Region collects locally available livestock residues and organic waste free of charge. These raw materials are transported by truck to the unit where the anaerobic digestion process takes place. The produced biogas is utilized through a generator to produce electricity and heat while the digested residue is either channeled to the nearby fields for soil enrichment or separated and the solid fraction is sold as an organic soil fertilizer.
- Use of organic residues for energy production: BIO2CHP[32] enables the use of raw residual biomass for on-site & small-scale energy production. What is now treated as waste is thus transformed into a valuable commodity decreasing both energy & waste disposal costs, improving profitability & the overall environmental impact.

Secondary Raw Materials

- Development of R&D and business activities in the fields of bioenergy and environment: CluBE is a cluster of bioeconomy and environment of Western Macedonia[33] that aims to reinforce bio, green and circular economy in the region and the neighboring area, through energy use of biomass for domestic and industrial use, energy utilization of biomass in municipal district

[28] https://www.titan.gr/en/sustainability/environment/circular-economy
[29] http://www.betterlife-withmgo.eu/en/
[30] https://waystup.eu/
[31] http://www.biogaslagada.gr/
[32] http://www.bio2chp.com/
[33] https://clube.gr/en/

heating and/or settlements or plants and service and mixed combustion of lignite in existing thermal power plants, saving this way energy in the business and service sectors and providing smart solutions for cities and regions.

- Turning Petroleum Refinery Sludge into soil with added value: The Petroleum Refinery Sludges (PRS), produced by the Refinery of MOTOR OIL (HELLAS) – CORINTH REFINERIES S.A., which is the largest private industrial complex in Greece are being exploited "smartly". In the context of the project "LIFE DIANA"[34] the PRS wastes originating from crude oil processing into fuel are used for the development of a Valorized Sludge Mixture (VSM) through their proper integration with cost efficient industrial minerals available in Greece and other countries, aiming to the PRS transformation into higher value commercial products. The PRS wastes properly processed and modified into a suitable raw material for the construction and restoration of landfill sites and abandoned inactive quarries. A stable quality Engineered Soil is developed for cost effective use in various development stages of landfill construction and restoration.
- Bioconversion of food industry wastes to biopolymers for packaging applications: The Wastes-to-Biopolymers project[35] developed environmentally friendly and economically feasible bioconversion processes of food industry wastes into bioplastic products. Emphasis is placed on the utilization of liquid waste streams, derived from the production of dairy products (cheese whey) and from fruit and vegetable juicing (sugar fractions), for the synthesis of completely biodegradable polymers (poly-hydroxy-alkanoates, PHAs), with applications in food packaging.
- Valorization of various types of wastes as substitutes to clayey raw material. Production of ceramic bricks that are technically at least as good as the virgin materials for which they substitute; have the same or better physico-mechanical properties compared to the original; are environmentally acceptable causing no danger to human health; have lower environmental footprint. The process has been developed by the Technological Educational Institute of Thessaly and the bricks and tiles industry "TERRA S.A."[36].

Innovation and Investments

- Conversion of 10 tonnes per day of the organic fraction of municipal solid waste (MSW) into: (i) chemical building blocks (bioethanol, medium or short volatile fatty acids, biogas), (ii) biopolymers (low and medium chain poly-hydroxy-alcanoates, composites combining different PHA) and (iii) additives (bioethylene, microalgae derived biochemicals). The process has been developed by Bio-Based Industries Joint Undertaking (BBI JU) under the EU Horizon 2020 programme URBIOFIN[37].

[34] https://www.lifediana.eu/
[35] http://www.wastes-to-biopolymers.gr/root.en.aspx
[36] http://www.teilar.gr/dbData/Labs/Lab_Circular_Economy_Eng.pdf
[37] https://www.urbiofin.eu/

- Creation of a sound network of actors for promoting Green Growth and showcasing real examples for the implementation of a Circular Economy in the Mediterranean. This community acts as a hub to collect, spread and capitalize project results, upgrade Green Growth Community networks and transfer activities to outreach the project results and potential replication of projects in other countries[38].

3.2 Sustainability and Circular Economy Good Practices in Bulgaria

Circular economy represents a concept related to the cycle of responsible and rational use of natural resources and materials in such a way that when the product fulfils its mission and continues its lifecycle. While the regular economy is based on the take-make-dispose principle, the circular economy goes into another direction, i.e., reduce-reuse-recycle and vice versa.

Circular and green economies are on the rise globally, and Bulgaria is not an exception to this trend. Although the share of companies that operate in these fields is very low compared to other countries in the EU, there are a few good practices, i.e., companies, projects, and initiatives in the field of a circular economy, that could be highlighted.

It is important to emphasise that the majority of the provided good practices in the field of circular economy are coming from bigger cities such as Sofia and Plovdiv, where the start-up community is much more developed. Therefore, it could be concluded that there is a clear relationship between start-up development and stronger youth entrepreneurship support with the initiation, maturing and potential scale-up of such initiatives. Here are a few of the most prominent examples of companies, initiatives, and policy instruments in the field of the circular economy[39].

RemixShop

Remixshop.com is one of the leading online stores for second-hand and outlet fashion in Europe. They offer high-quality branded clothing and accessories in 9 countries - Austria, Bulgaria, Germany, Greece, Poland, Romania, Slovakia, Czech Republic, and Hungary. Their team of over 600 people and logistics centre in Sofia, Bulgaria, takes care of the diverse product selection, accurate description of each item and fast delivery to our customers. They believe in the green side of fashion and therefore give a second life to preserved and almost new clothes and accessories, standing behind our motto: reuse reduce remix.

Zona Urbana

Zona Urbana is a small, home-based manufactory located in Sofia, Bulgaria. In 2004 the company started experimenting with recycling. Wherever there was a suitable piece of used and recycled material, it was sampled and put together as a wonderful new bag, wallet, or bracelet. Those materials are old newspapers, magazines, comics, maps, coffee packages, detergent bags, billboard

[38] (https://interregmedgreengrowth.eu/white-papers/

[39] https://neftelimov.com/krugova-ikonomika-v-bulgaria/
https://neftelimov.com/primeri-za-krugova-ikonomika/

banners, inner car tubes and so on. Their priority is for each customer to be unique because all their products are one of a kind. All products at Zona Urbana are unique & handcrafted[40].

Nasekomo

Nasekomo ("Insect" in translation from Bulgarian) is the first biotechnology company in Eastern Europe to produce fodder from the Hermetia illucens flies. The company's team invented a sustainable solution to reduce food waste with the help of a natural process that produces fodder. The main product is based on animal protein suitable for domestic animals and aquatic crops[41].

Baiomik

Baiomik is a startup biotech company that is revolutionising packaging. The company produces various packages that comply with the circular economy's principles. Their production process is based on the transformation of agricultural waste. All their packages are organic-based and turn into natural compost.

Zero Wave

Zero waste is a company engaged in the production of biodegradable utensils, biscuits and flour from a material that is discarded and treated as garbage - the residual malt after the production of beer. The company states that for each product, they "save" 100 g of malt from being disposed of as waste. They come in several flavours - sunflower seeds and dried tomatoes, pumpkin seeds, and white and black sesame.

Foundation Harmonica

The Foundation is one of the pioneers in Bulgaria's natural and organic food production. Most of Harmonica products embody these traditions and benefits of organically produced home-cooked communal meals. Harmonica is not just another food factory but a hub between our vision for real food, our farmers, our manufacturers, and our consumers. We are proud of our long and fruitful partnerships. One of their exclusive products, a beer named "From nothing, something" is produced with a special ingredient, leftover bread from supermarkets and local shops. This complies with the principles of circular economy and provides new use for potential waste.

Wood[42]

Woood Makerspace is the first shared workshop and creative centre in Sofia. It offers 24/7 shared space and co-working space, including tools, machines, and specialised equipment for the more skilled. In addition, they organise courses and workshops in ceramics, woodcarving, 3D printing and more.

[40] https://www.capital.bg/biznes/kompanii/2022/02/15/4312472_konteineri_za_nenujni_drehi/

[41] https://www.capital.bg/biznes/kompanii/2022/05/20/4348896_bulgariia_moje_da_e_lider_v_prerabotvaneto_na_nasekomi/

[42] https://thriftsheep.com/2022/02/03/circular-economy-bulgaria/

Burgas recycles[43]

Burgas Recycles is a community of active young people united by the need to reduce and responsibly manage waste. Its mission is to generate a positive change in the attitudes and behaviour of community members by organising annual campaigns, open meetings, educational lectures, creative workshops, beach cleaning, competitions for the delivery of the most electronic waste and other events. They also offer free consulting and support for waste reduction and recycling for people at their homes, school and office. This initiative is a typical example of a popular awareness-raising initiative in the field of environmental protection and circular economy.

Strategy and Action plan for transition to a circular economy of the Republic of Bulgaria for the period 2021-2027[44]

The Strategy is a good example of how the state authorities recognise the importance of the circular economy. It was developed and adopted by the Ministry of Environment and Water (MOEW). It has three strategic objectives grouped into several specific objectives related to:

1) Green and competitive economy;

2) Less waste – more resources;

3) Economy in service of consumers.

With this Strategy, the government is taking decisive action for the creation of more sustainable production and consumption patterns of Bulgarian society and business. The measures set out in this document aim to increase productivity and lead to economic cohesion through introducing new business models. The aim is to keep the materials in production for as long as possible and to recycle them with high quality, to produce better quality raw materials, to reduce the dependence of the country's economy on imports of raw materials and energy resources.

3.3 Circular Entrepreneurship: Opportunities for young entrepreneurs

3.3.1 Prospects of the Circular Economy for Youth Entrepreneurs in Greece

The Ministry of Environment and Energy published in December 2018 the National Strategy for the Circular Economy [45], which is in line with the European strategy. The immediate adoption of policies that will promote the transition to a circular economy is an urgent need and at the same time an opportunity for development for Greece. The circular economy can be a catalyst for productive reconstruction and has a clear regional dimension. Greece presents great possibilities for the application of this productive / economic model thanks to:

- available natural resources and untapped secondary resources and waste,

[43] https://www.burgasrecycle.com/kragova-ikonomika/
[44] https://www.moew.government.bg/bg/strategiya-i-plan-za-dejstvie-za-prehod-kum-krugova-ikonomika-na-republika-bulgariya-za-perioda-2021-2027-g-10910/
[45] https://circulareconomy.europa.eu/platform/sites/default/files/national_circular_economy_strategy.pdf

- scientific potential and know-how but also productive and technical tradition in technical professions,
- primary sector with growth potential and needs to modernize and reduce production costs,
- low indicators of resource productivity, as well as energy productivity (and energy efficiency),
- available EU strategy framework and available financial tools,
- knowledge and specialization of young Greek scientists,
- changes made in the field of waste management.

As characteristically pointed out in the National Strategy for the Circular Economy[46] "The circular economy refers to the economy of the real product, feeds the primary and secondary sectors of the economy, relies on the economy of knowledge and specialization, produces high value, utilizes and respects physicists and environmental resources, reduces import dependence and improves the trade balance, creates jobs, adapts to all economic sizes, does not always need initial capital, improves resource and energy productivity ratios and is fully compatible with small and medium-sized enterprises and social economy".

1st Circular Economy Forum

The 1st Circular Economy Forum[47] was held on 8 and 9 April 2019, in Athens, by the Ministry of Environment and Energy, the European Commission and the Economic and Social Committee (ESC). The event was attended by members of the government, Parliament, the European Commission, academia, as well as representatives of economic, social, and productive organizations. All participants demonstrated the need for the country, not only to enter the era of the Circular Economy, but also to accelerate its pace, so that the results are visible and immediate. In fact, the representatives of the European Commission stressed that Greece belongs to the vanguard of European countries that have and implement a Circular Economy Strategy.

The circular economy in Greece can fuel a qualitative leap in the economy, which will be a growth transformation. It may create new jobs, feeds small and medium entrepreneurship, the creation of new professions and the social economy, which is still at a very low level in Greece.

Further advantages are the decentralization of processing created by reuse and recycling, while it is compatible and friendly to the Greek productive fabric characterized by small business size. It supports the competitiveness and viability of businesses, by providing cheap raw materials, countering the forthcoming increase in the prices of limited raw materials, and helping to save costs in industries. It also creates new professional and business material with a real product and not services while the conversion of consumers into users adopts consumer trends towards environmentally friendly products.

[46] https://circulareconomy.europa.eu/platform/sites/default/files/national_circular_economy_strategy.pdf
[47] https://globalsustaingroup.com/global-sustain-at-the-1st-circular-economy-forum-of-the-european-commission-in-greece/

Greece is at the bottom of the European rankings in terms of the use of secondary fuels in industry and there is a relative lag in general in the adoption of circular economy models, depriving the economy and society of the added value it entails, according to a study by the Business Association and Industries - BSE.

The study of the BSE Council for Sustainable Development (prepared by EU, May 2016) [48] on the implementation of the circular economy in Greece, reflects the degree of application of the principles of the circular economy in Greece, while highlighting the piecemeal adoption of circular models in various businesses, mainly in the withdrawal phase of the products and not in their entire life cycle.

According to the main conclusions of the study, there is a need for: legislative and regulatory reform, significant improvement of excavation, construction and demolition waste management, significant improvement of food waste management, implementation of the legal framework on hazardous waste, and increase the penetration of secondary fuels in certain industrial uses.

The National Strategy [49]lists indicative areas where public policy actions are required:

- A series of institutional interventions that will strengthen the circular economy, modular design, and open innovation,
- Creating databases, analyzing information for use in evaluating actions and policies, making decisions, and defining evaluation indicators of the circular economy model,
- Facilitate business initiatives of circular economy and industrial coexistence with possible reduction of administrative costs, premium on public procurement, eco-industrial parks, creation of an appropriate regulatory framework and adaptation of an existing one),
- Smart financial tools with aid and tax relief and utilization of public investments, the NSRF, the Investment Bank, the Juncker package and other Funds and resources,
- Promotion of open technologies and utilization of open innovation products,
- Incentives for the development of social entrepreneurship, cooperation, and the social economy in the fields of reuse of resources and materials (eco-industrial clusters, patent pools),
- Policies in the direction of the "smart factory", which will be innovative, high-tech, green, modular, and possibly digitized,
- Communication campaign to raise public awareness.

Many start-ups lack the skills, network, and capabilities to reap the potential benefits of cyclical design, cyclical production processes, and cyclical business models. In essence, this is a challenge for small businesses to integrate the circular economy into their core business, as their existing networks, culture and know-how are based on linear business processes. Therefore, a proposal would be the creation of a national forum - "Circular Greece" - capable of bringing together

[48] https://ec.europa.eu/commission/presscorner/detail/en/MEMO_06_215
[49] https://circulareconomy.europa.eu/platform/sites/default/files/national_circular_economy_strategy.pdf

small businesses, authorities, and universities to work together offering knowledge in various fields and contribute to achieving the cyclical transition of Greek small business community.

In addition, an initiative should be created-funded to promote the development of circular enterprises through SME representative bodies from which small enterprises will draw information on opportunities for the implementation of the circular economy and the practical application of circular business models. In this context, such an initiative will enhance the know-how and skills of small businesses, create a network across the value chain and provide expert advisory services to cyclical business models[50].

Transforming into a circular economy requires investment in research, innovation, development, product design, production processes, remodeling, recycling, biological materials, cyclical business models, and chemical-free products. In this context, one proposal would be to provide new financing to the circular economy through long-term grants from funds such as those to be set up:

- The technology transfer fund (TTfund) and
- the Accelerator Fund.

In addition, cooperation between companies and research centers will ensure that research results can be easily implemented and will accelerate the transition to a circular economy while contributing to growth and employment.

Many small businesses that want to move to a circular economy have serious problems finding financing sources. In this context, a proposal would be to use existing European financial instruments, such as:

- Horizon 2020: is the financial instrument that implements the 2020 strategy initiative and aims to ensure Europe's global competitiveness,
- COSME: COSME is the European program for the competitiveness of Small and Large Enterprises.
- LIFE: The LIFE Program is the European financial instrument for Environment and Climate Action.
- European Structural and Investment Funds (ESIF): The European Structural and Investment Funds aim to invest in job creation and a sustainable and healthy European economy.
- European Strategic Investment Fund (EFSI): The European Strategic Investment Fund is an initiative launched by the European Investment Bank and the European Commission to help address the current investment deficit in the EU.

and in addition, the use of non-financial tools such as:

1) Product Environmental Footprint (PEF),

[50] Shi, H., Peng, S., Liu, Y., & Zhong, P. (2008). Barriers to the implementation of cleaner production in Chinese SMEs: Government, industry and expert stakeholders' perspectives. J. Clean. Prod., 7, 842-852. http://dx.doi.org/10.1016/j.jclepro.2007.05.002.

2) Organizational Environmental Footprint,

3) EU Eco-Management and Audit Scheme (EMAS),

4) EU Ecolabel,

5) Environmental Technology verification program (CETV) and

6) European Resource Efficiency Knowledge Center (EREK)

as well as the creation of new financial models and a circular investment fund under private or state control. The fund will be able to provide shares and guarantees and generally be able to increase lending.

3.3.2 Prospects of the Circular Economy for Youth Entrepreneurs in Bulgaria

Prospects of the circular economy for youth entrepreneurs in Bulgaria depends on the efforts that Bulgarian government does, to build resilient infrastructure, to promote inclusive and sustainable industrialization, and to foster innovation inclusive and sustainable industrial development.

One of the most important investments that can foster the process of transforming the national economics from linear to circular are the investments in research and development (R&D) and innovation. They drive competitiveness, economic growth, youth entrepreneurs, labor productivity and resource efficiency. They are crucial in achieving a clean and circular economy. Innovative products and services, often as a result of R&D activities, contribute to smart growth and sustainable industrialization. R&D and innovation are also essential for finding solutions to societal and environmental challenges such as climate change and clean energy, security, and active and healthy ageing [51]. R&D intensity shows the gross domestic expenditure on R&D in relation to GDP. R&D intensity thus reflects both growth in spending on R&D and growth in GDP. For the period of the 2007 to 2020 Bulgarian gross domestic expenditure on R&D is doubled from 0.43 to 0.85 [52]. But it is still far too away from the average R&D intensity for EU which is 2.32. The R&D intensity at Greece is 1.5. So, it is obvious that Bulgarian government should increase the investments in R&D and innovation to attract youth entrepreneurs.

According to the National Plan of management of the waste 2021-2028, Bulgaria is the largest waste generator unit of GDP, after Estonia, as the value of the indicator is several times higher than the EU average[53]. In this respect, Bulgarian industries' production patterns generate a great amount of waste. Waste should be seen as resources and more recycling would put materials back into the economy and ensure they are kept in circulation to preserve the value embedded within them. Resource productivity is defined as gross domestic product (GDP) divided by domestic material

[51] Sustainable development in the European Union, Eurostat https://ec.europa.eu/eurostat/documents/3217494/12878705/KS-03-21-096-EN-N.pdf/8f9812e6-1aaa-7823-928f-03d8dd74df4f?t=1623741433852

[52] Source: Eurostat (https://ec.europa.eu/eurostat/databrowser/view/sdg_09_10/default/table?lang=en

[53] https://www.moew.government.bg/static/media/ups/tiny/%D0%A3%D0%9E%D0%9E%D0%9F/%D0%9D%D0%9F%D0%A3%D0%9E-2021-2028/NPUO_2021-2028.pdf

consumption (DMC). DMC measures the total amount of material directly used by an economy. It is calculated as the annual quantity of raw materials extracted from the domestic territory of the focal economy, plus all physical imports, minus all physical exports. Resource productivity (GDP/DMC) is the European Union (EU) sustainable development indicator for policy evaluation[54].

Another important EU sustainable development indicator is the circular material use rate (CMU)[55] which measures the share of material recovered and fed back into the economy in overall material use. The CMU is defined as the ratio of the circular use of materials to the overall material use. The overall material use is measured by summing up the aggregate domestic material consumption (DMC) and the circular use of materials. A higher CMU rate value means more secondary materials are being substituted for primary raw materials, thus reducing the environmental impacts of extracting primary material.

According to Sustainable development in the European Union, which is monitoring report on progress towards the SDGs in an EU context issued by Eurostat, the Bulgarian Resource productivity index is one of the lowest among the EU countries and Bulgarian CMU for 2020 is 2.6% of material input for domestic use[56]. For compering the average CMU for EU is 12.8% where the highest CMU is 30.9% at Netherlands. And the same time during the last years Bulgarian generation of waste excluding major mineral wastes indicator is growing from 1617 kg per capita at 2014 to 3097 kg per capita at 2018 [57]. That means that there is a huge need of new business models which would reduce the waste and would put materials back into the Bulgarian economy. So, it is a great opportunity for youth entrepreneurs to find different solution for waste reduction or for their reuse.

Pursuant to measure 589 "Preparation of the National Strategy in connection with the circular economy package" the Government of Bulgaria prepared “The Strategy and the action plan for transition to the circular economy of the Republic of Bulgaria for the period 2021-2027“ [58]. The goal № 1 under the Strategy is accomplishment of a “Green and competitive economy”. The Bulgarian government is aware that the business plays a key role in the transition to a more resource-efficient economy.

At the same time in Bulgaria most companies are small or medium-sized enterprises. The SMEs contribute up to 75.7% of total employment and 65.3% of value added in the economy in 2018[59]. They are of great importance for the growth and competitiveness of the European and Bulgarian economies. In general, SMEs are seen as a source of innovative solutions to the challenges of climate change and resource efficiency.

[54] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Resource_productivity_statistics
[55] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211125-1
[56] Source: Eurostat (https://ec.europa.eu/eurostat/databrowser/view/sdg_12_41/default/table?lang=en)
[57] Source: Eurostat (https://ec.europa.eu/eurostat/databrowser/view/sdg_12_50/default/table?lang=en)
[58] https://www.moew.government.bg/bg/strategiya-i-plan-za-dejstvie-za-prehod-kum-krugova-ikonomika-na-republika-bulgariya-za-perioda-2021-2027-g-10910/
[59] European Commission, 2019. Guide for Bulgaria for 2019 to the Legislation on Small Business in Europe (SBA). Brussels: European Commission.

Usually, the youth entrepreneurs create corporations which are micro or small companies. So, it is very important to them how they can register their companies and how can they get access to the internal market. Bulgarian legislation allows to be registered limited liability company with initial capital of 2 BGN and the administrative tax for that is 55 BGN.

Alongside with the easy access to Bulgarian internal market the Bulgarian government understands how important the SMEs for Bulgarian economy are and created the "National Strategy for Small and Medium Enterprises" 2021-2027[60].

“The National Strategy for SMEs” 2021-2027 is aimed at achieving the following goals:

- Increasing the number of SMEs and their competitiveness in high-tech and medium-to-high-tech industries and high-tech knowledge-intensive services;
- helping SMEs to benefit more from the opportunities offered by the Single Market and increasing the added value of SME products and services;
- facilitate SMEs’ access to finance and develop a legal and business environment supportive to timely payments in commercial transactions
- Support for hiring qualified human resources in SMEs;
- Support for technological modernization and digitalization of SMEs;
- Encouraging SMEs to implement clean technologies, including the circular economy, increasing resource and energy efficiency, leading to sustainable growth.

“The Strategy and the action plan for transition to the circular economy of the Republic of Bulgaria for the period 2021-2027“ and “The National Strategy for SMEs” 2021-2027 create the main frame of tools for encourage small business initiatives to innovate new business models for the transformation of the Bulgarian economy as a circular economy.

Some of the measures for supporting those purposes are:

- establishment of a business support center for the transition to a circular economy;
- preparation of specialized training programs for "green" management and "green" business in vocational schools or as an additional qualification in vocational training centers;
- creation and maintaining a Platform for the results of implemented technologies for resource efficiency, environmental products, industrial symbiosis;
- improving access to finance and so on.

As a conclusion, during the last years in Bulgaria there is a clear tense of rising the number of innovative ideas by young entrepreneurs who are not afraid to make their first steps in business. On their way, they are supported by the entrepreneurial community that organizes and support various

[60] https://www.mi.government.bg/en/themes/national-strategy-for-small-and-medium-sized-enterprises-2014-2020-small-business-act-11-285.html

school and university programs, alongside with the efforts of the Bulgarian government to make their access to the Single market much easier.

Interreg
Greece-Bulgaria
CIRCUIT
European Regional Development Fund

EUROPEAN UNION

Chapter 4

Perceived Opportunities for the transition to the Circular Economy

4 Opportunities for the transition to Circular Economy

This chapter analyses the opportunities for transiting to the circular economy, in the form of enabling conditions and identifies potential obstacles that hinder this transition.

4.1 Enabling Condition towards Circular Economy

Global challenges such as climate change, land and ecosystem degradation, protection of biodiversity, efficient use of natural resources coupled with a growing population indicates that new ways of producing and consuming that respect the ecological boundaries of our planet must be developed. To tackle these challenges the European Commission adopted the New Circular Economy Action Plan (CEAP) in March 2020[61]. The circular economy has become a priority policy topic in Europe, and it is considered one of the main pillars of the European Green Deal[62], Europe's new agenda for sustainable growth. The EU's transition to a circular economy will reduce pressure on natural resources and will create sustainable growth and jobs. There is increasing interest in the potential for altering traditional, linear business models to enable materials and products to be reused and remain in the economy for as long as possible — as opposed to being used once and then discarded. However, to implement circular business models effectively an analytical framework, identifying actions must be designed.

In general, the development of circular economy in the cross-border region Greece-Bulgaria requires the implementation and upscaling of circular business models on a wide scale. Meeting circular economy objectives (e.g., reuse, repair, recycling) requires innovation in the type of business model used, technological innovation (new and state-of-the-art technologies, implementation of best practices) and social innovation (new ways of interacting or connecting business and people).

Implementing and upscaling circular business models requires policy enablers that puts in place a supportive policy framework and of behavior that leads to a change in consumption behavior and education. The general strategy (Action Plan for Circular Economy, EU Green Deal, CAP, Strategy from Farm to Fork, etc.) and the legislative measures e.g. (Eco-design Directive) have been established and regulated by the EU, however the policy framework and the supportive measures can be tailored to regional requirements and peculiarities. Policy enablers can support business model innovation by providing adequate laws and regulations, financial support, economic incentives and other policies to enable successful circular business models.

Behavioral and education enablers are also crucial, as the choices made by millions of consumers can support or hamper the adoption and upscaling of circular business models[63].

[61] EC, 2020, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, A new circular economy action plan for a cleaner and more competitive Europe, COM(2020) 98 final of 11 March 2020. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN

[62] Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social committee and the Committee of the Regions, The European Green Deal, COM/2019/640 final, Brussels, 11.12.2019.

[63] Van Weelden E., et al. (2016). Paving the way towards circular consumption: exploring consumer acceptance of refurbished mobile phones in the Dutch market, Journal of Cleaner Production 113, 743-754.

Consumers need to be knowledgeable, able, and willing to move towards circular products and services. Communication campaigns aimed at increasing consumer awareness regarding environmentally friendly products which are produced under sustainable procedures with low carbon footprint.

The transition towards the circular economy model can be realized only with the involvement of all actors within the society at micro, meso and macro levels[64,65] . The circular economy is challenging and requires a comprehensive discussion of its support and enabling mechanisms. A framework for enabling circular business model is outlined below[66]:

1. Design a road map to circular practices and activities. Strategic goals, explicit directions and action plans are necessary for an efficient uptake of circular economy models and innovations. Developing a strategy on the circular economy would serve to build a robust vision, define priorities, and allocate funds. The strategy should build on: i) an analysis of stocks and flows ii) map the existing circular economy-related initiatives iii) clear and achievable goals, actions and expected outcomes iv) budget and resources v) a shared understanding and co-creation with stakeholders to build consensus and vision vi) monitoring and evaluation framework.
2. Legislation and regulation to set in motion policies, standards, requirements, bylaws, and bans that promote circular practices. Policies for reuse, durability and reparability, and remanufacturing, aiming at preserving resources and increasing material resource efficiency in production and consumption from a life cycle approach. Policies for improving secondary materials markets, and initiatives to promote networks, strategic alliances among organizations to take advantage of industrial symbiosis, and the creation of regional supply chains. Moreover, green public procurement and innovation procurement. Governmental actors and public authorities can play a key role by setting the criteria and the resource efficiency potential of their purchases as large consumers of goods and services.
3. Financial support (grants, subsidies, direct and indirect investments, and public-private partnerships) to stimulate innovations that meet public commitments such as zero waste, climate, or air quality commitments, etc. Facilitate access to finance and broaden the range of financial instruments for entrepreneurship, liaise with the national government's departments to clarify existing funding opportunities and with other cities to learn about their experience in catalyzing financial resources and create a scheme to offer subsidized loans or credit guarantees to companies following circular economy principles, in co-operation with private and semi-public financial institutions.

[64] EC, 2015, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Closing the loop — an EU action plan for the circular economy, COM(2015) 614 final

[65] De Mattos C.A. and De Albuquerque T.L.M (2018).. Enabling Factors and Strategies for the Transition Toward a Circular Economy (CE). Sustainability 10, 4628.

[66] Ana Rodriquez Vasquez (2020). Enabling conditions for a circular economy.

4. Fiscal measures to incentivize or discourage certain behaviors and harmful and polluting activities among business and individuals. Explore putting in place rewards to companies through corporate income tax, reduced VAT on products labeled as circular.
5. Private and public Investment in Research and Development, artificial intelligence, and technology in general to allow reuse, durability and reparability and efficiency.
6. Innovations. Support business development and generate an information system and assess results concerning circular activities. The business can be supported through creation of spaces for experimentation, creation of stakeholder networks for material chains, creation of incubators to promote circular economy projects, establishment of a single window for the circular economy for businesses and promotion of public-private partnerships. The assessment of the circular economy model required collection of data and information on the circular economy, generation of open data sources and monitoring and evaluation of targets and goals of a circular strategy in the short, medium, and long terms.
7. Capacity building for individuals, organizations, and authorities: (i) develop training programs on the circular economy within municipal departments and for the private sector and (ii) review and analyze the required skills and capacities for carrying out all the activities associated with designing, setting, implementing, and monitoring the strategy. Training should be at different levels among local, regional, and national authorities as they can act as catalysts in this transition. Develop business capacity building programs within the organizations on the adoption of the so-called eco-design/sustainable design, also presenting the business case of adopting a circular economy approach. Moreover, integration of training on the circular economy concept in the education curriculum, including the new competences is required. Vocational training to help mainstream circular economy understanding and practices within society is another condition that should be enabled. This will also lead to job creation and increased consumer awareness.

4.2 Hindering Factors towards Circular Economy

National policy does not favor the transition to CE, nor does it facilitate circular innovation as more than 70% of companies classify it as an “obstacle, because of their own awareness of its benefits. Social conditions don’t seem to play a big role in business decisions but are nevertheless each other from auxiliary factor as their echo as auxiliary factor is quite low, only 23%. Financial and legal factors as well appear to be obstacles with 45% and 42% respectively unfortunately playing an inhibiting role in Circular Entrepreneurship. On the other hand, the environmental (70%) and technological (88%) conditions seem to be very important auxiliaries’ factors, if not the trigger for starting a cyclical business.

The above data outline in more detail a given situation in the national business scene. As it is not uncommon for the same obstacles to hinder even the development of conventional business models, let alone innovations. Hindering factors can be summarized as follows:

- Weak supportive policy for new innovations and initiatives (e.g. safe space for innovation projects, or green public awards) or due to frequent changing political priorities by reducing entrepreneurship as an issue of secondary importance, or due to a ban on its incorporation residual value in circular enterprises.
- Legal obstacles to the production of new products from waste streams or obstacles to hiring and service innovations that "threaten" the regime property.
- Weak and inconsistent legislation on waste management.
- Insufficient financial support: as the initial cost for realization business transformation can be high by providing further financial support to businesses, local authorities can contribute in the implementation of cyclical business models.
- Lack of measurable targets for the circular economy to motivate to improve corporate performance and organize their strategy.

In terms of internal conditions in companies they can also be significant deterrents to business transformation. The difficulty in applying a circular product and service design seems to be very common as an interior barrier to business cycles. 37% of businesses seem to have encountered problem designing a product based on the principles of circular economy(longevity, easy maintenance, disassembly). Another equally important obstacle within the business is lack of knowledge and skills of the circular economy. This was reported by 20/60 businesses, i.e.33% thus reflecting the importance of knowledge and skills required to pay the necessary attention to the circular economy and to support the transition to it[67]. Especially a more detailed level of Manage Recources(MR) becomes even more complex and demanding for people to understand this kind of changes It requires specific competences, skills and educational background. In addition, the change of corporate culture is one of the three most common and frequently mentioned corporate barriers that emerges. This is mainly due to either the difficulty of eliminating the short-term mentality towards profits and misunderstanding of long-term benefits, or in the event of strong hierarchical organization that prevents awareness and recognition of opportunities in MR. Strong hierarchical structures have difficulty recognizing strategies that do not work so well or to get ideas of innovation and change from the “lower classes” of an organization.In this way, the top management does not know the necessary changes or opportunities and is limited to tried or even outdated / harmful practices. A lack of supply chain transparency can pose operational problems that can stop businesses in their tracks. n opaque supply chain complicates ability to close business loops. This can be caused by internal organizational interests, as the procurement department focuses mainly on lower price while the design department pays attention to aesthetics. Having knowledge of the type of materials within a product, or knowing its origin constitutes an important aspect if the company produces complex products consisting of many different materials, especially when there are numerous collaborations with suppliers that procure their material from unknown sources. An

[67] Ormazabal, M., Prieto-Sandoval, V., Jaca, C., & Santos, J. (2016). An overview of the circular economy among SMEs in the Basque country: A multiple case study. Journal of Industrial Engineering and Management, 9(5), 1047. doi:10.3926/jiem.2065

opaque supply chain is difficult to manage in terms of production, but also in terms of the company's reputation. A responsible company that applies the principles of CE to improve its corporate image, can easily be discredited if it uses products of dubious origin . What does not seem to is a particular internal obstacle is the lack of cooperation and / or lack appropriate partners, implying that these are sufficient when this is the application of CE.

At European level, the Circular Economy seems to be growing steadily and significantly according to records of various innovative business ventures that they turn their negative corporate footprint into a positive one and become role models business models. Greece suffers in this area mainly due to lack of resources, economic and political instability, inadequate organizational plan, and targeted strategy.

It is obvious that circular entrepreneurship faces a multitude of inhibitors the main ones being the lack of political and financial support and the poor national environmental policy, because of which many companies feel insecure in thinking of new business initiatives, let alone innovative cyclical business models. Combined with the absence of research tools and development or protective and rewarding state structures to strengthen cyclicals business is expected to have difficulty implementing, lack of know-how and ignorance or even stagnation in the progress of business strategies. With him thus important business, financial and other are left unexploited opportunities that could improve the negative national landscape.

Administrative barriers are considered by the actors as one of the most important weaknesses that seek solution for the transition to a circular economy in the country. Other important issues mentioned are the financial and legislative obstacles, but also the difficulties in locating the necessary infrastructure. The main priorities for the promotion of the circular economy are the formulation of a development strategy that promotes circular economy investments, the increase of the available financial resources for circular economy investments and the provision of incentives for the redesign of products in the spirit of the circular economy. Other key priorities for the actors are the formulation of a circular economy business plan for priority areas, the application of circular economy criteria in project financing, targeted information, and awareness campaigns, but also the strengthening of the reuse, recycling, and recovery market. A significant part of the participants of the productive and economic bodies, but also of the waste management bodies, considers that investments are required to achieve the application of the circular economy in their activities, while highlighting the need for detailed identification of the possibilities and opportunities of intervention by the sectors. actors for their practical involvement in the transition to a circular economy. There are many obstacles that do not allow in small businesses and consequently in Greek small businesses to adopt business models of the circular economy[68]. In literature is estimated that the obstacles faced by small and medium-sized enterprises companies during implementation activities related to the circular economy are more often related:

[68] Geng, Y., & Doberstein, B. (2008). Developing the circular economy in China: Challenges and opportunities for achieving “leapfrog development.” International Journal of Sustainable Development & World Ecology, 15(3), 231–239. doi:10.3843/susdev.15.3:6

1. the organizational culture and management versus environmental issues,
2. the lack of funds for support for sustainable activities and innovation,
3. Lack of adequate state support / appropriate legislation (public funding opportunities, training, appropriate tax policies, etc.),
4. the lack of information about it with the benefits of implementing a circular economy,
5. the high level of bureaucracy in monitoring and reporting performance data of small and medium - sized enterprises in sector of the circular economy,
6. the lack of internal techniques skills that facilitate transition to business models enabling the application of sustainable production technologies and consumption and
7. insufficient support from them suppliers and consumers due to low interest on environmental issues.

Barriers to the environment business culture refer to the philosophy[69], habits and attitudes (manager and employees) in business application practices of the circular economy. For example, in many media, the manager is also the owner of the company with an important reason in relation to strategic decisions of the companies. In this respect, some media managers may have a positive attitude towards in the circular economy, while others no.

Lack of funds is reported extensively in the literature[70] as one of the most important obstacles in adoption of the circular economy by the media. The transition from one linear in a circular model production / business activity requires activities that require significant time and investment cm part of the company. The height of advances of expenditure, indirect cost (time and human potential) and the expected amortization period is special important for SMEs as well are generally more sensitive than the big companies in each additional costs that arise from green energies and requires constant monitoring and life cycle improvement of the product. Furthermore, the external financing through e.g., EU grants and of governments are often difficult to access media staff as well and no management restrictions usually allow careful evaluation of such opportunities. Finally, they are not available new financing methods to promote innovative business models.

Lack of government support/effective legislation (through the provision of financing opportunities, training, effective tax policy, laws, and regulations etc.) is recognized widely as a significant barrier to undertaking environmental investments[71]. The lack of a specific, A coherent and rigorous legal framework often prevents examination by SMEs of the integration of green solutions in their activities. In addition, the circular business models can be overly influenced by the fact that

[69] https://www.intechopen.com/chapters/63695

[70] Rizos, Vasileios & Behrens, Arno & Kafyeke, Terri & Hirschnitz-Garbers, Martin & Ioannou, Anastasia. (2015). The Circular Economy: Barriers and Opportunities for SMEs.

[71] Esposito, M., Tse, T., & Soufani, K. (2017). Is the Circular Economy a New FastExpanding Market? Thunderbird International Business Review, 59(1). https://doi.org/10.1002/tie.21764

resource taxes are quite low, therefore the companies prefer to buy cheaper raw materials instead of use recycled, something which often involves additives processing costs.

Innovation policies rarely incorporate new cyclical opportunities [72]business models as well focuses mainly on increased innovation and efficiency. In addition, competition law hinders cooperation between companies and discourages understanding cyclic design and product development. On the one hand, the exchange of knowledge about business processes can hurt the competitiveness of a business while, by on the other hand, close cooperation between businesses within product value chains can considered as a cartel formation[73].

Studies have also highlighted the lack of information about benefits of the circular economy and of environmental legislation[74]. The successful transition to a roundabout economy can only be achieved through collective effort, which requires exchange and dissemination of knowledge and innovation between the various factors of the value chain. However, often the information is stored confidential by companies or employees find it difficult to externalize know-how thus preventing her wider dissemination and development of its business models circular economy. The lack of an exchange system information is additional obstacle to effective adoption of circular business models. Confidentiality and lack of confidence prevent the exchange of knowledge and product information between companies and constitute barrier to production, the innovation and effective management at the end of the cycle product life.

The administrative burden associated with green business practices such as tracking and reporting on environmental performance, can be considered a complex and difficult process for SMEs. In addition, the adoption of a circular business model can involve more complex and costly management procedures and programming.

The lack of technique and technology know-how can hinder SMEs to convert it their linear business model in a circular. The linear technologies are widely established in current business practices, maintaining it economy locked in the current its form.

The conversion of everyday activities would require the integration of new technologies production and consumption in current linear business models and their ability competent professionals to them manage. However, the demand environmentally friendly technologies are often enough low and technical skills are insufficient. The lack of know-how may have as a result the media to adopt linear technologies and business models set know and depending on proposals of their suppliers for innovative technical solutions. In addition, insufficient investment in technologies focused on design of circular products (ecological design), h lack of advanced technologies resource

[72] EU approach to sustainable development | European Commission. (n.d.). Retrieved September 12, 2021, from https://ec.europa.eu/info/strategy/internationalstrategies/sustainable-development-goals/eu-approach-sustainabledevelopment_en

[73] Ritzén, S., & Sandström, G. Ö. (2017). Barriers to the Circular Economy – Integration of Perspectives and Domains. Procedia CIRP, 64, 7–12. doi:10.1016/j.procir.2017.03.005.

[74] European Commission. (2020b). Leading the way to a global circular economy: state of play and outlook. Commission Staff Workin Document.

efficiency as well the low cost of raw materials may interfere with adoption of circular approaches economy by SMEs.

Finally, the obstacle of scarcity support from the supply and demand network refers mainly to the dependence of SMEs on commitment of their suppliers and their customers in sustainable activities. Successful implementation of a circular economy requires the cooperation of all parties in the entire supply chain. However, suppliers and service partners may be reluctant to participate in innovative circular processes economy because of the risks to their competitive advantage or because of a mentality that does not give priority in its practice's circular economy. The adoption a cyclical business model is likely to increase the complexity throughout the chain logistics, financial, economic, and legal aspects), affecting the chain value of a product, process, or service.

Especially for very small businesses, one of the most important barriers are the exclusion of distribution channels as well as the unpredictable return flow of materials (which hinder effective product recovery) in cyclical practices involving product remanufacturing and reuse[75].

[75] Rizos, V., A. Behrens, W. van der Gaast, E. Hofman, A. Ioannou, T. Kafyeke, A. Flamos, R. Rinaldi, S. Papadelis, M. Hirschnitz-Garbers and C. Topi (2016), "Implementation of Circular Economy Business Models by Small and Medium-Sized Enterprises (SMEs): Barriers and Enablers'', Sustainability, 8(11). doi:10.3390/su8111212.

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Chapter 5

A Pathway to Circular Youth Entrepreneurship

5 Pathways to Circular Entrepreneurship

This chapter provides insight on how we can assess the economic impact of the application of circular economy principles and provides examples of indicators and monitoring frameworks as set up by the European Commission. It also discusses how small and medium companies can benefit from the transition to CE, within the growing competitive global environment and how regulations can facilitate this transition. Some hindering factors still in place are also recognized.

5.1 Circular Economy Indicators

As Circular Economy is a growing topic, especially in the European Union, which promotes the responsible and cyclical use of resources possibly contributing to sustainable development, there is a need for specific methods to measure its progress. Therefore, one of the critical questions in circular economy is how we should measure its performance since its objectives are substantially different from those in the traditional linear economy. In this context, indicators can be useful in various implementation scales and as a tool to assess Circular Economy.

Indicators are critical for economic assessment at all scales, from the micro- (business) level to macro- (regional and national) and global levels. Many are collected according to international standards and provide the basis on which critical decisions are taken in both public and private sectors.

The monitoring framework on the circular economy as set up by the European Commission[76] consists of ten indicators, some of which are divided in sub-indicators. These indicators were selected to capture the main elements of a circular economy. The list uses available data, while also earmarking areas where new indicators are in the process of being developed, for green public procurement and food waste.

About half of the indicators in this framework come from Eurostat; others are produced by the Joint Research Centre (JRC) and the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW). The indicator on patents comes from the European Patent Office.

Production and consumption

This area comprises of four indicators:

- Self-sufficiency of raw materials for production in the EU
- Green public procurement (as an indicator for financing aspects)
- Waste generation (as an indicator for consumption aspects)
- Food waste

Monitoring the production and consumption phase is essential for understanding progress towards the circular economy. Households and economic sectors should decrease the amount of

[76] https://ec.europa.eu/eurostat/web/circular-economy/indicators

waste they generate. In the longer term, this behavior may contribute to an increasing self-sufficiency of selected raw materials for production in the EU.

Waste management

This area comprises two indicators:

- Recycling rates (the share of waste which is recycled)
- Specific waste streams (packaging waste, biowaste, e-waste, etc.)

Increasing recycling is part of the transition to a circular economy. This area focuses on the share of waste which is recycled and returned into the economic cycle to continue creating value.

Secondary raw materials

This area comprises two indicators:

- Contribution of recycled materials to raw materials demand
- Trade of recyclable raw materials between the EU Member States and with the rest of the world

To close the loop, material and products need to be re-introduced into the economy, for example in form of new materials or products. Recycled materials replace newly extracted natural resources, reduce the environmental footprint of production and consumption, and increase the security of the future supply of raw materials.

Competitiveness and innovation

This area comprises two indicators:

- Private investments, jobs and gross value added
- Patents related to recycling and secondary raw materials as a proxy for innovation.

The circular economy contributes to the creation of jobs and growth, as illustrated below. The development of innovative technologies improves product designs for easier re-use and promotes innovative industrial processes.

5.2 Small and Medium-Sized Enterprises (SMEs) and the Circular Economy

The transition to a more cyclical economy could create a net creation of 700,000 jobs in Europe by 2030[77],, through the additional demand for human resources from recycling plants, repair services and other cyclical activities. However, cyclical approaches, other than recycling, such as reducing the amount of raw materials, plus reusing or exchanging existing products have been vaguely presented. To increase the life cycle of goods and introduce smarter cyclical techniques, different stakeholder groups need to work together. As the contribution of large, established organizations is undeniably

[77] https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits

important, start-ups can also play an important role because of their ability to create revolutionary technologies.

European SMEs play an important role in transforming the economy into a greener future. Thus, they will help the economy to accelerate its transition to a more circular approach. Circular SMEs start-ups are new business activities that adopt the CE model. Very little research is available on circular start-ups. But they can be leaders on the road to a more circular economy. Circular start-ups develop innovations that are integrated with the CE. model. They usually invest in waste management activities and promote solutions that can be distinguished as "cyclical innovations" - quite often they find new opportunities for products that are overlooked by medium and large companies.

By adopting circular economy strategies and practices, businesses can replace all types of different businesses benefits. These advantages depend on the strategy adopted, the degree to which business processes are cyclical, the environment in where the company operates and from its role in the value chain. Despite all of these ???? there are six general business tips for small businesses[78] given below :

i. Reduced exposure to rising and falling resource price volatility

The growing shortage of non-renewable natural resources (e.g. fossil fuels, metals and minerals) leads to increasing resource prices and/or price volatility, which has as a result higher material costs for businesses. By adopting circular economy strategies and practices, businesses can reduce the number of materials needed for their production and cover the needs of their customers. Thus reduces the risk of resource price increases.

ii. Circular thinking stimulates innovation

It provides a new perspective on looking at business model and functions of a business. Examining this new perspective can offer new one's ideas and stimulate innovation. For example, looking for ways to reduction in the quantities of materials used in construction, the Dutch BAM company invented new building materials from plastic waste [79].

iii. Creates a green profile

Consumers, businesses, and governments know more and more the environmental impact of the products they use. Hence, are more attuned to sustainability when making purchasing decisions there. By adopting strategies and circular economy practices, businesses can reduce the environmental costs of their products and thus to differentiate themselves from their competitors.

iv. Opens new markets and opportunities for development

Circular solutions can also create new markets. For example, in the textile industry there are several companies producing yarn from textile waste products. As consumers are looking for more

[78]KPMG (2018), Let's help SMEs to go circular, The Netherlands. Retrieved on: https://ec.europa.eu/environment/sme/pdf/Training%20materials_English.pdf
[79] https://www.bam.com/en/sustainability/innovations

sustainable clothes, a new market has been developed, which operates parallel to the market of mainstream textile products.

v. Increases customer confidence and creates more stable revenue streams

The transition to a circular economy can be facilitated by adopting a different business model. The economy that integrated digital platforms such as Airbnb, Uber etc. is one such example. Basically, the economy of sharing services and products concerns, among other things, the exchange of products and services. The basic idea is that individuals can use their assets as much as possible to contribute to the circular economy model. In Europe, Airbnb company claims to produce about 30% less waste, use 50% less water and emit 90% less CO2 than mainstream hotels[80].

vi. Creates environmental benefits

Adopting circular economy strategies and practices is both beneficial for the enterprises, as well as for the environment. Turning towards the circular economy model, businesses need to put an effort reducing their environmental impact, by:

- reducing the use of raw materials,
- reducing energy consumption and using green energy as much as possible,
- reducing drinking water consumption.

In this way, the establishment of a more circular economy is also one step closer of fulfilling the requirements of the European Commission's rules.

5.3 Circular Economy Regulations and Restrictions

In December 2015, the European Commission adopted a first Circular Economy Action Plan[81] with the aim to set the EU on the course of the transition towards a more sustainable model for economic development.

On 5 December 2015 European Parliament and EU Council adopted the Circular Economy Package. The Circular Economy Package (CEP) introduces a revised legislative framework, identifying steps for the reduction of waste and establishing an ambitious and credible long-term path for waste management and recycling. This package amends the following three Directives:

- Directive 2008/98/EC on waste (the Waste Framework Directive (WFD)), amended by Directive (EU) 2018/851 of 30 May 2018;
- Directive 94/62/EC on Packaging and Packaging Waste (PPWD), amended by Directive (EU) 2018/852 of 30 May 2018;
- Directive 1999/31/EC on the Landfill of waste (LFD), amended by Directive (EU) 2018/850 of 30 May 2018.

[80] https://www.airbnb.es/press/news/new-study-reveals-a-greener-way-to-travel-airbnb-community-shows-environmental-benefits-of-home-sharing-eu
[81] https://environment.ec.europa.eu/topics/circular-economy/first-circular-economy-action-plan_en

The three remaining Directives amended by the CEP are the End-of-Life Vehicles (ELV) (Directive 2000/53/EC), Batteries and Accumulators and Waste Batteries and Accumulators (BAWBA) (Directive 2006/66/EC) and Waste Electrical and Electronic Equipment (WEEE) (Directive 2012/19/EU). These have all been amended by a single amending, Directive (EU) 2018/849.

The package aimed to help European businesses and consumers make the transition to a stronger and more circular economy and called for the removal of regulatory barriers to the circular economy. At the final Report from the Commission to the European parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of the Circular Economy Action Plan (2019)[82] is conluded that the 54 actions under the action plan have been completed or are being implemented, even if work on some will continue beyond 2019.

In March 2020 the European Commission adopted the New Circular Economy Action Plan (CEAP)[83] - one of the main building blocks of the European Green Deal, Europe's new agenda for sustainable growth. The New CEAP provides a future-oriented agenda for achieving a cleaner and more competitive Europe in co-creation with economic actors, consumers, citizens and civil society organisations. One of the main purposes of the plan is to ensure that the regulatory framework is streamlined and made fit for a sustainable future, that the new opportunities from the transition are maximised, while minimising burdens on people and businesses.

In order to set into legislation the ambition for Europe to be the first climate neutral continent by 2050, the European Parliament acceped a REGULATION (EU) 2021/1119 for establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')[84]. Climate neutrality by 2050 means achieving net zero greenhouse gas emissions for EU countries as a whole, mainly by cutting emissions, investing in green technologies and protecting the natural environment. The law aims to ensure that all EU policies contribute to this goal and that all sectors of the economy and society play their part.

Nevetheless the efforts that European Commission and other EU bodies undertake to accelerate the transition to circular economy towards a regenerative growth model that gives back to the planet more than it takes, still faces many barriers during the implementation of sustainable strategies.

A survey made during 2017 from the Copernicus Institute of Sustainable Development, Utrecht University, the Netherlands and Deloitte[85] shows that there are four categories of barriers:

- cultural barriers of lacking awareness and/or willingness to engage with the circular economy;
- lacking (proven) technologies to implement circular economy;

[82] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1551871195772&uri=CELEX:52019DC0190
[83] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN
[84] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119
[85] Breaking the Barriers to the Circular Economy, 2017, the Copernicus Institute of Sustainable Development, Utrecht University, the Netherlands and Deloitte
https://www.uu.nl/sites/default/files/breaking_the_barriers_to_the_circular_economy_white_paper_web.pdf

- market barriers of lacking economic viability of circular economy business models and
- lacking policies that support a circular economy transition.

These barriers are interrelated, and several different obstacles have impact on them[86]:

Table 2 Synopsis of barriers to implementation of sustainable strategies.

Cultural	Technological	Market	Regulatory
• Company culture	• Circular design	• High upfront investment costs	• Obstructing laws and regulations
• Willingness to collaborate in the value chain	• Ability to deliver high quality remanufactured products	• Limited funding for circular business models	• Limited circular procurement
• Consumer interest and awareness	• Lack of data, e. g. on impacts	• Low virgin material prices	• Lacking global consensus
• Operating in a linear system	• Too few large scales pilot projects	• Standardization	

Another study with focus on regulatory barriers for the circular economy [87] summarised 6 typifications of such barriers:

- The lack of definitions and the occurrence of gaps in legislation;
- Unclear definitions of targets in legislation;
- The definition of hard numerical limits in regulation;
- Lagging or incomplete implementation or enforcement of legislation, notably of the Waste Framework Directive and the Exports and Shipment regulation;
- Different and conflicting national implementations of a legislation;
- legislations that conflict each other because they represent conflicting values, for example with hygiene rules versus food waste.

Some of the noticed gaps in the EU legislation for regulation the circular economy has been removed by amendments in it. But still, there is more to be done to clear the conflicts and synchronize the whole legal acts, which are in force in the EU members.

[86] Breaking the Barriers to the Circular Economy, 2017, the Copernicus Institute of Sustainable Development, Utrecht University, the Netherlands and Deloitte

[87] Regulatory barriers for the Circular Economy, 2016, produced by Technopolis Group in consortium with Fraunhofer ISI, Thinkstep and Wuppertal Institute

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Chapter 6

CIRCUIT Methods of Research

6 CIRCUIT Methods of Research

This section presents the tool used for conducting a survey to collect data on perceptions and awareness of CE approaches and its main features. The research work performed for the design and analysis of the questionnaire survey is also summarized in two main phases to provide an understanding of all the activities. Results of the survey are presented in the following sections.

6.1 Research Methods and Tools

The questionnaire used to collect the data for the survey is provided in the Appendix B. The questionnaire is divided into 5 sections (A-E). Section A includes general questions related to personal characteristics, such as age, country of residence, gender, education, area of expertise and income level. Section B provides insight on the perception/awareness on the circular economy, whereas section C explores the main barriers, drivers, and policies for accelerating the transition to CE perceived by respondents. Section D depicts the personal performance towards CE and section E explores how CE principles can be applied to foster entrepreneurship.

In section B of the questionnaire, the perceptions and awareness of respondents on CE matters are explored. Perception tends to be contextual and depends on previous experiences of individuals[88]. Awareness is related to the state of being conscious of something and is expressed in the ability of an individual to directly know and perceive events[89]. Awareness on CE can be understood as the knowledge and understanding of the meaning of CE concepts i.e., reverse logistics, pertaining in the CE narrative[90]. To understand the level of knowledge on the CE concept and the attitude towards CE in the cross-border area, is the first step to orient specific policies[91].

The research work involved **three phases.** The first phase included the search of existing literature for guiding the development of the questionnaire. We identified existing studies and review papers investigating the perception and awareness of the CE concept as well as the main drivers and barriers towards a CE transition. The questionnaire used was adapted by Xue et al. [92] and Van Langen et al.[93]. Then, the next step included the selection of the sample. The survey sample included young people in the cross-border region who are about to start their careers and some of them are thinking entrepreneurship as a career path and experts in the field.

[88] Lore Veelaert, Els Du Bois, Ingrid Moons, Elvin Karana, Experiential characterization of materials in product design: A literature review, Materials & Design, Volume 190, 2020, https://doi.org/10.1016/j.matdes.2020.108543.
[89] Chalmers, D., 1997. The Conscious Mind: in Search of a Fundamental Theory. Oxford University Press, Oxford, ISBN 978-0195105537, p. 225.
[90] Scho¨ggl, J.-P., Stumpf, L., Baumgartner, R.J., 2020. The narrative of sustainability and circular economy - a longitudinal review of two decades of research. Resour. Conserv. Recycl. 163, 105073.
[91] Guo, B., Geng, Y., Sterr, T., Zhu, Q., Liu, Y., 2017. Investigating public awareness on circular economy in western China: a case of Urumqi Midong. J. Clean. Prod. 142, 2177–2186.
[92] Bing Xue, Xing-peng Chen, Yong Geng, Xiao-jia Guo, Cheng-peng Lu, Zi-long Zhang, Chen-yu Lu, Survey of officials' awareness on circular economy development in China: Based on municipal and county level, Resources, Conservation and Recycling, Volume 54, Issue 12, 2010, Pages 1296-1302, https://doi.org/10.1016/j.resconrec.2010.05.010.
[93] Sven Kevin van Langen, Chiara Vassillo, Patrizia Ghisellini, Daniela Restaino, Renato Passaro, Sergio Ulgiati, Promoting circular economy transition: A study about perceptions and awareness by different stakeholders groups, Journal of Cleaner Production, Volume 316, 2021, https://doi.org/10.1016/j.jclepro.2021.128166.

The second phase included the distribution of the survey questionnaire by CIRCUIT project partners to the selected target groups. The survey was realized as a web questionnaire survey designed in the "EU Survey" tool. The questionnaire was distributed to the sample of respondents in May 2022. A total of 117 completed questionnaires were received.

6.2 Research Results

The main demographic information of the sample, as gathered from the first section of the questionnaire, is presented below. Regarding the age, the sample is highly diversified with most of the respondents (27.35%) being 40-50 years old, whereas the young people is the second major group of respondents (24.79%).

A1.1 Age

		Answers	Ratio
18 -22		29	24.79 %
23-30		24	20.51 %
30-40		27	23.08 %
40-50		32	27.35 %
50-60		2	1.71 %
Over 60		3	2.56 %
No Answer		0	0 %

Figure 3 Age Distribution of Respondents

The sample is composed by residents in Greece and Bulgaria. The majority of respondents (59.83%) reside in Bulgaria, while 40.17 % reside in Greece.

A1.2 Country of residence

		Answers	Ratio
Greece		47	40.17 %
Bulgaria		70	59.83 %
No Answer		0	0 %

Figure 4 Distribution of responses in terms of the country of residence

The sample is relatively balanced in its gender composition; with the largest part of the respondents are females (55.56%).

A2. Gender

		Answers	Ratio
Male		51	43.59 %
Female		65	55.56 %
No Answer		1	0.85 %

Figure 5 Distribution of responses in terms of gender

The majority of respondents (82.9%) are university graduates with a mainly a masters degree and with a smaller percentage with a PhD degree. The expertise of respondents is mainly in engineering or economics.

A3.1 Education

		Answers	Ratio
High School		19	16.24 %
Bachelor		35	29.91 %
Master		47	40.17 %
PhD		15	12.82 %
No Answer		1	0.85 %

Figure 6 Distribution of responses in terms of education

A3.2 Area of Expertise

		Answers	Ratio
Economics		35	29.91 %
Engineering		44	37.61 %
Political Science		2	1.71 %
Biology		3	2.56 %
Medicine		2	1.71 %
Other		27	23.08 %
No Answer		4	3.42 %

Figure 7 Respondent;s area of expertise

The sample is highly diversified in terms of income (personal, or family income), with the majority of respondents being in the ranges of less than 10.000 Euros per year or between 10.000 and 20.000 Euros.

A4. Income (personal, or family income, if a dependant member)

		Answers	Ratio
<10.000		41	35.04 %
10.000 - 20.000		30	25.64 %
20.000 - 30.000		23	19.66 %
30.000 - 40.000		6	5.13 %
>40.000		15	12.82 %
No Answer		2	1.71 %

Figure 8 Distribution of responses in terms of income

The second section (B) of the questionnaire investigates the awareness of the respondents regarding Circular Economy and Sustainable Development. Figure 9 shows that there is a general agreement on the concept of Sustainable Development, sharing a focus on the inter and intragenerational goal as well as on the achievement of a development pattern compatible with the three dimensions of sustainability (economic, environmental and social).

B1. What does Sustainable Development mean, for you?

		Answers	Ratio
Economic, social, and environmental equilibrium		75	64.1 %
Meet the needs of the present without compromising the well-being of future generations		79	67.52 %
Meet environmental integrity requirements		17	14.53 %
Other meanings (please indicate some)		1	0.85 %
No Answer		0	0 %

Figure 9. Distribution of the perception and awareness on the concept of sustainable development among the three groups (max 2 replies).

When it comes to what CE means to the respondents, there is more of a difference between samples. For the majority the CE mainly means: “Reduce, Reuse and Recycle” and “a more sustainable way to produce and consume” or “an economy able to regenerate itself”. A lesser percent is more oriented towards a concept of CE that means a “zero waste economy”. (Fig. 3).

B3. What does Circular Economy mean, for you?

		Answers	Ratio
A zero-waste economy		34	29.06 %
An economy able to regenerate itself		44	37.61 %
Reduce, recycle, reuse		60	51.28 %
A more sustainable way to produce and consume		49	41.88 %
Other		0	0 %
No Answer		1	0.85 %

Figure 10 Meaning of CE to the respondents

There is a notable difference when asked what the more important aspects in a CE are. Almost half of the respondents consider the "sustainable supply chain / Reverse logistic" (47.01%) one of the more important aspects along with "eco-industrial parks and smart cities" (38.46%), "recycling phase" (37.61%) and "new business models" (30.77%).

B4. Which aspect/s is/are more important in Circular Economy?

		Answers	Ratio
New product design		18	15.38 %
Eco-industrial parks and Smart cities		45	38.46 %
Sustainable supply chain/Reverse logistic		55	47.01 %
Recycling phase		44	37.61 %
New business models		36	30.77 %
Other		1	0.85 %
No Answer		0	0 %

Figure 11 Importance of CE aspects

The last question of the second section investigates the expectations that are most important to the respondents of CE. A large part of the sample (see Figure 12) agreed upon "environmental benefits" (79.49%) while a smaller portion of this sample entails "new business opportunities" (37.61%), "economic benefits" (29.06%) and "employment opportunities" (11.11%).

B5. Which are the more important expectations from Circular Economy?

		Answers	Ratio
Economic benefits		34	29.06 %
Environmental benefits		93	79.49 %
Employment opportunities		13	11.11 %
New business opportunities		44	37.61 %
Other		1	0.85 %
No Answer		0	0 %

Figure 12 Main important expectations from circular economy perceived by the three groups (max 2 replies).

Drivers, barriers, and change

About the possible obstacles from engaging in CE, the barrier that got the most responses resulted "low awareness and know how" (42.74%) Other most selected possible barriers have been "lack of financial support" (42.74%) and "resistance to change" (42.74%) (Figure 13).

C1. What are possible obstacles from engaging in Circular Economy?

		Answers	Ratio
Unfavourable prices		33	28.21 %
Lack of financial support		50	42.74 %
Lack of networks		10	8.55 %
Low awareness and know-how		60	51.28 %
Lack of innovation/disrupting technology		19	16.24 %
Lack of infrastructure		34	29.06 %
Resistance to change		50	42.74 %
Lack of policies/regulations		43	36.75 %
The current linear design of products		19	16.24 %
Other		1	0.85 %
No Answer		0	0 %

Figure 13 Distribution of potential obstacles from engagning in CE

Some changes that should be done in the CE process, are: "Invest in research to promote circular innovation / technology" (41.88%) and to "Increase dissemination and know-how of CE concepts (to overcome low awareness and know how (36.75%). About one third of respondents (33.33%) think that "Unfavorable prices (promote incentives such as decreased taxes and subsidies for recycled materials, etc.) and "Promote innovative, broad and long run policies at the national level, (to overcome the fear of instability) needs change (32.48%). Three answers received almost the same rate of responses (29%) as having to change the "Technical aspects (administrative, production techniques, collection techniques, others", "Invest in suitable circular infrastructure (to promote easy

transport, storage, marketing", and "Involve stakeholders and managers in decision making, provide transparent data to overcome resistance to change".

C2. What do you think have to change in the circular economy process?

		Answers	Ratio
Technical aspects (administrative, production techniques, collection techniques, others...)		34	29.06 %
Unfavourable prices (promote incentives such as decreased taxes and subsidies for recycled materials, etc)		39	33.33 %
Favour creation of recovery networks and markets (new finance tools, ethical finance, etc.)		22	18.8 %
Increase dissemination of circular concepts to overcome low awareness and know-how		43	36.75 %
Invest in research to promote circular innovation/technology		49	41.88 %
Invest in suitable circular infrastructure (to promote easy transport, storage, marketing...)		35	29.91 %
Involve stakeholders and managers in decision making, provide transparent data, to overcome resistance to change		34	29.06 %
Promote innovative, broad, and long-run policies at the national level (to overcome the fear of instability)		38	32.48 %
Promote research and implementation of circular design of products		17	14.53 %
Other		0	0 %
No Answer		1	0.85 %

Figure 14 Perceptions on things that need to change in the CE process

The last two questions deepened on the key actors and instruments that can switch the dynamics in the transition to CE. We tried to understand which might be the main actors in taking the initiative forward and the policy instruments and other measures needed for this pathway to the CE. With regard to the most important actors, "Citizens/Consumers" (70.09%), "Economic actors" (62.39%) and "Policy makers" (52.99%) gather the highest share of the responses

C3. If the transition from a linear economy to a Circular economy is to become a success, who should be, in your opinion, responsible for taking the initiatives forward?

		Answers	Ratio
Policy maker		62	52.99 %
Economic actors		73	62.39 %
Citizens/Costumers		82	70.09 %
Public administration		38	32.48 %
Public opinion		28	23.93 %
Other		0	0 %
No Answer		0	0 %

Figure 15 Perceptions on which stakeholders should take initiatives to foster the transition to CEW

The policy instruments that are considered relevant to drive the transition to CE are "Increased awareness for consumers" (47.86%), "Financial support for companies" (42.74%) and "Regulatory measures" (41.03%).

C4. What policy instruments do you think would be necessary for the drive towards a Circular Economy?

		Answers	Ratio
Regulatory measures		48	41.03 %
Harmonisation and advice on existing policies (e.g. on the circular economy, labeling, raw materials. etc.)		38	32.48 %
Financial support for companies		50	42.74 %
Selective tax system applied to consumption (e.g. plastic tax)		34	29.06 %
Increase awareness of consumers		56	47.86 %
Incentives for the consumption of selected products		26	22.22 %
To develop a cultural approach favoring waste prevention		40	34.19 %
Other		1	0.85 %
No Answer		1	0.85 %

Figure 16 Perceptions on policy instruments necessary for driving CE

The fourth part of the questionnaire examined the behavioral aspects in terms of current practices that facilitate the CE transition. Most of the respondents (73.5%) sort and dispose waste i.e., batteries, e-waste, plastic, metals compost, etc. in their daily lives, whereas only 25.64% do not sort wastes.

D1. Do you sort and dispose of your waste in your daily life (some of, or all of the following: batteries, e-waste, plastic, metals, compost, etc.)

		Answers	Ratio
Yes		86	73.5 %
No		30	25.64 %
No Answer		1	0.85 %

Figure 17 Behaviors in terms of sorting wastes

To identify the willingness for garbage sorting categories as a pre-condition issue to compile the CE development plan, we conclude that respondents are willing to sort mostly the “paper” (69.23%), followed by the “batteries” (59.83%), and “Glass” (50.43%).

D2. Into how many categories are you willing to sort your waste?

		Answers	Ratio
Batteries		70	59.83 %
Plastic non combustible		27	23.08 %
Plastic combustible		42	35.9 %
Paper		81	69.23 %
Aluminum		23	19.66 %
Other metals		12	10.26 %
Glass		59	50.43 %
Used cooking oil		9	7.69 %
Compost		12	10.26 %
No Answer		0	0 %

Figure 18 Categories of sorting waste

In general respondents showed willingness to spend a little bit more for a greener product i.e. “up to 5% (44.44%), while a lesser percent of respondents are willing to pay up to 10% (32.48%), or 15% (13.68%).

D3. How much money (in terms of % compared with the existing price) are you willing to pay for a greener product?

		Answers	Ratio
up to 5%		52	44.44 %
10%		38	32.48 %
15%		16	13.68 %
20%		8	6.84 %
25% or more		3	2.56 %
No Answer		0	0 %

Figure 19 Willingness to pay extra money for green products

In the fifth section (E) of the questionnaire, the intention to apply CE principles in entrepreneurial practices is examined. The majority of respondents (61.54%) believe that their skills somewhat suffice in applying CE principles in a business project followed by a relatively high percentage of undecided (27.35%) ones. Only 5.98% strongly believe that they have the right skills for fostering CE principles within entrepreneurial cases and another 5.13% that they are not skilled at all for promoting CE into their business.

E1. Do you believe that you have the skills to apply the circular economy principles in a business project you might have?

		Answers	Ratio
Very Much		7	5.98 %
Somewhat		72	61.54 %
Undecided		32	27.35 %
Not really		6	5.13 %
Not at all		0	0 %
No Answer		0	0 %

Figure 20 Perceptions on the capacity of respondents to apply CE principles in business

However, most respondents (80.3%) agree that receiving training on CE principles would encourage them to be involved in entrepreneurship. Only 17.09% is not confident that the training alone would be a catalyst factor for engaging in entrepreneurship.

E2. In your opinion, receiving training in circular economy principles would encourage you to get involved in entrepreneurship?

		Answers	Ratio
Totally Agree		23	19.66 %
Agree		71	60.68 %
I am not sure		20	17.09 %
Disagree		2	1.71 %
Totally Disagree		1	0.85 %
No Answer		0	0 %

Figure 21 Perceptions on whether training can foster the choice of entrepreneurship as career path

A relatively high percentage 76.93% is somewhat interested in getting involved in entrepreneurship involving aspects of the CE business, while only 23.07% is neutral or not very interested.

E5. Would you be interested to get involved professionally in the circular economy business in your area?

		Answers	Ratio
Very interested		27	23.08 %
Somewhat interested		63	53.85 %
Neutral		22	18.8 %
Not very interested		5	4.27 %
Not at all interested		0	0 %
No Answer		0	0 %

Figure 22 Distribution of interest to get involved in CE

There are quite distributed answers on the awareness question of pre-incubation and incubation process of a business idea. Only 38% of the respondents seem to be aware of the business support services of pre-incubation and incubation, however there is a quite high percentage that is not aware of those services (58.97%).

E6. Are you aware of the pre-incubation and incubation process of business ideas?

		Answers	Ratio
Fully aware		6	5.13 %
Aware		38	32.48 %
Neither aware nor not aware		35	29.91 %
Not aware		34	29.06 %
Fully not aware		4	3.42 %
No Answer		0	0 %

Figure 23 Distribution of awareness of pre-incubation and incubation process

However, most of the participants in the survey are interested to receive support for their business idea that could also guide them in CE matters of consider it to be helpful (52.38%). Only 7.69% feels confident they can make it on their own.

E7. Would you be interested to take part in a pre-incubator and/or an incubator that could also guide you in circular economy matters?

		Answers	Ratio
Yes, I would like to receive support for my business idea		47	40.17 %
Maybe it would be helpful for my business idea		60	51.28 %
No, I feel confident I can make it on my own		9	7.69 %
No Answer		1	0.85 %

Figure 24 Expression of interest to participate in a pre-incubation or incubation program that also guides in CE aspects

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Chapter 7

Main Conclusions and Recommendations

7 Main Conclusions and Recommendations

This chapter concludes the main findings of the insights provided in chapter 1-5 and the survey results presented in chapter 6. It also provides some recomendations for promoting the circular economy principles in entrepreneurship and encouraging young people in engaging in CE ractices in their entrepreneurial carreer.

7.1 Conclusions

The Circular Economy in the current situation can strengthen entrepreneurship and growth, while it can promote and facilitate a higher level of environmental protection. Investments in circular economy and energy efficiency are involved in the measures for tackling climate change and can be a lever for change for both the Greek and the Bulgarian production model, overturning the trends in prevailing investments and giving impetus to new investments and new jobs in the entire supply chain of industry products. The integration of CE principles with the aim of retargeting investments in the Greek and the Bulgarian industry, the supply of information, the establishment of incentives and guidance for the Greek companies, the transformation of waste, by-products management and the need for legislative reform are a one-way street for political action. More initiatives need to be undertaken by both countries and more investments in research and development (R&D), and innovation to attract young entrepreneurs. Governments need to act more proactively identifying market barriers and utilizing appropriately public capital to support the high upfront investment costs of circular business models.

The opportunities that are created with the application of circular economy practices are summarized as follows:

- Implementation of industrial symbiosis practices in the existing old-framed industrial system of the cross-border area through a cyclical flow of materials, by-products, waste, and energy.
- Increase investment in biogas plants from agricultural and industry waste to generate electricity, heat, and gas substitutes.
- Replacement of traditional fertilizers (from fossil fuels or material extraction) with products resulting from the recovery of nitrogen and phosphorus from biogas plants.
- Reducing food and agricultural waste and increasing the efficiency of the food value chain through the handling of secondary materials. A circular economy builds resilience in local communities, increasing people's wellbeing.
- Increase awareness of consumers for green products that are based on sustainable production processes. In a circular economy, food is produced regeneratively, hence, improving the overall health of the local ecosystem, promoting good human health, and protecting natural habitats.

7.2 Recommendations for Boosting Circular Entrepreneurship in Youth

A bridge between young people and potential investors must be created to ensure that new business ideas could turn into entrepreneurial reality through co-working and start-up incubators in the future. Towards this objective, vocational training programmes for co-working & start-up incubators managers in the era of circular economy must be designed with the participation of all experts and stakeholders involved in the industry. Manuals for business idea development and prototyping should be developed to assist young entrepreneurs apply circular economy principles in their business ideas. Moreover, the creation of a National Qualification Framework of the co-working & start-up incubator managers could serve as a useful tool to promote both lifelong learning in circular economy practices and equal opportunities in the knowledge-based society.

7.2.1 Suggestions for dealing with obstacles in order to develop the circular economy

Conversion of the circular economy in locomotives power for the Greeks SMEs

Many small businesses lack the skills, and network to reap the potential benefits of circular design, circular processes production and circular business models. Essentially, this is a challenge for small businesses to integrate the circular economy into their main business activity, given the existing networks, their culture and know-how based on linear business production processes. Therefore, a suggestion would be to create a National Forum i.e., “Circular Greece” - able to bring the SMEs in contact with authorities and universities to collaborate by offering knowledge in various fields and contribute in achieving the circular transition of Greek small business community. In addition, an initiative should be set up and funded for promoting the development of circular companies through representative bodies of SME companies from where the small businesses will learn about opportunities for implementation of circular economics and practice implementation of circular business models. In this context, such initiative will enhance know-how and skills in small businesses, will create a network throughout the value chain and will provide expert consulting services to circular business models.

Promoting research and development for circular solutions and technologies

The transformation into a circular economy requires investment in research, innovation, development, product design, processes production, reconstruction, recycling, biological materials, cyclic business models and products. In this context, the granting of new funding to circular economy through long-term grants from funds could be created:

- a technology transfer fund (TTfund) and
- an acceleration fund (Accelerator Fund).

In addition, the cooperation between business and research centers will ensure that research results can be implemented to accelerate the transition to circular economy while contributing to growth and employment.

Promotion of funding for small circular businesses

Lots of small businesses wanting the transition to a circular economy face serious problems in acquiring funding. In this context, one suggestion would be to use existing European financial instruments, such as: Horizon 2020, COSME, LIFE, European Structural and Investment Funds (ESIF), European Strategic Investment Fund (EFSI).

In addition, a significant contribution to accelerating the financing of small business would also be the use of non-financial instruments such as: 1) the Product Environmental Footprint (PEF), 2) Organizational Environmental Footprint, 3) EU Eco-Management and Audit Scheme (EMAS), 4) EU Ecolabel, 5) Environmental Technology verification program (CETV) and 6) European Resource Efficiency Knowledge Center (EREK) as well as the creation of new financial models and a circular investment fund under private or state control. The fund will have the ability to provide shares and guarantees and generally be able to increase borrowing.

Creating a single point of entry for authorities to the companies to meet obstacles in the circular transition

Businesses and especially small businesses that deal with circular economy face new and often more regulatory barriers in relation to other companies due to the fact that the circular business models are innovative and that the regulations do not include such categories of companies that work in existing value chains. The consequence may be that there is one long wait before clarifying circular business model regulation, which often hinders the development of new circular solutions.

The EU and local government's role

The EU and local governments have to make an effort to put in force more comprehensive and easy-to-apply legislation and to provide funding for a broad range of actions and initiatives, including projects and programs supporting the circular economy.

At the same time the true entrepreneurs do not wait for the government to create a market, but create a market themselves. The power of being first has oftentimes been underestimated. With many circular startups keen to scale, a wait-and-see approach may be a risky strategy.

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Appendices

Appendix A: List of incubators, accelerators, co-working spaces, and competition and hackathons in Greece and Bulgaria

Greece

Incubators

- ABC HUB is the first private incubator in Crete with three co-working spaces and business development programs.
- ATHENS CENTRE FOR ENTREPRENEURSHIP AND INNOVATION (ACEIN) is the incubation centre of Athens University of Economics and Business (AUEB) offering support to researchers and potential young entrepreneurs to develop innovative business ideas and bring them to the market.
- ATHENS DIGITAL LAB is a research and development lab for “smart cities” digital solutions. It supports the development and maturation of applications addressing the real needs of the city, upgrades the quality of life of Athenians and visitors and enhances the digital transformation of the city.
- ATHENS STARTUP BUSINESS INCUBATOR (TH.E.A.) is one of the most important initiatives of the Athens Chamber of Commerce and Industry (ACCI) for entrepreneurship promotion. It supports innovative new business ideas with a strong extroversion potential, offering consulting and training services, networking and investment opportunities.
- BLUEGROWTH is an umbrella of actions to promote business ideas relating to the local sea and aquatic resources through environmental & economic approach.
- BLUE LAB is the first center to promote and support business innovation exclusively for Blue Growth in Greece.
- CORALLIA was the first organization established in Greece for the structured and systematic management and development of innovation clusters.
- EGG - ENTER GROW GO is a long-running Athens based incubator and accelerator supported by Eurobank.
- ESA BIC Greece is the first incubator of the European Space Agency and supports startups active in the field of space.
- FOUND.ATION is a leading technology and innovation enabling platform in SE Europe. It acts as a startup hub, a digital transformation accelerator for corporations and a tech education hive.
- GENERATION AG GREECE The program aims to offer youth all the necessary tools to prepare them for employment in the Agrifood industry.
- GiSeMi is the Innovation and Entrepreneurship Network of the Municipality of Trikala - a joint initiative of the Municipality of Trikala and e-Trikala SA, aiming at the emergence of new innovative business ideas that provide solutions to the challenges and problems modern cities face.

- HIGGS - HIGHER INCUBATOR GIVING GROWTH & SUSTAINABILITY is an initiative which aims to reinforce non-profit organizations (NGOs) operating in Greece, through educational and supportive programs and activities carried out at its premises.
- I4G is a Greek-based Incubator also running a seed investment fund for tech and science startups.
- IMPACT HUB is part innovation lab, part business incubator, part community center, offering their members resources, inspiration, and collaboration opportunities to grow impact.
- INDUSTRY DISRUPTORS - GAME CHANGERS (ID-GC) is a non-profit/non-governmental organization founded to promote entrepreneurship in Greece, South-East Europe and East Med regions.
- INVENT ICT is a tech-incubator based in Athens, created by the Institute of Communications and Computer Systems of the National Technical University of Athens (NTUA) and Industry Disruptors Game Changers (ID-GC), with the support of the Greek Mobile Operators Association (EEKT). The program, which brings together academia and industry, aims to support and launch sustainable ICT companies.
- INNOVATION AND ENTREPRENEURSHIP UNIT OF THE AEGEAN UNIVERSITY aims to grow an entrepreneurial mentality and culture. Also, it aims to promote innovation and entrepreneurship as an important employment prospect through the development of basic skills within the context of entrepreneurial initiative. Finally, it aims at the enhancement of collaborations between the academic community and professional bodies.
- IQBILITY is an initiative of Quest, a Group of Companies active in the Information Technology, Renewable Energy and Parcel Delivery fields. Its goal is to identify, incubate and accelerate the development of the highest-potential startups in Greece through mentorship, experiential education and corporate resources.
- IMEDD hosts existing organizations, profit and non-profit, as well as individuals with the desire to create a new organization or to implement a new innovative project in the field of journalism.
- MICROSOFT INNOVATION CENTER is an incubator and startup events space in Athens, established in 2008. The aim of MIC is to support innovation and start-ups in the country.
- MINDSPACE is a non-profit organization of university students and young alumni, organizing free seminars, workshops and events on innovative entrepreneurship and soft skills covering a wide range of interest.
- NBG BUSINESS SEEDS is a complete support program of innovative and extroverted entrepreneurship. It involves initiatives promoting innovative ideas and projects, team training and counselling, infrastructure, networking and funding.
- OK!THESS provides space and technical support to teams of people with innovative ideas helping them to validate a business model fast, and to meet, mix and connect with like-minded peers.
- ORANGE GROVE is an initiative of the Embassy of the Kingdom of the Netherlands in Athens. It helps startups by providing incubation services, workshops, networking opportunities, access to competitions and more.

- PATRAS SCIENCE PARK was established according to the model of "Incubator" for New Technology- Based Firms (NTBFs). The main objective is to provide high-quality infrastructure as well as co-shape the appropriate financial and social conditions. These will support and promote the creation, operation and development of innovative firms through spin-off / spin-out processes and the co-operation among the University, Research Centers and the Industry.
- RELOAD GREECE is a UK based organization which provides the new generation of entrepreneurs with guidance, support, and the means to create ventures with a social or economic impact.
- RE-STARTUP PATRAS is an initiative of the University of Patras and POS4work for the support of innovative entrepreneurship of Patra.
- RIS3 ONE STOP LIAISON OFFICE is an initiative to support the Region of Central Macedonia's Innovation and Entrepreneurship Ecosystem. It undertakes networking and collaboration initiatives, mapping business needs in the priority areas of the RIS3 Strategy and then organizing targeted actions to address them.
- SEV EKINISI LAB is an initiative of SEV in cooperation with the Municipality of Athens, for the creation of a structured incubator environment for innovative business projects and provides support to young people to turn their business idea into a comprehensive business plan.
- SCIENCE AND TECHNOLOGY PARK OF CRETE (STEP-C) was created in 1993 as an initiative of the Foundation for Research and Technology- Hellas (FORTH), one of the largest Research Organizations in the country. STEP-C offers incubating facilities and services to start-up companies, with new and emerging technologies.
- STARTTECH VENTURES is an experienced early- stage investor and incubator. It provides startups with all the necessary infrastructure to help them gain momentum and grow. It focuses on investing in tech businesses and helping them to scale up with investments in capital, talent and entrepreneurial drive.
- Technology Park Lefkippos was founded bythe National Centre for Scientific Research "Demokritos" (NCSR Demokritos). It is the largest multidisciplinary Research Centre in Greece, a unique and efficient tool for strengthening the links between public Research Laboratories and the Industry. Lefkippos offers business incubator and accelerator services that support innovative ideas within an academic collaborative environment, from discovery to commercialization.
- THERMI S.A. BUSINESS INCUBATOR invests in advanced technologies and innovative products, by founding technologically innovative enterprises in cooperation with Greek and foreign researchers
- THESSALONIKI TECHNOLOGY PARK. MANAGEMENT & DEVELOPMENT CORPORATION S.A (TTP) was established in 1994 in response to the growing need for an efficient and dynamic organization that would promote innovation, competitiveness and entrepreneurship of the Greek enterprises. TTP's main stakeholder is the Centre for Research and Technology Hellas (CERTH), one of the biggest Greek research organizations.
- UNIVATION is a startup building Program for students and universities.

Accelerators

- AEGEAN STARTUPS is a digital academic accelerator of innovation and entrepreneurship with social impact for the Aegean Islands.
- ARCHIMEDES - NATIONAL & KAPODISTRIAN UNIVERSITY OF ATHENS THE BUSINESS ACCELERATOR aims to promote entrepreneurship among members of the academic community. It is addressed to business groups of which at least one member is also a member of the university community.
- BE FINNOVATIVE is a business acceleration program that helps teams and businesses develop ideas, technological solutions and new companies in the field of financial technologies (#FINTECH). It is organized by the National Bank of Greece.
- BIZRUPT is a not-for-profit organization, based in Crete. Its vision is to become an innovation catalyst contributing to the building of a strong innovation ecosystem in Crete through providing the right conditions (e.g. inspiration, practical knowledge, collaboration capabilities & resources) for the creation of new and innovative businesses.
- BUSINESS ACCELERATOR - INNOVATHENS is a three-month business enhancement program. Its main goal is the development of startups and the companies involved in order to claim a place in the innovation ecosystem of the city, the Greek and, above all, the international market.
- CAPSULET ACCELERATOR is an initiative by the Hellenic Chamber of Hotels. It is the first travel and hospitality accelerator for startups in Greece. It connects the leaders of the industry with young entrepreneurs.
- EMPHASIS - CARDLINK is a digital “accelerator” for innovative ideas, which provides support in the areas of expertise, organization, administration, management, and promotion, so that they can be implemented as quickly and efficiently as possible.
- EIT CLIMATE brings to light the potential of Greece for innovative solutions in CleanTech, WaterTech and Circular Economy.
- EIT DIGITAL VENTURE PROGRAMME supports the establishment of deep-tech-based ventures in East and Western Balkans (Greece, Romania, Bulgaria, Albania and Cyprus). It is designed to help entrepreneurs to develop and finalize their Minimum Viable Product and establish their startup company. It is implemented by Found. ation.
- EIT FOOD ACCELERATOR catalyzes new business growth to deliver transformative products and services in the agro/food sector.
- EIT HEALTH INNOSTARTER allows entrepreneurs with innovative ideas to look for all the EIT Health Accelerator activities and find the program that best suits their needs.
- EIT RAWMATERIALS targets mobilizing all stakeholders within the Knowledge Triangle and supporting the local ecosystem.
- EXCELIXI is Piraeus’s Bank Group Support of sustainable entrepreneurship in Greece.
- FOUND.ATION SPARK is an early-stage acceleration program aiming at bridging the gap between the stage that startups are when graduating from incubation programs and the stage they need to be in order to receive funding from investors. The first edition of the acceleration

program is implemented by Found.ation, with the support of Kathimerini newspaper, Oracle for Startups and PwC Greece.

- FOUNDERHOOD is a virtual acceleration program for newly-found tech startups.
- FOUNDIT is an entrepreneurship program for young people that provides youth the necessary practical knowledge, skills and support to explore entrepreneurship and set up their own businesses. It is implemented by Bizrupt and 100mentors and is fully funded by Prince's Trust International.
- GREEK STARTUP UNIVERSE is an 8-week online program exclusively for Greek founders globally.
- IGNITE IDEAS, by Nestle Greece is an accelerator program for startups to implement their idea (Proof-of-Concept) within 3 months.
- Imagine Program is a program of INTERAMERICAN for the submission, incubating and accelerating
  of innovative ideas. Since 2016, it is a pioneering "vehicle" of corporate innovation, enabling participants to express and showcase their ideas.
- KICK-IT is an accelerator program based in Kavala from the Kavala Chamber of Commerce & Industry.
- LAB.40 is an accelerator from the Drama Chamber of Commerce & Industry.
- METAVALLON – The Accelerator is a program that offers a pre-seed round of funding, business education, networking and a 1-month trip to Silicon Valley.
- MIT ENTERPRISE FORUM (MITEF) GREECE informs, connects, and coaches technology entrepreneurs enabling them to rapidly transform ideas into world-changing companies.
- PRAKSIS BUSINESS COACHING CENTER is aimed at people from socially vulnerable groups with viable business ideas, existing businesses in difficulty and family businesses that are in the process of succession by the next generation.
- SEV ENTEPRISE is promoting extroversion, innovation and startup entrepreneurship.
- VENTURE GARDEN is a complete educational program for entrepreneurs that aims to develop their skills, to allow them to be part of a constantly developing business network and provide practical training.
- YOUTH ENTREPRENEURSHIP CLUB is a non-profit, non-governmental organisation based in Chania, Crete. It was created by young people interested in entrepreneurship, full of ideas and eager to work.
- THE FASHION GATE. The AFBI "The Fashion Gate" accelerates emerging apparel and accessories design businesses while supporting fashion industry economic growth and job creation in Athens and all over Greece.
- THE STARTUP ELEVATOR is the first Startup Founders Leadership Academy in Athens. The purpose of The Startup Elevator is to craft the next era of entrepreneurial personalities in Greece through extensive training on Leadership skills and soft skill competencies.
- VIVA NEST is an accelerator for innovative services and startups in the FinTech sector.

Co-Working Spaces

- 3 VENIZELOU. At the premises of 3 Venizelou, in Thessaloniki, office spaces, administrative staff and technical equipment are available on-demand, for flexible use.
- ATHENS INVESTMENT CENTRE (AIC) supports entrepreneurship providing offices, meeting rooms, virtual offices with low cost and high quality for new businessmen and start-up companies. It provides fully equipped and modern offices in the center of Athens. It is aiming to develop cooperation between Greek and foreigner companies promoting investments in Greece and Greek exportations of innovative products and services.
- ATHENS MAKERSPACE is a membership-based DIY collaborative workspace that provides very affordable access to a variety of tools and equipment.
- ATHENS PLACE is a comfortable multi-space, that delivers flexible solutions to freelancers and companies. It provides flexibility in use, relieves from the business risk of the initial establishment, and releases resources from managing the daily operation. Most importantly, Athens Place was established to provide a creative environment, based on the exchange of knowledge and business synergies' growth.
- BUSINESS HIVE, in Athens, is a boutique coworking space for up to 20 people, which means you
  get to be a part of a real community full of opportunities.
- COHO is a modern collaboration business development and shared workspace in Thessaloniki.
- COWORK, based in Athens, offers luxurious coworking offices for rent and a conference center with meeting rooms.
- FOUND.ATION connects corporations, startups and young talents in an ecosystem of entrepreneurship. Originally established in 2011 in Athens as one of the first co-working spaces in SE Europe, Found.ation has since developed to a fully-fledged consultant for the evolving business world in the new technologically driven reality.
- H2B HUB in Heraklion, Crete, is supported by the University of Crete, the Foundation for Research & Technology Hellas, the Technological Educational Institute of Crete and the Heraklion Chamber of Commerce and Industry.
- HACKERSPACE is a dynamic community inspired by the Open-Source philosophy, located in Athens. The main operation is to promote collaboration by sharing projects.
- I4G PRO, launched by i4G is a coworking space in the heart of Thessaloniki.
- IMPACT HUB ATHENS is part of an International Network of socially-driven professionals and a variety of high impact creative professionals who are dedicated to prototyping the future of business. From social inclusion and social integration, to the environment and fair trade, the Impact Hub Athens is engaging expertise from its worldwide presence and creating a net of intercultural, high impact community that acts locally and internationally.
- LEFCO.WORK is a coworking space located on the idyllic island of Lefkada in the Ionian Sea.
- LUDD is a makerspace / fablab located in Athens. A platform where the latest developments in open design, prototyping and fabrication technology, along with shared expertise, serve as the basis for a community of individuals, organizations and broader initiatives, to connect and collaborate, thus accelerating local innovation.

- MAKE CREATIVE SPACES is based in Thessaloniki and supports and creates innovative solutions for new and existing companies which aim at extroversion with modern, state-of-the-art products. It is a creative space equipped with all the necessary tools and expertise to design and implement the most demanding and specialized projects.
- OFFICE12 is a coworking space in Heraklion, offering all the amenities necessary for a creative and innovative person to stay focused, productive and happy.
- OFFICE CLUB, based in Thessaloniki provides a professional environment in 3 different spots within the city.
- OFFICENTER is a coworking space in the heart of Heraklion, Crete, combining culture, professionalism and comfort with the Greek Cretan hospitality.
- OFFICE HUB offers coworking spaces for established enterprises or growing startups, in Athens and Thessaloniki.
- OPEN OFFICE VOLOS, is a modern-decorated coworking space at the center of the town.
- OPENSPACE, located in the heart of Mytilene is the first cooperative work space in Lesvos.
- ORANGE GROVE is a flexible co-working space and community for young entrepreneurs in Greece.
  It is a renowned initiative of the Embassy of the Kingdom of the Netherlands in Athens and is financially supported by Dutch-Greek businesses and grant-making foundations active in Greece.
- POM is a co-working space in Heraklion, Crete.
- POS4WORK is a place for coworking, meetings and events. Located in Patras, start-ups and talented freelancers can grow and build their projects along with a rich network of mentors and partners.
- QUALITY BRANDS SPACES is based in the city of Athens and provides innovative, flexible business office solutions for entrepreneurs, businesses and corporate users.
- REELHUB is located in one of the most picturesque neighborhoods of Athens: Akadimia Platonos.
- REGUS ATHENS, located in Maroussi, Athens is part of the global network of Regus Coworking.
- ROMANTSO, located in the heart of Athens, is a hybrid space which includes a cultural center, an event space and a collection of 21 coworking spaces with desks and offices.
- SELINA THEATROU, located in Omonoia, Athens is a nomadic hospitality hub with a jazzy new aesthetic, perfect for digital nomads.
- SPACES is a creative working environment and a member of the Regus brand. The most interesting part is that you can use the offices either in Greece or abroad as the Regus / Spaces network is large.
- STONE SOUP is a production house and coworking space, in Athens, where multi-disciplinary individuals gather to work, learn and build together.
- TECH MINISTRY is a space dedicated to creative software and hardware hacking, in Thessaloniki.

- THE CUBE is a co-working space, located in the center of Athens, where people who are open to new ideas and love innovation, actively work for positive change.
- THESWITCH is a fully equipped professional coworking venue in the historical center with Acropolis' view.
- TZAFERI 16 is a Boutique office & event space in Athens.
- PRELAB CREATIVE SPACE is a Creative Space, FabLab, Workshop Hosting, Coworking space and Designer shop in Athens.
- VIOS COWORKING is located in Athens and offers rented offices designed to meet the WELL Building Standard, which ensures health and well- being in the workplace.
- WORKHUB is a multifunctional coworking space, based in Chania, offering shared desks, private offices, meeting rooms, conference, seminars and events space, skype rooms, while providing all the amenities a modern workspace needs.

Competition and Hackathons

- ACCI 2020 AWARDS are hosted by the Athens Chamber of Commerce and Industry and honor business excellence, its values and corporate success stories. One of the awards categories regards startup entrepreneurship.
- ANTIVIRUS CROWDHACKATHON. The 1st remote innovation marathon for the development of applications to tackle the pandemic.
- CANSAT in Greece is a Pan-Hellenic Space Contest. It aims to familiarize participants with technologies similar to those used in satellites. The student competition is a qualifying phase of the European CanSats in Europe competition, organized by the European Space Agency (ESA) and aimed at high school students.
- CAPSULET IDEA PLATFORM calls to young universities' graduates/postgraduates, young unemployed executives and very early stage startuppers.
- CASSINI HACKATHON GREECE is an initiative aiming to connect hackers with the SpaceTech industry.
- CHIVAS VENTURE gives away $1 million every year in no-strings funding to social entrepreneurs, who blend profit with purpose to have a positive impact on the world.
- CLIMATHON ATHENS – Piraeus started as a 24h Hackathon from Climate KIC. Now it is a year-round platform, with a powerful solutions- hackathon at its core, translating climate action solutions into tangible projects, supporting climate-positive businesses & start-ups and addressing local policy changes.
- COPERNICUS HACKATHON, financed by the European Commission, brings together developers, entrepreneurs and topic-specific experts to develop new applications based on Copernicus Earth Observation (EO) data and services.
- COVIDHACKGR was an initiative of the Hellenic
- Ministry of Digital Governance in response to the pandemic and aimed at supporting new innovative ideas that focus on tackling the existing needs of the National Health System during the coronavirus pandemic.

- DEFENCE INNOVATION CHALLENGE is the first innovation competition for the development of solutions and applications in the Defence sector.
- EESTECH CHALLENGE is organized by EESTEC in cooperation with the School of Electrical and Computer Engineering of the National Technical University of Athens.
- EIT FOOD INNOVATION PRIZES is one of the largest in Europe in the agri-food sector. Its goal is to help entrepreneurs release their ideas and products on the market.
- ENNOVATION is an international university competition on entrepreneurship and innovation. The competition runs through a network of 20 universities in Greece and Cyprus with the organizational support of the Athens University of Economics & Business.
- ENVOLVE AWARD GREECE. This award program, formerly known as the Hellenic Entrepreneurship Award, was founded in Greece by the Libra Group, on behalf of The Hellenic Initiative in 2012.
- EUVSVIRUS is a mission-driven initiative that aims at fighting the world-changing challenge of coronavirus, organized in many countries across Europe.
- FINQUEST BY ALPHA BANK is an international open-innovation competition. It aims to enable innovative proposals and make the Fintech community part of the industry's transformation. FinQuest which is powered by Found.ation, leverages Alpha Bank's leading expertise and its network of top-performing partners, to offer added value to external teams and become a growth pillar of the FinTech ecosystem.
- GLOBAL HACK is a global initiative which unites the Hack the Crisis movement and the 40+ hackathons organized in the frames of this movement.
- HACKCOVID19 is a global call to openly share the most critical problems, assemble teams to tackle them, and share solutions and resources for COVID-19.
- HACKING HEALTH "EASTERHACK" was open to healthcare professionals, scientists, patients, entrepreneurs, engineers, designers, developers and anyone interested in working on solutions to problems.
- IDEA TREE is a student competition for innovation and startup entrepreneurship organized by the Greek Institute of Youth and Lifelong Learning.
- INNOVATION AND TECHNOLOGY COMPETITION by the National Bank of Greece. The bank, through its NBG Business Seeds programme, is organizing a competition to elicit and reward original ideas based on new technologies and to promote innovation in Greece.
- INNOVINAGRI is a business plan competition of the Agricultural University of Athens in the field of Agri-food.
- JA START UP OF JUNIOR ACHIEVEMENT GREECE is a student entrepreneurship competition.
- JOHN & MARY PAPPAJOHN BUSINESS PLAN COMPETITION. The Business Plan Competition of Anatolia School of Business, subsidized by John & Mary Pappajohn is open to young people interested in starting up their own business. John & Mary Pappajohn Business Plan Awards offers 5 prizes of €4,000 each to the top 5 business plans that will be evaluated as the best ones among those submitted to the contest.

- MAKE INNOVATION WORK aims at contributing to the stimulation of Greek Entrepreneurship and the Greek Economy, through the promotion of the creative potential of Greek Enterprises.
- MIT ENTERPRISE FORUM (MITEF) GREECE STARTUP COMPETITION is a technology accelerating competition in which Greek startups compete for prizes and receive global recognition through the MIT Enterprise Forum Global.
- NOYNOY IDEA CHALLENGE. The 1st Innovation Competition FrieslandCampina Hellas "NOYNOY Idea Challenge" attempts to capture the innovative dynamics of research teams working in the dairy sector in Greece, with NTUA as the main, but not exclusive, academic starting point.
- NASA SPACE APPS CHALLENGE is an international hackathon for coders, scientists, designers, storytellers, makers, builders, technologists, and others in cities around the world, where teams engage with NASA's free and open data to address real-world problems on Earth and in space.
- NATIONAL STARTUP AWARDS are awarded to start-ups that offer innovative solutions and products with the possibility of scaling sales worldwide.
- NEXT STAGE CHALLENGE is an entrepreneurship competition with prizes of total value over 20,000 € for startups from Thessaloniki, Kilkis, Florina and Pella.
- OLIVE CHALLENGE is a competition for innovation and entrepreneurship for the olive production sector. It is organized by FILAIOS.
- POWERUP! BY INNOENERGY is a competition for energy, cleantech, mobility, cybersecurity and smart city start-ups with financial awards up to 50,000€ and an opportunity of 150,000€ investment.
- SNF NOSTOS HACKATHON, powered by Stavros Niarchos Foundation, aims to tackle the challenges of technology and programming, in two separate competitions.
- STARTUPNOW FORUM is a hybrid event supporting the growth of the innovation ecosystem in Greece, providing various networking opportunities for startups.
- STARTUP WEEKEND COVID-19 GREECE was organized in response to the pandemic in several cities around the world as part of the Startup Weekend initiative, that included Athens as well.
- TAP 2 OPEN 2.0 BOOTCAMP BY THE FUND OF ARCHAEOLOGICAL PROCEEDS (TAP) AND CROWDPOLICY. It aims at developing innovative applications using emerging technologies and technological trends for cultural institutions.
- THE DIGITAL GATE is based on the "open innovation" principle, meaning that Athens International Airport (AIA) opens up its innovation processes to generate external knowledge for the development of innovative solutions by startups.
- THE GREENTECH CHALLENGE BY ESU NTUA is a competition of innovative ideas in the fields of: Energy & Environment, Smart Cities, Green, Innovative & Advanced Materials.
- THE NEW NOW is an initiative by the Swiss Embassy in Greece, focused on the future of healthcare.

- THE SQUEEZE is one of the well-known startup contests of Orange Grove.
- TROPHY CHALLENGE competition aims to highlight and reward innovative ideas that exploit technologies to develop products, services and business solutions in the agri-food sector.
- VENTUREGARDEN is a comprehensive educational and training program for entrepreneurs that want to develop their skills, gain access to a continuously growing entrepreneurial network and receive hands-on training.
- VISA INNOVATION PROGRAM organized by Visa and Crowdpolicy, aims at advancing new payment methods while at the same time offering an improved e-commerce experience for both Greek consumers and dealers/business owners.

Bulgaria

- Bulgaria Web Summit 2018
- CEE BLOCK
- DIGITAL|K 2018
- Entrepreneurs Night Out
- Innovation Explorer
- Innovative Enterprise Week Sofia 2018
- Innowave Summit
- IoT Sofia
- ISTA
- Java2Days 2018
- Questers Tech Meetups - Sofia
- Sofia Blockchain
- Sofia Crypto Meetup
- Startup SAFARI
- Startup Weekend Sofia
- Tech Talks Sofia
- WEBIT.FESTIVAL
- Women Techmakers Sofia
- Women Who Code Sofia
- B. Educate
- Best Practices: Beginner knowledge-sharing tech events. (i.e. beginner events that serve to educate more than inspire).
- <React.Sofia />
- Agile Community @ Paysafe
- Ansible Bulgaria
- Azure User Group Bulgaria
- Bulgaria Drupal User Group
- Bulgaria PHP

- Code Voyagers Sofia
- Django Bulgaria
- Elasticsearch Bulgaria User Group
- Elixir Sofia
- Golang Bulgaria
- Hyperledger Sofia
- Leanplum Tech Talks - Sofia
- JS Talks
- Skills Up by Smart Space
- Sofia HashiCorp User Group
- Sofia Kubernetes Group
- Sofia Salesforce Developer Group
- Sofia WordPress Meetup
- SofiaJS
- Startup Founder 101 Sofia
- Startup Grind Sofia
- SQLSaturday Sofia
- tekom Bulgaria Meetup
- User Experience (UX) Bulgaria
- Zuhlke Sofia
- Training & Feedback: Skill & Idea development events and startup bootcamps for entrepeneurs. (Includes comprehensive training programs, like Founder Institute, General Assembly, Lean Startup Machine, code camps, etc)
- #SwiftSofia Meetup
- Angular Sofia
- AWS Bulgaria User Group
- Blockchain Developers Meetup
- Bulgaria Cloud Meetup
- Bulgarian Agile Community
- Bulgarian BI & .NET User Group
- Bulgarian SQL&BI User Group "Lets' SQL Together!"
- C++ User Group Sofia
- DevTalks
- Docker Bulgaria
- Founder Institute
- GDG Sofia
- Global Azure Bootcamp 2019
- How to Raise Startup Funding in Sofia: Insights from Top Local Investors
- Kubernetes & Cloud Native Computing Bulgaria
- Lean Startup Machine Sofia

- Meteor Bulgaria
- Node.js
- OpenStack Bulgaria
- ProductTank Sofia
- Ruby Banitsa
- SharePoint User Group Bulgaria
- Sofia AI and Machine Learning Meetup
- Sofia Cloud Computing Users Group
- Sofia Internet of Things Meetup
- Sofia Startup: Idea to IPO
- Sofia Startup Ideation Bootcamp
- Startup Pitch Bootcamp: Learn How to Pitch from Top Entrepreneurs
- Uber Engineering Events - Sofia
- VMware Bulgaria
- C. Validate
- Team Formation: Events for Finding Co-founders in Sofia. (i.e. tech networking events or other resources that facilitate early-stage recruitment and cofounder matching)
- ABLE Bulgaria
- CoFoundersLab
- Endeavor Bulgaria
- Entrepreneurs Night Out
- Food Startups Meetup Sofia
- Founder Night Out
- Founder2be
- FounderDating
- FounderX
- MOVE.BG
- Silicon Drinkabout
- Sofia Business Networking
- Sofia Entrepreneurs Meetup
- Sofia Game Dev Meetup
- Startup Live Sofia
- STARTUP NAVIGATOR
- Youth Business Club
- Build First Product: Hackathons & product events in Sofia.
- 1st Sports Hackathon
- adidas Hackathon 2018
- AngelHack Sofia Hackathon 2018
- Balkan Hackathon 2018
- Bulgaria Innovation Hackathon 2018

- Balkan Ruby
- Coffee and Code Sofia
- Dev.bg
- Hack4Health
- HackConf 2018
- init Lab
- Innovator CoWorking Space
- jPrime
- Lambda Dojo Sofia
- MusicTechBG
- NEXT BLOCK Conference Hackathon
- PAYSAFE HACKATHON 2018
- React-not-a-Conf

Appendix B: Survey Questionnaire

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CIRCUIT - Promoting Circular Economy Incubator for Youth (D3.1)

CIRCUIT - Promoting Circular Economy Incubator for Youth

The aim of CIRCUIT is to accelerate the transition toward a Circular Economy. One way to achieve this is through the promotion of entrepreneurship in a circular economy. CIRCUIT (Promoting Circular Economy Incubator for Youth) focuses on:

a) improving entrepreneurship SME support systems by facilitating the economic exploitation of new ideas and promoting the creation of tools, including pre-incubators, incubators, Labs and info-points, and

b) supporting the capacity of young people and engaging them in innovation processes.

The project's main objectives are:

a) strengthening entrepreneurship on circular economy and networking culture for the promotion of a new business model expansion,

b) improvement of competitiveness of existing SMEs, while supporting the emergence of new collaborative business schemes,

c) improvement of the regions' authorities and stakeholders' capacity regarding entrepreneurship in the circular economy,

d) actual support offered to entrepreneurs through training, consulting, mentoring services,

e) Increase of the local population and authorities' awareness towards entrepreneurship in the circular economy,

f) Promotion of cross-border cooperation, networking, common exports, common business schemes, etc.

Please answer the following questionnaire developed for the needs of the CIRCUIT project.

Section A - General Part

A1. General information

A1.1 Age

- 18 -22
- 23-30
- 30-40
- 40-50
- 50-60
- Over 60

A1.2 Country of residence

- Greece
- Bulgaria

A2. Gender

- Male
- Female

A3.1 Education

- High School
- Bachelor
- Master
- PhD

A3.2 Area of Expertise

- Economics
- Engineering
- Political Science
- Biology
- Medicine
- Other

A3.3 If Other, please specify

A4. Income (personal, or family income, if a dependant member)

- ○ <10.000
- ○ 10.000 - 20.000
- ○ 20.000 - 30.000
- ○ 30.000 - 40.000
- ○ >40.000

Section B – Awareness about Circular Economy

B1. What does Sustainable Development mean, for you?

at most 2 choice(s)

- ☐ Economic, social, and environmental equilibrium
- ☐ Meet the needs of the present without compromising the well-being of future generations
- ☐ Meet environmental integrity requirements
- ☐ Other meanings (please indicate some)

B2. How well do you understand Circular Economy ?

- ○ Understand it well (Yes I knew what CE is)
- ○ Had no idea of it
- ○ Just heard of it
- ○ Did not care

B3. What does Circular Economy mean, for you?

at most 2 choice(s)

- ☐ A zero-waste economy
- ☐ An economy able to regenerate itself
- ☐ Reduce, recycle, reuse
- ☐ A more sustainable way to produce and consume
- ☐ Other

B4. Which aspect/s is/are more important in Circular Economy?

- ☐ New product design
- ☐ Eco-industrial parks and Smart cities
- ☐ Sustainable supply chain/Reverse logistic
- ☐ Recycling phase
- ☐ New business models
- ☐ Other

B5. Which are the more important expectations from Circular Economy?

- ☐ Economic benefits
- ☐ Environmental benefits
- ☐ Employment opportunities
- ☐ New business opportunities
- ☐ Other

Section C – Drivers, Barriers and Change perception and awareness

C1. What are possible obstacles from engaging in Circular Economy?

at most 3 choice(s)

- ☐ Unfavourable prices
- ☐ Lack of financial support
- ☐ Lack of networks
- ☐ Low awareness and know-how
- ☐ Lack of innovation/disrupting technology
- ☐ Lack of infrastructure
- ☐ Resistance to change
- ☐ Lack of policies/regulations
- ☐ The current linear design of products
- ☐ Other

C2. What do you think have to change in the circular economy process?

at most 3 choice(s)

- ☐ Technical aspects (administrative, production techniques, collection techniques, others...)
- ☐ Unfavourable prices (promote incentives such as decreased taxes and subsidies for recycled materials, etc)
- ☐ Favour creation of recovery networks and markets (new finance tools, ethical finance, etc.)
- ☐ Increase dissemination of circular concepts to overcome low awareness and know-how
- ☐ Invest in research to promote circular innovation/technology
- ☐ Invest in suitable circular infrastructure (to promote easy transport, storage, marketing...)
- ☐ Involve stakeholders and managers in decision making, provide transparent data, to overcome resistance to change
- ☐ Promote innovative, broad, and long-run policies at the national level (to overcome the fear of instability)
- ☐ Promote research and implementation of circular design of products
- ☐ Other

C3. If the transition from a linear economy to a Circular economy is to become a success, who should be, in your opinion, responsible for taking the initiatives forward?

at most 3 choice(s)

- ☐ Policy maker
- ☐ Economic actors
- ☐ Citizens/Costumers
- ☐ Public administration
- ☐ Public opinion
- ☐ Other

C4. What policy instruments do you think would be necessary for the drive towards a Circular Economy?

at most 3 choice(s)

- ☐ Regulatory measures
- ☐ Harmonisation and advice on existing policies (e.g. on the circular economy, labeling, raw materials. etc.)
- ☐ Financial support for companies
- ☐ Selective tax system applied to consumption (e.g. plastic tax)
- ☐ Increase awareness of consumers
- ☐ Incentives for the consumption of selected products
- ☐ To develop a cultural approach favoring waste prevention
- ☐ Other

Section D – Personal performance towards CE

D1. Do you sort and dispose of your waste in your daily life (some of, or all of the following: batteries, e-waste, plastic, metals, compost, etc.)

- ○ Yes
- ○ No

D2. Into how many categories are you willing to sort your waste?

at most 3 choice(s)

- ☐ Batteries
- ☐ Plastic non combustible
- ☐ Plastic combustible
- ☐ Paper
- ☐ Aluminum
- ☐ Other metals
- ☐ Glass
- ☐ Used cooking oil
- ☐ Compost

D3. How much money (in terms of % compared with the existing price) are you willing to pay for a greener product?

- ○ up to 5%
- ○ 10%
- ○ 15%
- ○ 20%
- ○ 25% or more

Section E - Application of Circular Economy Principles in Entrepreneurship

E1. Do you believe that you have the skills to apply the circular economy principles in a business project you might have?

- ○ Very Much
- ○ Somewhat
- ○ Undecided
- ○ Not really
- ○ Not at all

E2. In your opinion, receiving training in circular economy principles would encourage you to get involved in entrepreneurship?

- ○ Totally Agree
- ○ Agree
- ○ I am not sure
- ○ Disagree
- ○ Totally Disagree

E3. In your opinion, are circular economy practices feasible to be applied in business in your area?

- ○ Yes, they are

- No, they are not
- Maybe

E4. Please elaborate briefly on your reply to the previous question?

E5. Would you be interested to get involved professionally in the circular economy business in your area?

- Very interested
- Somewhat interested
- Neutral
- Not very interested
- Not at all interested

E6. Are you aware of the pre-incubation and incubation process of business ideas?

- Fully aware
- Aware
- Neither aware nor not aware
- Not aware
- Fully not aware

E7. Would you be interested to take part in a pre-incubator and/or an incubator that could also guide you in circular economy matters?

- Yes, I would like to receive support for my business idea
- Maybe it would be helpful for my business idea
- No, I feel confident I can make it on my own

Contact

Contact Form

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Greece-Bulgaria
CIRCUIT
European Regional Development Fund

Pirin Eagles

Centre for Cross-border Cooperation and Development – Sandanski

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Social Innovation & Cohesion Institute

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