



## Circular Economy strategy FRAMEwork for sustainable SMEs

### IO1: Circular Economy Self-Rate Tool (CE S-R Tool)

#### Disclaimer:

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## Introduction

Reframe - “Circular Economy strategy FRAMEwork for sustainable SMEs” is an Erasmus+ Project under:

- KA2 - Cooperation for innovation and the exchange of good practices
- KA202 - Strategic Partnerships for vocational education and training

The REFRAME project will create a CE Transition Framework specifically for small and medium businesses in construction, manufacturing and crafts industry, to help them become friendlier to the environment. It will provide the EU construction & manufacturing SMEs and micro-enterprises’ employees and future employees with practical knowledge on implementing CE transition in their business. A ‘sizable, growing and active’ REFRAME online community will be created, with main objective the Up-to-date insight in Circular Economy, the exchange of know-how and good practices among the participants and the successful implementation of a CE transition for all SMEs and micro-enterprises.

The first IO aims to develop an online Self-Rate Tool (CE S-R Tool): “the S-R Tool will be an interactive, user-friendly, self-rating tool aimed at representatives and experts working in manufacturing, craft and construction SMEs and micro-enterprises. It will be a helpful tool for those users to recognise their strengths, their weaknesses and the areas they may need a greater focus on. It will be presented on an interactive and user-friendly online tool, which will be part of the REFRAME iLearn Tool (IO4)”. The innovation is that, through this tool, each manufacturing, crafts and construction SMEs and micro-enterprises’ representative will have the chance to measure their company’s current Circularity Degree and be redirected to what actions shall be taken and what theory and practice should be studied and followed (IO2 and IO3) to get closer to the circular economy principles. That means that Circular principles, methodologies, good practices and success stories will be identified, evaluated and used to establish a set of requirements to be created against which each representative will be able to measure its Circular performance.

The first task of this IO is this desk research, conducted by all partners, aiming to identify **which circular economy principles and criteria should be applied to the project target groups to create a Circularity index and a Circularity Ranking System** - the core component of the S-R tool. The main criteria that should be included in the tool are:

- i. Use fewer primary resources and energy;
- ii. Maintenance of the highest value of materials and products;
- iii. Change of utilisation patterns.

This document is the result of this desk research.

## Approach

A Guideline for desk research was produced, aiming to lead REFRAME partners to conduct desk research for circular economy and circular economy Principles, by having the same orientations, clear concepts, aims and objectives. Partners went through the guideline and suggested readings. Desk research for **1) National circular economy strategies, plans and measures**, **2) CE SWOT Analysis on Construction, Manufacturing and Crafts sectors**, and a collection of **3) Good practices** under these sectors; will support the application of these concepts in real cases and prepare the IO1/A2 - “Benchmark analysis of comparable Self-Diagnostic or Self-Assessment existing tools”.

## Suggested Glossaries

- ✓ The International Resource Panel (IRP) at <https://www.resourcepanel.org/glossary>
- ✓ Ellen MacArthur Foundation- Circulytics – Definitions List at <https://www.ellenmacarthurfoundation.org/assets/downloads/Circulytics-definitions-list.pdf>

## 1. Circular economy strategies, plans and measures

The transition to the circular economy requires the adoption of new measures and actions focusing on the efficient use of natural resources, so that the life span extends throughout the cycle of the economy, i.e. for the economy at every stage of the product chain, from raw material extraction, planning, from the production to waste consumption and management.

The European Commission has adopted a [new Circular Economy action Plan](#) - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. The new Action Plan (11.03.2020) announces initiatives along the entire life cycle of products, targeting, for example, their design, promoting processes aligned with circular economy, fostering sustainable consumption and aiming to ensure that the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value.

This document presents measures to:

- ✓ Make sustainable products the norm in the EU;
- ✓ Empower consumers and public buyers;
- ✓ Focus on the sectors that use most resources and where the potential for circularity is high such as electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- ✓ Ensure less waste;
- ✓ Make circularity work for people, regions and cities,
- ✓ Lead global efforts on the circular economy.

As part of chapter 2 of this Action Plan, entitled, “Sustainable Product Policy Framework”, and through complementary legislative proposals, the Commission establishes sustainability principles and other ways to regulate the following aspects:

- ✓ improving product durability, reusability, upgradability and reparability, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency;
- ✓ increasing recycled content in products, while ensuring their performance and safety;
- ✓ enabling remanufacturing and high-quality recycling;
- ✓ reducing carbon and environmental footprints;
- ✓ restricting single-use and countering premature obsolescence;
- ✓ introducing a ban on the destruction of unsold durable goods;

- ✓ incentivising product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle;
- ✓ mobilising the potential of digitalisation of product information, including solutions such as digital passports, tagging and watermarks;
- ✓ rewarding products based on their different sustainability performance, including by linking high-performance levels to incentives.

Some of the general circular economy advantages are:

- strengthens the competitiveness of the economy and creates jobs,
- protects businesses from resource scarcity and price volatility, and contributes to the creation of new business opportunities,
- supports innovative and more efficient ways of production and consumption,
- contribute to saving energy and resources, and
- strengthens efforts to achieve sustainable development.

### 1.1 National circular economy strategies, plans and measures

Each partner conducted a **desk research on their National circular economy strategies, policies, plans and measures**, to be aware of what national indicators/objectives, should be comprised in this domain.

#### Greece

Greece has issued and adopted a National Strategy for circular economy in December 2018 as a key driver of the country's reconstruction of production.

The National Strategy for circular economy is designed to feed qualitatively the Greek economy to lead to transformation growth. A considerable advantage of the strategy is the decentralization of processing created by reuse and recycling, while it is compatible and friendly to the Greek productive fabric characterized by small business size.

The purpose of the National Strategy is to accelerate the actions of the circular economy and the release of Ogrowth potential. It also creates multiple economic, environmental and social benefits and should be adopted as a public policy.

The main pillars of the Greek circular economy Strategy are as follows:



- 1. Sustainable management of resources** with the main objectives of increasing their efficiency, re-examining value chains, rational waste management, reusing buildings and reusing water or collecting rainwater and spring water.
- 2. Strengthening of Circular Entrepreneurship** by encouraging the idea of eco-design, the production of long-lasting products, the repair, renovation, reuse, restoration, promotion of industrial coexistence (clusters, innovation parks, business incubators, knowledge-exchange platforms), model (entrepreneurship e.g. sharing economy), support for the biological economy, promotion of green and cyclical public procurement, support for the use of secondary materials.
- 3. Circular consumption** by providing full awareness to the citizens, utilizing of Eco-label and other incentives, preventing of excessive use of resources (food-beverages, clothing, packaging), preventing of production waste through preparation for reuse, repair and servicing, control of retail e-commerce and finally by promoting the utilization services instead of product supply.

In the framework of these pillars, the main long-term goals in Greece (through 2030) are:

- 1. Integration of eco-design** criteria and product life cycle analysis, avoiding the introduction of hazardous substances in their production and facilitating repairability and life extension. The use of non-hazardous substances also improves the quality of waste during the production process, reducing the impact on the environment.
- 2. Effective implementation of the waste management** hierarchy, promoting the prevention of waste generation and encouraging reuse and recycling.
- 3. Creation and promotion of Guides** for improving energy efficiency in production processes.
- 4. Promoting innovative forms of consumption**, such as the utilization services instead of the purchase of products.
- 5. Promoting a rational consumption model**, based on the transparency of information on the characteristics of goods and services, their lifespan and their energy efficiency.
- 6. Facilitation and creation of appropriate channels** for the exchange of information and coordination between administrations, the scientific community and other economic and social actors, to create synergies compatible with the transition to the circular economy model.
- 7. Promoting the importance of the transition from the linear to the circular economy**, promoting transparency in processes, developing training and raising public awareness.
- 8. Development of transparent and feasible indicators** for monitoring the implementation of the transition.

All goals and objectives will be achieved with an action plan that includes the following fields:

- a) Regulations and legislations to strengthen the circular economy and remove bureaucratic obstacles
- b) Financing and economic incentives
- c) Improving knowledge, its management and exchange processes and its connection with production, economy and society
- d) Strengthen the governance of the circular economy and networking

### **Action 1.8: Indicators of circular economy**

Resource productivity, energy demand, reduction of carbon dioxide emissions, are indicators of high importance internationally. On the other hand, the limited availability of objective indicators for measuring the cyclicity of enterprises prevents the development and/or shifting of profits from/to the part of the activities that promote the circular economy. For this reason, it is proposed to investigate the identification of cyclical economy indicators and their correlation with business activities and the utilization of the National Documentation Center.

## **Cyprus**

**The national circular economy package includes:**

- the circular economy Action Plan, and
- 4 legislations proposals to amend the following six directives: Waste, Packaging, Sanitary Burial of Waste, Old Vehicles retirement, Batteries and Accumulators, Electrical and Electronic Equipment Waste.

### **National Action Plan for the circular economy**

The Action Plan includes commitments to

- eco-design,
- developing strategic approaches to plastics and chemicals products,
- funding of innovative projects under the EU Horizon 2020 research programme,
- actions in areas such as plastics and food waste, construction, critical raw materials, industrial waste and mining waste, and

- horizontal support measures in innovative investments.

The proposed actions support the circular economy at every step of the value chain from production to consumption, repair and reconstruction, waste management and secondary raw materials reintroduced into the economy.

## **PRODUCTION STANDARDS: PRODUCT DESIGN**

The aim is to create incentives to improve the design of products to improve their durability, their repairability, upgrading or reconstruction, disassembly and final waste management.

## **CONSULTATION STANDARDS**

Consumer choices can support or delay the circular economy. These options are based on information and eco-labelling, product availability and prices, and the regulatory framework.

## **WASTE MANAGEMENT**

Waste management plays a central role in the circular economy: it sets out how to practically apply the waste hierarchy.

### **Waste Management: Legislation Proposals**

The new proposed quantitative targets for waste in the legislative proposals are:

#### **1. For Municipal Waste**

<b>Nonorganic waste</b>	<b>Organic waste</b>
<ul style="list-style-type: none"> <li>• Recycling of total municipal waste</li> <li>• By 2025 - 55% by weight</li> <li>• By 2030 - 60% by weight</li> </ul>	<ul style="list-style-type: none"> <li>• By 2025 - 50% by weight</li> <li>• By 2030 - 65% by weight</li> </ul>

#### **2. For Waste landfill**

- By 2030 limit waste landfill to 10% for municipal waste produced

#### **3. For packaging and packaging waste until 31/12/ 2025**

- 65% preparation for reuse and recycling

## **WASTE CONVERSION TO RESOURCES**

In a circular economy, reusable materials are reintroduced into the economy as 'secondary raw materials'. In respect of encouraging the use of secondary raw materials, the Action Plan promotes the following measures:

- start working on the development of quality standards for secondary raw materials, particularly plastics,

- review of the fertiliser legislation to facilitate the recognition of organic and waste-based fertilisers and to support the role of biological nutrients in the circular economy,
- facilitate the reuse of water, including a legislative proposal on minimum requirements for the reuse of water for irrigation and replenishment of the groundwater,
- check the possibilities for cross-linking legislation on chemicals, products, and waste, with the ways of reducing the presence of hazardous chemicals in products and improve their monitoring of products,
- improve the raw material information system so to support research for the flows of raw material.

## **PRIORITY SECTIONS**

The priority sections for the circular economy are:

1. Plastics
2. Constructions and Demolitions
3. Food Wasting
4. Critical Raw Materials
5. Biomass and Products of Biological Origin

## **Bulgaria**

Currently, Bulgaria does not have an already developed CE national strategy. The following information is extracted and summarized from the National programme for development Bulgaria 2030. The document defines three strategic goals, for the implementation of which it groups the government's intentions in five areas (axes) of development and raises 13 national priorities.

Vision: in 2030 Bulgaria is a country with a high standard of living and a competitive, low-carbon economy.

The second of the five axes is called Green and Sustainable Bulgaria. The main focus of this axis of development is the sustainable management of natural resources, allowing to meet the current needs of the economy and society while maintaining environmental sustainability so that these needs can continue to be met in the long run.

Within this axis, the government sets three national priorities:

P4 - Circular and low carbon economy

P5 – Clean air and biodiversity

P6 – Sustainable agriculture

**Sustainable development goals: 2, 3, 7, 8, 11, 12, 13, 14, and 15**

The main goal of Priority 4 will be to increase resource and in particular energy - productivity, following the principles of the circular economy and stimulating the introduction of low-carbon, resource-efficient and waste-free technologies. The focus will be on the transition from landfill to prevention, reuse, recycling and recovery of most of the generated waste in industrial processes and households. Their rational and responsible use will be a key prerequisite for improving the environment and achieving sustainable economic growth. The implementation of the priority will contribute to the achievement of Goal 7 "Ensuring access to affordable, reliable, sustainable and modern energy for all", Goal 8 "Stimulating sustainable, inclusive and sustainable economic growth, full and productive employment and decent work for all" and Goal 12 "Ensuring sustainable consumption and production patterns" of the UN Sustainable Development Goals.

The government's policy will be to reduce the resource intensity of the economy at a faster pace than the EU member states. Since Bulgaria's economy is the most resource-intensive within the EU, the focus will be on transforming the country's linear economy into a circular one. Actions will be taken to increase the rate of circular (secondary) use of materials in the economy. To achieve better results, the introduction of low-carbon, resource-efficient and waste-free technologies will be implemented. The implementation of eco-innovation activities, including new environmental products and technologies, will play an important role in supporting businesses. At the same time, efforts will be made to create new jobs in the green and blue economy. Low resource efficiency will also be addressed through actions to reduce the amount of waste generated in the production process, including the implementation of projects under public procurement and concessions.

Measures will be taken to improve energy savings in production, market incentives will be introduced to reduce energy consumption by businesses, the reduction of energy intensity in households will continue to be encouraged.

Given the challenges arising from climate change, as well as the need to reduce the country's dependence on energy imports, the growth of the share of energy from renewable sources will be encouraged.

The share of composted bio-waste and recycled municipal, industrial and construction waste will be increased in waste management at the expense of their incineration and disposal. Financial incentives will be provided to support the separate collection of waste, as well as the use of recycled raw materials.

## INDICATORS CIRCULAR AND LOW-CARBON ECONOMY

Indicator	Source	Current value	Target value	Average level in the EU
Renewable energy in gross final energy consumption, %	Eurostat	18.7 (2017)	27.0	17.5 (2017)
Recycling of household waste, %	Eurostat	36.0	55.0	47.0
Change in greenhouse gas levels outside the EU ETS compared to 2005, %	Eurostat	3.1	0.0	- 10.2

## Portugal

In 2017, the [Circular Economy Action Plan \(PAEC\)](#) was published in Portugal. This is a strategic model for growth and investment based on the efficiency and valorisation of resources and the minimization of environmental impacts. This is a document summarises Portugal's international commitments, such as the Paris Agreement, the Sustainable Development Goals and the European Union itself, since is aligned with the EU Circular Economy Action Plan.

The Plan presents three levels of actions to be introduced and worked until the end of 2020:

- Cross-cutting, national actions that consolidate some of the actions of various government areas for CE transition;
- Sectoral agendas, especially for more resource-intensive and export-oriented sectors;
- Regional agendas, which must be adapted to the socio-economic specificities of each region.

In the PAEC, was defined as a set of 10 indicators that substantiate the 10 national objectives of this domain, but there is still no systematic practice in Portugal to assess the country's transition process. The range of national indicators turns out to be more comprehensive than the European framework, as it considers indicators related to energy and water consumption.

Despite the lack of an integrated model for measuring CE in Portugal, there is an inventory of indicators related to environmental performance that are fed and updated annually by the two most relevant statistical entities in the area, the National Statistics Institute, which compiles 127 organized indicators according to 7 themes in the annual publication "Statistics of the Environment in Portugal", and the Portuguese Environment Agency, in the "Report on the State of the Environment" (REA), where it analyses 28 indicators distributed across 8 themes. The 2018 edition of REA includes an infographic dedicated

to EC, but either publication is sparse in references to EC principles or these references are non-existent.

Other publications will be useful for the construction of circular economy indicators in Portugal, such as the Water Services Regulatory Authority's Guide (ERSAR), the Water and Waste Services Quality Assessment System provided to users or PERSU 2020+.

Assessing progress towards the circular economy is at the heart of many issues recently raised by researchers, entrepreneurs, activists and policymakers. This is because, currently, there is still no robust and consensual way of measuring how effective economies, regions or even companies are in terms of circularity.

## Hungary<sup>1</sup>

Hungary has already started to prepare a national circular economy action plan. The key challenges:

- ✓ the lack of institutional coordination,
- ✓ the lack of dedicated funding.

Hungary's fourth (2015-2020) national environmental programme is a strategic six-year plan for environmental and nature protection. It encompasses several different strategies and could therefore be a good starting point for the transition towards a circular economy. This programme identifies resource efficiency as a priority.

In spring 2018, the Ministry of Agriculture's Department for Environmental Development and Strategy submitted the proposal to prepare a circular economy action plan and an inter-ministerial expert group was set up to this end. Since mid-2018, the circular economy-related questions belong to the Ministry for Innovation and Technology.

The national strategy on research and innovation (NKIS, 2011) lists the need to 'green' the tax system, to encourage green public procurement and to streamline the support schemes covered by its economic instruments. However, these are still being developed.

The national environmental technology innovation strategy (2011-2020), which includes 17 targets for sustainable resource management for 2020, shows how efforts are being made to include resource efficiency and circular economy considerations into some sectoral policies. The green economy development programme prioritises:

- ✓ green energy,
- ✓ energy efficiency,

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<sup>1</sup> **Useful links:**

[The Environmental Implementation Review 2019 COUNTRY REPORT HUNGARY](#)

[Guidelines to a sustainable future - How can Hungary contribute to the achievement of the sustainable development goals?](#)

- ✓ green education,
- ✓ employment, and
- ✓ green research and innovation.

Environmental technology innovation is important for achieving the national climate change strategy 2008-2025 (NCCS) goals. In 2015, the national research and innovation office published a call for proposals for Hungarian SMEs wishing to receive innovation and R&D services under an **innovation voucher scheme** to increase their innovation activities.

The National Framework Strategy on Sustainable Development was adopted by the Parliament in March 2013, it defines these strategic objectives and tasks and determines **the roadmap for the transition to sustainability** at a national and global level. The Framework Strategy defines 34 strategic objectives and 77 tasks until 2024, which are divided into 12 groups, one of them is a circular economy.

In 2020 the Ministry of Innovation and Technology has announced a **new national waste management strategy** under preparation based on the principles of the circular economy. The new strategy will reshape the waste management based on a linear economic methodology; the liability rules that characterize the design phase of products will be changed.

Priority actions for the circular economy suggested by the Environmental Implementation Review of Hungary (2019):

- **Strengthen the policy framework** to speed up the uptake of the circular economy by all economic sectors, especially concerning water and energy savings, waste reduction, the recycling of materials, eco-design and/or the uptake of secondary raw materials market; raise awareness within the general public and private sector on circular economy principles and products.
- **Adopt circular economy principles** incentivising resource efficiency measures and increasing recycling and the use of eco-design in the SME sector, promoting green jobs, eco-innovation performance and investments in green products and services.

## 2. Circular Economy Principles and Indicators

Although circular economy is considered to be a political priority in the European Union, it still does not have a 100% information system dedicated to measuring the progress of the transition process. In the short term, it was considered that this need could be met by two sets of existing indicators: the [Resource Efficiency Scoreboard](#) – which illustrates the progress towards increased resource efficiency of the individual Member States and the European Union as a whole - and the [Raw Materials Scoreboard](#) - which includes, for example, the value of the trade-in secondary raw materials.



However, in 2018, in the transition to a more circular economy, the European Commission took on the importance of monitoring the key trends and circular economy patterns to understand how the various elements of the circular economy are developing over time, to help identify success factors in the Member States and to assess whether sufficient action has been taken. From the 2018 European Commission communication came the presentation of a [Circular Economy Monitoring Framework](#) composed of 10 groups of indicators that aim to measure four domains:



**(i) production and consumption;**

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



**(ii) waste management;**

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



**(iii) secondary raw materials;**

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



**(iv) competitiveness and innovation.**

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

Source: [Eurostat-Circular Economy Indicators](#)

## CIRCULAR ECONOMY MONITORING FRAMEWORK

**1/ EU SELF-SUFFICIENCY FOR RAW MATERIALS**

The share of a selection of key materials (including critical raw materials) used in the EU that are produced within the EU

**2/ GREEN PUBLIC PROCUREMENT**

The share of major public procurements in the EU that include environmental requirements

**3 A-C/ WASTE GENERATION**

Generation of municipal waste per capita; total waste generation (excluding major mineral waste) per GDP unit and in relation to domestic material consumption

**4/ FOOD WASTE**

Amount of food waste generated

**7A-B/ CONTRIBUTION OF RECYCLED MATERIALS TO RAW MATERIALS DEMAND**

Secondary raw materials' share of overall materials demand – for specific materials and for the whole economy

**8/ TRADE IN RECYCLABLE RAW MATERIALS**

Imports and exports of selected recyclable raw materials

**5A-B/ OVERALL RECYCLING RATES**

Recycling rate of municipal waste and of all waste except major mineral waste

**6A-F/ RECYCLING RATES FOR SPECIFIC WASTE STREAMS**

Recycling rate of overall packaging waste, plastic packaging, wood packaging, waste electrical and electronic equipment, recycled biowaste per capita and recovery rate of construction and demolition waste

**9A-C/ PRIVATE INVESTMENTS, JOBS AND GROSS VALUE ADDED**  
Private investments, number of persons employed and gross value added in the circular economy sectors

**10/ PATENTS**  
Number of patents related to waste management and recycling

Figure 1. The CE monitoring framework - Source: [European Union, 2018](#)

Most of the indicators were already reported by the Member States and are available on the [Eurostat website](#).

### 3. REFRAME sectors

REFRAME partners will take into consideration the different needs of end-users who are interested in assessing their knowledge about circular economy (CE) issues and those who want to assess the CE-related performance of their enterprises, on the construction, crafts or manufacturing sectors. Nevertheless, the manufacturing sector is by far the largest and most diverse sector. Partners discussed that, hence, a tool developed to satisfy all the NACE Rev. 2 two-digit level manufacturing industries may be too generic and, thus, of not much use to the end-users. For a scientific approach and comparability performance, we list the Detailed Structure of NACE Rev. 2, for the above-mentioned sectors.

*Reliable and comparable international statistics can be produced and made available to business, financial institutions, governments and all other operators in the international market only if based on common statistical standards. NACE is the “statistical classification of economic activities in the European Community” and is the subject of legislation at the European Union level, which imposes the use of the classification uniformly within all the Member States. It is a basic element of the international integrated system of economic classifications, which is based on classifications of the UN Statistical Commission (UNSTAT), Eurostat as well as national classifications; all of them*

*strongly related each to the others, allowing the comparability of economic statistics produced worldwide by different institutions.*<sup>2</sup>

Follows the Detailed Structure of NACE Rev.2 by Division and Sector.

For detailed list please consult [NACE REV2 - Statistical classification of economic activities in the European Community](#), page 61 to 92.

### Manufacture & Crafts:

#### DIVISION SECTION C — MANUFACTURING

13	Manufacture of textiles
14	Manufacture of wearing apparel
15	Manufacture of leather and related products
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
22	Manufacture of rubber and plastic products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
31	Manufacture of furniture
32	Other manufacturing
33	Repair and installation of machinery and equipment

#### DIVISION SECTION F — CONSTRUCTION

41	Construction of buildings
42	Civil engineering
43	Specialized construction activities

<sup>2</sup> Adapted from “NACE - Statistical classification of economic activities in the European Community” at <https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

In this discussion, it was suggested leaving aside only the most irrelevant divisions, at least at this stage of the project. More specifically, the suggestion was to exclude manufacturing industries dealing with organics and chemicals. It is intended that end-users can perform the assessment of the internal and external circular economy and zero waste opportunities by responding to a set of questions and self-evaluating its performance, by means, their circularity index.

Excluded from the list:

<i>DIVISION</i>	SECTION C — MANUFACTURING
10	Manufacture of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations

Each partner conducted a brief **circular economy SWOT analysis on the construction, manufacturing and crafts sectors**, in their countries and, at European level, to identify existent major opportunities, benefits and barriers to CE implementation in these sectors, through a socio-political, economic, legal and/or environmental perspective.

## SWOT Analysis – Construction Sector

### European Level

#### STRENGTHS

- Construction sector generates almost 10% of GDP and provides 20 million jobs, mainly in micro and small enterprises;
- SMEs accounted for 88 % of total construction sector employment and 80 % of total construction sector value in 2016;
- Construction works have a direct impact on the quality of life of EU citizens;
- Construction sector plays an important role in adaptation to climate change and resilience to natural and man-made disasters;
- Greater material efficiency could save 80% of GHG emissions;
- Legislation supporting waste sorting;
- New technologies for on-site sorting and recycling of materials (e.g. concrete and glass);
- Use of local materials at a great extent.

#### WEAKNESSES

- Construction sector is responsible for over 35% of the EU's total waste generation, approximately 50% of the natural resources extracted per year, 40% of the energy produced, and 16% of the treated water;
- Material extraction, manufacturing of construction products, construction and renovation of buildings contributes to 5-12% of GHG emission;
- Ignorance and lack of information about sustainable construction;
- Shortfall of skilled workers and low attractiveness to young people due to the working conditions;
- Limited capacity for innovation;
- The markets of the EU construction sector and the sector itself are highly fragmented;
- Low spending on R&D.

#### OPPORTUNITIES

- EC's comprehensive Strategy for a Sustainable Built Environment, the Construction 2020 initiative and the EU Construction and Demolition Waste Protocol and Guidelines take several steps towards a CE approach;
- R&D of new solutions with a focus on developing circular construction products;
- Standardisation efforts of secondary raw materials at EU;

#### THREATS

- Secondary raw materials face price competition with primary raw materials;
- Lack of trust in the quality of secondary materials;
- Lack of information on the composition of materials used in existing buildings (e.g. hazardous substances);
- Inability to recycle hazardous materials;

<ul style="list-style-type: none"> <li>- More ambitious waste management targets;</li> <li>- Incentives for construction and demolition waste sorting;</li> <li>- Recycling/reusing of construction and demolition materials (secondary materials) creates employment;</li> <li>- Improvements in construction sector with respect to sustainability open up additional business opportunities for SMEs.</li> </ul>	<ul style="list-style-type: none"> <li>- Increased competition from non-European companies;</li> <li>- Achieving the EU's climate, energy and environmental objectives will be difficult for the sector without appropriate policy support;</li> <li>- Construction sector is vulnerable to the overall economic conditions;</li> <li>- Fiscal incentives and financial support measures vary greatly between the Member States.</li> </ul>
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## Greece

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Could play a lead role in CE transition as contributes 11% of the Greek GDP (20 Billion euros) covering 500.000 jobs position.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Unfavourable market conditions;</li> <li>- Widespread lack of trust in recycled products (quality issues);</li> <li>- Very low prices of raw materials;</li> <li>- Labour costs;</li> <li>- Costs of operating motor equipment.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Employment;</li> <li>- Conservation of natural resources (especially non-renewable resources such as water, fossil, fuels and minerals), reduced environmental impacts through efficient energy and material and less water discharge, avoidance of toxic materials, the extended life cycle of landfill sites, and recovery of the local ecosystem.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- Consumer perception;</li> <li>- Producers and consumers locked into the current economic/market system;</li> <li>- Lack of awareness, knowledge and understanding of environmental protection and benefits of CE.</li> </ul>

## Cyprus

**STRENGTHS**

- Construction contributes 377milions Euro in Cyprus economy, which is the 6,8% of Cyprus GDP, and constantly increase;
- Construction industry is strongly interconnected with the tourism industry;
- Construction works have a direct impact on Cyprus labour market;
- Construction sector plays an important role in adaptation to climate change and resilience to natural and man-made disasters;
- Legislation supporting waste sorting;
- New technologies for on-site sorting and recycling of materials (e.g. concrete, asphalt and glass).

**WEAKNESSES**

- Avoid adopting CE principles because of the initial cost;
- Lack of initiatives for sustainable construction;
- Shortfall of skilled workers and low attractiveness to young people due to the working conditions;
- Limited capacity for innovation;
- Lack of companies dealing with CE areas and re-fabric construction materials.

**OPPORTUNITIES**

- Investments to new solutions for developing circular construction products;
- Implement waste management practices;
- Incentives for construction and demolition waste sorting;
- Recycling/reusing of construction and demolition materials (secondary materials) creates employment;
- Improvements in the construction sector with respect to sustainability open additional business opportunities for SMEs.

**THREATS**

- Construction industry is strongly interconnected with the tourism industry;
- Lack of trust in the quality of secondary materials;
- Inability to recycle hazardous materials;
- Secondary raw materials face price competition with primary raw materials;
- Lack of information on the composition of materials used in existing buildings (e.g. hazardous substances);
- The booming increase of construction industry creates financial insecurity and unstable industry;
- Increased competition from non-European companies;
- Construction sector is vulnerable to the overall economic conditions.

## Bulgaria

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Relatively positive social climate towards environment protection;</li> <li>- Increased production in the construction sector for 2019 compared to 2018 (by 8.3%);</li> <li>- Increased direct foreign investment in Construction in 2019;</li> <li>- Decrease of 30% of the unemployed in construction for 2019 compared to 2018.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Demographic crisis;</li> <li>- Emigration attitudes of young Bulgarians;</li> <li>- Modernisation of a low number of companies in technologies;</li> <li>- Insufficient coverage of the standards for environmental, quality, and safety products;</li> <li>- Shortage of well-qualified specialists;</li> <li>- Higher cost of improved services.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Infrastructure improvement;</li> <li>- Digitalisation in the sector;</li> <li>- Absorption of EU funds.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- Ageing population;</li> <li>- Global economic crisis and slow down caused by COVID-19;</li> <li>- Non-compliance with environmental requirements;</li> <li>- Inadequate vocational education relevant to the sector.</li> </ul>

## Portugal

<b>STRENGTHS</b>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Construction is a highly fragmented industry with several issues in terms of productivity, quality, safety, labour, innovation, training and development;</li> </ul>
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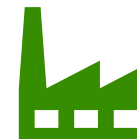
<ul style="list-style-type: none"> <li>- The construction and real estate sector are one of the most important drivers of the Portuguese economy, contributing to over 15% of GDP, around 50% of investment and 10% of employment;</li> <li>- Within the current supply chain for buildings, there is already a good collaboration between product manufacturers, architects, engineers and contractors;</li> <li>- In the design and construction phases, information is widely exchanged between these actors;</li> <li>- The success of “National Sustainable Buildings Program” that supports interventions that promote rehabilitation, decarbonisation, energy efficiency and circular economy in buildings, focusing on works in areas such as thermal insulation, air conditioning and heating systems and renewable energy and water efficiency systems. Portuguese government announces the re-opening of this programme;</li> <li>- Portugal is a country blessed with the climate and natural resources, endogenous and renewable, Construction sector (and buildings) can interact positively with the Portuguese climate; average temperatures and relative humidity considered comfortable by the human being (something that doesn’t happen in the vast majority of EU countries);</li> <li>- Integration of legislation in the solid waste plan of the municipalities that require that a percentage of the material used in public works be from the recycling of construction waste;</li> <li>- Portugal is a country rich in quality stone, gravel, sand and cement.</li> </ul>	<ul style="list-style-type: none"> <li>- Once the building is constructed and transacted from one owner to another, construction and product data incorporated into it are generally lost, leaving new owners, facility managers and building technicians with limited information on how to operate and rehabilitate the building and reuse building components and materials;</li> <li>- Portugal's metabolism is slow, that is, it is a tendency to cumulative savings in materials: it extracts and imports more raw materials from which exports finished product, accumulating materials in stock, especially of the “real estate” type (e.g. buildings, infrastructure);</li> <li>- According to the National Statistics Institute, the construction industry is responsible for the annual production of about 7.5 million tons of waste solids;</li> <li>- Construction sector holds, In Portugal, the largest share of waste production from all sectors (40%), and registered since 2015, an increase in waste production per unit of GDP generated.</li> </ul>
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<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Public and private investment in Portugal, namely in complex and large-scale projects, has represented an increasing demand for requirements to be met, which demand standards and appropriate qualifications for their management;</li> <li>- Opportunity to change in design culture - from mono-functional buildings to material banks;</li> <li>- Opportunity to change in the definition of value - from financial costs and benefits to social and environmental benefits;</li> <li>- Opportunity to strengthen the interaction between all the main stakeholders in the phases of design, construction, use, renovation and reuse;</li> <li>- Creation of new business model proposals;</li> <li>- The adoption of energy storage and self-consumption systems to overcome the problem of supply volatility (and not just prices): promote the use of green energy from the houses themselves and for related sectors such as construction or transport, ensuring a stable supply in all aspects;</li> <li>- Use ISO 14040 Analyse the Life Cycle (LCA) - consists of a methodology to assess the environmental impacts associated with each phase of a product's life ;</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Lack of communication and awareness strategies aimed at consumers municipalities, economic agents (e.g. construction sector) and waste management operators;</li> <li>- Circular and reversible construction solutions are often considered to be very expensive compared to conventional solutions;</li> <li>- National and EU Policies and standards should support the implementation of dynamic and reversible buildings by integrating “Material Passports” and the “Reversible Building Design Principles”;</li> <li>- National authorities should ensure that space for experimentation is included in new policies and regulations;</li> <li>- Although construction materials from recycling and reusing waste from construction is up to forty per cent cheaper, there are still some paradigms that do not facilitate the use of these techniques. Unfortunately, the construction waste is still seen as useless “garbage”;</li> <li>- Copying and reproducing the concepts Nordic construction in Portugal: it is necessary to interpret and assess whether what is sustainable in northern Europe, will be in a milder climate (for example, rotting of the wood as well as the degradation of the coating in buildings).</li> </ul>

<ul style="list-style-type: none"> <li>- Use the Environmental Product Declaration (EPD), which is a standardized way of quantifying the environmental impact of a product or system. EPDs include information on the environmental impact of purchasing, exploiting renewable resources by creating, through the construction sector, health and comfort conditions inside residential buildings, minimizing considerably energy needs.</li> </ul>	
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## Hungary

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Construction sector is attractive for new entrepreneurs;</li> <li>- Favourable taxation in the construction sector;</li> <li>- Increasing construction production in recent years;</li> <li>- A science and technology park have been established to implement innovative R&amp;D projects in the field of construction.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Lack of modern technologies and equipment;</li> <li>- Lack of professionals (both in engineering and construction work);</li> <li>- Low digitalization and innovation level of construction industry;</li> <li>- Construction industry is an unattractive sector for young employees.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Technology development in sectors related to construction (materials science, logistics);</li> <li>- The introduction of the new waste management strategy can help to facilitate the circular economy in the construction sector;</li> <li>- More and more national funds are available for green investments.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- The change of circular economy-related legislation can take years;</li> <li>- As a result of the epidemic situation, SMEs may focus on cost-effectiveness instead of sustainability;</li> <li>- If SMEs are not able to introduce technological change, the gap between the efficiency of SMEs and large enterprises may increase;</li> <li>- Lack of trust and information on alternative materials.</li> </ul>



## European Level

### STRENGTHS

- SMEs in the EU-28 manufacturing sector accounted for 58 % of total employment and 42 % of total value added in 2016;
- The profit rate increased moderately in manufacturing SMEs and reached 10.6% in 2016 (14.9% for micro SMEs);
- The share of innovation, R&D and applications for intellectual property protection is higher in SMEs of the manufacturing sector;
- SMEs in manufacturing have a solid science-based, with technical excellence in many domains;
- SMEs in manufacturing have a competitive strength thanks to highly skilled workers, high domestic content of export goods, and comparative advantages linked to complex and high-quality products;
- SMEs in manufacturing have higher export participation rates.

### OPPORTUNITIES

- Disruptive technology can create new markets;
- Reinforcement of recycled materials markets;

### WEAKNESSES

- Restructuring towards CE, especially for complex operations, is a costly exercise;
- Exchange of materials is limited by the capacity of reverse logistics;
- Limited attention for end-of-life phase in current product designs;
- High up-front investment costs for changing production and business models are important especially for SMEs;
- Lack of or low technical and technological know-how and expertise;
- The smaller a company is the more difficult it is to understand and assess different funding options;
- Lack of specific knowledge and capacity to comply with the CE requirements;
- The share of small and medium-sized SMEs undertaking product and/or process innovation activities is lower than that of large manufacturing companies;
- Increasing energy costs have a negative impact on export competitiveness.

### THREATS

- Lack of government support and encouragement may jeopardise circular economy innovation;
- Strong competition creates uncertainty about the marketplace;

<ul style="list-style-type: none"> <li>- EU manufacturing sectors have the potential for annual net material cost savings ranging from €265 to 490 billion, 23% of its current total input costs (Ellen MacArthur Foundation);</li> <li>- Improvements in circular business models in the manufacturing sector could create tenths of thousands of new jobs;</li> <li>- The EU initiative ICT Innovation for Manufacturing SMEs (I4MS) connects SMEs, with European Digital Innovation Hubs, who help them to test and adopt the latest digital technologies.</li> </ul>	<ul style="list-style-type: none"> <li>- Uncompetitive pricing of recycled materials;</li> <li>- Complexity of regulations and poor institutional framework;</li> <li>- Most tools for environmental management (e.g. EMAS) are produced for larger companies;</li> <li>- Small SMEs in the manufacturing sector are more likely to be hindered in their innovation activities by uncertain market demand;</li> <li>- Small SMEs in the manufacturing sector are more likely to face strong competition.</li> </ul>
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## Greece

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Wide product offering;</li> <li>- Efficiency of material and manufacturing process.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Market uncertainty;</li> <li>- Weak focus on process innovation.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Fast-growing sector;</li> <li>- Excellent opportunities for export.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- Shortage of available workforce and structural problem of lacking skills and capacity;</li> <li>- Instability of legislation and administration;</li> <li>- Lack of environmental culture.</li> </ul>

## Cyprus

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- SMEs in manufacturing have higher export participation rates;</li> <li>- Very good ICT technology;</li> <li>- Cyprus is a hub between continents;</li> <li>- Highly skilled labour;</li> <li>- SMEs in manufacturing have a solid science base, with technical excellence in many domains.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- High labour cost;</li> <li>- CE is not option because of its complex operations and high initial cost;</li> <li>- Lack of or low technical and technological know-how and expertise in CE requirements;</li> <li>- Small companies or family companies which are more difficult to understand and assess different funding options.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Variety of Funding options;</li> <li>- Digital transformation can introduce new business models closer to CE principles;</li> <li>- Disruptive technology can create new markets;</li> <li>- Reinforcement of recycled materials markets;</li> <li>- Improvements in circular business models in the manufacturing sector could create tenths of thousands of new jobs.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- Uncompetitive pricing of recycled materials;</li> <li>- Complexity of regulations and poor institutional framework;</li> <li>- Small SMEs in the manufacturing sector are more likely to face strong competition creates uncertainty about the marketplace;</li> <li>- Lack of government support and encouragement may jeopardise circular economy innovation.</li> </ul>

## Bulgaria

<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>- High share of the population with secondary and higher education;</li> <li>- Availability of qualified and well - trained researchers in the field of physics, computer technology, biology, chemistry, engineering and medicine;</li> <li>- Relatively low unemployment rate;</li> <li>- Developed heavy industry;</li> <li>- High growth rate of knowledge-intensive sectors of the economy;</li> <li>- Relative balance of regional development at NUTS II level.</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>- Adverse demographic trends;</li> <li>- Outdated educational infrastructure and deteriorating quality of the educational system;</li> <li>- Low income of the population;</li> <li>- Low labour productivity and resource efficiency of the economy;</li> <li>- Insufficient level of construction of drinking and wastewater drainage and treatment facilities and waste treatment infrastructure;</li> <li>- High dependence of the economy on imports of resources and energy and low level of diversification of the import of energy resources;</li> <li>- Lack of a national policy for adaptation to climate change;</li> <li>- Low energy efficiency in manufacturing.</li> </ul>
<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Effective absorption of European funds;</li> <li>- Improving the efficiency of public spending and ensuring the reallocation of public spending to capacity building activities for economic growth;</li> <li>- Specialization in high-tech sectors using highly qualified workforce;</li> <li>- Using the potential of the country to produce energy from renewable sources;</li> <li>- Establishing the country as a producer of organic agricultural products.</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Challenges to the sustainability of public finances in relation to an aging population, potential energy and/or financial/economic crisis;</li> <li>- Deepening of the adverse demographic trends and strengthening of their negative effects on the labour market and social systems;</li> <li>- Difficult realization on the labour market of those leaving the educational system due to its low quality;</li> <li>- Deterioration of the health status of the population;</li> </ul>

	<ul style="list-style-type: none"> <li>- Imposition of EU sanctions for non-compliance with commitments in the field of the environment;</li> <li>- Challenges caused by climate change;</li> <li>- Significant increase in food prices due to climate change and the growth of the biofuel industry worldwide;</li> <li>- Significant increase in resource prices (including energy) and their share in their cost of industrial production;</li> <li>- Depopulation of large parts of the country.</li> </ul>
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## Portugal

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- In Portugal (2015), raw materials represent 53% of the costs of the manufacturing industry, 42% of the agriculture, 37% of the energy sector - a 30% reduction in Direct Material Input (DMI) via efficiency and productivity, along the value chain, can lead to an increase in GVA of € 3.3 billion.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- 1) the retirement of the generation born in the post-colonial war period (1961-1974), 2) regionalization (change to different locations of the globe (namely China), 3) the proliferation of shop floor data, and now 4) COVID-19. These trends are generating a more widespread, less experienced and overloaded workforce with unused potential. This is also delaying the innovation &amp; CE transition of this sector;</li> <li>- Is still necessary to work on the instruments and mechanisms for Circular transition with the support of decision-makers politicians, openness to finance, educational institutions, leaders and practical examples mobilizers;</li> </ul>
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## OPPORTUNITIES

- Portuguese companies must be encouraged to adopt preventive attitudes planning their strategy, and reinventing, if necessary, their products, processes or business models in order to guarantee sustainability in the face of these structural changes related to circularity (or even world economic menaces);
- By 2030 Portugal must assert itself as a leading country in terms of development and adoption in the industry of advanced materials and technological processes. The good result obtained in recent years in terms of the increase in exports provided by the industry the national market makes it more and more well-noticed about new bets in the industry so that it becomes more competitive;
- Five dimensions of this research and innovation agenda for industry and manufacturing 2030 envisages betting on the development of advanced materials or efficient management of resources and processes:
  - 1) Opportunity for the valorisation of endogenous raw materials and technologies, development of functional and intelligent surfaces, multifunctionality and material compatibility;
  - 2) Opportunity for the valorisation of industrial waste and eco-design increasingly assumes an important role with the modelling of materials and prediction of their properties and behaviour;
  - 3) Dematerialization and reverse engineering processes;

## THREATS

- To help less-experienced workers developing knowledge and skills and take advantage of data through collaboration;
- “Circularity” implies change, and changing raises barriers to action, since there will be sectors that will feel the “lost”. In such cases, companies must be encouraged to adopt preventive attitudes (see strengths).

4) Advanced integration of processes for the use of industrial by-products or waste;

5) Significant change in terms of business models, encourage and materialize approaches in multisectoral industrial symbiosis;

- In Portugal, the manufacturing industry spends 53% of its turnover acquisition of raw materials, so reducing these expenses, even in a small percentage has a significant impact;
- In Portugal, implementing a CE strategy may allow a reduction of around 30% in the need for raw materials, generating a positive impact on Gross Value Added, estimated at 3.3 billion euros (according to Circular Economy Portugal);
- The impact on employment is not limited to the sanitation and recycling sector, but also to the promotion of design, repair, remanufacturing and fine disassembly, and associated reverse logistics networks. There is thus potential for fostering a wide variety of job types, from which it will require higher qualifications - e.g. design, architecture, materials engineering - technical and technological qualifications - e.g. repair.

## Hungary

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Favourable regulatory environment;</li> <li>- Development of the manufacturing sector is a top priority for the national government;</li> <li>- Dual training at vocational schools and universities helps manufacturing SMEs to hire young professionals;</li> <li>- Manufacturing SMEs have higher export participation rates.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Lack of innovation capacities at SME level;</li> <li>- Lack of medium-sized enterprises, the gap between SMEs and large companies;</li> <li>- Labour migration of professionals.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Technological innovations are available at the national level thanks to Industry 4.0 programs;</li> <li>- More and more national funds are available for green investments;</li> <li>- As a result of the epidemic situation, the need for European manufacturers/suppliers may increase in the EU.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- As a result of the epidemic situation, SMEs may focus on cost-effectiveness instead of sustainability;</li> <li>- If SMEs are not able to introduce technological change, the gap between the efficiency of SMEs and large enterprises may increase;</li> <li>- Generational transfer can be challenging for family businesses;</li> <li>- Manufacturing SMEs may not trust recycled materials (higher price, unknown quality).</li> </ul>



## European Level

<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>- Crafts in Europe has a strong social, historical, cultural and economic value;</li> <li>- Craft industry uses local resources, environmentally friendly and salvaged materials and local techniques and forms;</li> <li>- Rising demand for unique, customised, products;</li> <li>- Craft micro-businesses require little start-up capital;</li> <li>- Craft contributes to community-based lifestyle and cultural identity.</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>- Crafts knowledge and skills in Europe are often endangered;</li> <li>- Aiming to maximise economic value through CE could undermine the social and cultural value of crafts;</li> <li>- Skilled personnel get older and young people are not getting their position;</li> <li>- Increased cost of raw materials;</li> <li>- Craft innovations are poorly linked to modern technologies, especially digital ones.</li> </ul>
<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Stimulate creativity;</li> <li>- Generate economic value and employment opportunities;</li> <li>- Digital technologies used to increase CE potential at all levels - from design and production to marketing - could offer innovation and revitalisation of the craft industry.</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Crafts are positioned differently within classifications based on national frameworks making it difficult to estimate the contribution to the national economies across the Member States;</li> <li>- Competition by cheaper imported products;</li> <li>- Lack of fiscal and government incentives;</li> <li>- Lack of synergies with other economic sectors.</li> </ul>

## Greece

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Wide product offering;</li> <li>- Efficiency of material and manufacturing process;</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Market uncertainty;</li> <li>- Weak focus on process innovation</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Fast-growing sector;</li> <li>- Excellent export opportunities.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- Shortage of available workforce and structural problem of lacking skills and capacity;</li> <li>- Instability of legislation and administration;</li> <li>- Lack of environmental culture.</li> </ul>

## Cyprus

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- Crafts has a strong social, historical, cultural and economic value;</li> <li>- Crafts is directly and strongly connected with tourism industry (the larger industry in Cyprus);</li> <li>- It promotes art and the demand for customised products is increasing;</li> <li>- Crafts are usually micro-businesses so they more flexible to changes;</li> <li>- Craft contributes to community-based lifestyle and cultural identity.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Crafts knowledge and skills are often endangered;</li> <li>- Aiming to maximise economic value through CE could undermine the social and cultural value of crafts;</li> <li>- Skilled personnel get older and young people are not getting their position</li> <li>- Increased cost of raw materials;</li> <li>- Craft innovations are poorly linked to modern technologies, especially digital ones.</li> </ul>
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<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Digital transformation and new disruptive technologies (i.e 3D printing) can open new horizons from design and production to marketing - could offer innovation and revitalisation of craft industry;</li> <li>- Funding options and participation in EU projects;</li> <li>- Stimulate creativity;</li> <li>- Generate economic value and employment opportunities</li> <li>- Improvements in circular business models in the manufacturing sector could create tenths of thousands of new jobs.</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Digital transformation and new disruptive technologies (i.e. 3D printing) are treated as threads;</li> <li>- Competition by cheaper imported products;</li> <li>- Lack of fiscal and government incentives;</li> <li>- Crafts are positioned differently within classifications based on national frameworks making it difficult to estimate the contribution to the national economies across Member States so in Cyprus too.</li> </ul>
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## Bulgaria

<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>- Different and specific crafts through the regions of the country with significant cultural and historical value: schools for crafts and maintaining the tradition in crafts, art and culture, historical heritage;</li> <li>- Relatively positive attitude towards crafts;</li> <li>- Formed clientele and traditions on the Bulgarian market for the products of the crafts sector;</li> <li>- Positive attitude towards crafts as a motor for regional development, and interest in starting a small business;</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>- Unemployment and migration of young people;</li> <li>- Lack of an adequate marketing strategy to promote our country as a destination with interesting and unique crafts and traditions on the foreign market;</li> <li>- Poor promotion of local crafts;</li> <li>- Lack of awareness / education about traditional crafts;</li> <li>- Lack of ways to economically stimulate young people to start working in the field of crafts;</li> </ul>
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<ul style="list-style-type: none"> <li>- Preservation of the traditions of the local population.</li> </ul>	<ul style="list-style-type: none"> <li>- Not enough opportunities for an initial professional training in the craft field.</li> </ul>
<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Creating conditions to support the craft guilds;</li> <li>- Optimization of the cultural infrastructure in accordance with the processes of cultural integration with the European Community;</li> <li>- Providing funds for renovation and reconstruction of community centers buildings;</li> <li>- Reconstruction, repair and equipment of educational institutions in the crafts sector;</li> <li>- Derivation of authenticity, natural and cultural heritage in general as a key element in the sale of Bulgaria as a European destination;</li> <li>- Improving access to finance under European programs;</li> <li>- Activities within the crafts sector could be combined with activities in the rural tourism;</li> <li>- Modernization and implementation of new technologies and techniques for improvement of the working conditions in the sector;</li> <li>- Stimulating joint activities with educational institutions, including internship programs, trainings, professional consulting, scholarship programs, etc.</li> </ul>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Emigration of young and educated citizens;</li> <li>- Passivity and lack of interest of citizens in regards to crafts;</li> <li>- The deteriorating age structure of the population;</li> <li>- Loss of many traditional crafts and skills creates a danger of rapid loss of identity and authenticity of the sector;</li> <li>- The recessionary environment caused by the COVID-19 Pandemic may lead to lack of interest in the products within the sector.</li> </ul>

## Portugal

**STRENGTHS**

- Design, Repair, Reuse: an extended producer responsibility [product - consumption];
- Craft sector in Portugal is a form of culture, one of the foundations of the circular economy and social responsibility;
- The economy of authenticity and of what is genuine, regional;
- Handicrafts enable the recovery and enhancement of the identity of each people, materialize and disseminate the characteristics of our culture, enable the increase of family income;
- Crafts sector promotes materials used as resources in the production of the pieces, which can result from the reuse and recycling of post-consumer products.

**OPPORTUNITIES**

- Combining crafts with environmental awareness is a way of involving the community and making efforts to conserve natural resources interactive;
- Artisanal production can discourage exaggerated consumption, offering through the reuse of materials a form of resistance for programmed obsolescence;
- E-commerce: Investing in online sales can be a cheap way to promote products.

**WEAKNESSES**

- One of the great challenges for artisans is to value their creations, since the form of pricing is different from a product that has a clear market price, such as a cell phone or a television;
- In the artisanal market, the symbolic value is added to the functional value of the works created, and the symbolic value may or may not be linked to the cost of production;
- Depending on the “type of craft” access to resources/materials can be difficult and/or expensive to the artisan.

**THREATS**

- Lack of stores offering their own repair;
- Lack of Repair cafes and/or local actions carried out;
- Non-motivated citizens to use repair services: awareness actions needed;
- Lack of partnerships with municipalities/distribution;
- Lack of collaboration: so that process steps are distributed and made with more precision and quality maintained. Access to resources/materials can also be facilitated – “crafts sector symbiosis” – your waste is my resource.



## Hungary

<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>- High professional quality, traditional and sustainable manufacturing processes;</li> <li>- Crafts sector already benefits from local networks and local value chains;</li> <li>- It is a flexible and customizable form of manufacturing.</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>- Limited resources are available;</li> <li>- Lack of modern technologies and equipment;</li> <li>- Low level of digitalization and innovation;</li> <li>- The manufacturing processes in the crafts sector are less monitored.</li> </ul>
<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>- Craft sector is often locally based, local circular networks can be created;</li> <li>- More and more national funds are available for green investments;</li> <li>- Introducing circular manufacturing practices can be a competitive advantage.</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>- Lack of sustainable development policy;</li> <li>- Lack of accreditation scheme;</li> <li>- As a result of the epidemic situation, SMEs may focus on cost-effectiveness instead of sustainability;</li> <li>- Generational transfer can be challenging for family businesses.</li> </ul>

## 4. Resource Loops, Value creation, ReSOLVE Framework and CBMs

### 4.1 Resource Loops

In contrast to the linear value chain in the centre, the circles at the side of *Figure 2* illustrate possibilities for retaining products, components or materials in four distinct closed cycles or resource loops, i.e. the maintenance, reuse/redistribute, refurbish/remanufacture and recycle loops. Specifically, it provides an example of how this can be depicted, where the left-hand side shows the natural or biological system, and the right-hand side shows the technical system. Technical products typically contain extracted, non-renewable materials e.g. metals and petroleum-based plastics.

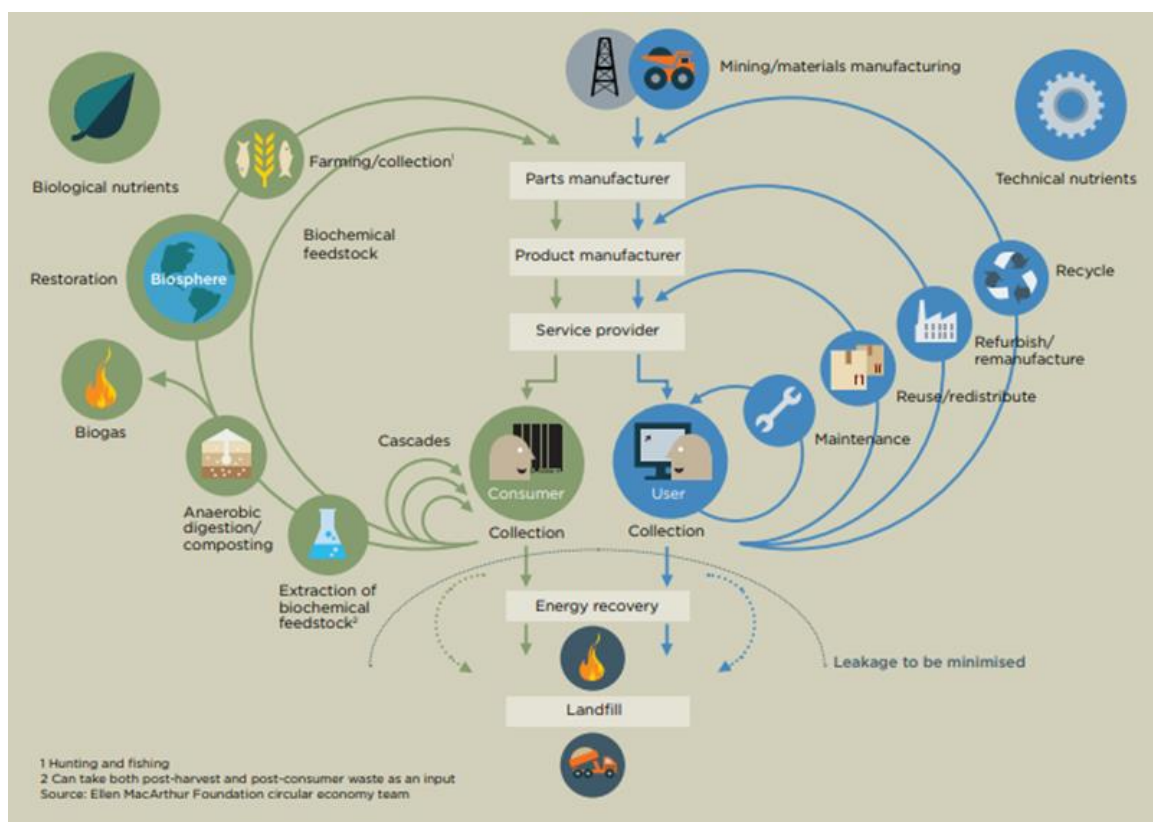


Figure 2. The circular economy – an industrial system that is restorative by design – source [Ellenmacarthurfoundation.org](https://ellenmacarthurfoundation.org)

Such products require waste treatment before they can be safely returned to the biosphere, and in most cases, it is not possible to do so without negative environmental impacts. Also, the residual value of the products and the embedded materials is lost when the products are disposed of through incineration or landfilling. To avoid this loss of value and materials, technical products, components and materials should be kept in closed loops for as long as possible.

## 4.2 Value Creation

Ellen MacArthur Foundation and Nguyen, Stuchtey and Zils point to four distinct ways in which companies can create value in the circular economy, all of which are based on an improvement of material productivity

1. Power of the inner circle
2. Power of circling longer
3. Power of cascaded use
4. Power of pure circles

1. **Power of the inner circle** is about keeping products alive and operating for as long as possible and preferably with the original owner or user. The principle relates to the maintenance loop, and to ensure that products can be kept functioning satisfactorily through uncomplicated maintenance and repairs and possibly through convenient updates. Product design and supportive business models play a vital role in taking advantage of this opportunity.

2. **Power of circling longer** refers to keeping products in as many consecutive usage cycles as possible and prolonging the time of each cycle. Refers to durable goods, long life with subsequent users, carefully choosing the packaging materials or setting up a return system improved the energy performance of new products.

3. **Power of cascaded use** is the third value-generating principle that firms could tap into when designing their circular business models. The idea is to diversify reuse of products and materials, within and between industries. The reused products and materials substitute an inflow of virgin material and hence reduce raw materials cost for the involved companies.

4. **Power of pure circles** highlights the importance of uncontaminated material streams since this is key to maintaining the quality of the materials for many consecutive cycles. Applying cleaner or purer materials is a well-known eco-design principle.

Which circular economy principles are most relevant to incorporate into a company's new business models will depend on several factors such as:

- Particular trade and market conditions;
- Focus, interests and values of the company;
- Existing competencies and capabilities.

## 4.3 The ReSOLVE Framework

Building a circular economy transition requires complex efforts at the local, national, regional, and global levels. To transition from the current trajectory to a circular one, European economies and companies must undertake six actions: regenerate, share, optimize, loop, virtualize, and exchange—the ReSOLVE framework (Figure 3):

**Regenerate:** Shift to renewable energy and materials; reclaim, retain, and regenerate the health of ecosystems; and return recovered biological resources to the biosphere.

**Share:** Maximize utilization of products through peer-to-peer sharing of privately owned products or public sharing of pools of products; reuse them throughout their technical life spans; and prolong those life spans through maintenance, repair, and design for durability. Examples include car- and home-sharing business models.

**Optimize:** Improve the performance and efficiency of products; remove waste from their supply chains; and leverage big data, automation, and remote sensing. None of these actions requires changing products or technologies.

**Loop:** Keep components and materials in closed loops and prioritize the inner ones. For finite materials, this means remanufacturing products or components and (as a last resort) recycling materials. For renewable materials, it involves anaerobic digestion and the extraction of biochemicals from organic waste.

**Virtualize:** Deliver utility virtually—books or music, online shopping, fleets of autonomous vehicles, and virtual offices.

**Exchange:** Replace old materials with advanced renewable ones; apply new technologies, such as 3-D printing and electric engines.<sup>3</sup>







































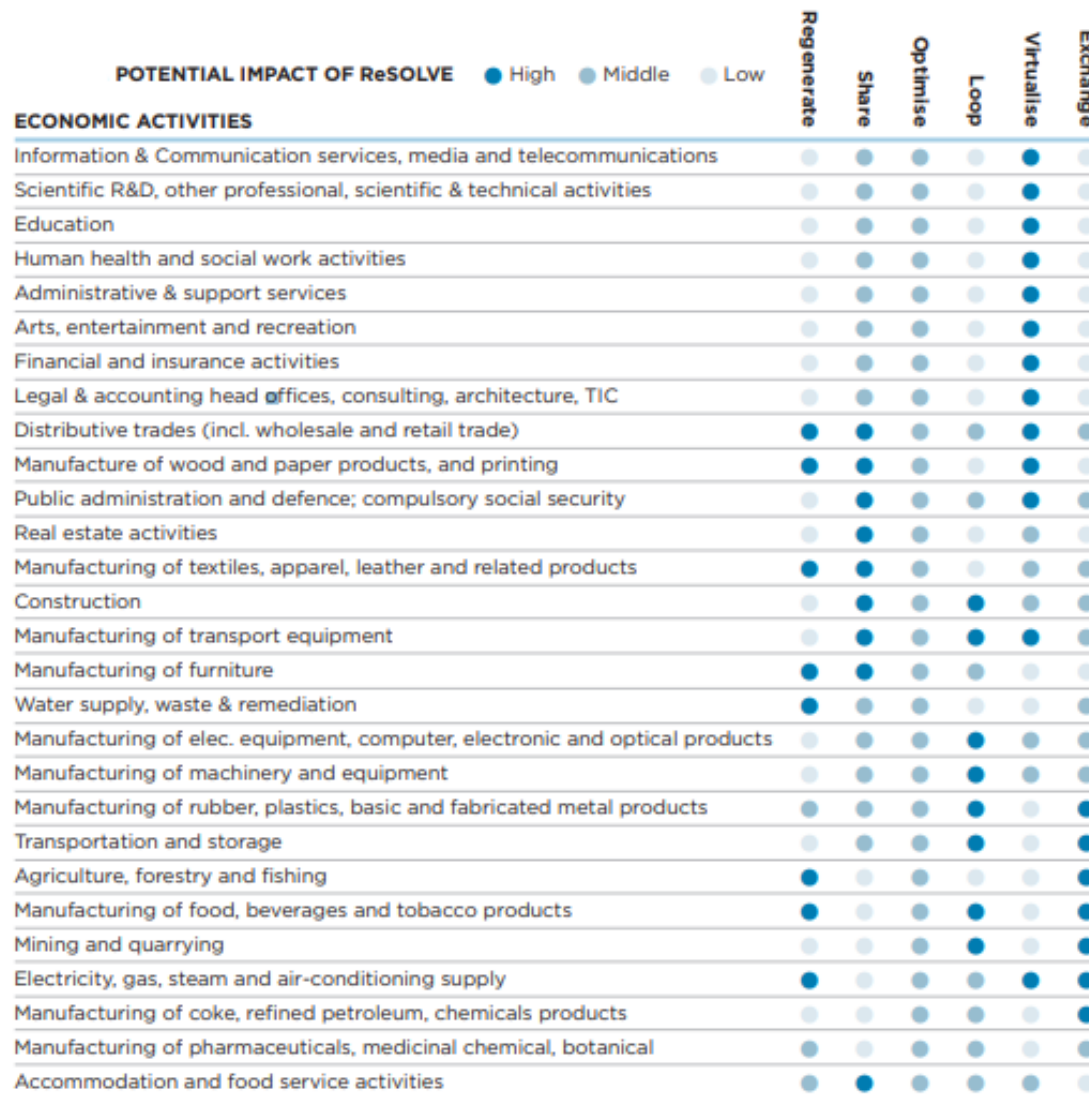
EXAMPLES		
<b>REGENERATE</b> 	<ul style="list-style-type: none"> <li>Shift to renewable energy and materials</li> <li>Reclaim, retain, and restore health of ecosystems</li> <li>Return recovered biological resources to the biosphere</li> </ul>	    
<b>SHARE</b> 	<ul style="list-style-type: none"> <li>Share assets (e.g. cars, rooms, appliances)</li> <li>Reuse/secondhand</li> <li>Prolong life through maintenance, design for durability, upgradability, etc.</li> </ul>	    
<b>OPTIMISE</b> 	<ul style="list-style-type: none"> <li>Increase performance/efficiency of product</li> <li>Remove waste in production and supply chain</li> <li>Leverage big data, automation, remote sensing and steering</li> </ul>	    
<b>LOOP</b> 	<ul style="list-style-type: none"> <li>Remanufacture products or components</li> <li>Recycle materials</li> <li>Digest anaerobic</li> <li>Extract biochemicals from organic waste</li> </ul>	       
<b>VIRTUALISE</b> 	<ul style="list-style-type: none"> <li>Books, music, travel, online shopping, autonomous vehicles etc.</li> </ul>	     
<b>EXCHANGE</b> 	<ul style="list-style-type: none"> <li>Replace old with advanced non-renewable materials</li> <li>Apply new technologies (e.g. 3D printing)</li> <li>Choose new product/service (e.g. multimodal transport)</li> </ul>	  

Figure 3. The RESOLVE framework - Source: Company interviews; Web search. S. Heck and M. Rogers, Resource revolution: How to capture the biggest business opportunity in a century, 2014.

<sup>3</sup> Adapted from McKinsey & Company, [The circular economy: Moving from theory to practice](#), October 2016

These actions could have a profound impact on European sectors. The next figure shows an indicative prioritisation for 20 major sectors, based on the economic and resource impact of the actions in the ReSOLVE framework. While not definitive, the prioritisation suggests where the greatest potential lies. The ReSOLVE framework offers companies a tool for generating circular strategies and growth initiatives:



Source: Ellen MacArthur Foundation and the McKinsey Center for Business and Environment (2015) [Growth Within A Circular Economy Vision for a Competitive Europe](#)

#### 4.4 Five types of Circular Business Models (CBMs)

Linear business models are based on the following logic: take natural resources, make products for consumers that eventually become waste. Circular business models contribute to a circular economy by adhering to the **circular economy's three fundamental principles**:

- **Circular Design** - Design out waste and pollution
- **Circular Use** - Keep products and materials in use

- **Circular Recovery** - Regenerate natural systems

The term business model is used to describe the core elements of how a company operates. Osterwalder and Pigneur, on *Business model generation: a handbook for visionaries, game-changers, and challengers* (2010) offer a widely adopted definition of what a business model is: "A business model describes the rationale of how an organization creates, delivers, and captures value." (Osterwalder& Pigneur 2010, p.14).<sup>4</sup>

Five distinct **types of circular business models** are suggested (Figure 4):

1. Circular supplies
2. Resource recovery
3. Product life extension
4. Sharing platforms
5. Product as a service

1. **Circular supplies** business model is about phasing out scarce resources by using fully renewable, recyclable or biodegradable resources. Removing inefficiencies and cutting waste is also an integral part of this model.

2. **Resource recovery** is about capturing embedded value at the end of one product lifecycle to feed into another via innovative recycling and upcycling services. This model is based on next-generation recycling using new technologies and capabilities. Industrial symbiosis and closed-loop recycling are examples.

3. **Product life extension** business model is concerned with extending the lifecycle of products and assets by repairing, upgrading, remanufacturing or remarketing products. This type of business model is appropriate for capital-intensive business-to-business companies such as industrial equipment manufacturers.

4. **Sharing platforms** business model encourages collaboration among product users, whether individuals or organizations. The offered platform facilitates the sharing of overcapacity or underutilization thus increasing productivity. Today, the business model is most often embraced by companies that do not manufacture shared products themselves.

5. **Product as a service** business model provides products through lease or pay-for-use arrangements. In this business model, the company has to ensure durability and upgradability.

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<sup>4</sup> Adapted from Eva Guldmann, University of Aalborg (2016), [Best Practice Examples of Circular Business Models](#), The Danish Environmental Protection Agency.



## 4.1

## CIRCULAR BUSINESS MODELS IN THE CURRENT VALUE CHAIN



CIRCULAR DESIGN



CIRCULAR USE



CIRCULAR RECOVERY

This diagram demonstrates that there are multiple circular business models (CBMs) which can be grouped into three categories: design, use and recovery - these relate to the stage of the building lifecycle when they will be engaged.

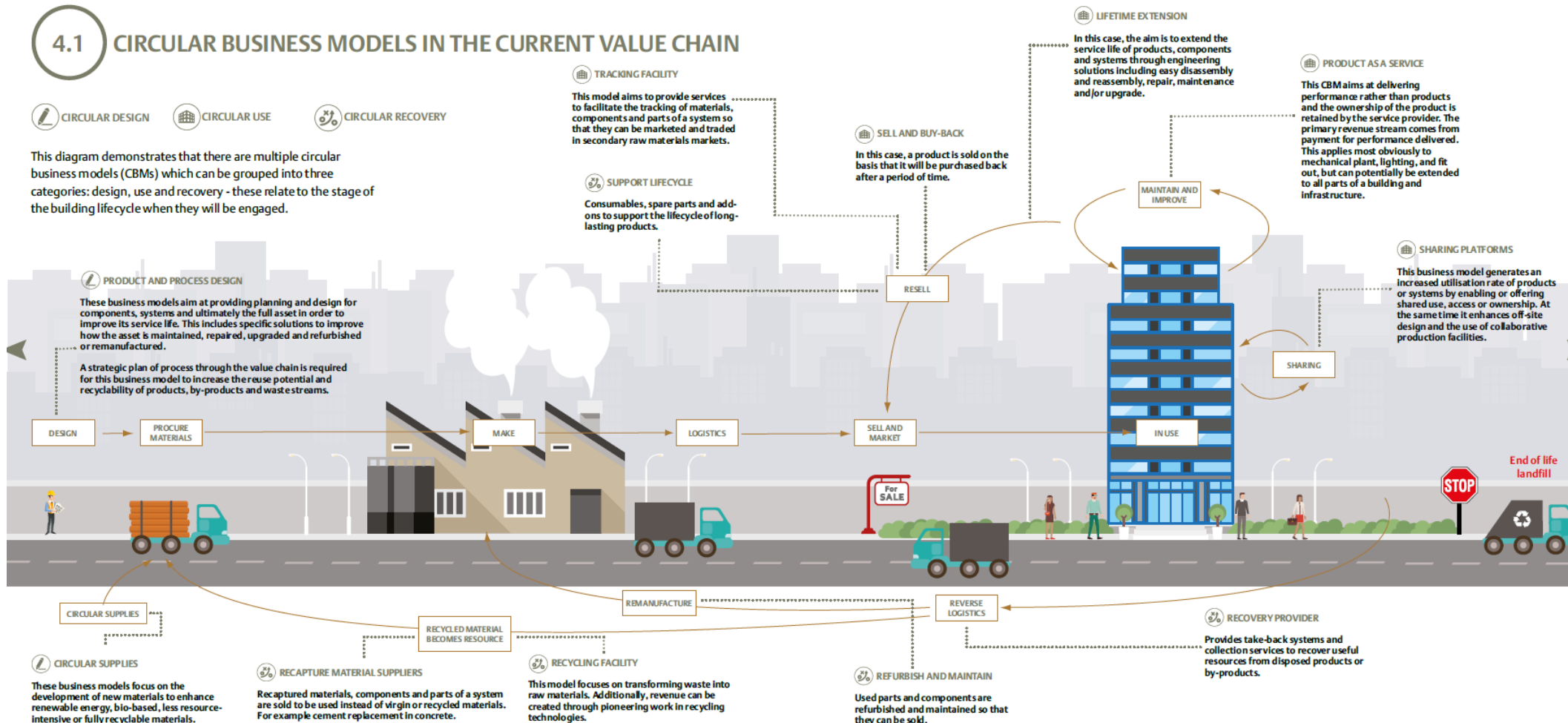


Figure 4. The Circular Business Model - Source: Carra, Guglielmo (Arup) and Magdani, Nitesh, (BAM), [Circular Business Models for the Built Environment](#)

## 5. Good practices

Each partner shared, in total, two national and two international “Good practices”, among the Construction, Manufacturing and Crafts sectors. The next pages compile three good practices from the Construction Sector (or related to it, such as training and CD waste management), nineteen good practices from the Manufacturing Sector and two good practices related to Crafts sector.

### Construction

Partner: ISQ

Name of the good practice	Circular Pavilion in Paris
Location/Geographical coverage and timeframe	<i>Paris, France</i>  <i>Circular Pavilion in Paris is an architectural experiment around the reuse of construction materials that were collected from different buildings (ex. The frontage was added with 180 doors meant to be thrown after the restoration of an HBM building in Paris 19th arrondissement and the interior insulation was removed from a supermarket roof when it was restored). For three months the circular pavilion stood in front of the Hôtel de Ville, and welcomed an exhibition, lectures and meetings.</i>
Sector/Economic Activity	<i>F Construction - 41.1 Development of building projects</i>
Brief description of the company/organization/action	<i>The circular pavilion is a singular small construction with nothing round about it: its name illustrates the manufacturing process that gave birth to it, following the principles of the circular economy.</i> <i>Objectives: Create an exhibition space through experimentation with the reuse of construction materials.</i>  <i>Set up on the forecourt of the Paris City Hall on the occasion of COP 21, this pavilion is an architectural experiment around the reuse of construction materials. The facade is made up of 180 oak doors from a rehabilitation operation on an HBM housing building in the 19th district. The rock wool used for the interior insulation was removed during work from the roof of a supermarket. The elements of the wooden structure are left over from the construction of a retirement home. The floors and inside walls are made of exhibition panels while the duckboards of the outside terrace come from the</i>



organization of Paris Plage. For the inside furniture, fifty wooden chairs were collected from the Parisian recycling centres, restored and painted and the ceiling lights come from the public lighting stocks.



Resource Loop	Recycle; Refurbish/remanufacture
Value Creation	Power of circling longer; Power of cascaded use
Circular Business Model	Resource recovery; Product life extension
ReSOLVE Action	Loop
Success factors	City of Paris services convinced of the interest of the project. Control of the source of reuse materials (doors, etc.).
Constraints	The door removal site has been delayed (due to the delay in manufacturing the replacement doors), thus jeopardizing the circular pavilion project. It took the mobilization of the MOA, Paris Habitat, Paris City Hall, etc. to compliant the deadlines.
Impact	<p>Re-use of 180 doors. The result of the operation does not highlight the avoided costs related to the non-recycling of the doors.</p> <p>Very positive feedback from the various DPA teams who have never worked together and who collaborated on this project.</p>
Lessons learned	<p>This experimental approach demonstrates that access to these new deposits of materials requires new relationships with those who dismantle, deconstruct or recover and those who implement. Attention to existing materials makes it possible to reduce the primary consumption of resources while avoiding the accumulation of waste, to be buried or incinerated, in search of an architecture marked by sobriety and accuracy.</p> <p>Concerning the economic data of the project, 70 000€ have been committed (frame/roofing lot, nacelle rental, hardware purchase + miscellaneous). The DPA workforce was estimated at around 50,000 €. This makes an informal cost of 120,000 € excluding taxes, which is the equivalent of a newly built pavilion, with the notable difference that a large</p>

	<i>part of the budget is devoted to labour and not to the purchase of raw materials.</i>
<b>Replicability and/or up-scaling</b>	<i>Replicable operation subject to a desire on the part of the project owner to promote reuse through an emblematic operation.</i>
<b>More info at</b>	ENCORE HEUREUX 104 rue d'Aubervilliers, 75019 Paris <a href="mailto:contact@encoreheureux.org">contact@encoreheureux.org</a>

### Partner: ISQ

<b>Name of the good practice</b>	<b>Malagoli</b>
<b>Location/Geographical coverage and timeframe</b>	<i>The first centre for the recovery of inert waste from construction and public works was inaugurated in 2013 in San Gavino di Carbini in the extreme south of Corsica, France.</i>
<b>Sector/Economic Activity</b>	<i>(F Construction); SECTION E — water supply; sewerage, waste management and remediation activities (Waste collection, treatment and disposal activities; materials recovery)</i>
<b>Brief description of the company/organization/action</b>	<p><i>Malagoli company provides an infrastructure that gives priority to the recovery and recycling of inert waste to the detriment of its landfill and to involve public contractors more in the disposal of waste generated by their works. The aim of the project which is implemented in South Corsica and Upper Corsica is to store the inert waste and revalorize it to reuse it on construction sites.</i></p> <p><i>Balagne recyclage is a centre of the same type, located in Calvi (Haute-Corse) and which also accepts, in addition to inert building waste, scrap metal, cardboard, wood and green waste that is stored pending the implementation of a recovery process nearby. Inert waste comes from construction, rehabilitation and demolition activities related to the building industry (bricks, concrete, ceramics, tiles, glass, etc.), related to the construction and maintenance of public works, including earthworks (pebbles, earth, cuttings, asphalt, etc.) and the construction of new buildings.</i></p> <p><i>Materials accepted:</i></p> <ul style="list-style-type: none"> <li>- <i>Soil and earthmoving materials including excavated material,</i></li> </ul>

	<ul style="list-style-type: none"> <li>- Construction and demolition waste: rubble, concrete, bricks, tiles,</li> </ul> <p>Recycled and recovered products:</p> <ul style="list-style-type: none"> <li>- Compacted hardcore 0/31, 5, rock 30/80, compacted hardcore from the embankment,</li> <li>- Topsoil, tuff.</li> </ul> <p>Recycling and recovery:</p> <ul style="list-style-type: none"> <li>- Preparation for reuse (sorting, crushing, scalping and screening, etc)</li> <li>- The equipment used: Crusher, scalper, sieve.</li> </ul> <p>The crusher is used to coarsely break and reduce hard or dry materials to irregular aggregates. A scalping sifter is a tool for preparing waste materials; it can separate good from bad bulk materials; thanks to its cleaning power, it can coarsely clean the materials. And finally, the screening machine can be used to calibrate the good materials in different cuts.</p>
Resource Loop	Recycle, refurbish, reuse/redistribute
Value Creation	<p>Power of circling longer</p> <p>Power of cascaded use</p> <p>Power of pure circles</p>
Circular Business Model	<p>Circular supply</p> <p>Resource recovery</p> <p>Sharing platform</p>
ReSOLVE Action	<p>Optimize by remove waste in production and supply chain Loop by recycling materials</p> <p>Regenerate by returning recovered biological resources to the biosphere</p>
Success factors	<p>To ensure the monitor and traceability of waste, an inert waste tracking form is provided. This BSDI must be kept justifying the management of the waste.</p> <p>Following the sorting centre, each material is then sent to its recycling plant. Sorting centres work closely with existing eco-organisations.</p> <p>Involvement of building professionals: Companies managing the sites and Construction companies for landfill sites.</p>
Constraints	The capture of flows still comes up against the indiscipline of some entrepreneurs, with the persistence of uncontrolled storage practices.

<b>Impact</b>	<i>Decrease in landfill volumes. Beginning of the organisation of a reuse stream.</i>
<b>Lessons learned</b>	<i>To be investigated: volumes collected, and volumes revalued. Waste and its management is a major issue for Corsica. All initiatives aimed at reducing the volume of waste sent to landfill are therefore timely.</i>
<b>Replicability and/or up-scaling</b>	<i>An easily replicable experiment provided that the necessary land is available and access to the site is easy.</i>
<b>More info at</b>	<p><i>Office de l'Environnement de la Corse, Uffiziu di l'Ambiente di a Corsica 14, Avenue Jean Nicoli 20250 Corte Tel : 04.95.45.04.00 email : contact@oec.fr</i></p> <p><a href="https://www.oec.corsica/Centru-di-riciculera-di-i-scarti-stabbuli-di-u-BTP_a69.html">https://www.oec.corsica/Centru-di-riciculera-di-i-scarti-stabbuli-di-u-BTP_a69.html</a></p>

#### Partner: ISQ

<b>Name of the good practice</b>	<b>The Construction Professional card (CPC) and its MOOC Platform</b>
<b>Location/Geographical coverage and timeframe</b>	<p><i>These tools have a national scope for workers in the construction sector (Spain).</i></p> <p><i>This initiative began in September 2016 and continues today, with the periodic offer of the most demanded courses by the sector.</i></p> <p><i>The Construction Professional Card (CPC) was established in 2007, the 4th General Agreement for the Construction sector.</i></p>
<b>Sector/Economic Activity</b>	<p><i>F Construction / (SECTION P — EDUCATION)</i></p> <p><i>The Construction Professional Card (CPC) is a tool for accreditation.</i></p> <p><i>MOOCs courses are training programs for CPC holders on the main topics of the construction sector: Rehabilitation and sustainable construction; energy efficiency; health and safety; materials; waste and other topics demanded by the sector.</i></p>
<b>Brief description of the company/organization/action</b>	<i>The Construction Professional Card (CPC) and the MOOC Platform for Card Holders is a best practice that comprises a Unified Accreditation System and Innovative Training Offer for the Professionals of the Construction Industry in Spain. A Card is a tool for accreditation and evidence about training, qualification, professional category, occupations and other labour data of interest to construction workers and employers</i>

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while MOOCs are designed, developed and offered to CPC holders in topics related to the construction sector. The construction professional card (CPC) is the result of an agreement between the employers and the most representative trade unions in the construction sector at the state level, reflected in the Fourth General Agreement of the Construction Sector, and the procedures for issuing it are carried out by the Fundación Laboral de la Construcción (FLC). The CPC and the MOOC Platform-tools are very well considered by the whole sector and offer a computerized and always expandable professional curriculum including some subjects about CD Waste, that provides security to both workers and companies throughout the whole national territory of Spain.

The General Agreement of the Construction Sector, where the signatory parties are the representatives of the companies of the sector and the workers of the sector, established the guidelines to follow to achieve this tool:

The Fundación Laboral de la Construcción (FLC) oversees establishing the procedure for the development of the CPC. To this end, a process was articulated, firstly, to inform potential users, and later to make available the mechanisms for their application and obtention.

Two actions were carried out concerning training in OHS, which is essential for obtaining the CPC:

- the possibility of carrying out this training through the FLC was made available to those interested.
- a procedure was stipulated for the official approval of entities interested in providing this training (necessary equipment, human resources, curricula...), to verify that it was correct.

As for the reception of applications, several mechanisms were set up, both in face-to-face and online, to facilitate these procedures for the recipients of the card.

An agile application resolution department was set up in the process.

After a period of operation of the CPC, the FLC, in 2016:

Created the CPC for companies' platform to give greater security to the system in terms of the data reflected in the CPC for each worker.

And after a detailed study of the sector's needs, it introduced for CPC holders the possibility of training in those competencies through free online courses (MOOCs).

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#### Resource Loop

Trainees will learn about all the possibilities for retaining products, components or materials in four distinct closed cycles

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	<i>or resource loops, i.e. the maintenance, reuse/redistribute, refurbish/remanufacture and recycle loops.</i>
<b>Value Creation</b>	<i>The MOOCs courses are aimed at all professionals working in the construction sector who, being holders of the Construction Professional Card, are interested in continuing their training in the most popular current subjects related to the Construction Sector and CD Waste.</i>
<b>Circular Business Model</b>	<p><i>The direct users or receivers of the CPC are the construction sector workers interested in using this tool for the accreditation of their training in OHS and other relevant information in the labour market. And in turn, the holders of the CPC exclusively can carry out the training through the MOOCs courses.</i></p> <p><i>However, there are also other beneficiaries and stakeholders interested in these initiatives, like construction companies, since, in this way, the hiring company can check that the work complies with the requirements of compulsory training in the field of OHS. These include their experience in the sector, their professional qualifications, the skills and abilities according to the training received, and even their ability to provide medical examinations. Besides, since October 2016, companies that request it have also access to a service called “TPC empresas”, a free service that makes available to companies in the construction sector, the training certificate in OHS of the TPC of each of its workers, subject to their authorization.</i></p> <p><i>“TPC Empresa” users can check the veracity of the OHS diplomas, issued by the FLC or by an approved Entity, both their own and those of their subcontractors. On the other hand, the construction sector, improving its competitiveness and advancing towards a more sustainable sector with better-qualified workers in the most demanded competences.</i></p>
<b>ReSOLVE Action</b>	<p><i>Virtualize – MOOC courses.</i></p> <p><i>As for the MOOCs courses, the main objective of the FLC with this type of action is to facilitate as much as possible, and free of charge, access to the acquisition of knowledge on various current issues in the sector for workers who have the CPC, to disseminate the main lines of innovation and to encourage the adoption of good practices in the construction sector, promoting continuous training in construction and reflecting this training in the CPC.</i></p>
<b>Success factors</b>	<i>For an initiative such as the CPC to take place, there must be a good reception on the part of the representatives of the companies and the workers in the sector. Willingness to reach an</i>

	<p>agreement and, even if possible, to transfer it to the Collective Agreement to give it regulatory status.</p> <p>And subsequently, important dissemination and information of the tool by all the parties involved in the sector, including the public administrations, since this initiative provides legal certainty to the construction industry.</p>
<b>Constraints</b>	<p>The greatest difficulty encountered in this initiative has been the difficulty for workers to receive training through the MOOC courses, sometimes due to the scarcity of time available and on many other occasions due to the lack of digital skills to carry out the training. We must take into account that the sector is ageing and the knowledge for the development of e-training is scarce or non-existent.</p>
<b>Impact</b>	<p>The direct impact of these initiatives on waste reduction is very difficult to measure since it must be produced indirectly by the application of the training acquired in this area by workers in their jobs. And that undoubtedly must lead to an application of circular economy principles to the CDW, as transferred to the trained personnel.</p>
<b>Lessons learned</b>	<p>The experience with the CPC indicates that we are in front of a tool very well considered by the whole sector, we are in front of what we could call, a computerized and always expandable professional curriculum. And that provides security and sustainability to both workers and companies.</p> <p>And as for MOOCs, experience tells us that a lot of training is needed in new technologies, inefficient and sustainable construction to have an updated and consequently competitive sector.</p>
<b>Replicability and/or up-scaling</b>	<p>Within the same construction field, the CPC has been extended to other workers who belong to other sectors but who carry out their professions in the construction sector. Thus, the obtaining of the CPC has also been regulated for workers in the metal sector; in the glass and ceramics sector; in the wood and furniture sector, with the same procedures.</p> <p>This good practice could be extrapolated to the European level, it would be necessary to seek agreement between the representatives of companies and workers at the European level and to advance towards the unification of professional qualifications, where work is already being done. As for the procedure developed in Spain, it would be applicable in Europe by seeking competent entities for its implementation or with the collaboration of public institutions.</p>



Currently, the European Professional Card already exists but only for a few very specific professionals where there is none from the construction sector. This format could also be transferred to the construction sector.

Concerning the MOOC's within the TPC, upscaling and replicability and EU level is facilitated by current accreditation and assessment tools like the European Credit Transfer System for VET (ECVET) and European Qualifications Framework (EQF) and the possibility to establish Memorandums Of Understanding between European Organizations.

#### More info at

Fundación Laboral de la Construcción, Calle Rivas, 25. 28052 Madrid (España)  
Tel: 91 323 34 59  
Fax: 91 733 45 54  
<http://trabajoenconstruccion.com/>  
<https://www.trabajoenconstruccion.com/MOOC/AccesoTrabajoador.aspx>

## Manufacturing

Partner: NTUA

Name of the good practice	CIRCOS
Location/Geographical coverage and timeframe	HQ location: Amsterdam, the Netherlands. Founded: 2019. Circos is available in Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Spain, Sweden, United Kingdom
Sector/Economic Activity	C14 'Manufacture of wearing apparel'
Brief description of the company/organization/action	Circos is an online shop where users rent high-quality design clothes for children from newborn up to 2-3 years and maternity wear. Circos was born out of the passion for a more sustainable alternative to purchasing children and maternity clothing. Circos has introduced a subscription model for baby clothing (and maternity wear) where members pay a monthly fee to access a range of high-quality clothing from different brands, delivered to their door. Clothes are returned when outgrown, and either cleaned and reused, or worn-out garments are recycled into something new



Resource Loop	<i>Reuse/Redistribute; Recycle</i>
Value Creation	<i>Power of the inner circle; Power of circling longer</i>
Circular Business Model	<i>Sharing platform; Lifetime extension;</i>
ReSOLVE Action	<i>Share: Maximize utilization of products</i>
Success factors	<i>The environmental impact and resource use associated with clothing young children is reduced. Clothes businesses are incentivised to make higher quality, more durable clothing, as more revenue can be made through multiple cycles of reuse. People can get regular access to new clothing, but in a way that is less pollutant and more affordable.</i>
Constraints	<i>Circos operates in certain countries, so far.</i>
Impact	<i>Utilising Circos for one year alone could save 72 kilograms of CO2, 2,904 litres of water, and 3.6 kilograms of cotton.</i>
Lessons learned	<i>In the first two years of life, an average child needs 280 pieces of clothing, most of which are only worn for about two or three months and end up in landfills. With Circos, 8 to 10 families enjoy the same pieces of high-quality clothing, extending the lifetime of the product and achieving great environmental benefits compared to traditional consumption.</i>
Replicability and/or up-scaling	<i>Circos example could be followed at national, regional but also local levels. Local similar schemes could help not only to adopt better social and environmental practices but also to promote community capacity building.</i>
More info at	<a href="https://circos.co">https://circos.co</a>

#### Partner: NTUA

Name of the good practice	Shaw Industries Group
Location/Geographical coverage and timeframe	HQ location: Dalton, Georgia, USA. Founded: 1967. Salespeople and/or offices located throughout the U.S. as well as Australia, Belgium, Brazil, Canada, Chile, China, France, India, Mexico, Singapore, United Arab Emirates and the United Kingdom
Sector/Economic Activity	C22 'Manufacture of rubber and plastic products'

<b>Brief description of the company/organization/action</b>	<i>Shaw Industries supplies carpet, resilient, hardwood, laminate, tile and stone, synthetic turf and other speciality products to residential and commercial markets worldwide. Shaw Industries created EcoWorx as a more environmentally friendly alternative to traditional PVC-backed carpet tile. EcoWorx is the world's first Cradle to Cradle Certified carpet tile and the first 100% PVC-free carpet tile backing.</i>
<b>Resource Loop</b>	<i>Refurbish/Remanufacture</i>
<b>Value Creation</b>	<i>Power of the inner circle; Power of circling longer</i>
<b>Circular Business Model</b>	<i>Resource recovery; Product life extension</i>
<b>ReSOLVE Action</b>	<i>Regenerate; Loop</i>
<b>Success factors</b>	<i>The product has been designed to become a carpet tile again. Shaw has developed a takeback program and, to encourage participation, recovers the carpet at no cost to the end-user. Each tile is labelled with a toll-free number on the back to facilitate the process. The economics work because of the intrinsic value built into the product.</i>
<b>Constraints</b>	<i>The EcoWorx product was designed to match the existing durability of current carpet tile products in the market. This was a design constraint and was factored into the design and material choices from the outset.</i>
<b>Impact</b>	<i>Today, Shaw reclaims millions of pounds annually – converting carpet tile back into carpet tile. More than 65 per cent of the products manufactured are Cradle to Cradle Certified. EcoWorx uses 40% less energy in production and weighs 40% less than traditional carpet tile, creating carbon reductions in transport. In addition, at the carpet tile manufacturing facility in Cartersville, Ga. where EcoWorx products are made, solar arrays have been installed generating approximately 1.3 million kilowatt-hours annually.</i>
<b>Lessons learned</b>	<i>The development of EcoWorx incorporates anticipatory design, resource conservation, and material safety. Moreover, Shaw provides mechanisms to explain the benefits of the EcoWorx and educate the marketplace on the desirability of sustainable products as qualitatively, economically, and environmentally friendlier.</i>
<b>Replicability and/or up-scaling</b>	<i>Several end-of-life solutions for carpet tile sustainability are already offered and continue to be developed but they do not significantly reduce the carpet tile waste going to landfills. Therefore, solutions like EcoWorx will and should be expanded for carpet recycling.</i>

More info at	<a href="https://www.shawcontract.com/en-US/TechnicalPage/EcoWorx-(1)">https://www.shawcontract.com/en-US/TechnicalPage/EcoWorx-(1)</a>
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Partner: NTUA

Name of the good practice	Urban Mining Company
Location/Geographical coverage and timeframe	HQ location: Austin, Texas, USA. Founded: 2014. Practically worldwide
Sector/Economic Activity	C27 'Manufacture of electrical equipment'
Brief description of the company/organization/action	Urban Mining Company (UMC) delivers high-performance Nd-Fe-B rare earth magnet products to end-users, deriving >95% of the elements required for manufacture from recycled source material found in end-of-use products
Resource Loop	Refurbish/Remanufacture; Recycle
Value Creation	Power of the inner circle; Power of circling longer; Power of cascaded use; Power of pure circles
Circular Business Model	Resource recovery; Product life extension; Recycled material becomes a resource
ReSOLVE Action	Regenerate; Optimise; Loop
Success factors	UMC has patented a technology to reprocess the scrap magnets into new, custom made magnets. UMC's magnets come with improved properties. Further, by using the magnets found in end-of-use products as a feedstock, UMC is protected from raw material price fluctuations.
Constraints	The supply chain for rare earth elements and rare earth magnets is highly centralized. China controls greater than 90% of the supply chain for rare earth raw materials and more than 85% of manufacturing for Nd-Fe-B magnets. UMC's raw material is not dependent on China but on end-of-use products. There is, however, a lag in this material becoming available, until "end-of-life" is reached.
Impact	The process saves 11 tons of CO <sub>2</sub> per ton of magnet produced relative to magnets using virgin materials and uses 52% of the energy used in traditional magnet manufacturing. It does not produce acidic wastewater or radioactive waste by-products. Further, it reduces carcinogens, smog, respiratory effects, and ozone depletion.
Lessons learned	UMC pointed out that technology may offer multi-benefit solutions. In this case, the product has improved properties,

	<i>is more environmentally friendly and protects both the manufacturer and the client from supply availability and price volatility.</i>
<b>Replicability and/or up-scaling</b>	<i>Currently, less than 1% of the world's rare earth elements (REEs) are recovered or recycled. At the same time, electric motors play an increasingly significant role in society. Nd-Fe-B magnet motors have an efficiency of more than 90% compared to 75% of the typical electric motors. This means that there is plenty of room for new companies in this field.</i>
<b>More info at</b>	<a href="http://urbanminingco.com/">http://urbanminingco.com/</a>

### Partner: SIGMA BUSINESS NETWORK

<b>Name of the good practice</b>	<b>JetK</b>
<b>Location/Geographical coverage and timeframe</b>	<i>Greece/ Athens but sales to more than 25 countries</i>
<b>Sector/Economic Activity</b>	<i>C25 Manufacture of fabricated metal products, except machinery and equipment C25.9 Manufacture of other fabricated metal products</i>
<b>Brief description of the company/organization/action</b>	<i>Jetk is an upcycling company making keychains, pocket tools, knives and multitools out of fighter jet materials. JetK believes that the objective value of these superalloy pieces as well as their glorious operational service record unequivocally preclude their sale &amp; melting like ordinary scrap metal. The superalloy pieces are being mechanically engineered with a CNC Milling machine and laser engraved to meet every customization need that might arise. The final products apart from being unique because of the stories that accompany them, they show exceptional qualities being stronger and lighter than other similar products as well as absolutely rustproof.</i>
<b>Resource Loop</b>	<i>Refurbish/Remanufacture; Recycle</i>
<b>Value Creation</b>	<i>Power of circling longer</i>
<b>Circular Business Model</b>	<i>Resource recovery; Product life extension</i>
<b>ReSOLVE Action</b>	<i>Optimise; Loop</i>
<b>Success factors</b>	<i>The final products apart from being unique because of the stories that accompany them, they show exceptional</i>

	<i>qualities being stronger and lighter than the products of competitors as well as absolutely rust proof.</i>
<b>Constraints</b>	<i>Limited resources as there is a limited number of blades available in each country; Access to get military obsolete materials.</i>
<b>Impact</b>	<i>JetK take advantages of the stacked fighter jets' materials that reached their end of their life. In this way, it prevents waste by collecting certain parts of the jets and remanufactures them into personal equipment.</i>
<b>Lessons learned</b>	<i>An innovative thinking along with cutting-edge technological appliances could turn old scrap metal into piece of art.</i>
<b>Replicability and/or up-scaling</b>	<i>Upcycling airplane parts — that is, using old materials to make something new and different — has gained traction in recent years. There are some attempts worldwide (<a href="https://www.planeindustries.com/">https://www.planeindustries.com/</a>)</i>
<b>More info at</b>	<a href="https://jetk.gr/">https://jetk.gr/</a>

#### Partner: SIGMA BUSINESS NETWORK

<b>Name of the good practice</b>	<b>Sulapac</b>
<b>Location/Geographical coverage and timeframe</b>	<i>Helsinki/ Finland but operating worldwide</i>
<b>Sector/Economic Activity</b>	<i>C22.2.2 Manufacture of plastic packing goods</i>
<b>Brief description of the company/organization/action</b>	<p><i>Sulapac founders were aware of the ever-growing amounts of single-use plastic that fills our lives and seas and they set out to find a solution. As biochemists specializing in biomaterials, they came up with a sustainable alternative to plastic.</i></p> <p><i>Sulapac is a functional alternative to plastic packaging. It biodegrades fully without leaving permanent microplastics behind. Sulapac can be processed with existing plastic product machinery, making the switch from conventional plastic to an eco-friendly alternative easier job.</i></p>
<b>Resource Loop</b>	<i>Reuse/redistribute, refurbish/remanufacture and recycle loops</i>
<b>Value Creation</b>	<i>Power of pure circles</i>
<b>Circular Business Model</b>	<i>Circular supplies</i>

ReSOLVE Action	<i>Regenerate</i>
Success factors	<ul style="list-style-type: none"> <li>- <i>The new standard for sustainable materials replacing plastics.</i></li> <li>- <i>Sulapac® materials can be used with existing plastic converting machinery, enabling a practical and resource-efficient transition towards a cleaner future.</i></li> </ul>
Constraints	<i>Higher price products; Low speed of processing</i>
Impact	<i>Reduce of Plastic consumption; Accelerating the Plastic Waste-Free Future</i>
Lessons learned	<i>There is always expertise in place as well as technology to replace traditional materials responsible for causing environmental issues.</i>
Replicability and/or up-scaling	<i>Many startups innovating with sustainable packaging solutions at Europe-wide and internationally.</i>
More info at	<a href="https://www.sulapac.com/">https://www.sulapac.com/</a>

#### Partner: SIGMA BUSINESS NETWORK

Name of the good practice	<b>CelluComp</b>
Location/Geographical coverage and timeframe	<i>Burntisland, Fife, UK (operating worldwide)</i>
Sector/Economic Activity	<i>C20.3 Manufacture of paints, varnishes and similar coatings, printing ink and mastics</i> <i>C23.6.1 Manufacture of concrete products for construction purposes</i> <i>C32.5 Manufacture of medical and dental instruments and supplies</i>
Brief description of the company/organization/action	<i>CelluComp is a Scottish-based company located in Fife, near Edinburgh. Our team of scientists and business professionals work on the development and commercialisation of sustainable materials. Our principal activity is to develop and commercialise Curran®, a material developed from the extraction of nanocellulose fibres of root vegetables, primarily from sugar beet pulp, which is a by-product of the sugar industry. Curran® offers exceptional mechanical and rheological properties for numerous applications, such as paints and coatings, inks, personal care, home care, paper, food, concrete, drilling fluids, composites and other potential applications.</i>

	<p>CelluComp has invented a proprietary process that is unique in allowing the properties of cellulose nanofibers (CNF) to be fully utilised. Curran® fibres are strong, stiff and light; properties which allow the production of composites with performance characteristics comparable to those based on conventional carbon fibre technology. Bio-composites based on Curran® can be based on a variety of conventional resins such as epoxy, polyurethane and polyester. The platelet structure of Curran® fibres also makes them effective rheology modifiers in end uses such as paints &amp; coatings, concrete, drilling fluids, cosmetics, personal care and home care products. The same platelet structure provides impressive reinforcing effects in paints &amp; coatings, concrete and some personal care products. Curran® is compatible in a variety of common water-based polymer systems such as epoxies, acrylics and polyurethanes.</p>
Resource Loop	Recycle loops
Value Creation	Power of pure circles
Circular Business Model	Circular supplies
ReSOLVE Action	Regenerate; Loop
Success factors	<p>Curran is manufactured from waste or by-products streams produced by the food processing industry. Common raw materials are carrots or sugar beet and, because its feedstocks come from by-products of existing industries, they do not compete with food crops for scarce land.</p> <p>Not only does CelluComp use root vegetable fibre as its feedstock but it also processes Curran® using safe, non-toxic materials. Given root vegetables contain a loose cell structure (unlike woody fibres), low levels of chemicals, enzymes and energy are needed to produce Curran.</p> <p>During the process of making Curran, CelluComp can recycle its water use and even produce energy through the mechanisation of its waste streams during production. This means that CelluComp is not only making high-valued materials from waste streams, but it is also creating energy from its waste streams.</p>
Constraints	Target markets are conservative, and adoption is long and time-consuming;

	<i>Piloting and testing a novel product is time-consuming and costly.</i>
<b>Impact</b>	<p><i>Low carbon footprint due to an efficient process.</i></p> <p><i>Compared to other additives used in paints, Curran has a low carbon footprint due to its efficient process and Curran is not chemically modified.</i></p> <p><i>When adding small doses of Curran® to paints, formulators can reduce significant quantities of other materials, making the paint formulation safer for the environment and more economically viable for paint companies.</i></p>
<b>Lessons learned</b>	<i>High market potential and strong potential in multiple industries</i>
<b>Replicability and/or up-scaling</b>	<i>Many initiatives are ongoing in the EU (<a href="http://news.bio-based.eu/media/2019/03/KI0718113ENN.en_.pdf">http://news.bio-based.eu/media/2019/03/KI0718113ENN.en_.pdf</a>)</i>
<b>More info at</b>	<a href="https://www.cellucomp.com/">https://www.cellucomp.com/</a>

### Partner: PCX Computers & Information Systems Ltd

<b>Name of the good practice</b>	<b>StoneCycling</b>
<b>Location/Geographical coverage and timeframe</b>	<i>The StoneCycling office is in Amsterdam North, Netherlands but its operation is worldwide. Since 2011</i>
<b>Sector/Economic Activity</b>	<i>C32 Other Manufacturing</i>
<b>Brief description of the company/organization/action</b>	<p><i>StoneCycling develops the next generation of high-end, sustainable materials. Their mission is to decrease the world's waste streams – without compromising aesthetically. All of their products meet industry standards and can be used for both interiors and exteriors.</i></p> <p><i>WasteBasedBricks® can be found all over the world in facades, wall cladding and flooring of high-end, sustainable architectural projects.</i></p> <p><i>The building materials are made from 100% upcycled waste with a positive carbon impact on the planet.</i></p>
<b>Resource Loop</b>	<i>Recycle</i>
<b>Value Creation</b>	<i>Power of circling longer</i>
<b>Circular Business Model</b>	<i>Circular supplies</i>



ReSOLVE Action	<i>Loop: Manufacturing bricks from 100% demolitions waste.</i>
Success factors	<i>They produce all WasteBasedBricks® products on a project basis. This allows them to accommodate any architect, any design and any unique requirements and wishes of a specific project.</i>
Constraints	<i>N/A</i>
Impact	<i>From 2011 they have upcycled 510.595 kg waste</i>
Lessons learned	<i>Quality products following industry standards can be made with waste materials.</i>
Replicability and/or up-scaling	<i>From 2018 they are producing bricks in the US for the local market to avoid exporting and improve the CO2 footprint.</i>
More info at	<a href="http://www.StoneCycling.com">www.StoneCycling.com</a>

#### Partner: PCX Computers & Information Systems Ltd

Name of the good practice	<b>Waste2wear</b>
Location/Geographical coverage and timeframe	<i>Waste2Wear established in China since 1998 by the Dutch textile engineer Monique Maissan. Nowadays they employ 80 employees, covering almost 20 nationalities and have offices in nine countries around the world.</i>
Sector/Economic Activity	<i>C13 Manufacturing Textiles</i>
Brief description of the company/organization/action	<i>Waste2Wear produces fabrics and textile products from recycled plastic bottles. The company started as a spin-off of Vision Textiles, intending to produce high-quality garments responsibly. Ever since Waste2Wear was founded, it challenged the fashion and textile industry to be a force for good. By applying circular economy solutions and a clear focus on reducing plastic waste, they bring a positive environmental impact.</i>
Resource Loop	<i>Recycle-Reduce-Reuse</i>

Value Creation	<i>Power of circling longer</i>
Circular Business Model	<i>Circular supplies</i>
ReSOLVE Action	<i>Loop: Manufacturing textiles, bags and accessories from waste plastic bottles.</i>
Success factors	<i>Recycled polyester is made from recycled plastic bottles. By choosing recycled polyester, they can deliver the same technical performance in fabric, but with a significantly smaller environmental footprint. Almost any fabric can be developed with RPET yarns.</i>
Constraints	
Impact	<p><i>Almost every product has a manufacturing process that consumes energy and water and produces carbon dioxide emissions and as such has an environmental impact. Using R-PET (Recycled polyester) instead of regular polyester they save:</i></p> <ul style="list-style-type: none"> <li><i>• 70% less Energy</i></li> <li><i>• 86% less Water</i></li> <li><i>• 75% less CO2</i></li> </ul> <p><i>To reduce waste, they make responsible decisions about which materials to use. For example, if they use five pounds of RPET yarn to make Waste2Wear® fabric they can:</i></p> <ul style="list-style-type: none"> <li><i>• Save one full gallon of gasoline</i></li> <li><i>• Save enough water to provide drinking water to one person for five days!</i></li> <li><i>• Save the amount of greenhouse gas emitted while driving a hybrid car for almost 15 miles</i></li> </ul>
Lessons learned	<i>Through using plastic waste as a resource for textiles an important step of this circular value chain is fulfilled. They are committed to connect with partners to explore opportunities for recycling end-of-life garments into new yarns. They support the circular design and closed-loop recycling from creating infinite loops for recycled textiles.</i>
Replicability and/or up-scaling	<i>Nowadays they employ 80 employees, covering almost 20 nationalities and have offices in nine countries around the world.</i>
More info at	<a href="https://www.waste2wear.com/">https://www.waste2wear.com/</a>

Partner: PCX Computers & Information Systems Ltd

Name of the good practice	4RE Energyprom Ltd
Location/Geographical coverage and timeframe	<i>4RE ENERGYFROM LTD is a Limited Company registered in Cyprus on 31 Dec 2015. It is operating in Cyprus and its located in Nicosia.</i>
Sector/Economic Activity	<i>C27 Manufacture of electrical equipment</i>
Brief description of the company/organization/action	<i>4Re Energyprom Ltd is an innovative company that uses state-of-the-art machinery to prolong the life of all types of lead batteries (golf carts, photovoltaics, trucks, cars, forklifts, marine, ups, etc). The regeneration process dissolves the salt sulphide acid of the batteries and enables them to reproduce energy.</i>
Resource Loop	<i>Regenerate - Reuse - Reduce - Recycle</i>
Value Creation	<i>Power of the inner circle</i>
Circular Business Model	<i>Lifetime extension</i>
ReSOLVE Action	<i>Regenerate</i>
Success factors	<i>Reliable procedure with the 1-year warranty. If the battery cannot be regenerated the is recycled.</i>
Constraints	<i>The limited area operation and the cost of battery regeneration.</i>
Impact	<i>Benefits of regenerated lead acid batteries: – Extension of life from 2-3 years – Cost reduction of up to 55% – Reduction in environmental footprint</i>
Lessons learned	<i>Extending the lifetime of product and achieving great environmental benefits compared to traditional consumption.</i>
Replicability and/or up-scaling	<i>n.a</i>
More info at	<i><a href="https://www.linkedin.com/company/energyprom-ltd/about/">https://www.linkedin.com/company/energyprom-ltd/about/</a></i>

Partner: Chamber of Commerce and Industry Vratsa & CSMKIK

Name of the good practice	Fairphone
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<b>Location/Geographical coverage and timeframe</b>	<i>The company's head office is based in Amsterdam, the Netherlands. It became an independent company in 2013. Currently it has over 70 employees in 20 European countries.</i>
<b>Sector/Economic Activity</b>	<i>MANUFACTURING C. 26.40 Manufacture of consumer electronics</i>
<b>Brief description of the company/organization/action</b>	<p><i>In 2013, Fairphone launched a movement for fairer electronics. They create sustainable smartphones, making a positive impact across the value chain in mining, design, manufacturing and life cycle, while expanding the market for products that put people and environment first. Fairphone has designed and produced an innovative smartphone that is designed to be long-lasting, uses conflict-free tin and tungsten and has a transparent supply chain whose environmental footprint is minimal.</i></p> <p><i>Together with their community, they are changing the way products are made. Fairphone products are easy to repair and last longer. The company cares about waste reduction and sustainable electronics industry.</i></p>
<b>Resource Loop</b>	<i>Maintenance; remanufacture; recycle</i>
<b>Value Creation</b>	<i>Power of the inner circle with the product's maintenance and repair; Power of circling longer; Power of cascaded use; Power of pure circles</i>
<b>Circular Business Model</b>	<i>Product life extension business model concerned with extending the lifecycle of the product by repair, upgrade, and sustainability; Circular supplies; Resource recovery; Ssharing platforms.</i>
<b>ReSOLVE Action</b>	<i>Share: prolong the product's lifespan through maintenance, repair, ad upgrade. Loop; Exchange.</i>
<b>Success factors</b>	<p><i>An important success factor is the social one – Fairphone has a community of supporters and advocates who make the change possible. One of their aims is to improve the job satisfaction of workers in the industry.</i></p> <p><i>They succeed by putting the environment and people first and with the help of their suppliers, local community, and the wider industry.</i></p> <p><i>In addition to using fair materials and providing good working conditions, they recycle old phones. They sell spare parts and offers repair tutorials to help make one's phone useful for as long as possible. The take-back program supports the reuse/recycling of old phones.</i></p>

	<i>This good practice seems by far quite successful because it puts people to the forefront and by having followers and supporters.</i>
<b>Constraints</b>	<i>The behavioural change of users is necessary, they have to accept the higher prices of Fairphones. Complex process is needed to make manufacturing circular.</i>
<b>Impact</b>	<p><i>More than 175,000 Fairphones have been produced and sold and nearly 100,000 waste phones have been shipped back from Ghana to date to extract and reuse the minerals within.</i></p> <p><i>The good practice has and will have in the future a considerable impact on the circular economy as it prolongs the life span of products that are widely used daily.</i></p>
<b>Lessons learned</b>	<p><i>The key message learned is that repaired, upgraded, and well-maintained products can be as useful, practical, and modern as new ones and the change to circularity and care for the environment depends on the changing mindset of the individual and the society as a whole.</i></p> <p><i>Manufacturing longer-lasting products and encouraging the reuse and repair of them can pay off financially.</i></p>
<b>Replicability and/or up-scaling</b>	<p><i>Replicability is possible but the lack of circular infrastructure makes it difficult to manufacture electronic products.</i></p> <p><i>This good practice can and will be extended more widely (outside Europe) as it gains more and more supporters.</i></p>
<b>More info at</b>	<a href="https://www.fairphone.com/en/">https://www.fairphone.com/en/</a>

### Partner: Chamber of Commerce and Industry Vratsa

<b>Name of the good practice</b>	<b>Rockwool Group</b>
<b>Location/Geographical coverage and timeframe</b>	<i>The Rockwool group is the world's leading manufacturer of stone wool insulation. It started as a family business more than 80 years ago and currently they operate 45 manufacturing facilities around the world.</i>
<b>Sector/Economic Activity</b>	<p>MANUFACTURING</p> <p>C.23.20 Manufacture of refractory products</p>
<b>Brief description of the company/organization/action</b>	<p><i>Rockwool offers a full range of sustainable insulation products for the construction industry. The company uses stone, one of the world's most abundant natural resources, to face the challenges of modern living.</i></p> <p><i>They recycle waste materials, recycle their own waste in closed circuits and design products with long life and unlimited recycling. One of the most valuable features of</i></p>

	<p>stone wool is that it can be made from materials that would otherwise be deposited or removed from the economic cycle. In general, about one-third of the raw materials used by Rockwool, consist of recycled waste (with a change in the purpose of the material) from metal production, power plants and wastewater treatment plants.</p> <p>Another key aspect of the circular economy is the so-called "disassembly design". In order for products to be recycled, they must be easily disassembled and the individual materials from which they are made must be separated. The use of modular and easy-to-disassemble building materials also makes it possible to reuse them when making changes to spaces instead of having to throw them away.</p> <p>Stone wool is used to produce products that retain the same characteristics throughout their long service life and are easily dismantled, reused and recycled. Its qualities make ROCKWOOL products an indispensable ingredient in the transition to a more sustainable, circular economy.</p>
Resource Loop	Recycle loop where waste materials are being recycled.
Value Creation	Power of circling longer with the recycling of waste and Power of cascaded use with reuse of products and materials within and between industries.
Circular Business Model	Circular supplies business model by cutting waste
ReSOLVE Action	Optimize: improving products by reducing waste Loop – recycling materials
Success factors	Since insulation products are needed in the construction industry, a prerequisite for the success of this good practice to be replicated might be lawfully set institutional and environmental rules for the construction of buildings.
Constraints	Constraints can be the lack of a skilled workforce and /or technology.
Impact	The impact of the good practice to the circular economy is the usage of recyclable resources, the design of products with long life, and the reduction of waste.
Lessons learned	The key message learned is that successful companies in the future will be those that produce sustainable products with care for the environment.
Replicability and/or up-scaling	The good practice is already successfully replicated due to the high demand for quality products.
More info at	<a href="https://www.rockwool.com/">https://www.rockwool.com/</a>

## Partner: Chamber of Commerce and Industry Vratsa

<b>Name of the good practice</b>	<b>Biomyc</b>
<b>Location/Geographical coverage and timeframe</b>	<i>The company was initiated in June 2017. It is based in Pleven (North-Western Bulgaria) and currently operates in Bulgaria.</i>
<b>Sector/Economic Activity</b>	<i>M — PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES M.72.11 Research and experimental development on biotechnology</i>
<b>Brief description of the company/organization/action</b>	<p><i>The company started as an R&amp;D company aiming to bring sustainable products to market. Their initial goal was to develop a biodegradable alternative to Styrofoam using agricultural residue and the root structure of mushrooms as a binder. By 2018 they have finished their in-lab technology, formed their team, and won several awards.</i></p> <p><i>While reaching out to potential customers, Biomyc realised that there is a big market demand for sustainable packaging and the companies needed different complex packaging solutions. Multiple technologies had to be combined to fit the needs of more customers.</i></p> <p><i>Thus, the company increased its portfolio of products and services to bring a sustainable product to market sooner.</i></p> <p><i>The goal of the company is to create a production facility for sustainable packaging in Bulgaria by 2022 that will satisfy EU wide demand and take advantage of the great manufacturing conditions in the country.</i></p>
<b>Resource Loop</b>	<p><i>The packaging is created in an entirely sustainable process without any harm to the environment. Using agricultural residue and the root structure of mushrooms this packaging solution can be tailor-made.</i></p> <p><i>Reuse / Recycle</i></p>
<b>Value Creation</b>	<i>Power of cascaded use involving the reuse of products and materials.</i>
<b>Circular Business Model</b>	<i>Circular supplies business model using biodegradable resources and cutting waste.</i>
<b>ReSOLVE Action</b>	<i>Loop</i>
<b>Success factors</b>	
<b>Constraints</b>	<i>A challenge in applying the good practice is the funding available. This is addressed by the active participation in relevant programmes and projects. Another challenge might be the lack of professionals operating in the field.</i>

<b>Impact</b>	<i>This good practice has an important impact on the circular economy as it brings sustainable products to market as per the specific need of the customer.</i>
<b>Lessons learned</b>	<p><i>The lesson learned from this good practice is that your great idea can be successful if you:</i></p> <ul style="list-style-type: none"> <li>- <i>Are active and search for ways of support (funding);</i></li> <li>- <i>Build a network of stakeholders;</i></li> <li>- <i>Offer products /services that fit different customers' needs.</i></li> </ul>
<b>Replicability and/or up-scaling</b>	<p><i>In order for the good practice to be successfully replicated there should be enough funding for the realisation as well as customer demand.</i></p> <p><i>The most important requirement for the replication of this good practice more widely is the necessity to have professionals in the specific field with the relevant know-how.</i></p>
<b>More info at</b>	<a href="https://biomyc.eu/">https://biomyc.eu/</a>

**Partner: CSMKIK**

<b>Name of the good practice</b>	<b>Platio Solar Pavement</b>
<b>Location/Geographical coverage and timeframe</b>	<i>It is a Budapest-based (Hungary) company, they made their debut into the spotlight in 2017 at the World Expo in Kazakhstan. Since then they have also established a solar pontoon bridge in Sweden.</i>
<b>Sector/Economic Activity</b>	<i>C22 Manufacture of rubber and plastic products, C27 Manufacture of electrical equipment</i>
<b>Brief description of the company/organization/action</b>	<i>Platio is a tech company focused on creating sustainable building materials. The start-ups' main idea: if we're covering our cities in concrete paving slabs, why not make them out of recycled waste and get them to produce clean energy?</i>
<b>Resource Loop</b>	<i>Recycle</i>
<b>Value Creation</b>	<i>Power of cascaded use</i>
<b>Circular Business Model</b>	<i>Circular supplies</i>
<b>ReSOLVE Action</b>	<i>Regenerate; Loop</i>



Success factors	<i>The product is versatile: it can be built into street furniture, sidewalks, on small or large surfaces. The low price of recycled plastic provides a competitive advantage at the production phase.</i>
Constraints	<i>In Hungary there is a special tax for solar products, it can affect the domestic demand.</i>
Impact	<i>Using 90% recycled plastic, the company has created solar panel pavement 'slabs' that fit together like Lego bricks and can be applied anywhere. With a peak output of 11.7kw, which can power a standard light bulb for around 117 hours,</i>
Lessons learned	<i>Similar solar panels have already existed but the company upscale the product with a simple idea. Using recycled materials made it possible to set lower prices and to reduce the environmental impact at the same time.</i>
Replicability and/or up-scaling	<i>The company is planning to increase the proportion of recycled material to 100 per cent in the long run by refining production.</i>
More info at	<a href="http://platosolar.com/">http://platosolar.com/</a>

#### Partner: CSMKIK

Name of the good practice	Green Printing from Hungary
Location/Geographical coverage and timeframe	<i>The Budapest-based (Hungary) company was established in 1985. Green printing from 2010</i>
Sector/Economic Activity	<i>18 Printing and reproduction of recorded media</i>
Brief description of the company/organization/action	<i>The printing company is carbon neutral: the raw materials come from conscious forest management; their printing activity has a carbon-neutral certification. The company has developed a green mindset and they promote sustainability principles among clients.</i>
Resource Loop	<i>Recycle circles</i>
Value Creation	<i>Power of cascaded use; Power of pure</i>
Circular Business Model	<i>Circular supplies</i>
ReSOLVE Action	<i>Loop</i>

Success factors	<i>The company use recycled paper made from wastepaper, FSC raw material from certified forestry, vegetable oil-based paint, reused stamps and they also have chemical and alcohol-free solutions. The green concept appears at all areas: marketing, management, green consulting services for clients.</i>
Constraints	<i>Health and safety legislation limit the scope of use in case of recycled materials.</i>
Impact	<i>The company uses more than 50% environmentally friendly paper. The stamps they use are from reused plastic in 60%.</i>
Lessons learned	<i>Raising environmental awareness among clients, suppliers and other business partners can help to create a market need for sustainable products.</i>
Replicability and/or up-scaling	<i>The good practice is replicable by printing companies. The transformation of manufacturing processes may need financial resources, but some minor change can improve the circularity.</i>
More info at	<a href="https://folprintnyomda.hu/">https://folprintnyomda.hu/</a>

#### Partner: CSMKIK

Name of the good practice	<b>Tarkett, ReStart Program</b>
Location/Geographical coverage and timeframe	<i>Tarkett is based in Paris, France, and it was founded in 1886. The company have 34 factories worldwide and sales in over 100 countries.</i>
Sector/Economic Activity	<i>22 Manufacture of rubber and plastic products</i>
Brief description of the company/organization/action	<i>Tarkett is a flooring and sports surface manufacturer and sale company. In ReStart take-back program they collect post-installation and post-consumer flooring, to recycle and reuse it as a new resource.</i>
Resource Loop	<i>Remanufacture; Recycle loops</i>
Value Creation	<i>Power of cascaded use; Power of pure circles</i>
Circular Business Model	<i>Circular supplies; Resource recovery</i>
ReSOLVE Action	<i>Loop</i>
Success factors	<i>The company collects a lot of used, polluting plastic including vinyl and linoleum, and they reuse them as new flooring materials and carpet.</i>

Constraints	<i>The use of the collected materials is limited because of high health and safety standards. They give the unused materials to their partners from other sectors, who can recycle them.</i>
Impact	<i>The company has 8 dedicated recycling centres. Tarkett has collected more than 105000 tonnes of flooring through ReStart from 2010 to 2019 in Europe, Brazil and North America.</i>
Lessons learned	<i>Various types of plastic waste can be used as secondary raw material.</i>
Replicability and/or up-scaling	<i>Collecting and recycling used plastics is possible in other sectors without large-scale investment.</i>
More info at	<a href="https://professionals.tarkett.com/en_EU/node/restart-recycling-take-back-programme-9721">https://professionals.tarkett.com/en_EU/node/restart-recycling-take-back-programme-9721</a>

## Crafts

Partner: PCX Computers & Information Systems Ltd

Name of the good practice	Denou marble jewelry
Location/Geographical coverage and timeframe	<i>Denou was established in Greece in a small island, Tinos.</i>
Sector/Economic Activity	<i>C32 Other manufacturing / Crafts</i>
Brief description of the company/organization/action	<p><i>They design and create jewellery, handmade, visual, alternative, modern, minimal, with unexpectedly modern or recyclable, ecological materials, bags with special design and natural materials.</i></p> <p><i>They use materials such as marble, silver, semi-precious stones, metals, fabrics, ties, zippers, old buttons, soft drink caps and cricks, vinyl discs, cd, rubber, computer keys, ropes, aluminium, empty Nespresso coffee capsules, plastic, magazines, newspapers, curtains and everything else inspires them.</i></p>
Resource Loop	<i>Recycle-Reduce-Reuse</i>
Value Creation	<i>Power of circling longer</i>
Circular Business Model	<i>Circular supplies</i>
ReSOLVE Action	<i>Loop: Manufacturing jewellery from almost everything wasted</i>

Success factors	<i>Innovative and creative design, alternative art</i>
Constraints	<i>no</i>
Impact	<i>Difficult to estimate the impact in the circular economy indexes.</i>
Lessons learned	<i>Art can be created from waste too! It is a very good example for small crafts. Low cost and most of the time free raw material. Minimized the production costs, help the environment and promote art.</i>
Replicability and/or up-scaling	<i>The new online shop helps the artist to expand their market and share their creative art pieces.</i>
More info at	<a href="http://denou.gr">denou.gr</a>

#### Partner: NTUA

Name of the good practice	<b>Salty Bag</b>
Location/Geographical coverage and timeframe	<i>HQ location: Corfu, Greece. Founded: 2013. Salty Bag products are available worldwide</i>
Sector/Economic Activity	<i>C14 'Manufacture of wearing apparel'</i>
Brief description of the company/organization/action	<i>Salty Bag designs and handcrafts handbags, totes and luggage that know, and weather, the elements. Salty Bag reuses decommissioned sails, giving them a new life and new value. Even after reaching their end of service at sea, sails will retain their strong, long-lasting, weather-resistant nature perfect for being upcycled into tough, elegant travel bags and accessories to cherish for years to come</i>
Resource Loop	<i>Reuse/Redistribute; Recycle</i>
Value Creation	<i>Power of the inner circle; Power of circling longer</i>
Circular Business Model	<i>Resource recovery; Product life extension</i>
ReSOLVE Action	<i>Regenerate; Optimise; Loop</i>
Success factors	<i>Every Salty Bag is a unique piece, which means that no two bags will ever be alike. Furthermore, Salty Bag cleans, washes, repairs and refurbishes firm's bags for free and charges only for major restorations. Finally, Salty Bag</i>

	<i>receives back at old bags offering a 30% discount on a new bag. The old Salty Bag bags are converted into a new Salty Bag.</i>
<b>Constraints</b>	<i>Products are relatively expensive.</i>
<b>Impact</b>	<i>Salty Bag prevents waste by making smarter use of end-of-life sails used in cruising. Reusing sails reduces the carbon footprint of the product and creates environmental value. Moreover, using a modular system, each Salty Bag minimizes waste and can be upgraded into the latest design.</i>
<b>Lessons learned</b>	<i>Textiles are the fourth highest-pressure category for the use of primary raw materials and water, and fifth for GHG emissions. Nevertheless, it is estimated that less than 1% of all textiles worldwide are recycled into new textiles. Salty Bag, and similar companies, support the creation of an EU market for sustainable and circular textiles and drive new business models.</i>
<b>Replicability and/or up-scaling</b>	<i>Salty Bag example could be followed by other companies. Indeed, there are similar companies in Europe (e.g. <a href="https://sailsbags.wixsite.com/sailsbags">https://sailsbags.wixsite.com/sailsbags</a>) and elsewhere (e.g. <a href="https://vintagesailbags.com/shop/">https://vintagesailbags.com/shop/</a>)</i>
<b>More info at</b>	<a href="https://saltybag.com/">https://saltybag.com/</a>

### Partner: SIGMA BUSINESS NETWORK

<b>Name of the good practice</b>	<b>Convert Art</b>
<b>Location/Geographical coverage and timeframe</b>	<i>Greece/ Athens</i>
<b>Sector/Economic Activity</b>	<i>C32.1 Manufacture of jewellery, bijouterie and related articles</i>
<b>Brief description of the company/organization/action</b>	<p><i>Convert Art is an upcycling startup company in Greece, that manufactures handmade bags, jewellery, accessories and utensils made exclusively from used tubes, tires, electrical material, and aluminium.</i></p> <p><i>It started in 2012 when the creator of the company happened to be in a car repair shop. There were a lot of discarded tires in the area and so she thought of experimenting with one of them. She borrowed the tools of the workshop and made her first belt. At the same time, she started to process an old portable speaker, the parts of which ended up becoming a colourful and imaginative piece of jewellery.</i></p>

	<i>This is how the beginning was made, collecting tubes, tires and electrical material. And that's how Convert Art was born and its products now count more than 60 different genres and over 400 different designs.</i>
<b>Resource Loop</b>	<i>Reuse/redistribute, refurbish/remanufacture</i>
<b>Value Creation</b>	<i>Power of circling longer; Power of cascaded use</i>
<b>Circular Business Model</b>	<i>Resource recovery; Product life extension</i>
<b>ReSOLVE Action</b>	<i>Optimise; Loop</i>
<b>Success factors</b>	<p><i>Creativity has been the first success factor for this case while the second has been the extroversion of the founders as they use very well marketing tools including expositions and competitions to advertise their circular products.</i></p> <p><i>Furthermore, all creations of Convert Art are handmade and unique pieces.</i></p> <p><i>To date, it has over 35 points of sale in Greece, Cyprus and abroad.</i></p>
<b>Constraints</b>	<i>Expensive products</i>
<b>Impact</b>	<i>Reuse and refabricate more than 35 tons of tyres and bicycles' inner tubes</i>
<b>Lessons learned</b>	<i>A large amount of waste of tires, inner tubes and electronic equipment can be used as the basic raw material for a start-up company and make it profitable and well-placed on National and pan-European level. In order this to happen it needs a well-established plan and of course creativity.</i>
<b>Replicability and/or up-scaling</b>	<i>There are many companies worldwide using such products to manufacture jewellery.</i>
<b>More info at</b>	<a href="https://convertart.gr/">https://convertart.gr/</a>

#### Partner: Chamber of Commerce and Industry Vratsa

<b>Name of the good practice</b>	<b>Zona Urbana</b>
<b>Location/Geographical coverage and timeframe</b>	<i>The company operates since 2004. There are physical shops in Sofia and an online shop. The owner has the idea to open a shop in another country (Spain or Germany).</i>

Sector/Economic Activity	<i>C Manufacturing C.17.29 Manufacture of other articles of paper and paperboard</i>
Brief description of the company/organization/action	<i>It all began in 2004 when Julian Kirilov, the owner, started an experiment and decided to create bags from recycled parts. He used canvases from old billboards for the pockets and damaged car seat belts for shoulder straps. He eventually developed the brand Zona Urbana. The materials used are coffee packs, empty boxes of washing powder, old Bulgarian newspapers and magazines, etc. The recycled materials are used to produce handmade bags, wallets, toys, bracelets, and others.</i>
Resource Loop	<i>Coffee packs from the coffee shops, empty boxes of washing powder from the dry clean offices (which become separators for business and credit cards), flour and corn sacks, old newspapers, magazines, and letters. Reuse/redistribute</i>
Value Creation	<i>Power of cascaded use – diversify reuse of paper between the food industry and the fashion industry. The products are handmade and unique made out of recycled materials.</i>
Circular Business Model	<i>Product life extension business model with an extended lifecycle of the materials /products</i>
ReSOLVE Action	<i>Loop – remanufacturing products and components</i>
Success factors	
Constraints	<i>The challenges are that the handmade products are more expensive and although the products are unique, they are not affordable to the mass consumer. Those challenges are addressed by reaching a bigger audience (also abroad).</i>
Impact	<i>The impact of this good practice for the CE is the reuse of materials thus contributing to improved waste management.</i>
Lessons learned	<i>The lessons learned are that different industries can easily combine forces towards the reuse of materials and achieve great results.</i>
Replicability and/or up-scaling	<i>This good practice can be successfully replicated in countries where there is interest in unique fashionable items made by recycled materials.</i>  <i>This good practise can be extended more widely without any difficulties at national and even international scale.</i>
More info at	<a href="https://www.zurbana.com/">https://www.zurbana.com/</a>

Partner: ISQ

<b>Name of the good practice</b>	<b>Boa Safra</b>
<b>Location/Geographical coverage and timeframe</b>	<i>Vila Nova de Gaia, Portugal, founded in 2010.</i>
<b>Sector/Economic Activity</b>	<i>31 Manufacture of Furniture/ Crafts</i>
<b>Brief description of the company/organization/action</b>	<i>Boa Safra means good harvest in Portuguese. Every year they select and develop new products: Boa Safra Design Harvest. The pieces are conceived by Portuguese designers and made locally, with time and dedication. Boa Safra products are defined by aesthetic simplicity, timeless design and the use of both natural materials and finishes.</i>
<b>Resource Loop</b>	<i>Recycle -Reuse</i>
<b>Value Creation</b>	<i>Power of the inner circle – maintenance loop – they receive old furniture from clients Power of circling longer – durable goods Power of pure circles – eco-design principles</i>
<b>Circular Business Model</b>	<i>Circular supplies - phasing out scarce resources by using fully renewable, recyclable or biodegradable resources</i>  <i>Resource recovery – by capturing embedded value at the end of one product lifecycle – old furniture - to feed into another via innovative recycling and upcycling services.</i>
<b>ReSOLVE Action</b>	<i>Share - prolong life through design for durability, upgradability Loop – remanufacture of products</i>
<b>Success factors</b>	<i>As a Design Editor company, Boa Safra seeks to contribute to sustainable living beyond Home Design. They share a systemic vision that involves us all in redefining society to accommodate ecological challenges. At Boa Safra headquarters they are developing a pole for sustainable living that is called ECO LIFE DESIGN. They have several partners and projects going on with practical proposals of local impact for the development of a more sustainable life. Local Organic Vegetable Garden Get to know - Bioagro; Beekeeping; Play -Learning Community for Children.</i>



	<p><i>Boa Safra promotes environmental awareness, thought workshops.</i></p> <p><i>Based on the accumulated experience and a solid and multidisciplinary team, Boa Safra also has a bespoke furniture service and develops fully personalized products adapted to specific spaces or features.</i></p> <p><i>There is also a line of paints and biological oils for natural finishing of walls, floors, decks, windows and furniture.</i></p>
<b>Constraints</b>	<i>All furniture is handmade, using plain wood and ecological materials and sustainable design. Service is tailored and personalized. The final price is high, excluding general buyers.</i>
<b>Impact</b>	<i>Good design takes care of the relationship between the economy, the people and the planet, ensuring that the needs of the present generation do not compromise the needs of a future generation.</i>
<b>Lessons learned</b>	<p><i>Good design seeks to be timeless. Understands fashion and trends to transcend them. Uses durable materials that can be repaired and maintained.</i></p> <p><i>Good design does not hide the essence of materials. The inhabited space must translate the truth of its inhabitants. Space and objects must be authentic.</i></p> <p><i>Good design is inclusive. Intuitive, self-explanatory, ergonomic and affordable. When designing for a group or society, good design seeks to ensure that no one is excluded from their use or enjoyment of space or objects.</i></p>
<b>Replicability and/or up-scaling</b>	<p><i>Up-scale the network of partners and designers.</i></p> <p><i>Expand the business model outside Portugal (with local shops, designers and artisans in other European countries).</i></p>
<b>More info at</b>	<a href="https://boasafra.pt/about-us/#">https://boasafra.pt/about-us/#</a>

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