



*Erasmus*+ *Programme* – *KA2 Strategic Partnerships for Adult Educators* 

# **AGILE4CIRC**

# Agile leadership transformation for business in circular economy

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Adult and new business opportunities in Circular Economy (CircEc) and Social Responsibility (SR) consolidated report

AGILE4CIRC IO1 Consolidated report	Adult and new business opportunities in Circular Economy (CircEc) and Social Responsibility (SR) consolidated report
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Version table

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1	AGILE4CIRC IO1 Consolidated report_v1	Achilleas Barlas	30/11/2019	Initial draft
2	AGILE4CIRC IO1 Consolidated report_v2	Achilleas Barlas	07/12/2019	Interim version
3	AGILE4CIRC IO1 Consolidated report_v3	Achilleas Barlas	31/01/2020	Final version







# Activity calendar

RE	Activity	Partner	Deadline
		responsible	
1	Development of Consolidated report	UTH	30/11/2019
2	Reviewing and correcting	ALL	07/12/2019
3	Finalizing	UTH	31/01/2020
4			
5			





A circular economy is an economic system aimed at minimizing waste and making the most of resources. This regenerative approach is in contrast to the traditional linear economy, which has a 'take, make dispose of' model of production.

The scope of the report is the initial methodological framework based on a research on Circular Economy and Social Responsibility at the Policy Maker level. The results of the report will be used as to designing the training course (IO2). National circular economy ecosystem will be examined focusing in the existing needs, lessons learnt, new Business Opportunities for adults in the new economy and best practices.

AGILE4CIRC operates in understanding how the ecosystem of the Circular Economy and Social Responsibility is implemented in Greece, Luxembourg, Netherlands, North Macedonia and Spain which provides clues for capitalizing in market niches, potential business replicability in an adaptation of existing models attending the local needs and regulations.

The research focuses on "detecting opportunities for Adult entrepreneurs in the new economy". The reason for this focus lies on the concept that many adult EU funded projects are concentrated in general in providing " basic skills" and mentoring to an adult just to become "another one to compete with thousands on the market for a job" without a "value proposition" that gives them a competitive advantage.

The research is needed because spots the existing business model across different economic realities and enables to detect market niches and potential partnership target group cooperation. Understanding the state of the art of the Circular Economy through a Matrix that classifies and organize them is what the research brings, clarity.

The Methodology identifies how local stakeholders can contribute to the implementation of the new economy mindset generating a win-win situation.

In general the objective of the current report is is to understand the potential of the circular economy in Greece, Luxembourg, Netherlands, North Macedonia and Spain where the business is, best practices, and market niche

# 1.Definition of methods to be used in the research and creation of tools

Data have obtained mainly by interviewing local stakeholders and collecting data from policies, national reports, case studies, best practices, training materials and market research and forecasts. For the data analysis we will use both qualitative and quantitative research methods, including desk research, survey research and secondary data. We will use





qualitative methods for a complete, detailed description of observations, including the context of events and circumstances that makes Circular Economy and Social Sustainability feasible. The quantitative methods used will be related to analysis of researches where hypotheses were tested, features were classified and observations were explained in the area of Circular Economy and Social Sustainability.

# 2.CircEc & SR at Policy Maker level

# Greece

Greece's strategy in the circular economy is an element of national transformation aimed to improve the growth model. The main strategies are:

- Sustainable management of resources in order to make them more efficient. Based on the revision of the value chain such as waste management, reuse of buildings and water recycling
- Strengthen circular entrepreneurship with the aim of producing more durable products with longer lifespan and promoting the eco-building
- Circular consumption aimed at fully informing citizens about the benefits of renewable food consumption and the disadvantages of excessive consumption of resources, and how they can be avoided<sub>1</sub>
  - The action plan for the circular economy

Working groups of 9 ministries were set up for the actions of the national strategy under the coordination of the environment ministry and adopted as public policy. The actions aimed at the next two years concern the following areas:

- $\circ$  Regulatory and legislative measures to boost the circular economy and reduce red tape
- Financial incentives
- $_{\odot}$   $\,$  Improving knowledge, management and exchange processes  $\,$
- $\circ$   $\;$  Strengthening the governance of the circular economy and networking

The 34 actions are described in detail, such as funding improvement actions, technical knowledge actions and governance actions:

# **1)** Complete a legislative framework for waste management, promoting prevention of waste generation and encouraging their reuse and recycling.







- 2) Elaborate a National Action Plan for the promotion of Green Public Procurement and national policy making by, which the public sector procures products or services by using green criteria when evaluating tenders.
- 3) Elaborate proposals to reduce food waste, with the aim of combating food waste.
- 4) Adaptation of the framework for public and private construction works, in order to ensure the recovery of valuable resources and the proper management of waste from the construction or demolition of buildings.
- 5) Clarify the distinction between waste and product to facilitate the transition and use of secondary raw materials. Including new legislation on post-use resources collected and intended for recycling and how waste will be classified.
- 6) Water reuse and sludge utilization, for use for irrigation, industrial or port use or for energy purposes.
- 7) Development of innovative applications and cutting-edge technologies for waste management. Through a series of actions and research programs to exploit the combitation of all factors in areas such as universities, public bodies, science and technology parks, businesses, civil society and its design.
- 8) Indicators of circular economy such as resource productivity, energy demand, and carbon dioxide emissions are high indicators at international level. It is proposed to investigate them in relation to business activities and to utilize the National Documentation Center.
- 9) Develop a methodology for measuring and monitoring food waste, in order to create more transparent and comparable data. In order to reduce uncertainties and enable a better understanding of the magnitude of the problem and the scale of potential opportunities.
- **10) Developing and integrating eco-design criteria**, such as product life cycle analysis, avoiding the introduction of hazardous substances in the production of products, the ability to repair products, incorporating renewable energy sources in public works (eg photovoltaics), extending the labeling of products. certification of recycled building materials, reduction of emissions from ships by mounting scrubbers.
- **11)** National standards for the environment and the circular economy, to enhance the supervision of industrial and other products, in order to avoid the movement of products with hazardous materials and substances.
- **12)** Integrate the circular economy dimension into environmental impacts, to simplify business permit and infrastructure permit procedures. The action will include an analysis of the integration of the circular economy with better regulation, integration of criteria into the licensing of business activities (eg building projects, roads and other infrastructure).
- **13)** Promoting the use of brokerage at regional or city level to promote the circular economy as an unpaid consulting service. "Resource brokers" generally help concentrate on factors, develop supply and demand for secondary materials. At the same time, the expertise of these experts is required in order for municipalities to accelerate the development of cyclicality in business and industrial activities.
- 14) Creation of urban spaces as 'creative reuse centers', and converting them into 'Green Centers', in order to encourage repair, reuse, rotation, training in repair. So it will be a meeting point for consumers and producers to get feedback on design, design so that urban areas can encourage eco-design.





- **15) Promote the use of waste as a secondary fuel in industry.** The use of waste contributes substantially to saving non-renewable fuels, reducing greenhouse gas emissions and reducing production costs mainly in highly energy-intensive industries such as the cement industry.
- 16) Establishment of an institutional regulatory framework to facilitate the production of biomethane (green gas) from organic waste and its injection into natural gas or its use as propellant fuel. The use of biomethane and green gas in general is a rapidly expanding energy option globally necessary to achieve the greenhouse gas reduction targets and the Paris Agreement. Promoting biomethane would not only help reduce gas emissions and reduce gas imports, but would also solve one of the problems Greece faces in managing organic waste from agricultural industries (poultry, mills, dairies) or the residential sector (including hotels and expired foods).
- **17) Compost specification of pre-selected organic and domestic waste**, to ensure the quality of compost produced by pre-selected organic waste composting plants and to facilitate its function.
- 18) Upgrading and strengthening of the bioeconomy sectors. Preparation of a National Action Plan for national policy making. In this context, the following two actions are proposed:

• Development of targeted training to encourage sustainable bioeconomy and biotechnologies that support it, in the selected areas of interest of the Greek region, according to their needs, infrastructure and characteristics (agri-food, bioenergy, textiles, chemicals, etc.) in safety conditions.

• Develop the current legislative framework, with the aim of encouraging innovative business initiatives and the regulatory framework, taking into account trends in countries with developed biotechnology and the prospects of the bioeconomy in the near future.

- 19) Utilizing Institutional Framework Law 4513/2018 on Energy Communities locally through Energy Efficiency Technologies and Improvements, where incentives are provided for the utilization of agricultural and industrial waste for the use of electricity for electricity infrastructure.
- **20)** Waste management, recovery and reuse. Products that are unnecessary for some (eg clothes, furniture, appliances, etc.) should be collected and distributed to be used by needy or low-income citizens with basic livelihood needs.
- 21) Adaptation of cost types to calculate the life cycle cost of a public or private project, in order to take a series of measures to ensure the use of materials and products for the construction of a second use.
- 22) Incorporate the principles of circular and cooperative economics into Sustainable Urban Mobility Plans, to meet the needs of people for mobility and the transport of goods to urban areas and their surroundings, thus improving the quality of life. A long-term vision is developed for the balanced, integrated and sustainable development of urban transport and mobility on the basis of social, economic and environmental criteria covering all modes and means of transport.
- 23) **Promoting and developing a circular economy in ports**, in order to create policies that will lead to balanced development and make the islands viable for all days





of the year, should take account of the above features as well. It is considered necessary to integrate them into the design, operation and development of ports, as well as the communities of producers and users of port services and logistics services developed around or in cooperation with ports.

**24) Opportunities to finance circular economy actions**, with particular emphasis on small and medium-sized entrepreneurship and the social economy. With Partnership agreement (PA) funding, transnational programs, European research funding programs, the Development Bank and other funding opportunities.

#### 25) **Circular tax incentives**, which will focus on:

• Summarize other Member States' good practices in using tax arrangements as incentives for the cyclical transition.

• Formulating justifications and proposals for a cyclical tax shift, eliminating VAT on food donations, reducing taxation on repair services, financial incentives for businesses, incentives for financial institutions financing cyclical projects.

• Identify ways in which the state can inform, guide and encourage businesses to make cyclical changes and their benefits.

**26)** Forum for the development of the circular economy, in order to create synergy between economic, social and scientific actors aiming at the transition to the circular model. It also aims to develop a dialogue between public and productive actors to improve the competitiveness of the domestic industry, expand knowledge and technology, increase the added value of the economy and create new markets and products with a high degree of penetration into international markets.

**27) Development of a Circular City Guide**, providing guidance on cycling developments by supplementing and utilizing other existing sources. The guide will focus on both planning and implementation aspects and is expected to include, inter alia: cyclical good practices and business models, a cyclical roadmap, financing guidance, cyclical guidance, monitoring framework and etc.

**28) Specific awareness-raising programs on food waste**, and measures to prevent food waste more accessible to citizens. In the context of an integrated strategy with guidelines on how texts can apply food collection measures to public bodies such as schools, hotels, public canteens, but also to households and retailers.

**29)** Creating and promoting energy efficiency improvement guides in production processes. Exploitation of textbooks and technical guides prepared by the country's institutions and associations, as well as major educational institutions.

- **30)** Developing proposals and measures to enhance knowledge and information on circular economy issues. Demonstrate the importance of transitioning from linear to circular economies, promoting transparency in processes, developing public awareness, training and raising awareness through the development of information campaigns and awareness-raising actions of producers, consumers and society, rich and varied.
- **31) Promoting Collaborative Economics**, which is the motivating power behind many Circular Economy initiatives, enhancing the cyclical consumption and reduction of CO2. Promoting innovative forms of consumption, such as "product as a service" involving small businesses and self employed, with the aim of maintaining or modernizing a building stock of equipment and products, and actions for shared mobility associated with smart and clean transport.





- **32) Establishment and operation of a secretaryship**, that will address virtually all aspects and needs of the Circular Economy Plan. Tasks such as monitoring and coordinating the timetable of actions and planning, precisely defining the deliverables of all actions, evaluating Actions with criteria such as existing readiness for implementation and expected outcome etc.
- **33)** Education and training programs for administrations, with the need for municipal, regional and decentralized licensing bodies and control agencies to implement and enforce the cyclicality criteria for licensed activities.
- **34) Establishment of a Circular Economy Observatory**, for the organized collection of analytical data from investors and services. The processing of data to draw conclusions on the evolution of the circular economy. The extraction of performance indicators and the annual compilation and publication of an aggregated report containing all economic, environmental and social indicators.

# Luxembourg

Given that a circular economy is a source of competitive advantage,Luxembourg could increase the available job opportunities (more than 2,200 jobs in the next three years), and lead to cost-savings ( $\in$ 300 million to  $\in$ 1 billion per year) and less pressure on the environment<sup>1</sup>. What is more, the introduction of secondary raw materials that Luxembourgish industries rely on would reinforce their interdependency and substantially reduce waste production. Luxembourg is considered to be a fertile ground for the testing of a circular economy, based on the country's values of "equity, cultural tolerance, economic stability, responsive,government and manageable size" (EPEA, 2014).

The Ministry of Sustainable Development and Infrastructure of Luxembourg represents the vast majority of policies associated with transport, public works, environment and regional planning. The National Nature Protection Plan (Plan national concernant la protection de la nature 2017-2021) focuses on policies concerning agriculture, forestry, water management, urban planning and land use planning.2

#### 1) The Landscape Plan (Plan directeur sectorial "Paysages")

It seeks to find the balance between socio-economic developments and conservation of natural resources. Several prohibitions are formulated for different 'zones'; multifunctional zones (large collection of landscapes, green zones within urban areas) and priority zones that are part of the ecological network. For example, new constructions cannot have adverse effects on green zones within urban areas and zones that are part of the ecological network





cannot be fragmented (but some exceptions are formulated) (Gouvernement du Grand-Duche de Luxembourg, n.d.).

#### 2) Alzette - Ecological valorization of the Alzette's upper valley

The project consisted of restoration works on a river corridor along thecourse of the Alzette between the towns of Esch-sur-Alzette and Hesperange. The corridor was intended to be between 50m and 100m wide running along 16 km between the two towns. By the end of the LIFE funding in 2006, the project had partially achieved its objectives, with 41 ha of land purchased, restoration work carried out on over 5 km of the watercourse, and with a further 2.8 km of restoration in the pipeline.

# **3)** LIFE grassland Luxembourg - Conservation and management of species-rich grasslands by local authorities

The project focuses on protecting endangered grassland habitats as well as a number of animal species that depend on these habitats within 15 Natura 2000 sites in the western part of the 'Gutland' of Luxembourg. These goals will be achieved by strengthening the Natura 2000 network via purchase of grasslands and subsequent restoration and improvement of their conservation status.

#### 4) LIFE Orchis - Restoration of calcareous grassland in eastern Luxembourg

The project's main objective centers on securing and restoring all calcareous grasslands that have been known to exist in southeast Luxembourg. This will be achieved by improving the conservation status of grassland habitats through removal of moss and dead biomass; expanding the surface area of target habitats by clearing of shrubs and removing non-native forestation; cross-linking habitat patches through extension of adjacent farmland; and providing long-term protection through land purchases and management.

Luxembourg has adopted various policies several policies for industries, start-ups, entrepreneurs, and companies. One of these policies is the 'Air Quality Plan for Luxembourg City' which applies restriction methods against exceeding the nitrogen oxide (NOx) limits in the city centre of Luxembourg with scope various public transport segments.

Furthermore, Luxembourg provides advisory support to technology adopters and especially to those interested in the innovative construction sector. Finally hosts a thriving Cleantechsector comprised of a growing number of companies that work mainly in the fields of eco-construction, renewable energy, waste management, water and electromobility.

# Netherland

In October 2016 the governmental program A Circular Economy in the Netherlands by 2050 was launched. The goal formulated in this report is to reduce the amount of primary resources used in the Netherlands by 50% in 2030, and to become completely circular by 2050. This can be accomplished through resource efficiency, a shift to renewable and recycled resources, and creating new markets and business models.

The Dutch government has selected five economic sectors and value chains that will be the first to switch to a circular economy: Food and Biomass, Plastics, Manufacturing, Construction





and Consumer Goods. These five priorities are important to the Dutch economy and have a big impact on the environment. In January 2017 a National Agreement on the Circular Economy (Letter of Intent) to develop transition agendas was signed by the Dutch government and a variety of partners.

Transition agendas have been developed for all five sectors and were offered to the initiators of the National Agreement on 15 January 2018:

- Transition Agenda Biomass and Food
- Transition Agenda Plastics
- Transition Agenda Manufacturing Industry
- Transition Agenda Circular Construction Economy
- Transition Consumer goods.

In July 2018, the Dutch government announced its commitments and priorities to support and promote the realization of the Transition Agendas. For example, Reduce the amount of primary resources used in the Netherlands by 50% in 2030, and become completely circular by 2050.

# North Macedonia

Waste in Macedonia is a serious environmental problem, the approach and practices in the circular economy in the European Union offer an excellent solution for solving environmental problems. But, until now there aren't specialised national policies regarding both of them, but they are included in other national policies. The current waste management in the Republic of N. Macedonia, where 80% is deposited, represents a great potential and challenge for the competent institutions to work out and find models on how to use the waste value of waste which with this approach only further endangers other environmental media (soil, air, water). There are vide area of national policies that are related to Circular economy:

- 1) Legislation in the Republic of N. Macedonia (related to the area of circular economy)
- Environmental legislation
- Instruments to support innovation and competitiveness
- Strategy for Innovation and Technological Development of the Republic of Macedonia
- Industrial Policy Strategy of the Republic of N. Macedonia
- Western Balkans Regional Innovation and Development Strategy (developed by World Bank and EC)

#### 2) Environmental legislation

- Law on Waste Management
- Law on Management of Packaging and Packaging Waste
- Law on Battery and Battery Management
- Law on Electrical and Electronic Waste

#### 3) Law on Ambient Air Quality

• Strategies, action plans, bylaws





#### 4) Law on Waters

• Strategies, action plans, bylaws

#### 5) Law on Noise Protection

• Strategies, action plans, bylaws

#### 6) Administrative procedures related to Circular economy

Integrated Pollution Prevention and Control (IPPC) is in correlation with the requirements of the Circular economy

- Production processes and industrial plants need to meet EU BAT requirements
- Best Available Techniques Best Available TechniquesBREF Documents
  - $\circ$   $\;$  By industry types available at EC JRC  $\;$
  - The European IPPC Bureau (http://eippcb.jrc.ec.europa.eu/reference/)3

Circular economy is also included in "Industrial Strategy of the Republic of N. Macedonia 2018-2027, with Action Plan". The whole Industrial strategy is related to the 2017thEC / EU IP communication (Investing in a Smart, Innovative and Sustainable Industry COM (2017) 479), where the latest challenges are not only faced by EU Member States; but also N. Macedonia and the country needs to take them in account if order to be able to effectively absorb EU development funds.

The Industrial Policy of the Republic of Macedonia 2009-2020, focuses on five areas of action, as the main pillars for increasing the competitiveness of the domestic industry, where one of them is:

• Development of environmentally friendly products and services for sustainable development where main measures include: public awareness activities, green procurement, training, joint research and development of new environmental products and services, sustainable industrial resource infrastructure and environmental support certification. This pillar is planned to be achieved by implementing wide range of industry-led voluntary initiatives that can be supported by the Ministry of Economy, the Ministry of Environment and Physical Planning, the Energy Agency and other institutions.

Another important part is that multinational companies adopt green chain supply standards that must be adopted by their suppliers as well. EU EcoLabel helps identify products and services that have reduced environmental impact throughout their lifecycle, enabling consumers to make informed choices and reward processors who decide to design durable and correctable products promoting innovation and saving resources.

Also, part of the Industrial policy is the Awareness raising and training in circular economics, green industry / processing, closed loop processing, energy efficiency and clean production. This is important because greening is no longer just an option but an urgent necessity for manufacturing firms to stay competitive and take advantage of day-to-day competitors, especially if they want to export to EU.





Macedonian manufacturing SMEs are still relatively uninformed about the potential threats, as well as the benefits offered by the concepts of circular economy, green industry / manufacturing, etc. The role of information provision, awareness-raising, education, training and capacity-building should not be underestimated, and it is important that the state liaises with business associations and other institutions, such as UNIDO / REC, EEN, etc., on a systematic basis.

The focus will be on developing a practical Awareness and Training Program to enable industry participants to learn more about circular economics, green industry / manufacturing, closed-loop production, energy efficiency, clean production as a whole and adaptive focus on specific types of green processes, technology methods most relevant to Macedonian industry and economics. It is also necessary to raise the awareness of managers working with credit lines about the need to integrate the circular economy as a criterion for financing industrial projects.

However, the Macedonian community still lacks the appropriate knowledge and practical tools to fully implement socially responsible principles. The challenges on the road to developing a socially responsible community appear to be overwhelming and include a misunderstanding of the concept of SR and the justification for SR; unpredictable business climate; low level of consumer awareness and activism and poor consumer rights exercise; the lack of socially responsible investors, the lack of a dominant model of corporate governance and financing; weaknesses in corporate governance; lack of SR incentives and poor coordination among different stakeholders.

Public knowledge of the social concept and social economy is limited. In addition, a great challenge in the country presents the lack of institutional capacity and knowledge to recognize the value of the sector and supports its development. Regarding the institutional setup, specialized government body in charge of the development of the social economy sector is missing, which clearly demonstrates government bodies' lack of knowledge of this area.

# Spain

Regarding the construction of new indicators of Circular Economy, it should be born in mind that a considerable part of these indicators are not yet fully developed, especially those relating to the prevention of excessive use of raw materials, eco-design and eco-innovation. On the other hand, significant progress has been made in the efficient use of materials and waste management, although it is recognized that greater efforts are needed to give a more complete and detailed picture of the Circular Economy's progress towards sustainable development.

In the case of Spain, the Circular Economy initiatives are emerging and the measures taken so far have been focused, above all, on the environmental policies of the final phase of the economic cycle, such as waste management, where it is available a State Waste Management





Framework Plan 2016–2022 (PEMAR, 2016-2022) in the medium term. On the other hand, new prospects for bioprocesses are also opening up with the Spanish Bioeconomy Strategy Horizon 2030.

To facilitate the transition to the Circular Economy in Spain, new political, business and social initiatives focused on the overall objective of promoting endogenous capacities to promote the transition to the Circular Economy are needed, in line with the European Community. Based on this, The Ministry of Agriculture and Fisheries, Food and Environment (MAPAMA) started working on the development of a Spanish Circular Economy Strategy in March 2017.

This Strategy aligns with the objectives of the European Commission's Action Plan adopted in December 2015, taking into account the Spanish characteristics, and sets out a national framework that allows us to implement the necessary measures to promote our economy fully sustainable and competitive in the international framework by 2030.

The Spanish Strategy for Science and Technology and Innovation 2013-2020, which includes the State Plan for Scientific and Technical Research and Innovation 2013-2017, and the State Plan for Scientific and Technical Research and Innovation 2017-2020, promotes the generation of knowledge and its use for the development and application of derived technologies, through collaboration within the science and technology system and public Spanish entities.

The transition of the circular economy in Spain represents a great opportunity for economic development and the creation of new sustainable employment sites, but to give a boost to this innovative potential necessary to harmonize efforts and define long-term strategies and immediate actions.

Thus, according to the European Commission's estimates, applying all existing waste management regulations would create more than 400,000 jobs in the European Union, of which 52,000 would be located in Spain.

Since value chains in many sectors are global and also important resources, such as critical raw materials, are often imported from third countries, impacts on employment and GDP can also take place outside the EU.

"Spain Circular 2030", represents the strategic and action framework essential to facilitate and promote the transition to the circular economy from the collaboration between the General Administration of the State, the autonomous communities, local entities and other actors involved, in particular producers and consumers of goods.





# 3. What has been done in each country

# Greece

Greece is slowly adapting to this model because it is lagging behind in adopting a policy in favor of the circular economy compared to other European countries (e.g. recycling), and is delaying or even failing to implement its proposals and directives EU for the circular economy. Greece performs well in wood and paper recycling, but is significantly behind in the recycling of glass, metal and plastic packaging at 32.2%, compared to the rest of the EU that recycle 37.3% of plastics and municipal waste at 19-20% when compared to other EU countries amounts to 41.8%. In Greece, 58.6% of packaging is recycled, while the EU recycles 65.3%, which shows that our country is significantly different from the rest of the countries in achieving the target of increasing the packaging recycling rate to 75% by 2030.

### - Some applications of circular economy in Greece: *i.* <u>National Waste Management Plan</u>

Until 2011 solid waste collection and transportation was carried out with 325 Municipal cleaning services throughout the territory. At the same time, 73% of the country recycled the blue bins, while only 3.2% of the population was able to recycle in 4 different bins. Waste of electrical and electronic equipment was exported abroad for recycling due to the inability of existing facilities to manage it. Non-hazardous industrial wastes used for alternative raw materials and fuels as well as secondary materials in cement plants, steel mills, etc. were collected at just 150 plants throughout the country, thus meeting the needs of only proprietary companies, so long-term storage of waste was a frequent management option.

#### <u>Actions:</u>

- An in-depth assessment of how the solid waste legislation is actually implemented
- Assessment of the need for a regulatory framework that better meets the requirements of the use of secondary resources

#### <u>Obstacles:</u>

- Current legislation on solid waste focuses on protecting public health and the environment but does not meet the objectives of a circular economy
- Once products or materials are classified as waste, it becomes very difficult, if not impossible, to redirect them to the economic cycle for reuse or recycling

#### <u>Projects</u>

The LafargeHolcim group uses waste that would end up in landfill as fuel or raw materials, responding to the global challenge of optimal waste management. We look at products that complete their lifecycle as resources, redefining their character as raw





materials for other processes or industries. For its part, the Hercules group, which is a member of LafargeHolcim, replaces fossil fuels with the recycling of industrial, commercial and municipal waste, as well as agricultural waste, contributing to sustainable development.

- Titan applies the circular economy to extend the product life cycle, while saving nonrenewable natural resources by reducing, reusing, recycling and recycling raw materials, energy and waste. It has already exploited the circular economy model through different stages of production. Thus, the final product, namely concrete, a key material of human activity, contributes to tackling and adapting to climate change and energy saving.
- In June 2019, two international scientific conferences were organized in Crete, focusing on the environment, climate change and important environmental projects on the island. The first conference is being implemented in the framework of the LIFE project 'ADAPT2CLIMA', whose main objective is to adapt agriculture to climate change. The second conference on Solid Waste Management, with an important section on how hotel waste can be turned into animal feed using solar energy, as well as an anaerobic digestion plant in the industrial area of Heraklion.

#### *ii.* <u>National Action Plan for the Promotion of Green Public Procurement</u>

Greece is high on the list of countries where businesses that market green products owe more than 75% of their turnover to them, while there is a growing interest in SMEs in offering such products in the future. On the other hand Greece it is far behind other European countries in the use of so-called "green contracts" in public works-studies and services. It is characteristic that our country should have prepared a National Action Plan already in 2006, when today seven Member States (Britain, Denmark, Finland, Netherlands, Austria, Germany, Sweden) currently have 45% of the total value and 55% of their contracts are "green".

#### Actions:

• Connection with cyclicality by adding cyclical criteria

#### <u>Obstacles</u>

- The limited number of environmental criteria established for products or services
- Insufficient information and understanding of product life cycle costs and the relative costs of environmentally friendly products or services
- Insufficient awareness of the benefits of environmentally friendly products and services

#### <u>Projects</u>

The University of Patras, representing Greece, and 8 other EU countries are involved in the project Green Public Procurement for the Effective Use of Regional Development Resources (**GPP4Growth**), are part of Interreg Europe and co-funded by the European



Regional Development Fund. The aim of the project is to improve and implement policies that promote eco-innovation and environmental development.

#### *iii. <u>National Water Reuse and Soil Management Strategy</u>*

Waste water reuse can be a rational tool for water resources management. The rationale for the re-use of properly treated municipal or industrial waste water has intrinsic benefits related to water resources conservation, environmental protection and economic benefits.

#### <u>Actions:</u>

- Proposals to improve existing water legislation to encourage and facilitate water reuse
- The European policy needs to be better adapted to the circular economy of water management and water reuse
- Develop a position paper and contribute to current water legislative processes

#### Obstacles:

- The current legal framework for water does not sufficiently meet the objectives of a circular economy with regard to the reuse of water in cities
- The lack of minimum quality requirements for water in its various uses and management processes, such as different quality standards for recycled water, simply results in a ban on reuse
- The lack of clear responsibility and the risks posed by each player have implications for quality assurance, monitoring, maintenance, etc.
- Unwillingness to allow the application of new technologies (regulations tend to focus on the description of technologies rather than adherence to the required standards)

#### Projects

- ➢ In 2000, the Mesogeos S.A. was founded which up to now through the sustainable management of natural resources gives water more than 1 time value.
- The European HYDROUSA program is part of the "Horizon 2020" program and is the rational management of water resources through the recovery of water, materials and energy from waste water, as well as the increase of water reserves in the Mediterranean region. The project will be implemented in 3 Greek islands of Tinos, Mykonos and Lesvos, which are facing major water scarcity problems. This system (HYDRO5) will have a minimum production of 70 cubic meters per year which will supply water to a 200 sqm greenhouse and the systems (HYDRO1 & HYDRO2) will produce irrigation water for urban forestry.

#### iv. Other projects based on circular economy

In April 2019, the first recycling and circular economy center in Greece opened its doors. The groundbreaking **Recycling and Circular Economy Center, Zero Waste Lab**, promises a unique experiential experience for the citizens of Thessaloniki, with an innovative workshop open to the public showing what our waste-free world would be - a world where nothing is lost.





- On 1 August 2019, the SinCE-AFC project ("Enhancing the Entrepreneurship of SMEs in the Agri-Food Chain") was formally launched, approved under the 4th call for the INTERREG EUROPE program. This project aims to involve SMEs in the agri-food product chain (production, processing, packaging, distribution, and final consumption) in the circular economy by promoting appropriate horizontal management and financing mechanisms.
- The University of Thessaly has a Postgraduate Program "Sustainable Environmental Change Management and Cyclical Economics" aiming at an in-depth diagnosis and understanding of environmental issues, the way they are related to humans. It examines the nature, causes and impacts of major forms of environmental change, how these changes interact at global, regional and local levels, and how they impact ecological systems and what are the sustainable solutions to these changes.
- In September 2017, a workshop on Industrial Coexistence and Cyclical Economy, Examples in Western Macedonia" was organized in the municipality of Kozani. The workshop was held in the framework of the implementation of the European projects SYMBI (Industrial Symbiosis for Regional Sustainable Growth and Resource Efficient Circular Economy) financed by the Interreg Europe Program and M3P (Material Match Making Platform) funded by the LIFE program implemented by the Municipality of Kozani and DIADYMA SA respectively.
- Replace is the new European program for the Circular Economy (Interreg Europe) launching in Crete and aims to integrate, develop and exploit the results of the successful H2020 SCREEN program. Develop and implement policies and actions focusing on identifying, exploiting and financing circular value chains and related projects.

#### v. <u>Circular Economy Forum</u>

The Forum was an opportunity to exchange views on important issues such as how to introduce the circular economy to Greece, its ability to contribute to waste management and job creation, the production of goodwill through new and innovative business models, and the presentation of good practices from organizations and businesses in the country, which are examples of a circular economy. It should be noted here that Greece is one of the 10 European countries that have a National Cyclical Economy Strategy.

# Luxembourg

With regard to businesses, the government has developed a trademark – the SuperDrecksKëscht– in order to incentivize businesses to better manage their waste, rationalise their resource consumption and transition towards a more circular model.<sup>2</sup> The SuperDrecksKëscht is a particularly effective vehicle for the government to deliver its messages to the private sphere, given the popularity and respect it holds from businesses.

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- The government aims to encourage circular economy through the development of economic activity zones and the so-called 'eco-neighbourhoods' in accordance with circular principles. These zones can promote low-carbon mobility, industrial symbiosis and collaborative consumption (equipment, machinery, cars, facilities, nurseries, resources, electricity supply, with purchase agreements at a preferential rate, etc.).
- In 2017, Luxembourg established the "Wood Cluster", with the aim to maintain, rebuild and develop the wood and timber value chain in Luxembourg. The potential of the locally grown wood is not fully tapped today and over the years, more and more added value was generated outside Luxembourg and the Greater Region or even the EU.

Eco-innovation and circular economy in Luxembourg are accomplished through publicprivate partnerships in which the key actors are the Ministry of Economy, the Ministry of Sustainable Development and Infrastructure, the EcoInnovation Cluster, MyEnergy and LuxInnovation (the national agency for innovation and research).

- Eco-Innovation Cluster gathers companies, research institutes and public organizations involved in the field of eco-technologies.<sup>3</sup> It focuses on the establishment of new opportunities that can be sustainable through collaborative Research &Development(R&D) and innovation projects related to material flows, industrial material loops and the bio economy.
- LuxInnovation encourages businesses and researchers in developing and implementing projects which further support the government in its innovation and R&D policies.
- "Fit4Circularity", created in 2015 by LuxInnovation and targeting SMEs, commits its actions towards sustainable initiatives such as the Fit4Digital and the Fit4Innovation. The goal is to limit the use of raw materialsby maximizing the use of renewable sources for innovative products and services of a sustainable growth. It also has as an objective to reduce energy consumption and to increase recyclability. Fit4Circularity improves competitiveness and helps to increase SMEs' revenues. The kinds of projects that can be eligible for support are those associated with technological innovation, organizational innovation and investment.

# Netherlands

The Netherlands is a circular hotspot. Dutch businesses are showing the way in the development of innovative circular business models: the recycling infrastructure and technologies are advanced, Dutch entrepreneurs are innovative and committed to circular transformation, and the solutions are not only durable, they are economically viable. This bodes well for the sustainability of Dutch businesses. But there is need to do more.





Collaboration is key: congregate, share knowledge and experiences, make arrangements with partner organisations and help each other, and make use of the specialised institutions that are already present.

- MVO Nederlands, an important partner of Confederation of Netherlands Industry and Employers (known as VNO-NCW) the Dutch employers' federation, is a valuable platform for entrepreneurs, providing access to a large body of information on sustainable economic development. Or be inspired by the eight Dutch multinationals, which together form the Dutch Sustainable Growth Coalition, provide insight into viable business cases in their publication, Circular Economy.
- "Limits to growth" report became reality early in the 21st century. Economic growth no longer outpaces the increase of material cost, and with the acceleration of digital technologies new revenue models have emerged. Leading businesses in the Netherlands, are taking up the challenges these growth limitations have created. Businesses, collaborative platforms, innovators, governments and joint initiatives throughout the country, see the circular economy as the next business opportunity.

The Netherlands now claims the title of "Circular Hotspot" due to the fact that these key economic players have set their focus on creating circular awareness. To understand the current status of the circular economy

within the Netherlands' largest organizations, as well as to trigger awareness and educate companies on the economic advantages of this new way of thinking, Accenture, Circle Economy, have initiated the Circular Economy Index.

To get a better understanding of the maturity of circular economy strategies and the initiatives undertaken by large Dutch organizations, Accenture, Circle Economy, MVO Nederland and DuurzaamBedrijfsleven joined forces to develop the Circular Economy Index. The research provided some insight into the progress being made, as well as the challenges companies are experiencing and opportunities they are discovering. The principles of the circular economy are broadly understood by the 50 companies participating in the Circular Economy Index.

# **North Macedonia**

Though the term of Circular economy more present in the country, until now there isn't specialised national policy or law regarding this concept. The Industrial Strategy of the Republic of N. Macedonia 2018-2027, with Action Plan has the potential to start the things to move in this area, because of the pillar dedicated to circular economy public awareness activities, green procurement, training, joint research and development of new environmental products and services, sustainable industrial resource infrastructure and environmental support certification.



# Spain

Below there is an overview of Indicator's sources of particular interest including the following:

- UNEP Green Economy Initiative.
- OECD Green Growth Initiative.
- United Nations Sustainable Development Goals (SDGs).
- European Union, EU Sustainable Development Strategy, in line with Europe 2020.
- Evaluation reports from EUROSTAT and EEA.
- Sustainability Observatory in Spain (OSE). Sustainability Report Indicators in Spain
- Various indicators from official sources, such as those from the INE, MAGRAMA, EEA, and EUROSTAT.

Spain achieves its best results in SDG 6 (clean water and sanitation) and SDG 7 (affordable and non-polluting energy), although progress towards responsible production and consumption (SDG 12) is a significant challenge for our country and has not yet been possible calculate the trend, as national indicators are missing to be evaluated.

The following is a summary of the Spanish situation in relation to resource consumption and the evolution and trends of the main economic sectors that have a significant impact on circular economy:

- National consumption of materials (NCM) in Spain, with official data from MAGRAMA, has fallen by almost 50% between 2008 and 2012.
- > The **final energy consumption** in Spain maintains a declining trend started in 2005.
- Industry sector: 60% drop in environmental protection investment over the past few years.
- One of the most dynamic subsectors is the **Ecological Industry** or Eco-Industry, being one of the keys to the improvement of sustainability and the Circular Economy with capacity, in addition to generating new sources of sustainable employment.

There are favourable trends in a number of sectors in the Circular Economy, such as renewable energy, energy efficiency, water treatment,

solid waste treatment, mechanical and biological pre-treatment of waste, tire recovery and air quality and emissions.

- Tourism sector: interest in improving tourist eco-efficiency in order to advance the Circular Economy supported by economic dematerialization. Spain is trying to boost alternative tourism modalities.
- Agricultural sector: technological innovations in the Spanish agribusiness sector are being developed. Spain is at the top of the EU in number of hectares dedicated to organic farming.
- The bioeconomy sector in Spain offers great opportunities for the Circular Economy and the closure of biological cycles, given the agri-food potential and the availability of geographical spaces. The Spanish strategy will focus on the activity of the agricultural, fisheries, aquaculture, food and forestry sectors, the efficient and sustainable use of products, and waste they generate, as well as products obtained from crops from algae and microorganisms and other bioprocesses. The Spanish





Horizon 2030 Strategy gives the **agri-food and forestry sectors a fundamental role**.

The generation of **municipal waste** maintains a widespread trend of decline in recent years. From 2000 to 2013, this reduction in the generation of municipal waste per inhabitant has reached 31.8% while in the EU-28 it has fallen to a lesser extent, by just 8.0%.

As we discussed, we have developed a State Plan Waste Management Framework (PEMAR 2016-2022), which is the key instrument for the implementation of the waste prevention and management policy in Spain.

• Spain is among the European countries that have supported and encouraged the **reuse of wastewater**, with specific legislation since 2007.

# 4.Level of low-skilled or low-qualified adults involved

# Greece

Unemployed in Greece in April 2019 amounted to 833,858 persons and their number decreased by 107,290 persons compared to April 2018 (decrease of 11.4%) and by 26,925 persons compared to March 2019 (decrease of 3.1%). In the first quarter of 2019, unemployment had slightly increased. The total number of employees is estimated to be 3,891,618 and the number of employees increased by 74,993 compared to April 2018 (2% increase) and 26,926 persons compared to March 2019 (0.7% increase). The economically inactive (unemployed or job seekers) amounted to 3,215,369 persons and decreased by 10,218 persons compared to April 2018 (0.3% decrease) and by 3,606 persons compared to March 2019 (decrease 0.1%). For women, the unemployment rate (21.7% in April 2019 from 24.4% in April 2018) remains significantly higher than that for men (14.5% from 16.1%), according to RES. By age, the highest rates were recorded in the groups of 15-24 years (30.4% in April 2019 from 40.3% in April 2018) and 25-34 years (24.2% from 25%). Following are the ages 35-44 years (16.3% from 18.2%), 45-54 years (14.2% from 16.5%), 55-64 years (13.8% from 15.8%) and 65-74 years (12.4% from 9.7%).

According to the 2019 European Monitoring Report on Greece, the rate of educational poverty, is basic reading and writing skills and sufficient knowledge in science, reaches 32% on average while in Europe it is 20%. But Greece is much better than Europe in the early dropout rate of 18-24-year-old students. The Greek percentage is 4.7% and the European average is 10.6%. Also, most Greeks aged 30-34 hold a university degree compared to the European average (44.3 and 40.7% respectively). The 43% of Greeks believe that their education or training did not provide them with the skills needed to find a job that meets their professional qualifications. Also, 81% of Greek respondents' rate 'good' the quality of education they received at school, compared to 86% in the EU. Only 29% of Greeks and 39% of Greeks rated





'good' quality of education. European citizens. The Greek education system provides sound knowledge bases but lacks in organization, extroversion, evaluation and labor market linkage mechanisms to understand needs and provide the appropriate skills.



#### European Commission

Greece ranks 27th out of 28 EU member states. Overall, in recent years, Greece has not made much progress compared to other EU Member States. Last year, progress was slightly slower than average. EU integration of Greeks into more sophisticated digital technologies remains low. Greece's performance is reported to be well below the EU average, but it is making progress.

New data from the Organization for Economic Cooperation and Development, which records the work of its 35 members from the "western world" as we are used to calling the most advanced in economic terms, states that Greece is at the top of European states in average. Greeks work 2,035 hours a year. In contrast, the Germans work only 1,363 hours.

# Luxembourg

In Luxembourg, it is generally accepted that a low-qualified worker is a person without educational qualifications beyond lower secondary level. The great majority of low-qualified workers work under employment contracts (almost 97%), with men working most commonly in the construction sector (32.9%), and women working most commonly in the retail and sales sector (19.1%).

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Source:





The graph below presents the placing of Luxembourg among other EU Member States based on a ranking of employment percentage rates of low-skilled adults (aged 25-64 years old) in 2015. It is obvious that Luxembourg holds the 12<sup>th</sup> position among its counterparts and its representative percentage of 57.3% shows that the countryresponses positively in favor of the employment placement of low-skilled adults.



Note: OECD is the weighted average of 28 OECD countries (excluding Australia, Chile, Israel, Japan, Korea and New Zealand). Low skill corresponds to less than upper secondary educational attainment. High skill corresponds to tertiary level educational attainment. Source: OECD estimates based on national labour force surveys.

Taking a closer look at the labour market of Luxembourg, the insurance as well as the working status of the employed population helps us to identify the gap in skills and to conceptualize new opportunities in the circular economy. In this way, the following table illustrates the employment nature to which adults have so faradapted, but also the working conditions that would potentially help the circular economy to become a stable part of the growing economy.

The idea of sustainable building has been introduced by Neobuild, the first technological innovation pole for the sustainable construction sector in Luxembourg. Neobuild follows a transparent, responsible and collaborative approach, in order to highlight the benefits of the sustainable construction. The latter is a vast and varied topic that embraces materials and construction processes as well as renewable energies or certification systems. Some of Neobuild's services include ethical and sustainable principles, such as the support of the companies in their development and in their search for value creation, in accordance with the community and the future generation interests.

Moreover, the Ministry of Labour, Employment and the Social and SolidarityEconomy in Luxembourg has created the Digital Skills Bridge programme to develop a common national strategy and a support mechanism. This programme aims to aid the future skills development





of the national workforce and assist companies' in their response to the digital transformation of their businesses. Since the development of new skills within the country's companies has risen, employers have to meet the needs of the market whilst allowing their employees to secure their careerpath. In this way, entrepreneurship activities acquire a major additional asset that allows them to safeguard and advance their competitiveness. The programme thus emphasizes the importance of a proactive and preventive strategy regarding companies and employees' skills development in order to meet the challenges posed by digital transformation and to secure career paths in a sustainable way.

# Netherlands

It has identified three main factors that contribute to the success of these city initiatives to create green jobs for social inclusion at the local level. They are:

### A. Combining demand and supply side interventions

There are two different approaches taken by the cities presented in this publication to create employment opportunities: (1) intermediate labour market (ILM) initiatives and (2) local job creation.

- 1) Intermediate labour market initiatives: the majority of the examples are intermediate labour market (ILM) programmes. They work on the demand side of the labour market, creating a job or a work placement. The concept of the intermediate labour market (ILM) approach is based on the premise that there are people so far from the labour market that they have no chance to access it. The objective of ILM programmes is to provide a 'protected' working environment with the view of supporting people to gain real work experience to enable them to compete in the mainstream labour market.
- 2) Local job creation: Four of the examples demonstrate how a city can create new employment opportunities and support disadvantaged people in accessing them. Birmingham and Newcastle created new jobs by setting up energy efficiency programmes via private-public partnership. Tampere stimulated demand for jobs through awareness-raising and running a centre to demonstrate energy efficiency improvements for heritage housing. The Brussels Capital Region provided grants to new entrepreneurs who have ideas for sustainable businesses. These demand side interventions are then complemented by well-matched activation and training measures (supply side interventions) helping people to gain specific skills and improve their chances of accessing the labour market. For instance, the grant programme in Brussels is complemented by training and advice on running an enterprise. The work placements in Amsterdam, Antwerp, and Rennes Metropole are combined with both on-the job training and educational programmes that allow participants to gain formal qualifications.
- 3) Engaging with schools is also important. Berlin has an educational programme for reengaging disadvantaged young people in the education system and raising awareness of the job opportunities in the green economy. Likewise, Birmingham in





addition to the local job creation and activation measures runs a career guidance programme for its young people to direct their education and employment choices towards the green economy.

#### B. Linking the interventions to local employment opportunities

Cities as the level of government closest to the people have an in-depth knowledge of their local labour markets. They can design programmes in line with local economic demand and prepare people for jobs that are available locally. The effectiveness of the demand and supply interventions is made stronger when they are grounded in local businesses and job market needs. In the majority of cities people received training linked to the demand of the local green labour market. This is a proactive way to ensure a job to skills match and avoid any anticipated future skill shortages in the green economy. For example, eco-construction energy efficiency industry energy auditing and advice renewable energy industry 'green' enterprises green area maintenance / bio diversity management waste disposal and recycling industry. A number of cities are also active agents in shaping the local economy and creating local jobs.

#### C. Tailoring activation measures to the specific needs of people

The third success factor of the programmes is linking the activation measures to the specific needs of the target groups. For example, Barcelona engages a specialised team to address the barriers to employment of people with disabilities and Berlin uses an innovative teaching method to reengage young people who have dropped out of school. Some of the initiatives cater for the needs of more than one target group and design interventions accordingly. Many interventions, put a strong emphasis on addressing individual needs in a comprehensive way, taking into account people's personal situation, abilities, talents, interests and their employability profiles.

Tools Public Procurement Cities can leverage the power of public procurement to create inclusive labour markets. The cities of Amsterdam and Rennes Metropole use clauses in public procurement to create employment opportunities for vulnerable people. Amsterdam procures work from private companies on the condition that they reinvest part of the profits from the public contracts into programmes with an added social value, such as employability programmes for young people without qualifications.

Partnerships Cooperation with a range of other stakeholders is important in creating inclusive labour markets in the green sector. City administrations have a key role in creating and brokering these partnerships and in leading them in the right direction.

The green economy represents an opportunity to tackle major societal challenges and can contribute to combating poverty and exclusion in a sustainable way. In this context, public intervention is important to help disadvantaged people access the labour market. The practice examples demonstrate that well-designed local authority programmes can increase the labour market opportunities of vulnerable people and people with very low employability profiles. For local authorities, programmes that combine greening and social inclusion bring beginning





to integrate circular economy principles into multiple facets of their business strategy. This will help them mitigate risks that may arise from future policy changes and industry shocks, and enable them to explore the creation of new revenue streams. Respondents highlight the difficulties of creating a viable business case as the primary barrier to realising their circular economy initiatives. Partnerships are a core element of the circular economy initiatives of Dutch business, as illustrated in the "Circular Rail" initiative.

# North Macedonia

The gender gaps remains significant in the country, with about 78% of men participating in the labour market, compared with 52% of women, with little change over the past 5 years. Youth unemployment, which has slowly, but steadily declined in recent years, remains high. The employment rate has increased from 44% in 2012 to 51.7% in 2018, but remain slow by regional comparison. Around 80% of unemployed dare long-term unemployed, reflecting the skills mismatch.

Informal employment continues to decline in the country, but the proportion remain shigh. The proportion of informal employment, at 18.1% in 2017, has decreased steadily from 28.6% in 2008, but remains significant, especially for the low-skilled. The high labour tax wedge affects participation and formal employment.

Those 80% of long-term unemployed and informal employed are the target group of this project and they will be included in the planned activities.

There is no specific data related to the level of low-skilled and low-qualified adults involved in Circular economy in North Macedonia, but there is data of the Employed by sectors of activities.

From what has been said before we can see that there are around 20% of employed in the country are in the activities related to Circular economy, or more specifically to Manufacturing and Water supply, sewerage, waste management and remediation activities. Of course there are possibilities for other activities and fields where new jobs can be created and to be related to the Circular economy, but that has to start with development of National strategy for Circular economy and better involvement of all key stakeholders.

This project and the good practices shared between the partner countries can result in defining new possibilities for new job creations in the field of Circular Economy that will be disseminate to the key stakeholders in the country.

Percentage	Employed	Sectors and divisions of activities
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100.00%	794283	Total	
14.27%	113318	Agriculture, forestry and fishing	
0.82%	6505	Mining and quarrying	
19.72%	156625	Manufacturing	
1.35%	10703	Electricity, gas, steam and air conditioning supply	
2.15%	17059	Water supply, sewerage, waste management and remediation activities	
7.28%	57830	Construction	
13.75%	109242	Wholesale and retail trade, repair of motor vehicles and motorcycles	
5.07%	40256	Transportation and storage	
4.77%	37914	Accommodation and food service activities	
1.97%	15625	Information and communication	
1.30%	10303	Financial and insurance activities	
2.66%	21113	Professional, scientific and technical activities	
2.59%	20534	Administrative and support service activities	
6.58%	52227	Public administration and defence, compulsory social security	
5.65%	44861	Education	
5.56%	44145	Human health and social work activities	
2.43%	19272	Arts, entertainment and recreation	
1.79%	14194	Other service activities	

# Spain

In Spain, the term 'low qualified workers' is usually employed when referring to those people who have only basic educational levels, fundamentally compulsory educational level or lower. Currently, education is compulsory until 16 years old. According to the data provided by the European Labour Force Survey, presence of 'low qualified people' in Spain is much higher comparing to EU-28

Spanish 'low qualified' workers have longer working hours than 'non-low-qualified' workers, and they are more likely to be employed under a fixed-term contract. They are usually less remunerated on a fixed basis, and their satisfaction with their salary is lower in comparison to other groups.





'Low qualified' people are particularly present in the construction sector. From a training perspective, these 'low qualified' people are less likely to participate in training activities, and when they do they receive less hours of training.

Meanwhile, according to the information provided by the Spanish Survey of Quality of Life at Work, working conditions of the Spanish 'low qualified workers' are characterised by the following main traits (data from 2010):

- 'Low qualified workers' declare a relatively high satisfaction average level with the work they carry out, although lower than other groups. By way of contrast, working people with tertiary studies suggest a satisfaction rate higher than low qualified workers since only 2.1 % declared are highly unsatisfied at work.
- Less than 55.3% and 63.2% of those working people with less than primary studies and with primary studies, respectively, declare to receive a fixed salary, whereas this percentage goes up to 72.0% amongst university workers.
- The unemployed are defined as people without a job but actively seeking employment and currently available to start working. As we can see in the chart below, people with higher levels of education have better job prospects; the difference is particularly marked between those who have attained upper secondary education and those who have not.



• From a time, comparative perspective, the proportion of 'low qualified people' has experienced a downward trend in the last years, which shows an increase





- Spanish 'Low qualified' people are particularly present in some occupational groups, basically unskilled workers, craft and related trades workers and finally sales and services workers, where this result is very similar to the EU-28 average. Interestingly, the largest percentage of 'low qualified' women are unskilled workers and sales and services workers, whereas the category of craft and related trades workers is the most important amongst 'low qualified' men.
- Construction is the economic sector that has the largest presence of Spanish 'low qualified' people (approximately a 20% of all the sector employment), followed by manufacturing (approximately a 18% of all sector employment), whereas the lowest percentage corresponds to education and financial intermediation services. Interestingly, gender considerations show a higher presence of 'low qualified' women in the wholesale and retail trade sector.
- As we mentioned previously, 'low qualified workers' benefit lower from training activities confirmed by several reports elaborated by the Spanish Economic and Social Committee (CES). According to CES, those collectives more in need of training are the ones less involved of them for different reasons. The first reason is that employers prefer to invest on employees who are highly -qualified or on those who have a management role within the company. The other reason is low-educated or low-skilled individuals are also those least aware of that need of the benefits derived from their involvement in training activities (cognitive barriers), which results in a lack of motivation.

# 5.New Business Opportunities for low-skilled or low-qualified adults in the CircEc

# Greece

In 2011, according to a McKinsey survey, the 8 top sectors in Greece that would create jobs by 2020 (in 2 years from now) were: the pharmaceutical industry (for generics), aquaculture, medical tourism, care the elderly and the elderly, the creation of a regional freight transit center, waste management, specialized food categories and the development and





development of classical curricula. Today, recent studies indicate that there are indeed some occupations that will have positive job market prospects in the coming years and offer better working conditions, higher earnings and faster career prospects. Sectors like energy and green technology and food & beverage industries is addressed to low-skilled or low-qualified adults who want to invest in the circular economy.

The **food and beverage** industry is one of the key pillars that are important for the Greek processing and development of the country. Highlights of the role of the domestic food and beverage industry on the world map of processing are: high quality products, the Greek brand name, as well as the organized promotion of Greek food. The growth prospects of the food and beverage industry are promising, which, together with the more effective cooperation of industry representatives and competent bodies, can contribute not only to improving efficiency but also to having a new development model, boosting the Greek economy.

The **energy and green technologies** industry from the need to develop renewable energy. Renewable energy sources include wind energy, solar energy (thermal, photovoltaic and condensed), hydroelectric power, tidal energy, geothermal energy, environmental heat absorbed by heat pumps, biofuels and renewable energy waste. The use of renewable energy has many potential benefits, such as reducing greenhouse gas emissions, diversifying energy supplies and reducing dependence on fossil fuel markets (in particular, oil and gas).

#### • <u>Green Employment</u>

Green employment is those activities in the primary, secondary, tertiary and quaternary sectors that contribute to the preservation or even restoration of the environment. Green jobs relate to professional activities that:

- Protect ecosystems and biodiversity
- They contribute to the rational use of energy and natural resources
- Reduce water consumption
- They lead to a low-carbon economy
- They limit the production of waste and pollutants

Adding to the above is the qualitative dimension of decent work, that is, work that provides equal opportunities for men or women in conditions of freedom, security and respect for human nature. Ensuring dignity at work is central to enhancing poverty reduction efforts and is an important means of achieving integrated and sustainable development.

#### • Green entrepreneurship

Green entrepreneurship is that form of economic activity that puts the protection of the environment and nature at the heart of its strategy in general. Green entrepreneurship is the company's positive attitude towards environmental protection, with regard to its products or



services, as well as with its production processes. The green business has a positive attitude towards protecting the environment in all its activities

According to the Green Paper on Entrepreneurship in Europe, entrepreneurs are the driving force behind a market economy and their achievements offer a wealth of society and jobs and consumers a variety of options.

#### <u>New or emerging green business activities</u>

The National Documentation Center informs and supports Greek businesses to turn to greener and more "cyclical" solutions, receiving personalized guidance, can effectively manage their innovation, leverage research results from leading European and non-research institutions. They are thus able to design products with a view to durability, re-use and overall saving of natural resources. According to studies conducted for Greece, new jobs are expected to emerge in the following activities:

- Air Quality Management
- > Water Resources Management
- Solid Waste Management
- > Management and Protection of Habitats
- Generated Energy Management
- Travel Management
- > Dealing with Natural Disasters and Environmental Accidents

The success of the project and the pace of its implementation are based on the adoption of the principles of the circular economy by private companies that are invited to invest in new emerging profitable opportunities, in collaboration with the state and supranational authorities (European Union) who are called upon to create an environment that ensures the profitability of investments, not through subsidies, but by achieving and synchronizing the development of a critical mass of circular economy interventions to guide investment As underwriting.

The whole process of the circular economy may lead to reclassifications in income, education and employment as products become more resilient (shorter jobs) and there will be a need for new skills in material recovery and reprocessing, and energy production, by waste (more employment), which should be taken into account.

# Luxembourg

Luxembourg is best described as a country in a constant state of transformation, having reinvented itself in an economy based upon technological development. The country has shown a remarkable resilience amid the turbulence of recent years in the EU and prepared its people to face future economic challenges. However, the amount of wastes as well as the





consumption of energy in the country in order to define new business opportunities in Luxembourg. By doing so, general conclusions will allow us to determine which waste management methods can be implemented and under which conditions the reuse of raw materials is feasible.

Examining the EU level, energy is consumed by different sectors of the economy: households (i.e. energy consumed in citizen's dwellings), transport (e.g. rail, road, domestic aviation or inland shipping), industry, services (including commercial and public services) and agriculture & forestry. Looking at which sectors in the EU consume the most energy, the industry sector (31 % of final energy consumption) consumes the most energy, followed by the transport sector (28 %), households (25 %), services (13 %) and agriculture & forestry (2 %).

On the contrary, looking at the national level of Luxembourg and the sectors in which the energy use can be done more efficiently, it is clear that transport holds the primary place (61.1%) in the energy consumption ranking of 2017.

For the purpose of the expansion of the job market and the creation of new employment opportunities, entrepreneurs and start-ups can stimulate the use of new technologies and enhance the productivity rates of the country. Nevertheless, the social perception of entrepreneurship in Luxembourg is relatively low: compared to EU average of 56%, only 45% of Luxembourg residents regard entrepreneurship as a desirable career choice<sup>4</sup>. The share of entrepreneurs and the positive perception of entrepreneurship are higher among other social groups, such as among immigrants and especially first generation immigrants.

The fact the residents of Luxembourg are ready to reduce their energy bills leads to a decrease of their reliance on external suppliers of oil and gas. Starting with Luxembourg CleanTech Cluster, which is managed by Luxinnovation, fosters innovation, business development and cross-sector cooperation by focusing on an exciting area for potential growth sustainable living and clean technologies.The cluster supports it members in the generation of new processes, products and services with the goal of turning the concept of the circular economy into a reality in Luxembourg. Some of its objectives include the diversification of the activities of domestic companies by allowing them to gain and to develop new capabilities in the clean technologies field. By contributing to the development of new environmental solutions in the field of eco-technologies and sustainable construction, it also raises public awareness for the uptake of "green technologies" and build public-private partnerships.

Nowadays, the development of the digital economy creates new grounds for the cultivations of skills that are essential for a changing working environment. In this direction, Digital Luxembourg intends to track the process of digital transformation in human resources, and





specifically inEducation and Youth (e.g. developing maker spaces in secondary schools), in lifelong learning opportunities for professionals (e.g. FIT4Coding to train unemployed, or training in cybersecurity), and in developing ICT specialised profiles (e.g. in the Cybersecurity Competence Centre 3C).

# Netherlands

An expansion of the circular economy for technical products in the Netherlands initially means advocating more maintenance and repair work, intensive reuse and increased recycling. Of course, these activities are already happening. So we can already speak, to a certain extent, of a circular economy. By looking at 17 product categories from the metal and electrical sectors, it is estimated that the current value of the circular economy for these products is €3.3 billion and that an additional market value of €573 million per year could be achieved by responding to a broad range of opportunities identified by stakeholders and experts. With respect to value creation with biotic waste streams, the Netherlands has the advantage of being a densely populated country with an active agricultural sector and a large agro-food industry. As a result, significant biotic waste streams are available. The 34 most important waste streams have been identified: the use of these waste streams already represents a value of  $\in 3.5$  billion. An estimated investment of  $\in 4$  billion to  $\in 8$  billion per year in new technologies could create added value of  $\in 1$  billion per year for the circular economy in the areas of biorefining, biogas extraction and more com If the Netherlands is to take full advantage of the opportunities, the government needs to develop a consistent, multidisciplinary and well-founded long-term strategy intended to lead to a circular economy. The following actions (and supporting studies) are needed now in order to identify areas of research, regulations, financial and fiscal incentives and strategies that will encourage frontrunners, promote the role of the

government as a 'launching customer' and enhance international relations: – create a clear, cross-departmental, consistent strategy for the circular economy; – develop a coherent education and research plan for the circular economy; – make a comprehensive assessment of the pros and cons of existing rules and regulations regarding waste; – increase knowledge and awareness of raw materials in each value chain; – ensure that leaders and others who stick their necks out receive a permanent and true advantage, for example through value chain management; – review the effectiveness of a broad set of fiscal and financial incentives to promote circular behaviour; – determine the impact of incineration plants on the viability of circular business cases and take appropriate action; – develop the role of the government as active and expert 'launching customer'; and – use the international playing field to help the circular economy move forward. prehensive systems for sorting household waste.



# North Macedonia

Knowing the situation in N.Macedonia and looking at the proposed green industries mentioned before, we can see that there are options for jobs in:

- Solar power and wind power those industries are in upraise and still there are fields of them that have to be discovered and analysed in the direction of Circle economy
- Motor vehicle electric equipment manufacturing there are factories that are operating in this area, mostly FDI and Greenfield investments, that are bringing knowledge for Circle economy from other developed countries.
- Construction analysis is need in the direction of Circle economy

Another option is to have more jobs in newly opened industrial waste processing facilities. Waste management in the direction of the circular economy can be defined as sustainable resource management, because the products need to be present on the market longer, and ultimately re-used, repaired, refined, upgraded or recycled. Principle "4R" - Repair - Repair, Reuse - Reuse, Remanufacture - Rebuild / Recycle, Recycle - Recycle.

In addition to protecting the environment, waste management also provides for the creation of new jobs: incineration of 10 000 t of waste - 1 job if disposed of on landfill - 6 jobs, recycling - 36 jobs, recurring usage - 296 jobs.

The waste that will be processed in industrial facilities will produce a raw material that will be used to produce another product, substituting the use of new resources and saving energy in the production process.

Another area where low skilled and qualified adults can find jobs are in the area of green jobs. Green jobs are defined as jobs that reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable. Green jobs are a subset of employment in environmental activities that meets the requirements of decent work.

# Spain

There are some companies and entrepreneurs related to the Circular Economy sector in Spain. It is becoming more and more popular to to start initiatives related to the protection of the environment. There are some companies that use as primary source recycled materials coming from waste found in beaches or other places.

Actually, we can find some companies like *Ecoembes* that opened the first innovation centre on the circular economy created in Europe. Located in La Rioja, it is the only laboratory focused on this area, and could turn this region into a great experimentation hub. Their goal is to promote the best lines of innovation in the field of packaging and its subsequent recycling.





Another initiative from local governments consists of shared farms for citizens: citizens request a piece of land to cultivate vegetables and the government assigns them to the citizens for a limited period of time. This a way of using and maintaining the land and soil near the towns and villages.

Despite the great controversy in Spain due to the start of operation of mobility platforms such as Uber and Cabify, mobility is one field that might be a market niche in Spain. "The Conclusions on New Trends of Social Economy"<sup>5</sup> show that younger generations do not expect to buy a car. Instead, they prefer to use car-sharing.

In line with mobility, since cycling is becoming increasingly popular in Spain as a mean of transport, construction workers should be properly trained. These specialists should have the necessary technical knowledge and equipment to carry out these services properly in order to preserve road safety. In recent years, more and more people are supporting sustainable transport. In 2016, Spain was the country where the use of bicycles increased the most, with 8%, ahead of Switzerland with an increase of 6% and Finland, with an increase of 4% according to the *European commission*.

Trends might lead, according to the study Employment and the circular economy. Job creation in a more resource efficient Britain. Green Alliance, 2015, low-skilled adults will be potentially needed in Circular Economy activities mainly related to:

- **Closed-loop recycling** (Using waste to make new products without changing the inherent properties of the material being recycled).
- **Open-loop recycling** (also, Downcycling, uses recovered materials to create products that have lower value compared to those produced in closed-loop recycling).
- Reuse.





6.The Pocket Library: collection of documents, reports, book, and websites on circular economy

# Greece

# **Documents and Reports**

- Hellenic Federation of Enterprises, <a href="https://en.sev.org.gr/">https://en.sev.org.gr/</a>, SEV Hellenic Federation of Enterprises has consistently fostered business development in Greece since 1907. Sev representing a broad spectrum of the country's economic activity, including manufacturing and services.
- <u>http://www.sev.org.gr/Uploads/Documents/Epiteliki synopsi Ianouarios FINAL.pdf</u>, Proposals to accelerate environmental licensing by reassessing projects and activities according to their environmental impact.
- <u>https://www.sev.org.gr/Uploads/Documents/52248/SpecialReport\_paideia\_dexiotites\_V\_03072019\_F.pdf</u> Lack of education and skills are an obstacle to productive transformation and modern competitive production.
- <u>http://www.sev.org.gr/Uploads/Documents/50726/Weekly 04 01 2018.pdf</u>, Yes to the circular economy (not to the recycling of wrong policies.
- European Center for the Development of Vocational Training, <u>https://www.cedefop.europa.eu/en</u>, Cedefop works to strengthen European cooperation and provide the evidence on which to base European VET policy. Cedefop's added value is the high quality of its comparative analyses and expertise gathered through research and networking.
- <u>https://www.cedefop.europa.eu/files/9067\_el.pdf</u>, A strategy for green skills. The Cedefop Study on Relevant Skills Contains Lessons Learned for a Successful Transition to the Green Econom.
- Ellen Macarthur Foundation, <a href="https://www.ellenmacarthurfoundation.org/">https://www.ellenmacarthurfoundation.org/</a>, The Ellen MacArthur Foundation works business, goverment and academia to build a framework for an economy that is restorative and regenerative by design.
- <u>https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf</u>, Economic and business rationale for an accelerated transition.
- **Eurostat,** <u>https://ec.europa.eu/eurostat</u>, Eurostat is the statistical office of the European Union situated in Luxembourg. Its mission is to provide high quality statistics for Europe.
- <u>https://ec.europa.eu/eurostat/statistics-explained/index.php/Renewable\_energy\_statistics</u>, Renewable energy sources include wind power, solar power.



# <u>Books</u>

• Waste to Wealth,The Circular Economy Advantage, https://books.google.gr/books/about/Waste\_to\_Wealth.html?id=DmKkCgAAQBAJ&pr intsec=frontcover&source=kp\_read\_button&redir\_esc=y#v=onepage&q&f=false, This book examines five new business models that provide circular growth from deploying sustainable resources to the sharing economy before setting out what business leaders need to do to implement the models successfully.

# <u>Websites</u>

- Hellenic Ministry of Environment and Energy, <u>http://www.ypeka.gr/?locale=en-US</u>, The Ministry of the Environment and Energy is a government department of Greece responsible for environmental and energy policy
- **Circle Economy**, <u>https://www.circle-economy.com/</u>, A social enterprise, organised as a cooperative, Circle Economy accelerates the transition to circularity through on the ground, action focused, development of practical and scalable solutions.
- **Forum of Circular Economy,** https://www.circular-economy.gr/, The Forum's online expression can support the development of a network, involving economic and social actors and the scientific community, for the transition to the circular model of production and operation of its society.

# Scientist Journal

- McKinsey Blog, <a href="https://www.mckinsey.com/about-us/new-at-mckinsey-blog">https://www.mckinsey.com/about-us/new-at-mckinsey-blog</a>
- Ecopress, <u>http://ecopress.gr/</u>

# Luxembourg

# **Documents and Reports**

- Digital Luxembourg Innovative Initiatives, Progress Report, Spring 2018, <u>https://digital-luxembourg.public.lu/sites/default/files/2018-</u>06/DL 201804022 PROGRESS%20REPORT 08%20BAT.pdf (Digital Luxembourg keeps innovation moving in the sectors of data regulations, simplifying procedures or triggering conversations)
- OECD
- OECD Economic Surveys Luxembourg Overview, July 2019, <u>https://www.oecd.org/economy/surveys/Luxembourg-2019-OECD-economic-survey-overview.pdf</u> (The Organisation for Economic Co-operation and Development (OECD) is an international organisation that works to build better policies for better lives)





> OECD, Inclusive Entrepreneurship Policies: Country Assessment Notes, Luxembourg 2018, OECD Better Policies for Better Lives, <u>http://www.oecd.org/cfe/smes/LUXEMBOURG-IE-Country-Note-2018.pdf</u>

- Larosse, Jan. Analysis of National Initiatives on Digitizing European Industry-Luxembourg: Digital4Industry <u>https://ec.europa.eu/futurium/en/system/files/ged/lu\_country\_analysis.pdf</u> (The European Commission is committed to supporting beneficiaries in complying with open access requirements in Horizon 2020)
- Eco-innovation Observatory, Eco-Innovation Observatory Country Profile 2016-2017: Luxembourg <u>https://ec.europa.eu/environment/ecoap/sites/ecoap\_stayconnected/files/field/field-</u> country-files/luxembourg\_eio\_country\_profile\_2016-2017.pdf

# <u>Books</u>

 OECD, OECD Economic Surveys: Luxembourg 2017, OECD Publishing Paris, 2017. https://books.google.gr/books?id=zMgtDwAAQBAJ&pg=PA33&lpg=PA33&dq=lowskilled+employees+in+luxembourg+circular+economy&source=bl&ots=sBVm\_FAR0 e&sig=ACfU3U3Gq0eC0OyphlCjmETWAfRtvi2g5g&hl=el&sa=X&ved=2ahUKEwjn45H4 qLIAhXFwqYKHW7FBTkQ6AEwBXoECAkQBA#v=onepage&q&f=false

# <u>Websites</u>

- **Bee creative**, <u>https://www.bee-creative.lu/(BEE CREATIVE</u> is the initiative of the government of Luxembourg which prepares the youth of the Grand-Duché for the challenges of digitalization)
- House of Training, <u>https://www.houseoftraining.lu/training/explore</u> (The House of Training has the mission of proposing professional education in accordance with the Luxembourgish Economy)
- **Digital Four Industry-Luxembourg**, <u>https://digital4industry.lu/</u> (The initiativeD4I is part of the European Platform for co-ordination of initiatives for digitising industry)

# <u>Forum</u>

 Policy Forum on the Future of Work, Employment and Labour Ministerial Meeting, OECD Better Policies for Better Lives, <u>https://www.oecd.org/employment/ministerial/employment-in-figures.htm</u> (The OECD hosted a Ministerial meeting on Labour and Employmenton 14-15 January 2016, and a Policy Forum on the Future of Work)

# Scientist Journal

• Mateusz Lewandowski, Designing the Business Models for Circular Economy—Towards the Conceptual Framework, MDPI, 2016.

<sup>•</sup> European Commission,



https://www.researchgate.net/publication/291171892 Designing the Business Mod els for Circular Economy-Towards the Conceptual Framework

# Netherlands

# **Documents and Reports**

• **Circular Economy,** A social enterprise, organised as a cooperative, Circle Economy accelerates the transition to circularity through on the ground, action focused, development of practical and scalable solutions, <u>https://www.circle-economy.com/the-7-key-elements-of-the-circular-economy</u>

# <u>Websites</u>

- KENNISKAARTEN, <u>https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-</u> <u>circular-economy/what-are-useful-tools-for-organizations-that-want-to-get-started-</u> <u>with-the-circular-economy/</u>
- **MVO Nederland,** is an independent expertise and network organisation on Corporate Social Responsibility founded by the Dutch Ministry of Economic Affairs, <u>https://www.csreurope.org/mvo-nederland</u>

# Scientist Journal

- Holland Circular Hotspot, <u>https://hollandcircularhotspot.nl/wp-</u> content/uploads/2018/06/LR 2033 HCH Magazine 210x297mm COMPLEET.pdf
- PwC Netherland, <a href="https://www.pwc.nl/en/onze-organisatie/corporate-responsibility/our-circular-ambition.html">https://www.pwc.nl/en/onze-organisatie/corporate-responsibility/our-circular-ambition.html</a>

# North Macedonia

# **Documents and Reports**

• **COMMISSION STAFF WORKING DOCUMENT,** North Macedonia 2019 Report Accompanying the document, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions2019 Communication on EU Enlargement Policy. <u>https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20190529-northmacedonia-report.pdf</u>

# **Websites**





• **CIRCULAR ECONOMY INNOVATION TOOLS**, Different Business Models based on Circular Economy, Qualification Programme Handbook, Prepared by DI Siegfried Keplinger, June 2018 <u>http://www.interreg-danube.eu/approved-projects/moveco</u>

# Scientist Journal

- National agenda on corporate social responsibility for the Republic of Macedonia, 2008-2012, Working Group of the national Coordinating Body (Македонски и Англиски јазик), http://www.cbcsr.mk/Upload/Content/Documents/Macedonian-CSR-agenda-2008-2012.pdf
- Social Europe, SOCIAL ENTERPRISES AND THEIR ECOSYSTEMS IN EUROPE, Countryfiche, FORMERYUGOSLAVREPUBLICOFMACEDONIA, KlimentinaIlijevski, Aleksandra Iloska, 2018, <u>https://public.org.mk/wp-content/uploads/2018/12/Socialenterprises-and-their-ecosystems-in-Europe.-Country-fiche.-Former-Yugoslav-Republic-of-Macedonia-1-1.pdf
  </u>
- Republic of Macedonia ECONOMIC REFORM PROGRAMME2018 2020, January 2018 <u>https://www.finance.gov.mk/files/Macedonia\_ERP\_2018.pdf</u>
- A Wider Circle? The Circular Economy in Developing Countries, Felix Preston and Johanna Lehne, Briefing December 2017 Energy, Environment and Resources Department, <u>https://www.chathamhouse.org/sites/default/files/publications/research/2017-12-05-circular-economy-preston-lehne-final.pdf</u>

Spain

# **Documents and Reports**

- Situation and evolution of the circular economy in Spain. The document presents some general information about Circular Economy, Indicators on Circular Economy and its context in Spain regarding resources, water, waste, recycling and actors and good practices identified in Spain, as well as the framework offered by the politics and some recommendations: <u>http://informecotec.es/media/informe-CotecISBN-1.pdf</u>
- Why and how to develop circular economy strategies at regional levels, issued by the Foundation for Circular Economy. The document shows references of regional strategies in Circular Economy, as well as some tools at legal, economic and informative-educative levels. The document also gathers information about the first initiatives put into practice in Spain: http://economiacircular.org/DOCUMENTACION/Publicaciones/Monografias/201703 P or%20qué%20y%20cómo.pdf
- OECD Guide on Business Models for the Circular Economy. Opportunities and Challenges from a Policy Perspective: <a href="https://www.oecd.org/environment/waste/policy-highlights-business-models-for-the-circular-economy.pdf">https://www.oecd.org/environment/waste/policy-highlights-business-models-for- <a href="https://www.oecd.org/environment/waste/policy-highlights-business-models-for-the-circular-economy.pdf">https://www.oecd.org/environment/waste/policy-highlights-business-models-for-<a href="https://www.eib.org/attachments/thematic/circular-economy.guide-en.pdf">https://www.eib.org/attachments/thematic/circular-economy.guide-en.pdf</a>





 Circular Business Models for the building sector (Ellen MacArthur Foundation): <u>https://circulareconomy.europa.eu/platform/sites/default/files/knowledge</u> -<u>circular business-models-for the environment.pdf</u>

# <u>Books</u>

• European Investment Bank Circular Economy Guide: <u>https://circulareconomy.europa.eu/platform/en/knowledge/eib-guide-circular-</u> <u>economy</u>

#### **Websites**

• Initiatives from the European Investment Bank on Circular Economy: <u>https://www.eib.org/en/projects/initiatives/circular-economy/index</u>

### **Scientist Journal**

- Blog site with information about Platforms, Documents, Articles, Legislation, Statistics, Guides, Good Practices, pieces of News, and audiovisual content on Circular Economy: <u>http://headesociedaddelconocimiento.blogspot.com/2018/07/herramientas-de-apoyo-la-economia.html</u>
- European Investment Bank Circular Economy Guide: <u>https://circulareconomy.europa.eu/platform/en/knowledge/eib-guide-circular-</u> <u>economy</u>





# 7.Tools and methodologies for CircEc and SR applications

Tools and methodologies for CircEc and SR applications for all the countries.

# Greece





Source: The circular economy (Ellen MacArthur Foundation 2012)

Such an economy is based on a few simple principles, as shown in the above figure. First, at its core, a circular economy aims to design out waste. Waste does not exist: products are designed and optimized for a cycle of disassembly and reuse. These tight component and product cycles define the circular economy and set it apart from disposal and even recycling, where large amounts of embedded energy and labour are lost. Second, circularity introduces a strict differentiation between consumable and durable components of a product. Unlike today, consumables in the circular economy are largely made of biological ingredients or 'nutrients' that are at least non-toxic and possibly even beneficial, and can safely be returned to the biosphere, either directly or in a cascade of consecutive uses. Durables such as engines or computers, on the other hand, are made of technical nutrients unsuitable for the biosphere, such as metals and most plastics. These are designed from the start for reuse, and products subject to rapid technological advance are designed for upgrade. Third, the energy required to fuel this cycle should be renewable by nature, again to decrease resource dependence and increase systems resilience (to oil shocks, for example).







• The 7R Model



Source: LinkedIn, The 7R Model for a Circular Economy

- 1. Rethink solutions at every system level by exploring alternatives and restating problems.
- 2. Reduce resource use by applying lean design principles and extending product life spans.
- 3. Repair components and parts so that products can be used longer by one and the same user.
- 4. Reuse products by transferring them in their original (or modified) form to another user.
- 5. Refurbish products by replacing malfunctioning components and parts by new ones.
- 6. Recycle materials or resources by disassembling components and separating parts.
- 7. Recover embedded energy from non-recyclable waste material where feasible.

The 7R model is the basic principle underlying all circular economy theory. The biggest effort is focused on reusing products and waste so that resources do not fall dramatically. The circular economy transcends economic fragmentation and transcends it into sectors for the benefit of a holistic view of the product life cycle.

#### • The Swot Analysis for Greece

The University of Thessaly team developed a SWOT analysis, which is a methodological tool for recording the current situation, for the factors affecting the circular economy in Greece:







The conclusion is that the circular economy in Greece can fuel a qualitative leap in the economy, which will be a developmental transformation. It creates new jobs, fosters small and medium-sized entrepreneurship, new jobs and the social economy, which is still very low in Greece.

#### Business Model Canvas

The business model canvas is helping to create a new dynamic, creative and functional approach.

Partners	Activities	Value Proposition	Customer Relations	Customer
Cooperative networks Types of collaboration	<ul> <li>Optimising performance</li> <li>Product Design</li> <li>Lobbying</li> <li>Remanufacturing, recycling</li> <li>Technology exchange</li> </ul> Key Resources <ul> <li>Better-performing materials</li> <li>Regeneration and restoring of natural capital</li> <li>Virmalization of materials</li> <li>Retrieved Resources (products, components, unterplace)</li> </ul>	<ul> <li>PSS</li> <li>Circular Product</li> <li>Virtual service</li> <li>Incentives for customers in Take-Back</li> <li>System</li> </ul>	<ul> <li>Produce on order</li> <li>Customer vote (design)</li> <li>Social-marketing strategies and relationships with community partners in Recycling 2.0</li> <li>Channels</li> <li>Virtualization</li> <li>Take-Back System</li> <li>Take-back management</li> <li>Channels</li> <li>Customer relations</li> </ul>	Segments • Customer types
Cost Structure Evaluation or Value of ince Guidelines to	iteria ntives for customers account the costs of material flow	Revenue St Input Avail Usage Perfo Value	freams -based ability-based e-based mnance-based of retrieved resources	
Adoption Factors Organiz PEST fi	ational capabilities	1		







- Value Propositions: Cyclical products allow extending the product life cycle through the 7R model. This, however, requires a modular design and selection of materials that allow for scaling, re-use, reconstruction, recycling or safe disposal. In addition, product design should allow for the use of less raw materials or energy or minimize emissions.
- Channels: One of the strongest shifts towards a circular business model regarding channels is virtualization. Another possibility is to communicate virtually with the customer(e.g., using web advertisements, e-mails, websites, social media)
- Costumers Relationship: Building and maintaining relationships with customers can underlie the main principle of the circular economy. This relationship encompasses producing on order, and engaging customers to vote for which product to make. Additionally, can be enhanced the social-marketing strategies and leverage relationships with community partners.
- Revenue Streams: Revenue streams depend on the value proposition. Moreover, revenue streams may be related to retrieved value, generated from products, components and/or raw materials collected back. Despite how low or high the value, it must be sufficient to make the material loops economically reasonable. Retrieved value may also be related to energy captured from waste disposal.
- Key Resources: The assets required to create, offer and deliver value propositions via chosen channels, to build and maintain relationships and to receive revenue flows, correspond with the principles guiding the circular economy in two major ways. One is focused on input choices and the second on regenerating and restoring the natural capital. Another way to achieve this is direct substitution of resources with better-performing materials, which are less harmful to the environment, more feasible to use and have the same or better technical requirements. Natural capital regeneration and restoring concerns using energy from renewable sources, land restoration or reclamation, saving water, operating in more efficient buildings, and choosing sustainable production locations like eco-parks
- Key Activities: The key activities which directly or indirectly lead to creating, offering and delivering the value propositions, may apply the circular economy principles in several ways. Some are oriented on increasing performance, product design, technology exchange, and the other on remanufacturing, recycling or even lobbying. Increasing performance can be obtained through good housekeeping, better process control, equipment modification and technology changes, sharing and virtualization. Appropriate product design enables using less raw material or energy, to reduce emissions and toxic materials, prolonging product life, eliminating waste before resource-life extension, and to circulate the product, components and materials in a 100% closed material loop.
- Key Partnerships: Cooperative networks allow businesses to receive advantages from supplies, and support a company in research, product design, marketing, office support, supply routes, financial functions, production processes, and management. Thus, collaboration enhances obtaining key resources and performing key activities. For instance, off-site recycling is done by other parties that recycle the industrial wastes at the post-consumer stage or recycle the specific wastes, which then are sold to other industries.
- ✤ Cost Structure: Cost structure is usually mentioned when the implications and potential benefits of circular economy are described. Whenever a company decides to





change the cost structure it might require further organizational changes, such as for materials, energy consumption, staff behavior etc., and in turn elicit more circular changes to the business model. This process could start with the analysis of the cost structure.

# Luxembourg

Key mechanisms shaping the role of products in a linear and in a circular • economy

Linear system mechanisms	Circular system mechanisms	
Business perspective		
Product as value creation source	<i>Functionality/performance as a source of value creation</i>	
Profit margins are based on the difference betweenthe market price of a product and the production cost. The strategy for increasing profits is to sell more products and keep production costs as low as possible. Technologicalinnovation makes old products obsolete and urges consumersto buy new products. Protection of intellectual property rights, a main source of value, leads to protective design measures, such as creating barriers to repairing a product, rather than sharing product technical information and repair manuals.	Products are part of an integrated business modelfocusing on the delivery of a performance or functionalservice. Competition is mainly based on the creation of addedservice value of a product, not solely on its sales value. Social/business model innovation allows the creation of extra valueby applying technological innovation to solving societalneeds. As products are part of a company's assets, costminimisation drives product longevity, reuse, reparability andremanufacturing.	
<i>Economies of scale in global production chains</i>	<i>Location of production and use tend</i> <i>to be more linked</i>	
	As the provision of a service is physically linked tothe location of the	





Cost efficiency drives the optimisation of globalproduction chains, minimising the costs of resources, labour and transport.	customer, there is an incentive to produce/manage physical products used in a service close tothe user.
Steer consumer needs towards product offer	<i>User needs/wants drive the role of a product</i>
	Offering the best service means matching the(intangible) needs of the user with a combination of services and products.
Products with short lifespans are preferred	
as theyare cheaper to make and support a	
market for new productsthat replace old	
ones. Maintenance and repair are avoided,	
as it is more profitable to sell new products	
than to repair oldones.	
Tendency to disregard end-of-life phase	Internal incentive to incorporate end-
	or-life phase indusiness model
There is no economic incentive for product lifeextension, reuse or remanufacturing as they counteract mostlinear business models.	As products are assets, minimising life-cycle costs is animplicit incentive for a company, inducing a search for the best economic equilibrium between reusing, repairing, remanufacturing and recycling products.
Consumer perspective	
User needs/wants drive the role of a	User needs/wants drive the role of a
product	product
Consumers want new products that keep pace withfashion and technological	In a service relationship with a company, the customerexperience feeds back more strongly to the service







advances. Consumers mustmatch their needs with the product offerings available.	provider, raising consumers' awareness of their actual needs.In other cases consumers become prosumers who co-createor co- produce the products and services they need.
International opportunities for cost	Local-first attitude
Consumers seek the cheapest version of a product oninternational markets, enabled by e-commerce.	Accessibility to the service provider is part of theservice experience, which leads to proximity as acustomer choice criterion.
Ownership is the norm	Accessibility is the norm
Owning a product is regarded as the normal way tofulfil needs. Over time, previously luxury products becomecommodity goods due to decreasing production costs. Beyond legal warranty, product repair is considered too expensivecompared with buying a new product. Do-it-yourself repairis considered too difficult due to complex and protective product design.	Fulfilling needs is driven first and foremost byaccessibility of a product and the satisfaction provided by its use. Different consumer segments can access productsof their choice through customised services or by sharingproducts, for instance in peer- to-peer networks. Serviceagreements provide an incentive for product care for theproducer and the user, depending on the agreement.

The following principles are identical for categorizing some of the main business models in a circular economy. In other words, the criteria that we use for conceptualizing the adaptability of a business product into the recycling phases are based upon:

- regeneration,
- ➤ share,
- > optimization,
- ➢ loop,
- virtualization





and exchange

If we take a closer look at the process of generating a new business model, we will have to focus on its sustainability aspects. The graphic below represents the idea behind every step of the process:



The **Canvas Model** focuses on the identification and classification of the product service systems' characteristics. As a design tool for a circular business model, it is especially known for its eco-innovation application.Looking at the infrastructure management of each business model, from the partners and the resources to the activities involved, there are some contextual factors which serve as enablers for a business model to operate in practice.









Apart from the Canvas model, we can identify other three models concerning the use of circular economy tools:

- The Co-creation of products and services model which offers end-users the design and the manufacturing phases by identifying consumer preferences<sup>6</sup>. Big-data online mining product reviews and evaluating product specifications and prototypes via Living Lab to customize the end-user requirements. In this way, sets of sustainable production methods will be implemented and new products and services will be createdfrom the co-creation features.
- 2. The Sustainable Consumption model, which develops a method to calculate the eco-points of products based on the outcome of myEcoCost project and assesses product environment footprints (PEF). It also provides a traceability solution to monitor product's sustainability along the value chain, and supports end-users and stakeholders to actively implement the circular economy via awareness raising and knowledge sharing activities.

# Netherland







Source: <u>https://medium.com/@sudarhtc/agile-project-management-methodology-manifesto-frameworks-and-process-f4c332ddb779</u>

#### Design thinking



Source: <u>https://productcoalition.com/design-thinking-isnt-just-for-your-product-development-team-e8e25f713643</u>

• Team Canvas



Source: Team canvas



#### • Innovation Journey



**Source:** <u>https://blogs.flinders.edu.au/nutrition/2018/10/19/nutrition-dietetics-innovation-journey-weve-learnt-far/fund-innovation-journey/</u>

#### • Value Network



Source: https://www.edrawsoft.com/template-value-network-business-model.php? c=1







Source: https://www.pinterest.it/pin/21181060732761271/

#### **Vision Canvas** .



Source: Brucey, "5 Bolds Steps Vision Canvas"

**Opportunity Canvas** •







Users & Customers	Problems	Solution ideas	How will users use your solution?	User Metrics
2	Solutions Today	1	Adoption Strategy	6
Business Challenges	1	Budget	Business Benefits and	d Metrics
4	-	9	(	5

Source: <u>https://www.entrepreneurshipsecret.com/agile-opportunity-canvas/</u>

#### • Design Criteria Canvas

MUST Must-haves and non-negotiables
SHOULD Should-haves and important features
COULD Could-haves and optional features
WON'T Won't haves - things that are definitely not on the table. Also non-negotiables.

Source: https://www.designabetterbusiness.tools/tools/design-criteria-canvas





#### • Value proposición Canvas



Source: https://www.slideshare.net/cristpar/value-proposition-canvas-53449926

- Systemic approach with LEGO
- Innovation Wall
- Partnership Canvas



Source: https://valuechaingeneration.com/2014/10/17/the-partnership-canvas/

#### • Assumptions Matrix







Source: https://toolkit.highlinebeta.io/assumption-matrix

#### Road map



Source: https://gr.pinterest.com/pin/648940627539963942/?lp=true

Cost benefit analysis







Source: https://www.researchgate.net/figure/Cost-benefit-analysis-scale\_fig3\_291696984



# North Macedonia

#### • Product life extension

Through remanufacturing, repairing, upgrading or remarketing material, that otherwise would be eliminated from the life circle, is maintained or even improved. By extending the lifespan of the product for as long as senseful (not as long as possible!), companies can keep material out of the landfill and discover new sources of revenue. Depending on the customer's needs, bearing in mind market and regulatory bodies' view points, a specification has to be developed where the product's major technical parameters and its main functional aspects are defined. In the detailed design phase, the development of the product is predeterminated, materials and modularity are defined, life span of the final product is fixed.

#### Resource recovery

Resource recovery creates products of value using wastes as an input material. The key feature of resource recovery is to reduce the amount of waste generated and extract the maximum additional benefit from retired products. Resource recovery minimises the need of new raw materials in the manufacturing process.

#### • Circular supplies

The business model of circular supplies solves the problems of scarce commodities. Companies facing scarce resources will replace these with fully renewable, recyclable or biodegradable resource inputs to ensure their availability to future generations.

#### • Product as a service





The business model product as a service changes this approach to a new concept where the buyer no longer owns a physical thing, instead the product is delivered as a service. The customer subscribes to the service and pays a recurring fee for using the product in case he needs it.

Product as a service allow producers to create a long-term relationship fostering recurring revenue. For companies which are able to develop a service mentality, this leads to a differentiated position in the market.

If a product is moved to a product as a service also a new business opportunity can be utilized: Pooling of own and external services. In case of the leasing of a car very often 3rd party insurance and roadside assistance are added.

#### • Sharing platform

The business model sharing platform is focused on sharing a product that has a low ownership or use rate. Low use rate means that the time over which products or service lay idle is wasted value. This idle time can be reduced if groups of users or organizations use a business model based on sharing to better utilize a product or service. The classic example are cars. They stay unused 90% of the time. This significant resource can be used by car sharing platforms, an opportunity for new economic solutions.

#### • The ResCoM platform and tools

The ResCoM platform brings together software applications and descriptive (i.e. non-software) tools and methods in one place to support decision-making and implementation of closed-loop product systems.





# Spain

• Toolkit



#### Source: <a href="http://circulareconomytoolkit.org/">http://circulareconomytoolkit.org/</a>

The Circular Economy Toolkit has consolidated all the opportunities and provided information on how your company could start finding benefits. Read through the toolkit, complete the 5-minute opportunity assessment tool and run your own workshop to start creating more valuable and sustainable products and services.

#### • Toolkit for policymakers

Set of tools addressed to governments "Toolkit for policymakers" from the Ellen MacArthur Foundation. The kit identifies eight key ideas, options to take, opportunities and barriers, and it demonstrates how these tools can be applied in a pilot study carried out in Denmark.

#### Industrial ecology









Source: <u>https://hazwastehelp.net/BHW/industrial-ecology.aspx</u>









Sharing economy



#### SHARING ECONOMY BUSINESS MODEL

Figure 1: The Sharing Economy business model; Source: Business Model Toolbox

Source:

https://• sharing economygr.pinterest.com/pin/318207529921700206/?lp=true

- **FTSE4good IBEX** •
- Merco (corporate social responsibility ranking -Monitor Empresarial de Reputación . Corporativa in Spanish)





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# **1. Appendix**