European Neighbourhood Instrument Cross-Border Cooperation

Project BSB1021 CIRCLECON

Project title: Knowing Circular Economy in Black Sea Basin

1.2 ACTIVITY TITLE: Regional Specific Study

Regional Study in the Region of Central Macedonia, Greece:

Programme priority	2. Promote coordination of environmental protection and joint reduction of marine litter in the Black Sea Basin
Programme priority specific objective	2.2 Promote common awareness-raising and joint actions to reduce river and marine litter
Project title:	Knowing Circular Economy in Black Sea Basin
eMS Code:	BSB-1021
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Partner	PB2 Greek Exporters Association
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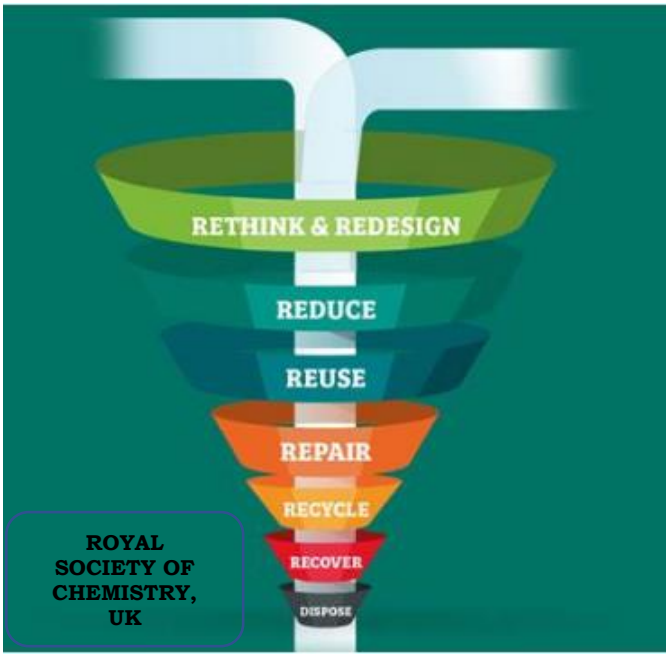
Executive Summary

In the Regulation (EU) 2020/852 of the European Parliament and the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, Circular Economy means an economic system whereby the value of products, materials and other resources in the economy is maintained for as long as possible, enhancing their efficient use in production and consumption, thereby reducing the environmental impact of their use, minimising waste and the release of hazardous substances at all stages of their life cycle, including through the application of the waste hierarchy.



The major findings of this study consist of: a) lack of awareness about “CE” model both in business and general public b) absence of funding incentives c) deficiencies in circular economy business models.

Public authorities at all levels should realise their unique position to influence the transition to a circular economy. They should invest in building capacity both internally and externally within the areas under their administration to enable and support circular economy projects. Promoting an organisational culture of ‘circular economy enablers’ will support the introduction of innovative models of public governance that stimulate the circular economy and improve service to the public.

Although circular economy practices and applications are gaining momentum over the linear economic model and are supported by institutional policy frameworks, there are still major barriers and serious challenges that lie ahead.

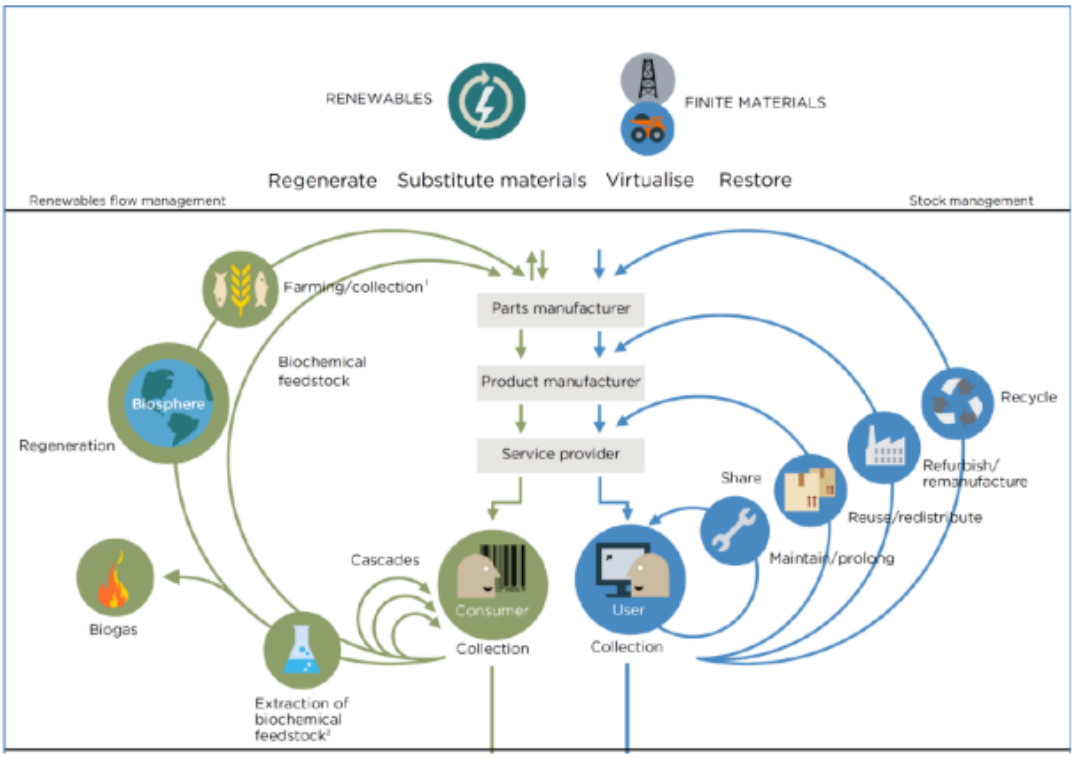
To achieve the climate targets and contain the environmental effects of pollution and waste generation, we need a fundamental shift in economic values and procedures applied by businesses, consumers and governments.

A clear message deriving from the current analysis is that implementation of the European legislative framework into the Greek legal system should not be limited to the typical procedure of translating, repeating or rephrasing European law via a national legislative instrument, but it should further include the political will to exercise all powers available to make this law operational and effective in practice, setting thus the required underpinnings for the transformation of the Greek economy to progress to the Circular Economy.

1. Introduction

The main aim of the study should be enlisted. Describe also the structure of the report, indicate the reference period covered by your analysis, shortly enumerate the main methods used and highlight the importance of your work performed for further work

While it has many facets, the Circular Economy is a sustainable economic model that eliminates all or most waste, or recycles it, thus reducing the use of virgin resources as well as reducing energy consumption, which in turn reduces the environmental impact of the consumer society. The main ideas are illustrated in figure below, which was developed by the Ellen MacArthur Foundation, a leading proponent of the circular economy



Source: Ellen MacArthur Foundation

The circular economy concept is strongly promoted by the European Commission as it goes beyond resource efficiency and recycling and provides the framework to develop new business models aimed at increasing the value, use and life of materials, products and assets and designing out waste from production and consumption.

In the light of globalized supply chains, strong growth in the demand for raw materials and a world population set to reach 9 billion by 2050, it is clear that the global transition to the circular economy is not only necessary for the success of the EU's policy ambitions, but a global imperative.

The aim of the current study is to provide up-to-date comparative data of the status of Greece and especially the Region of Central Macedonia in terms of Circular Economy action.

The project BSB1021 intends to promote the EU CE model, inform on waste prevention, reduction and management and establish a permanent BSB cooperation achieving long-term sustainability of its outputs and results contributing to Priority 2.2.

The 5 planned studies will showcase the main findings in a series of environmental challenges related to the Programme's Specific Objective 2.2.

2. Methodology

In this section, explain how the study was produced. It should also be enlisted persons and institutions who contributed to the study. What kind of methods were used?

- *Quantitative methods – secondary analysis of existing sources – provide a short overview of them*
  - *Official statistics collected at national level and Eurostat*
  - *Previous Studies in the field of circular economy, waste management, etc. on national/ regional level*
- *Qualitative methods*
  - *Interviews with relevant stakeholders, semi-structured interviews*

How the study was produced

The current study was drafted in favor of PB2, Greek Exporters Association based on the methodology and specifications developed by VFU which are common for all partners as to insure compatibility of results and comparability of data.

The approach of the study constitutes both quantitative and qualitative methods. The aim is to describe in detail in quality and quantity terms the current situation of waste management and circular economy issues, especially, waste collection – waste treatment - waste recycling – waste reuse - main environmental challenges in each area — soil, area and water pollution status - general people behavioral patterns related to waste.

Quantitative methods – secondary analysis of existing sources

In terms of quantitative methods a desktop research was carried out; the main resources are listed below; the full list of sources are shown in Section 7 of the current document.

The main contributors to the current analysis have been:

- Eurostat
- Region of Central Macedonia (RCM)
- Managing Authority of RCM,
- Thessaloniki Chamber of Commerce and Industry,
- Technical Chamber of Greece
- Aristotle University of Thessaloniki
- Alpha Bank

Qualitative methods

The main contributors in terms of qualitative analysis were:

- Mr Georgios Stavros Kremlis, Honorary Director European Commission, in charge of Circular Economy
- Mr Konstantinos Aravosis, Secretary General of Natural Environment and Water, Ministry of Environment and Energy
- Mr Aristotelis Spiliotis, General Secretary of the *Black Sea Trade & Development Bank*
- Mr Georgios Zalidis, Prof. Agriculture AUTH, President of Interbalkan Environment Center
- Mr Konstantinos Michailidis, Deputy Head of Independent Directorate of Innovation and Entrepreneurship Support of the Region of Central Macedonia.
- Mr Christos Vlachokostas, Prof. Dept of Mechanical Engineers, AUTH.
- Mr Dimitrios Chomatidis, member of the working group of the Green Fund LIFE-IP CEI-Greece

Questionnaires

A survey was conducted on key stakeholders that may contribute to the transition to a more circular economy in the region, which was based on the mapping of public authorities, bodies directly involved in the waste sector, sectoral bodies as well as organisations representing the economic and social life in general.

The questionnaires were prepared aimed to evaluate the current perception of the CE status as well as to examine the transition potential of the Region Central Macedonia – Greece to the circular economy ecosystem.

Two questionnaires prepared, one addressing to key-experts and policy makers when the other was addressed to stakeholders.

Policy Makers Questionnaire:

1. *Short description of the organization and its activities*
2. *Does your region implements initiatives in the field of circular economy? What do you expect to be the development in the future?*
3. *Challenges, policies, projects and programmes related to circular economy*

Does national culture encourage introduction of circular economy principles?
How would you describe legal framework for circular economy? Is that one of the top national priorities?

4. *In your region who collects data concerning circular economy? What kind of data is collected or missing?*
5. *Please give us a short overview on how circular economy play a role for your institution?*
6. *Organizational engagement (how the organization the interviewed person represents is affected by circular economy challenges)*
7. *Recommendations*

Stakeholders Questionnaire:

1. *Short description of the organization and its activities*

2. *Are you aware of the model "Circular Economy" and/or the EU Action Plan?*
3. *Do you know whether Circular Economy policies are deployed in the country and/or in the region? If yes, in which sectors?*
4. *Do you consider as useful a more intensive dissemination on the CE from the Greek Exporters Association?*
5. *DO you think that the National Action Plan for the Circular Economy in Greece will affect you organisation?*
6. *Comments & Recommendations*

Sixteen (16) questionnaires were collected as from:

- Governmental Organisations: 1
- Academic Institutions: 2
- Business Associations: 3
- Non-Governmental Organisations: 1
- Business Consultants: 3
- Manufacturing Companies: 6

Limitations

The work consisted primarily of analysis and synthesis of information and data made available or collected through primary and secondary research. Unavailability of information has been a major challenge throughout this study, which is a limitation that could have potentially impacted the completeness of provided information and relevant conclusions.

3. General presentation of the country/region

- *Review of the national legislation on circular economy of the country/region [insert tables and graphs here]*
- *Major institutions relevant from the perspective of circular economy [policy framework]. How the national legislation reflects the European directives on circular economy?*
- *Are there some regional legislation/institutions dealing with the issue?*
- *Is there a circular economy national action plan?*

Greece has recently embarked on an accelerated path towards a transition to a circular economy.

The Greek government asked the European Commission (EC) for support in specific areas (including the improvement of municipal waste management, regulatory issues of the waste sector, the management of specific waste categories) in order to raise the quality and quantity of recycling, to improve data quality and to effectively use economic instruments. To achieve the aforementioned goals, the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) provides "Technical support for the implementation of the National Waste Management Plan (NWMP) of Greece" from 2018 to 2020. The project is funded by the European Union (EU) via the Structural Reform Support Programme (SRSP) and the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU), and jointly implemented by GIZ and the Hellenic Ministry of Environment and Energy (YPEN), in collaboration with the European Commissio

Review on the National Legislation about Circular Economy

The National Waste Management Plan for the period 2021-2030
The extreme situation of illegal landfilling in Greece was reflected in series of convictions by the European Court of Justice, the first of which took place in 2005 for the operation of 1,125 illegal landfills. From 2014 until 2019, Greece had paid EUR 58.9 mn in fines for illegal dumps. The new National Waste Management Plan for 2021-2030 is in line with the EU standards for sustainable development and circular economy principles, aimed at the construction of 17 waste treatment plans in Greece. The previous plan for 2015-2020 failed to comply with the objectives that were then set. Despite the efforts, Greece continues to perform poorly regarding waste management compared to other EU countries and stills pays fines for the remaining 50 illegal landfills.

The reduction of landfilling to 10% in 2030 and the increase of recycling to 55% in 2025 and 60% in 2030 (including biowaste) are among the plan's main objectives. The Plan aims to achieve full coverage of the country with 43 Waste Treatment Plants, 43 to 46 Bio Waste Treatment Plants and 4 power plants with energy recovery from waste and separate collection of organic waste.

The National Strategic Plan for Waste Prevention (NSPWP)
The NSPWP, which supplements the NWMP regarding waste prevention initiatives, sets qualitative targets and proposes indicative indicators for monitoring the achievement of WPP goals. In case of food waste prevention, a dedicated topic in the CircularGreece, even though there are ongoing initiatives, there is still limited knowledge (data) on food waste production and prevention. Therefore, CircularGreece actions will set the ground for the calculation and monitoring of indicators, taking into account and the forthcoming delegated Decision establishing a common EU methodology to measure food waste. The operation of EGCs will increase potential for preparation for reuse, especially for EEE. It should be noted that a lot of efforts are ongoing for reuse through voluntary/community level actions (i.e. the case of food, clothing). CircularGreece will assist in recording these actions and collecting data so as to measure waste prevention.

The New climate law
The draft climate law, which is posted for public consultation, "is extremely ambitious." It raises the bar, as it does not simply bring EU targets into the national body of laws, but it supplements them, updates them, and oftentimes exceeds them. It is very up-to-date legislation that shows Greece is a pioneer on issues of climate change.
The law will set quantitative targets to reduce greenhouse emissions by 55 percent in 2030 compared to 1990, and by 80 percent in 2040, aiming for climate neutrality in 2050, the EU target.

Regulatory initiatives in 2019-2021

Apart from the New Action Plan for the Circular Economy 2021-2025, during 2019-2021 a series of various other regulatory initiatives have been undertaken to promote the circular economy in Greece. These included:

▪ The new proposed legal framework for waste, landfill and alternative waste management, the revision of the National Waste Management Plan and the National Strategic Waste Prevention Plan.

▪ The new legal framework for disposable plastics, the signing of the European Plastic Pact Agreement, the business plan for the implementation of relevant actions, as well as the approval of the action plan for green public procurement.

▪ The enactment of a series of flagship national measures such as a) the prevention of food waste, b) reuse initiatives, such as the obligation to serve consumers with a reusable cup at a reduced price, c) separate waste collection actions, such as the refund guarantee system for bottles (DRS), d) redesign of products, such as the minimum recycled content in new bottles, e) citizen awareness, such as mandatory separate waste collection in schools, f) free water supply to public taps and g) provision of incentives and disincentives, such as the landfill fee, the classification of producer contributions within "the polluter pays" principle and the implementation of "pay as I throw" systems by local authorities.

▪ The establishment of the "Alliance for food waste reduction" in Greece and the operation of the "National Council of Circular Economy" with the participation of various stakeholders.

▪ New funding programs for actions regarding a) the environmental protection due to climate change, b) the need for sustainable energy, c) the promotion of circular economy principles, d) the intensification of auctions for new projects regarding waste treatment activities and e) the design of focused awareness actions.

The National Plan on Circular Economy (NAPCE).

Greece's Governmental Economic Policy Council endorsed a National Action Plan on Circular Economy in early 2018 and updated on March 2021, to set the country on a path towards the long-term adoption of circular economy principles. 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 resource efficiency, promotion of SMEs, innovation and investment in new technologies, and strengthening of the "social economy" potential. The long-term (2030) goals of the National Action Plan on Circular Economy can be summarized as follows:

- 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.

National Recovery and Sustainability Plan – Greece 2.0

The National Recovery and Sustainability Plan or Greece 2.0 contributes to the country's green transition by devoting 1/3 of the estimated RRF budget (EUR 6 bn), and 40% of mobilized investment resources (EUR 10.4 bn), to achieving the climate targets. The green axes, reforms and investments of the first Pillar of Greece 2.0 are in line with the priorities set by the Pissaridis Commission Report for economic growth. The Report recognized the importance of protecting and restoring the natural environment and strengthening of the circular economy, sustainable waste management and resilience to climate change and its effects (Growth Plan for the Greek Economy, 2020).

Greece 2.0 green pillar axes include a) an environmentally friendly transition to a new energy model, estimated to absorb 7% of the total RRF budget or 20% of the first pillar's budget, b) an energy upgrade of the building stock (14% of total grants or EUR 2.5 bn), c) the transition to a green and sustainable transportation system, funded with 9% of the pillar's budget and d) the sustainable use of resources, climate resilience and environmental protection (10% of total grants or 29% or the first pillar budget).

The green pillar of Greece 2.0, in combination with other national environmental plans, such as the Just Transition Development of Lignite Areas and the Reforestation program, forms strategies that support green transition. Greece 2.0 also reflects the strategic priorities and climate objectives of the National Energy and Climate Plan and incorporates the EC's recommendations on the use of the Recovery and Sustainability Fund to achieve the 2030 energy and climate targets.

The New Action Plan for the Circular Economy 2021-2025

The New Action Plan is the new roadmap of 66 actions for the period 2021-2025 that aims to accelerate the transition to the circular economy. Out of these actions, 45 pertain to basic economic axes, such as production, consumption, waste and horizontal measures (e.g. governance). The other 21 actions regard circular policies for certain commodities and products.
In addition to the horizontal actions, the new action plan also includes a series of actions for businesses, citizens and cities via existing as well as new, innovative and digital models and the promotion of circular economy principles and applications in various municipalities.

In the New Action Plan, all actions are divided into five axes, which include:
- sustainable development and industrial policy actions, aimed at the promotion of industrial symbiosis and a climate neutral and efficient circular economy,
- sustainable consumption actions in order to strengthen consumers' participation in the circular economy and the demand of sustainable products,

▪ less waste with greater value aimed at the reduction of waste generation and landfilling, as well as the increase of waste recycling,
▪ horizontal actions related to governance, legislation, organization and implementation and
▪ special actions for certain commodities, which need to be addressed as a matter of priority, due to their environmental footprint, such as electronic and ICT equipment, batteries and vehicles, packaging, plastics, textiles, construction and buildings, food and water.

Comparison of National Legislation vs European Directives

The EU regulatory framework that guides the transition to a circular economy contains the new Circular Economy Action Plan and other regulations, such as those for waste management. Greece recently introduced its New Action Plan for the Circular Economy 2021-2025, by also adopting other relevant regulations and policies for waste limitation as well as ESG environmental criteria aligned with various circular economy targets.

Recently, Greece has been adopting new legislation, transposing EU directives. The most recent transposition is the one of the Directive 2019/904 on single use plastics, which was tabled for a vote in parliament in October 2020, making Greece a pioneer country in the context of addressing single use plastics' environmental impact. In the same context, Greece is also member of the European Plastics Pact, which brings together governments and frontrunner companies to accelerate the transition towards a European circular plastics economy. Furthermore, Greece recently published a new National Waste Management Plan (2020-2030) aiming to reduce the amount of waste that ends up at landfills to 10% by 2030, five years earlier than the European obligation.

The directions set by the Waste Framework Directive 2008/98/EC, as they have been integrated in the National environmental legislation through the framework law 4042/2012 and amended by the EU Directive 2018/851. – The Circular Economy Package (OJ L150/14.06.2018), as depicted in the National Action Plan on Circular Economy (NAPCE, 2018). The directives EU 904/2019, 2018/851, 2018/852 and has been integrated in law 4819/2021.

Additionally, the Ministry of Environment and Energy is coordinating since 2019 a LIFE Integrated Project (LIFE-IP), LIFE-IP CEI-Greece "Circular Economy Implementation in Greece", along with 18 partners (national and local administration, universities, private sector and NGOs). This 8-year-old project intends to implement the National Waste Management Plan, the National Waste Prevention Plan and the National Strategy for the Circular Economy with the implementation of different activities such as waste prevention, development of circular economy indicators and the development of action skills and awareness raise activities.

The LIFE-IP CEI
LIFE – the Circular Economy Implementation program in Greece ▪ LIFE-IP CEI-Greece aspires to contribute to the implementation of the National Waste Management Plan and the National Strategy for the Circular Economy. The project aims to develop actions in nine municipalities and one region to

promote a) an integrated waste management plan, b) preparation for reuse and separate waste collection, c) hazardous household waste management, and d) financial tools implementation. ▪ The objectives of the program also include a) the promotion of actions for food waste prevention via regional alliances for agri-food waste management, b) secondary material standards to support circular economy, c) greater awareness of the circular economy and waste management implications among authorities and the public and d) the mobilization of complementary financing resources to support the National Waste Management Plan.

The project actions are related to the following measures/actions of the NWMP:

- Development of a guide for the management of agri-food waste
- Development of technical standards for the usage of secondary materials
- Implementation of a PAYT scheme in an urban municipality
- Development of a guide for the prevention of food waste
- Formation of a circular economy observatory
- Construction and operation of Enhanced Green Centers
- Implementation of a system for the management of household hazardous waste
- Use of economic instruments for waste management
- Development of sectoral prevention plans
- Promotion of voluntary agreements for waste production prevention
- Awareness campaigns addressed to either the wider public or selected consumer groups
- Promotion of repair-reuse centres (e.g. Green Centers)

Regional Legislative Framework

According to the Law 4042/2012 in each of the 13 regions of Greece, a 'Regional Plan for Waste Management" has been developed following the establishment of a Regional Authority.

The plan of the Region of Central Macedonia has been approved during 2016 by the Regional Council. The Regional Authority of Central Macedonia designs, implements and operates the Regional Integrated Waste Management System. It operates the regional recycling infrastructures and supports the local authorities in the collection, selection and re-use of waste.

The Authority covers 38 municipalities with a population of apprx 2 million and handles on annual basis more than 850.000 tons of municipal waste.

4. Circular Economy: Quantitative perspective

- *Please, use country`s statistics. Describe the circular economy in terms of a) production and consumption; b) waste management; c) secondary raw materials; d) competitiveness and innovation statistics.*
- *Please, use also relevant regional statistics to describe the situation on the regional level.*

National Quantitative Data

According to EUROSTAT, the disposal of waste accounted for 85% of total waste treatment and recovery for only 15% (2018). Regarding municipal solid waste, its largest part in Greece is treated in landfills and other forms of disposal (78%) and only 21% is recycled.

As to the EU Monitoring Framework, the key indicators of Circular Economy for Greece, are:

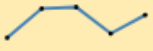
Waste Management

Indicator	Value	Trend
Recycling rates		
Recycling rate of municipal waste *(percentage)*	21 [2019]	
Recycling rate of all waste excluding major mineral waste *(percentage)*	27 [2018]	N/A
Recycling / recovery for specific waste streams		
Recycling rate of overall packaging *(percentage)*	60.1 [2019]	
Recycling rate of plastic packaging *(percentage)*	37.6 [2019]	
Recycling rate of wooden packaging *(percentage)*	24.5 [2019]	
Recycling rate of e-waste *(percentage)*	35.8 [2018]	
Recycling of biowaste *(kg per capita)*	26 [2019]	
Recovery rate of construction and demolition waste *(percentage)*	97 [2018]	

Production and consumption

Indicator	Value	Trend
EU self-sufficiency for raw materials, aluminium *(percentage)*	N/A	N/A
Green public procurement	N/A	N/A
Waste generation		
Generation of municipal waste per capita *(Kg per capita)*	524 [2019]	
Generation of waste excluding major mineral wastes per GDP unit *(Kg per thousand euro, chain linked volumes (2010))*	85 [2018]	
Generation of waste excluding major mineral wastes per domestic material consumption *(percentage)*	13.3 [2018]	
Food waste *(million tonne)*	N/A	N/A

Secondary raw materials

Indicator	Value	Trend
Contribution of recycled materials to raw materials demand		
End-of-life recycling input rates (EOL-RIR), aluminium *(percentage)*	N/A	N/A
Circular material use rate *(percentage)*	5.4 [2020]	
Trade in recyclable raw materials *(tonne)*		
Imports from non-EU countries	636 293 [2020]	
Exports to non-EU countries	404 852 [2020]	
Intra EU trade	293 000 [2020]	

Competitiveness and innovation

Indicator	Value	Trend
Private investment, jobs and gross value added related to circular economy sectors		
Gross investment in tangible goods *(percentage of gross domestic product (GDP) at current prices)*	0.02 [2018]	
Persons employed *(percentage of total employment)*	1.53 [2018]	
Value added at factor cost *(percentage of gross domestic product (GDP) at current prices)*	0.36 [2018]	
Number of patents related to recycling and secondary raw materials	1 [2016]	

The materials flow diagram for 2020 as per EUROSTAT:

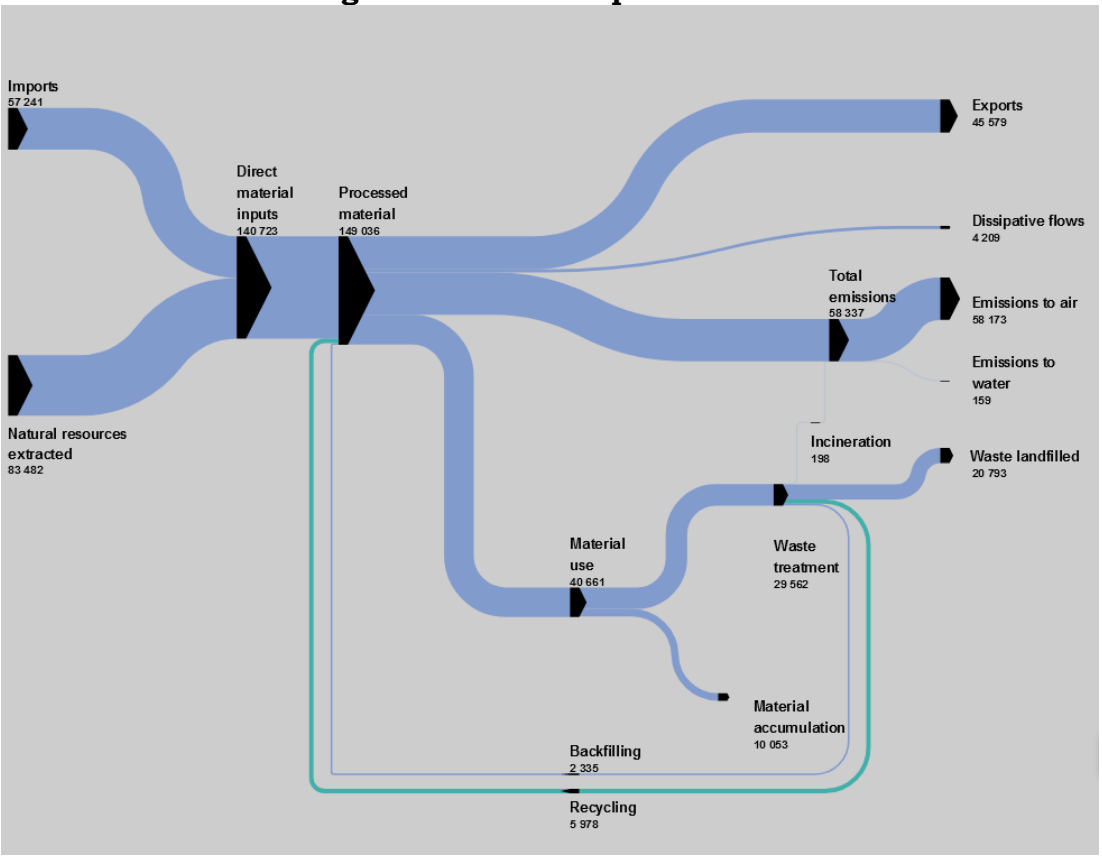


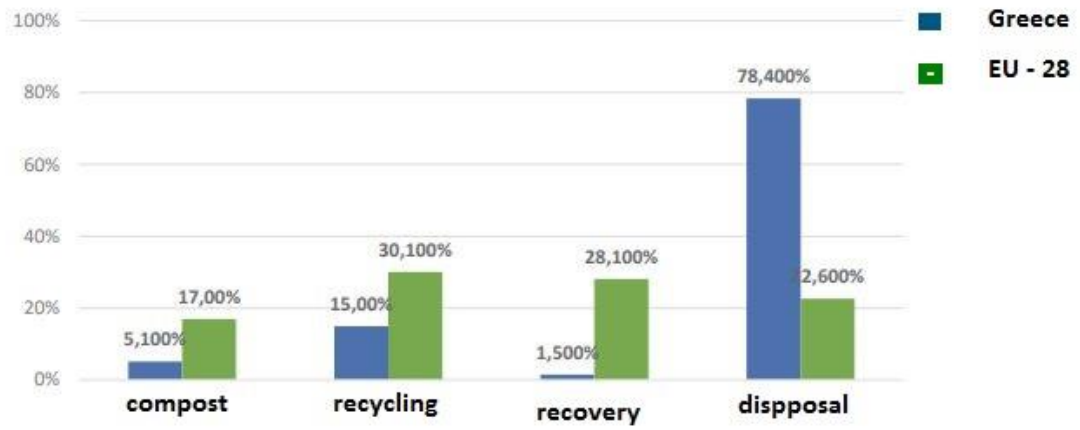
Table: Indicators and Ranking

THEMATIC AREAS	INDICATORS	GREECE	EU28	RANKING IN DESCENDING ORDER
Production and consumption	Generation of municipal waste *(Kg per capita)* (2017)	504	488	11th
	Generation of waste excluding major mineral wastes per GDP unit *(Kg per thousand euro)* (2018)	85	65	8 th
	Generation of waste excluding major mineral wastes per domestic material consumption - % (2018)	13,40	13,60	9 th
Waste management	Recycling rate of municipal waste - % (2017)	18,90	46,50	25 th
	Recycling rate of packaging waste by type of packaging - % (2017)	68,60	68	8 th
	Recycling rate of plastic packaging - % (2017)	41,40	41,90	16 th
	Recycling rate of wooden packaging - % (2017)	20,40	40,30	22
	Recycling rate of e-waste -% (2018)	35,80	38,40	16
	Recycling of biowaste *(Kg per capita)* (2018)	21	82	23
	Recovery rate of construction and demolition waste -% (2018)	97	90	12
Secondary raw materials	Circular material use rate *(% in overall material use).* (2019)	4,20	11,90	23
	Trade in recyclable raw materials- *(tonne)* (Imports extra – EU28) (2019)	677.081	5.937.995	4
	Trade in recyclable raw materials - *(tonne)* (Exports extra – EU28) (2019)	380.527	36.105.287	15

	Trade in recyclable raw materials - *(tonne)* (Imports Intra EU 28)(2019)	326.141	51.470.034	16
Competitiveness and Innovation	Gross investment in tangible goods (*million euro*)(2017)	95,40	18.447,70	16
	Gross investment in tangible goods (percentage of gross domestic product (GDP) at current prices) (2017)	0,05	0,12	19
	Persons employed *(number)* (2017)	63.084	3.985.720	12
	Persons employed (percentage of total employment) (2017)	1,52	1.69	17
	Number of patents related to recycling and secondary raw materials (2016)	1	290.47	21
	Number of patents related to recycling and secondary raw materials (per million inhabitants) (2016)	0,09	0.57	21

Municipal Waste Management Indicators

(https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework)

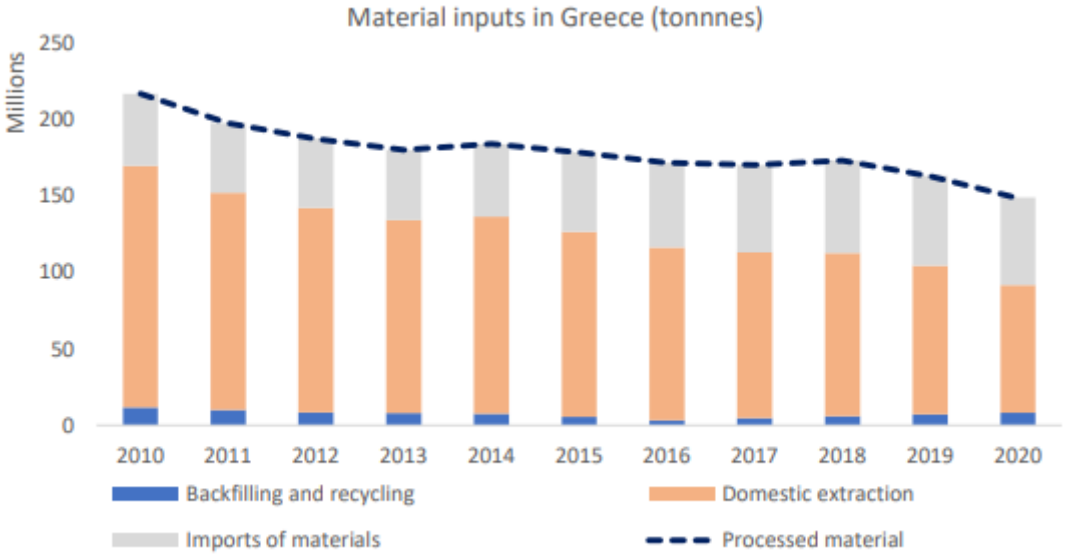


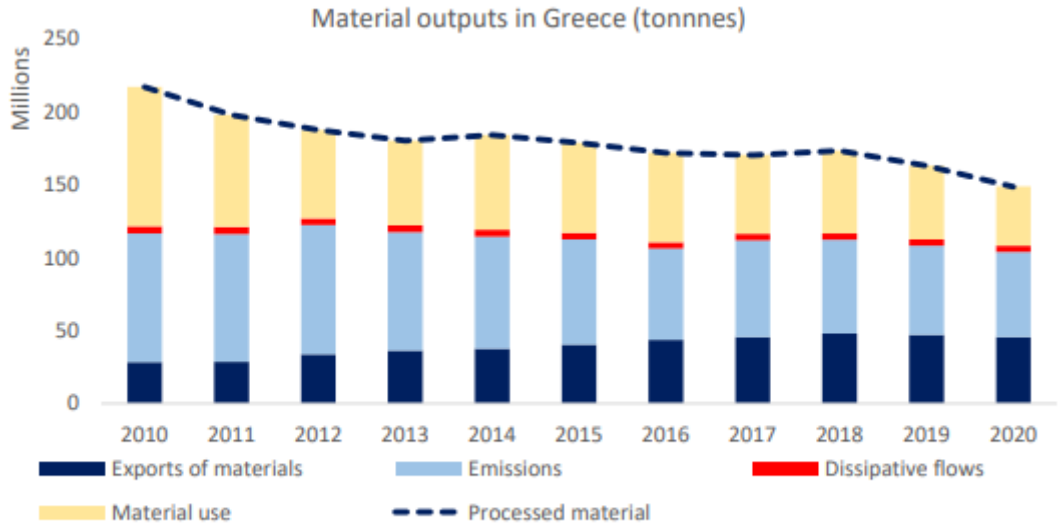
Material inputs

The processed materials of the Greek economy reached 149 million tonnes in 2020, reduced cumulatively by 31% compared to 2010. Among the processed materials in 2020, 56% are primary materials produced by domestic extraction (from 73% in 2010). During the period 2010-2020, natural resources extraction was cumulatively reduced by 47%, standing at 83.5 million tonnes in 2020.

Imported materials in Greece accounted for 39% of the processed materials of the economy in 2020, while in 2010, they represented 22% of the total materials. Imports of waste for recovery and recycling account for only 1.7% of the total imported materials. Imports of materials were cumulatively increased by 21% in the period 2010-2020, reaching 57 million tonnes in 2020. Direct material inputs (imports and extracted natural resources) reached 141 million tonnes in 2020.

Backfilling and recycling operations of waste materials complete the list of material inputs, accounting for 6% of the processed materials of the Greek economy in 2020, when they amounted to nearly 8 million tonnes. Backfilling and recycling have been reduced by 29% since 2010, when they accounted for 5% of the processed materials.





Source: Eurostat

Material outputs

Material use (waste treatment and material accumulation) reached 40.7 million tonnes in 2020 or 27% of processed material, reduced from 44% in 2010. Material use was cumulatively contained by 57% in 2020 relative to 2010. Dissipative flows account for only 3% of the processed material, reduced by 14% since 2010.

Exports of materials, which is by and large exports excluding those for recovery/recycling, accounted for 31% of the material output in 2020, reaching 45.5 million tonnes, and cumulatively increasing by 61% in the period 2010-2020.

Emissions of waste, which are primarily air emissions, accounted for 39% of the total material output in 2020. Emissions were downsized by 1/3 over the same period, reaching 58 million tonnes in 2020.

Regional Quantitative Data

Material	**Generation 2020**	**Recovery whith pre-sorting**	**Waste treatment & final disposal**			**Total**	**Recovery whith pre-sorting**	**Waste treatment & final disposal**		
			Recovery	Disposal	Total			Recovery	Disposal	Total
Food and green	386.852	154.741	154.741	77.370	232.111	100%	40%	40%	20%	60%
Paper & cardboard	193.863	251.454	38.738	96.661	135.398	100%	65%	10%	25%	35%
Plastic	121.383									
Metal	34.057									
Glass	37.550									
Wood	40.170	20.085	12.051	8.034	20.085	100%	50%	30%	20%	50%
Other recoverable waste	13.972	9.780	699	3.493	4.192	100%	70%	5%	25%	30%
Other	45.409	0	0	45.409	45.409	100%	0%	0%	100%	100%
TOTAL	873.256	436.060	206.228	230.967	437.195	100%	50%	24%	26%	50%
		642.288		230.967			74%		26%	

National vs EU Quantitative Data

Greece **lags** European countries in recycling, with **only 11% of total waste being recycled**, far behind the EU-27 average (38%). However, in certain categories, as with packaging waste (64% in 2018), recycling rates in Greece have converged to the EU-27 average. Paper and cardboard packaging records a high recycling rate (92%), but plastics are relatively low (40%).

The circular material use rate, as well as the material import dependency ratio, are closely related to the circulation of materials. The circular use of materials "is approximated by the amount of waste recycled in domestic recovery plants, minus imported waste destined for recovery, plus exported waste destined for recovery abroad" (Eurostat). Greece stands well below the EU-27 average (12%) in terms of the circular material use rate, at 4% in 2019, implying lower circularity of secondary materials relative to the primary raw materials. Material import dependency

The material import dependency ratio is the percentage of imported materials over DMI, i.e. material imports plus natural extracted resources. Greece's material import dependency ratio was equal to 41% in 2020, increased from 22% in 2009, significantly higher than the EU-27 average (23%). The ratio reflects Greece's increased dependency on imported materials in order to meet domestic material needs. Material import dependency is higher for fossil energy materials/carriers (73% in 2020) and metal ores (59%) and lower for biomass (29%) and non-metallic minerals (7%).

Resource productivity
Resource productivity is the ratio of GDP over domestic material consumption and it "reflects the GDP generated per unit of resources used by the economy" (Eurostat). In Greece, resource productivity increased from 1.2 EUR/kilogram (kg) in 2009 to 1.8 EUR/kg in 2020, close to the EU-27 average (2.1 EUR/kg), indicating a more productive use of resources in the economy.

Greece is close to the EU-27 average in its e-waste recycling rate (39% in 2018), the world leader of electronic recycling.

According to "Switchmed.eu", the total number of people employed in the circular economy sector is quite low, 1.65% of total employment (data from 2016), however this is not far from the EU average of 1.73%2 . Regarding, the circular (secondary) use of materials in Greece was 2.4% in 2014, so most of the economy relies on new, virgin materials which can be, in part, explained by the variety and quantity of natural resources. Nevertheless, it can also be an obstacle given the special geographical characteristics of the country (e.g. insularity) and the lack of sufficient recycling infrastructure to collect, separate and implement the appropriate recycling procedures. In fact, national and public funds are being channeled to improve waste and wastewater management, since these two sectors are still in Greece facing major issues, enhancing the difficulty of achieving the European goals and targets

Per sector, the largest part of waste in Greece is generated from mining and quarrying (56%) (27% is the EU-27 average), followed by manufacturing (12%), households (10%), electricity, gas, steam, air conditioning supply (8%), waste collection, treatment, disposal and materials recovery (6%), construction (5%), services (2%) and agriculture (1%).

Waste per capita fell by 31% in 2018 compared to 2008, to 4,248 kg/capita, lower than the EU-27 average (5,234 kg/capita), which increased by 7%. Greece, due to the reduction of economic production during the economic crisis, was among the few EU27 countries that recorded a drop. In the EU-27 countries, a higher waste per capita ratio is related to higher shares of waste from mining and quarrying.

Waste excluding major mineral wastes per GDP unit, which indicates an economy's ability to produce more wealth while generating less waste, fell by 10% in Greece in 2018, to 85 kg/thousand EUR, higher than the EU-27 average (66 kg/thousand EUR), which decreased by 3%. In addition, waste excluding major mineral wastes per domestic material consumption, which reflects the efficiency of material consumption by comparing waste generation to domestic material consumption, rose to 13.3% in 2018, from 10% in 2008, higher than the EU-27 average (12.9%).

The waste treated in Greece amounted to 42.7 million tonnes in 2018 or 94% of the waste generated over the same year, cumulatively reduced by 39% between 2010 and 2018. Disposal of waste accounted for 85% of total waste treatment and waste recovery for only 15% (2018). Contrary to the EU-27 averages (45% and 55%, respectively), the small recovery rates in Greece imply a far narrower use of circular economy principles in waste treatment.

Greece is among the EU countries that rely heavily on landfilling operations for waste treatment: 82% of waste ends up in landfills, the highest share after those of Romania (94%) and Bulgaria (85%), and the same as that of Finland. On the contrary, countries like Czechia, Slovenia or the Netherlands, use close to zero waste burial procedures.

Municipal solid waste treatment in Greece includes landfilling and other disposal operations, as well as energy recovery and recycling, in the form of material recycling, composting and digestion. A large share of the country's municipal waste is still treated in landfills, underscoring the fact that waste management is recognized as one of the major concerns in Greece's environmental performance and compliance with the circular economy principles.

During the period 2009-2019, municipal solid waste treatment increased cumulatively by 9%, whereas in 2019 it amounted to 5,613 thousand tonnes. In Greece, all municipal waste that is generated is also treated. Municipal solid waste management operations represent 12% of total waste management operations (2018), contrary to countries such as Portugal (48%), Croatia (43%) or Latvia (39%), in which the ratio of municipal to total waste is significantly higher. ▪ Germany exhibits the largest amount of municipal solid waste treatment (over 50 thousand tonnes), followed by France and

Italy, while Greece, despite its much lower population, ranks 7 th among EU countries. In per capita terms, Greece ranked 10th in 2018 among the EU-27 countries, with 515 kg/capita of municipal waste treated. Denmark (812 kg/capita), Luxembourg (803 kg/capita) and Malta (617 kg/capita) had the highest per capita ratios, while Latvia (351 kg/capita), Poland (329 kg/capita) and Romania (264 kg/capita) had the lowest. ▪ Although there has been an increase in municipal waste generation over the years, the ratio of municipal waste treated in landfills has been reduced, implying less disposal and more recycling. However, as with total waste treatment in Greece, the largest part of municipal solid waste is treated in landfills and other forms of disposal (78% in 2019 from 88% in 2005), and only 21% is recycled (from 12% in 2005). ▪ On the contrary, Slovenia (72%) and Germany (67%) exhibit the highest recycling rates, while countries such as Finland (56%) and Sweden (53%) are using energy recovery as a main option for municipal waste treatment

Imports of recyclable raw materials

Imports and exports of recyclable raw materials include five classes of materials: a) plastic, b) paper and cardboard, c) precious metals, d) iron and steel, e) copper, aluminum and nickel. From these classes of recyclable raw materials, Greece imports mainly iron and steel: these two materials make up 82% of its total recyclable materials imports.

The second largest import category is copper, aluminum and nickel (13%) and a small percentage is recyclable plastics (3%). Total imported recyclable waste in Greece reached 929 thousand tonnes (or EUR 508 mn) in 2020, cumulatively reduced by 9% compared to 2011. Greece's recyclable material imports account for only 1.5% of the total EU-27 imports. Moreover, 70% of the selected recyclable materials in Greece originate from non-EU countries, with 30% being intra EU-27 imports.

Exports of recyclable raw materials

The exports of Greece in terms of the recyclable raw materials include mainly paper and cardboard (68% in 2020), but also plastics (12%), iron and steel (12%) and a small amount of copper, aluminum and nickel (7%).

Total exports of these materials waste and by-products reached nearly 480 thousand tonnes in 2020 (or EUR 145 mn), implying that the country' s exports of recyclable materials amount to nearly half its respective imports. ▪ All selected raw material exports have been cumulatively increased by 9% since 2011, representing 0.5% of the total EU-27 exports of these materials. Greece exports 54% of its raw materials waste and by-products to the EU-27 countries, with the rest being exported to countries outside the EU.

Conclusions in national and regional level

The Region of Central Macedonia lags in achieving the goals of waste collection and recycling. The main problem is the lack of infrastructure in the metropolitan area of Thessaloniki both in waste collection and waste management.

In terms of National level, most of goals of 2020 were not reached for a variety of systemic and investments' reasons. Nevertheless the last couple of years a significant and very ambitious legislative framework has been established. The mega-challenge the Greece faces is the way and the pace that this legislation will be transformed in action.

5. Regional challenges connected to circular economy

Please summarize the results of the interviews with experts and institutional actors, concerning circular economy.
Here you should outline the institutional structure and present the relevant actors concerning circular economy, their role and responsibilities in environmental issues, in particular circular economy

- *What do they see as the main regional challenges concerned with circular economy?*
- *Can you name any obstacles they connect with circular economy?*
- *What are the different challenges of the project partners 'region in the context of the BSB?*
- *Special regional level policies, strategies, services or programs related to circular economy.*

Findings based on the Questionnaires

In National level:

Circular Economy legislation is already well established while CE policies are far from deployed in the country. Only packaging and paper waste records a high recycling rate. Circular indicators are extremely low.

Despite the legislative framework, the people's culture does not supports circular economy yet.

In regional level:

Some activities are implemented and there is growing interest in Circular Economy and Waste Management.

In the Region data concerning circular economy are collected from Municipalities, Regional and National Authorities without a systemic and common way. This leads to a confusion; the data are not credible enough as to sum up precise conclusions

All kind of organisations believe that the circular economy will play a significant role in their operation in the near future.

The vast majority of the interviewed persons wait to be affected by circular economy challenges although they cannot estimate the extend of the necessary changes and adaptations

All interviewed persons recommend diffusion of information, informative campaigns to all sectors of the society. The necessity for awareness is vast. There is a need to understand the alignment between technological advancement, the market, behavioral aspects, and regulatory and policy frameworks. From top to the bottom, all authorities, business organisations and consumer NGOs should act ASAP towards the transition to CE model.

Subjective Conclusions
These responses indicate that while there is an understanding of the concept of the Circular Economy there is very limited knowledge or experience of the practices involved in the CE.

There is a massive and urgent necessity to raise awareness of CE policies & practices and to use these as means of creating awareness, improving understanding and affecting future policies

Manufacturers are trying to understand the new regulations. However, it is evident that there is a lack of knowledge, experience and guidance.

Many faculties / universities are engaged in pilot EU projects and various studies are carried out in the field of production

Obstacles

Business
Circularity has financial and practical limitations that should be taken into account. For example, recycling has physical limitations, while the recycling of long lifespan products can be difficult, costly and more energy consuming. Large investments might be required in advanced technologies and in modernizing existing facilities and equipment. Financial barriers could hinder these investments, which require intensive funding and economic incentives.

All the companies interviewed are well aware of the growing need for their company to move towards more sustainable operations involving CE concepts. The barriers identified are mainly:
Lack of knowledge and experience
Lack of investments' governmental support (grants etc)

Major barriers for implementation of CE are quality issues in recycled materials, supply chain complexities, coordination problems between companies, design and production of the product, disassembly of products and high start-up/ investment costs.

Societal challenges
Circular economy applications are not feasible without a marked transformation of both production and consumption, which involves the entire supply chain and various sectors. Cultural barriers, lack of consumer interest and awareness are the main barriers for businesses and policy-makers.

Meeting the requirements of a true, circular economy isn't always easy. Even the best-intentioned companies run into obstacles when attempting to meet the requirements of the circular economy. For example, organizations can't always access and reprocess end-of-life products. The other four primary challenges are:

Ownership of end-of-life materials. Most supply chain organizations lose control of products and raw materials at their respective point of sale. This means they must regain access from the consumer at the end of a product's life. High-tech organizations favor leasing and subscription models because the product will automatically return to them. "Organizations must engage with customers in new ways to gain access to end-of-life materials. Many supply chains rely on new business models or incentives, however 35% rely on customer goodwill," Watt said.

Quantity of materials. One of the key challenges is to collect and centralize end-of-life products for processing in an economical fashion. Most supply chain organizations collaborate with waste vendors, raw material suppliers and reverse logistics providers to gain access to material.

Value of raw materials. A circular economy still needs to operate within economic boundaries. Products with low residual value are less likely to be processed. While there may be differences in environmental impacts between materials, most of the organization's decision-making will be based on economics and risk.

"There are a couple of reasons why it can be worthwhile to reclaim end-of-life materials with low residual value," Watt said. "Reclaiming those assets can act as a hedge against price volatility and increase an organization's raw material security. Customer sentiment towards certain forms of materials such as single-use plastics has also changed, presenting a reputational risk, which has been a catalyst for action."

Special regional level policies, strategies & projects related to circular economy

The region of Central Macedonia has taken several actions in order to follow the transition towards the circular economy. The core activity was the development of the "Regional CE Action Plan".

The central objective of the Action Plan is to influence the available policy tools towards circular economy, with special focus on the Regional Operational Programme (ROP) of Central Macedonia. This will be supported by actions that will increase the awareness of potential SMEs beneficiaries, in order to include the benficeries/SMEs in actions funded by the ROP. The overall goal is 80 SMEs in the Region to improve their resource efficiency through circular economy actions.

The Action Plan for the promotion of circular economy in the Region of Central Macedonia consists of three (3) main axes:

1. "Specialization" of the RIS3 Strategy

The Region of Central Macedonia seeks to influence the Strategy's specialization with actions in the field of circular economy. Indicative relevant actions are included in the Plan, concerning 'champions' and 'horizontal support' sectors, as identified in RIS3.

2. Incorporation of circular economy actions into the ROP of Central Macedonia 2014-2020 The Region will seek to incorporate actions in the ROP 2014-2020, through which the Region's SMEs can be funded in order to move

towards a more circular economy. "Circularity" is intended to be seen primarily as a key factor for improving competitiveness and secondarily as a factor for reducing the environmental impact of the SME.
The above objective, i.e. the influence of this particular policy tool, is proposed to take place in three dimensions:

A. Introduction of the "circular economy" criterion in the funding procedures stemming from the ROP 2014-2020. Focusing on Priority Axis 3 "Enhancing the competitiveness of small and medium-sized enterprises" favors this approach.

B. Development of a 'structure' to promote the idea and good practices in the field of circular economy (one-stop-shop).

C. Innovation coupons for SMEs (aiming to strengthen the Region's SMEs and the improvement of their production processes through the purchase of knowledge and expertise from innovation institutions).

3. Implicit incorporation of the issues of circular economy into the ROP of the next programming period (2021-2027) and its funding priorities.

A cross-cutting initiative is the establishment of the **One Stop Liaison Office.** This constitutes a "web" betwwen academic society, research institutions and businesses targeting to facilitate the flow of knowledge and expertise as well as the exchange of practices and eprerience.

In addition the Region participated in EU projects such as:
CESME, The CESME project addresses SME inclusion in the circular economy, by interregional meetings identifying good practices aiming to examine how best regional and local authorities and business development agencies can improve relevant policy instruments and design support packages to assist SMEs to enter the circular economy.
BIOREGIO aims at improving knowledge related to circular economy of biological streams i.e. bio-based circular economy, increasing recycling rates of biological materials e.g. food waste/biowaste, municipal and industrial sludge and agricultural residues.
SINCE-AFC aims at involving SMEs of the Agri-Food chain in circular economy through the promotion of the appropriate managing and financial horizontal mechanisms. All the Agri-Food agents committed to production, processing, packaging, distribution and final consumption are expected to operate in a coordinated way to better adapt to circular economy. The project will promote innovation, derive knowledge and develop close collaboration with the Interreg Europe Learning Platform as well as with the European Circular Economy Stakeholder Platform and the RIS3 Platform Group.

6. OUTLOOK, CONCLUSIONS and RECOMMENDATIONS

This chapter should include conclusions drawn from the study regarding the possible future of circular economy.
Major challenges in the country/ region
Are there any specific services/programmes that you would mention as a good practice?

The transition to the circular economy requires a radical change in the way we produce and consume. In a circular economy, products are designed for durability, upgradeability, reparability and reusability, with a view to reusing materials from which they are made after they reach the end of their life. In the use phase, products are managed with a view to maximizing their utilization capacity and extending their useful life, thus maintaining their value for as long as possible. **This is made possible only by changing the culture of the society**.

Like with any systemic change, the transition to the circular economy requires several elements of the system to change simultaneously. The inertia and resistance of the current linear economic systems prevent the transition from occurring. Concerted actions by a host of stakeholders are needed. Government at all levels, businesses, innovators, academia, investors and consumers all have to play their distinct roles and contribute to the process.

In order for the circular economy implementation to succeed you need to make sure that:

- The people are ready to accept the change
- The government regulations are ready to monitor the change
- The waste treatment facility is ready to support the change
- The waste recycling facility is ready to execute the change
- The business model is ready to maintain the change sustainably

Challenges for the policy makers

Public fiscal, industrial, environmental and regional policies do not yet provide a clear societal goal for the circular economy and a coherent definition of the role of different actors and affected stakeholders. Typically, economic operators tend to avoid risks of disruption and defer the costs of the initial changes that need to be made for the transition to the circular economy. They will continue in their business-as-usual practices as long as price signals favour the linear model. In the case of the market failing to give correct price signals, public policy should provide the right incentives. While there is a positive development, public policy does not yet stimulate sufficiently the changes in economic operators' behaviour. Most notably, the polluter-pays principle is not properly applied in the form of suitable market-based instruments to internalise the externalities associated with the linear material consumption.

Challenges for the businesses

Campaign to inform and raise the awareness of society; Shaping a framework to develop know-how, information and relevant actions of co-governance will capitalise and outline the set of initiatives and will establish a system for

designing, monitoring, information dissemination and familiarisation of competent agencies, society and enterprises with the relevant initiatives and the matter in general. Special emphasis should also be placed on specific early mobilisation actions to facilitate, inter alia, the active mobilisation and involvement of SMEs, small and very small enterprises in ventures and initiatives of circular economy and to contribute towards empowering the productive basis of the country.

Challenges for the consumers

Greek society, due to the geographical characteristics presents differences regarding environmental work and awareness. A study found a link between, for example, most regions with a higher GDP are overall regions where the development of ENGOs (environmental nongovernmental organizations) is more evident. The same study also states there is a low level of public awareness about the environment in all Greek regions. On the opposite side, a report from the European Commission reveals that Greek society strongly supports circular economy initiatives and environmental protection measures (for example, more than 90% stated they are concerned about the impact of plastic products on the environment).

Challenges for the local authorities and cities

It is necessary to train municipal, regional and decentralised agencies that issue licenses and auditing organisations about the implementation and enforcement of circularity criteria concerning licensed activities (and infrastructure). Municipality and Agency technicians competent for issuing licenses and inspectors need to acquire knowledge about circularity criteria, so that they may be capable to permit and inspect relevant activities. Training and educational initiatives will also develop in port operation and administration authorities.

Recommendations

The Strategy of Circular Economy needs to be incorporated into Governmental planning and Ministerial sectorial policies, into the National Developmental Strategy 2021-27 and its corresponding specific issues, the financial and developmental tools and to mark the overall governmental developmental policy. Successful transition to circular economy requires parallel implementation of actions at all stages of the value chain: In mining raw materials and the design of products and materials (PRODUCTION), movement and consumption of goods, repair, reuse or reconstruction through informing the public, research and innovation (CONSUMPTION) and putting materials and water into new usage (SECONDARY RAW MATERIALS). The holistic approach to the issue of circular economy also requires ways of more collective operation of basic agencies (Administration, Market, Media, Society, Local Authorities, Citizens), as well as improved coordination of Administration (Government, Ministries, Organisations, Agencies)

There is an urgent need to characterise circular economy projects through metrics and taxonomy. Definitions, metrics, and taxonomy will enable better assessment of circular risks versus linear risks. Also, the social and environmental benefits of the circular economy should become explicit,

quantifiable and disclosed and should be taken into account in financing decisions.

No government is capable of carrying out the transition on its own. Cities and local communities play a crucial role in the transition: they are increasingly recognized as the central generators of circular change. In the process of creating the roadmap to circularity, various available resources need to be considered. From guidelines found in EU documents to national documents, but above all, the concrete examples presented in the reports of the Ellen MacArthur Foundation, the Circle Economy – The Circularity Gap Report and various other documents. This will allow the formation criteria for the inclusion of good practices taking into account Greek culture and specifics.

Regional Good Practices

TITAN Greece S.A. https://www.titan.gr/en
A company with 3 cement plants, 25 quarries, 28 ready-mix plants that adopted a CE action since 2016. TITAN proceeds with raw materials substitution, industrial symbiosis network, clinker substitution, products' recarbonisation etc; In 2020, the main factory in Thessaloniki absorbed 30.000 tons of others' industries waste as raw materials, consumed another 25.000 tons from other industries' waste as fuel, and achieved a "Zero Waste to Landfill" Certificate, meenign energy recovery of 99,90%. 500 tons of waste was directed to other facilities for recovery via an industrial symbiosis network that TITAN established.

TITAN Greece S.A Initiative: Nothing to waste https://nothingtowaste.gr/
TITAN with the participation of 24 companies with more than 500 workforce initiated a local CE action consisting of the education, reduce, recycle and reuse of six (6) waste streams:

- Plastics
- Metal
- Paper and Cartons
- Electric devices
- Batteries
- Household oil

DIOPAS S.A. https://diopas.com/
The company manufactures nets for fish farming, fishing, sports, shading, protection, windproof nets and any other special construction that is related to nets. DIOPAS collects from seas the ghost nets and waste nets as well as the waste nets from aquacultures and fishermen. The collected nets, via industrial symbiosis, are processed and regenerated into yarn for the fashion and interior industries.

LAGADAS BIOGAS http://www.biogaslagada.gr/
A cluster of 20 farms, poultry and meat producers, jointly established a biogas plant using as raw materials the farms' waste.

PROJECT SOCIAL PLATE https://www.socialplate.eu/en

Funded by the INTERREG V-A Greece-Bulgaria 2014-2020 programme, Thessaloniki Central Market S.A. delivers non-marketable fruits and vegetables to civil society organisations (Social Grocery Stores, Non-Governmental Organisations, Church Kitchens, Collectives, etc.) to be distributed to vulnerable groups, such as homeless, unemployed, refugees, and anyone in need of a plate of food.

The "Social Plate" project developed the network "FoodAngels". The moto is:
Are you a company with surplus food like supermarket, restaurant, catering etc.? Register with FoodAngels and offer your surplus food to those in need. At any time you can check what you have offered, as well as the charities your donations have helped.
Are you a charity helping vulnerable groups in our society? Register with FoodAngels and accept food donations from actors across the food supply chain and . In that way you will make sure that this safe-for-consumption food is put on the table for people in need.

PROJECT BIOREGIO https://www.interregeurope.eu/bioregio/

The project deals with regional circular economy models and best available technologies for biological streams. The Region of Central Macedonia with 5 other EU Regional Authorities work on how to improve knowledge related to circular economy of biological materials and strive to increase the recycling rates of these materials. The expertise of best available technologies, e.g. biorefinery, biogas production, and relevant cooperation models, e.g. ecosystems, networks and administrative cooperation, will be transferred. The project will share expertise and promote the possibilities for closing the loops of biological streams, e.g. develop the materials to be used as fertilizers and biofuels, instead of disposal.

PROJECT CESME https://www.interregeurope.eu/cesme/

Under this EU project, the Region of Central Macedonia has recognized that the most important goal is to influence SMEs towards the adoption of this model and at the same time introduce the concept of circular economy.
Thus, with a view to attaining the model of industrial symbiosis, the RCM proposed the following actions: a) the creation of a one stop shop, in order to inform SME's, to organise seminars, and workshops on circular economy, and bring SME's closer to one another b) the provision of innovation coupons which can strengthen SMEs who want to integrate circular economy actions into their operation, including co-operation with other SMEs in the context of industrial symbiosis, because by nature, SMEs are more flexible, adaptable and resilient and can adopt such practices.

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Hellenic Republic Ministry of Environment & Energy NATIONAL CIRCULAR ECONOMY STRATEGY 2018

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To go further…

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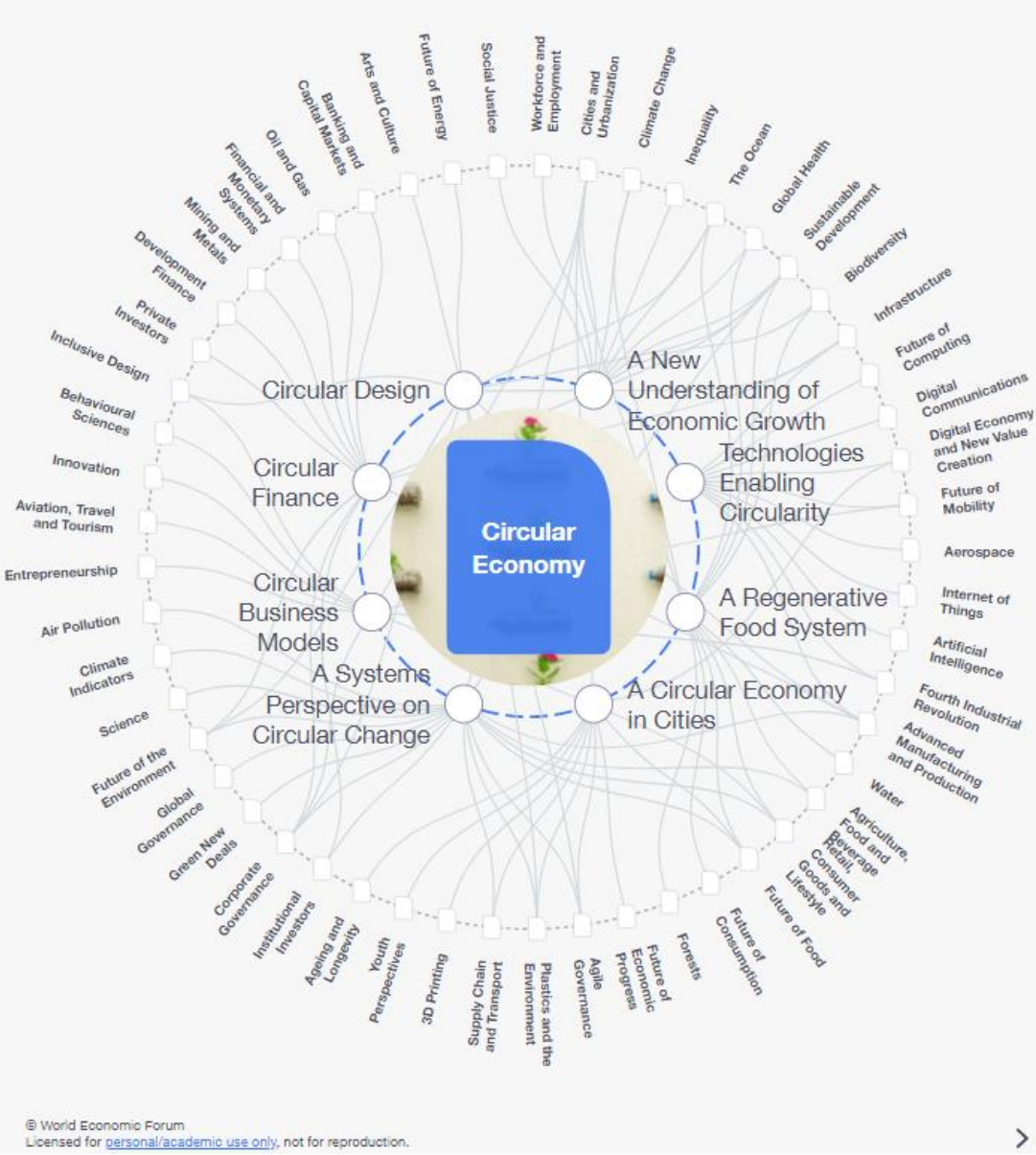
EC, Sustainable finance

The EIB in the circular economy

European Circular Economy Stakeholder Platform



European Neighbourhood Instrument Cross-Border Cooperation	
Joint Operational Programme Black Sea Basin 2014-2020	
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