

COLLABORATIVE RECYCLING/REUSE BUSINESS MODEL TOOLKIT



Green-4-Future
Greening the EntreComp Framework to Reconcile Economic
Development and Environmental Security

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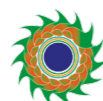


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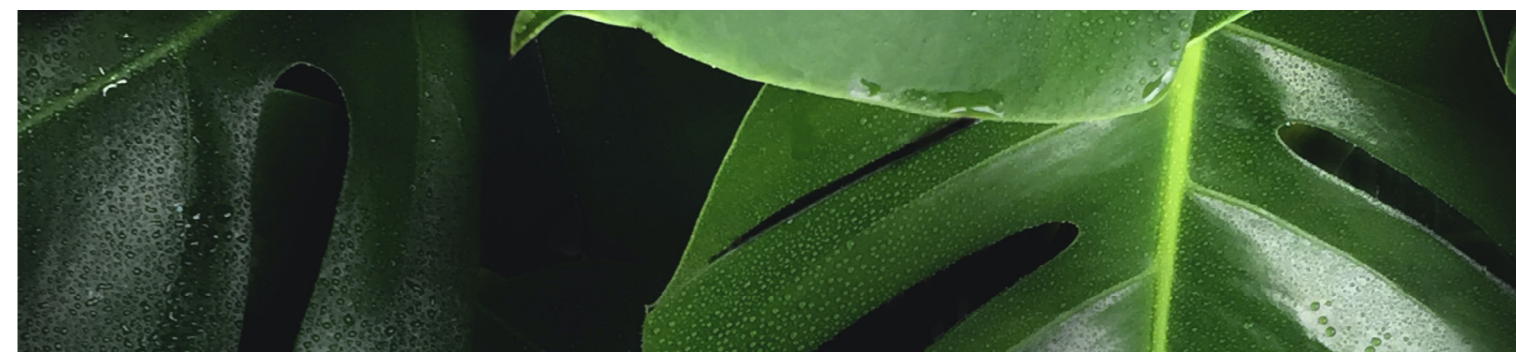
1. COLLABORATIVE RECYCLING/ REUSE MODEL: INTRODUCTION

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The Collaborative Recycling/Reuse Circle Business Model (CRRCBM) develops “a system for stakeholders to interact with each other to facilitate the use/reuse of end-of-life products, reduce waste, and implement the eco-credits awarding scheme to encourage people to recycle/reuse” (CIRC4life, 2020). The CRRCBM was developed within the CIRC4life project¹. The goals of the CRRCBM are 1) to extend the product’s lifecycle by reusing and 2) to avoid new raw material extraction by recycling. To accomplish these goals, the CRRCBM combines two circle business models – Reusing/Repairing and Recycle. The mean that unites the two models is the sorted collection of waste. The model is based on a user-friendly collection system for sorted waste and involves all stakeholders: citizens, businesses, and municipalities. The key business model innovation of the CRRCBM is supported by a smartphone app and eco-credits incentive scheme, which rewards citizens for sorting their waste.

The key innovations of the CEBM are:

- the ICT-based reuse/recycling system
- an eco-credit/eco-cost-based consumer app
- incentive schemes for reducing, reusing, and recycling
- awareness activities



¹ CIRC4Life is an international collaborative innovation project (May 2018 until April 2021) with the aim to develop and implement a circular economy approach for sustainable products and services through their value and supply chains.

1.1 KEY FEATURES

The model includes all stakeholders – citizens, businesses (manufacturers, retailers, companies exploiting wastes), and municipalities.

The business model owner creates: 1) a collection system for sorted waste and 2) a smartphone app for citizens. The waste can be collected in several ways: intelligent bins or containers located on streets or supermarket areas, through door-to-door collecting services, or by delivery companies. The smartphone app informs citizens where and how the waste is collected, allows users to identify themselves, links their disposal to their account, informs them if their waste has been recycled or reused, displays the rewards obtained, and provides information on where to redeem the rewards. Local stores or municipalities can offer incentives in the form of discounts on specific products or municipal services. The business owner will send the collected waste to sorting centres. From there, they will be sent on to be repaired, reused directly, or threatened for redistribution as raw material (Arieta-araunabeña et al., 2019). Manufacturers can keep the waste for their use.

In their work, Osterwalder et al. (2005) list and describes features of the nine “key elements” of the business model: 1) The value proposition – customer’s needs, the product that meets these needs, and the product value from the customer’s point of view; 2) The target customer segments - the group of customers to target; 3) The communication and distribution channels to influence customers and offer the value proposition; 4) The relationships with customers; 5) The core capacities required to make the business model possible; 6) The activities for the business model implementation; 7) The partners and their motivation to collaborate in the business model realisation; 8) The revenue streams created by the business model; 9) The cost structure resulting of the business model (Olofsson & Farr, 2008).

Figure 1 (shown on the next page) visually represents the semantic summary of the Collaborative Recycling/Reuse circular business model (CIRC4life, 2020).

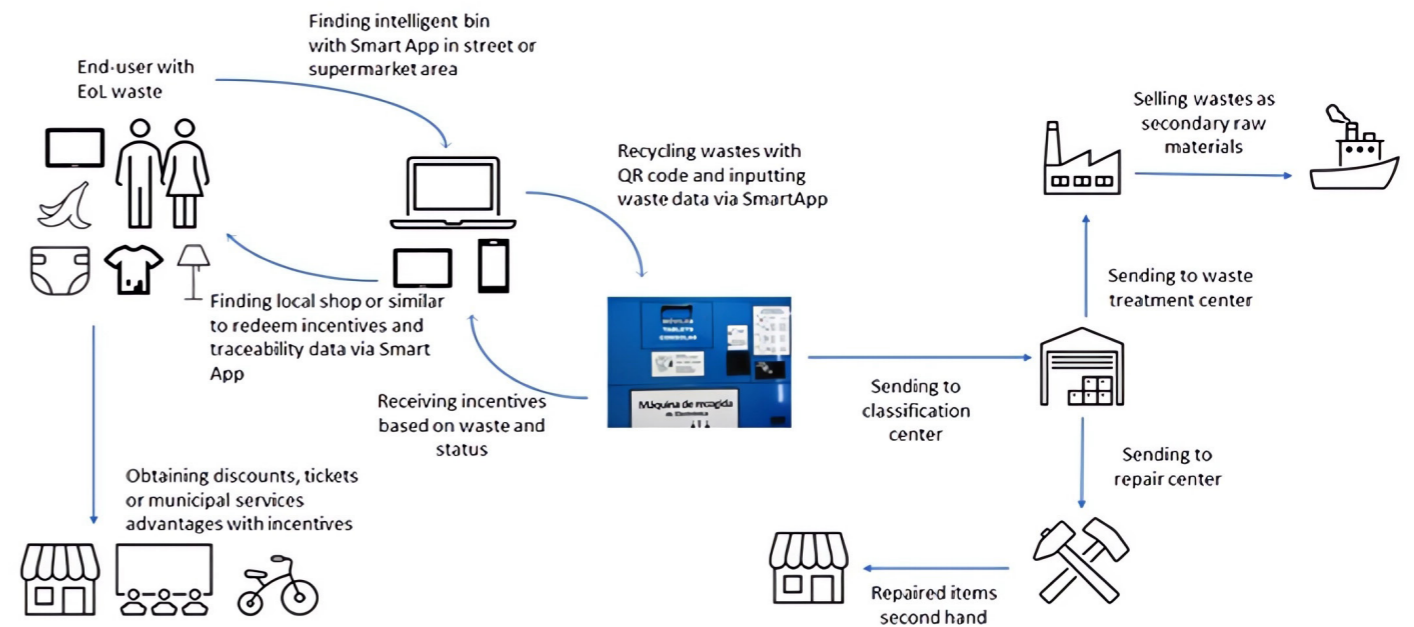


Figure 1. Semantic summary of the Collaborative Recycling/Reuse circular business model

(Source: <https://www.circ4life.eu/collaborativerecycling>)

At the centre of the business model are citizens. They are rewarded for sorting the waste, collecting reusable or repairable items, and receiving information on whether their waste was recycled or reused. The Collaborative Recycling/Reuse circular business model focuses on multi-sided markets. The business model owner needs a large base of end-users (individuals and households) with EoL waste. On the other hand, it also needs different segments like consumers looking to buy used products at a lower price (for reuse strategy) and business customers like manufacturers or recycling facilities (for recycling strategy). Moreover, one customer segment cannot exist without others.

There are different areas of value proposition – emotional benefit (“green” attitude and behaviour), reducing costs, or economic benefits like discounts.

The business owner can communicate and deliver value to its customer segments via different channels; some are direct, like a smartphone app, and the indirect is partner stores and their websites. The customer relationship mixes customer self-service and automated service provided by smartphone apps.

The model includes different revenue streams – transactional revenues from selling repaired or used products to customers, selling goods to repairing companies, and fees from manufacturing companies. One or more segments may enjoy free offers or reduced prices subsidised by revenues from other customer segments.

The distribution system and ICT platform are key resources required for this business model.

Key activities required to deliver the value proposition are network building, platform (smartphone app) promotion, and platform management. The partnership is the cornerstone of this business model. Key partners include retailers, recycling companies, repairing companies, manufacturers, retailers, municipalities, distributors, and media. Cost structure includes fixed costs like buying and maintaining bins, advertising and media, and development and maintenance of the platform (smartphone app). The variable costs include transportation and incentives for end users with EoL waste (CIRC4life, 2021).



1.2. CHARACTERISTICS

According to business model types suggested by Accenture², the Collaborative Recycling/Reuse circle business model falls into two categories – resource recovery and product life expansion. Resource recovery is “about capturing embedded value at the end of one product lifecycle to feed into another via innovative recycling and upcycling services”. The product life expansion model is concerned with “extending the lifecycle of products and assets by repairing and reusing” (Accenture, 2014).

The business model in focus is one of the circular business models in the the-end-of-life phase. This phase starts when products lose their original function or value - this means that products become waste and, after proper collection, enter the waste management system to be reused or destroyed for material recycling, energy recovery, or disposal. Some materials, such as precious metals, have intrinsic economic value to stimulate recycling over disposal, but for most waste, assigning a cost to waste disposal or incineration is higher than the costs of sorting and recycling. Changing people’s behaviour to sort waste at the source is another accomplishment of waste policy that has greatly benefited the business case for recycling. Although waste sorting and separation technologies have evolved rapidly, avoiding mixing waste fractions is often more effective than separating them after collection, although trade-offs with increased transport need to be considered. Another problem that this business model focuses on is that most people do not know or want to know what happens to waste once they are disposed of. The authors of the business model took a different approach and developed a traceability module that provides information to the consumer on whether their waste was recycled or reused. Providing this information is great because it engages consumers and makes citizens feel part of the process.

² Accenture 2014, Circular Advantage: Innovative Business Models and Technologies to Create Value in a World without Limits to Growth, Accenture.

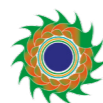
The model encourages cooperation between consumers, recyclers, manufacturers, and municipalities to increase the quality and quantity of recycling further.

One of the most important characteristics of the Collaborative Recycling/Reuse circle business model is the eco-credit system. Eco-credits are obtained when the citizen returns waste to a collection facility. This is a positive incentive system that encourages citizens by providing a benefit - monetary rewards, as well as nonmonetary rewards, can be utilised.

1.3. BENEFITS AND PITFALLS

Adopting this business model will produce financial, social, and environmental benefits. The model puts the citizen at the centre of the process, and the reward system (eco-credits) increases motivation to conduct proper behaviour. Incentives can be categorised into different types - monetary and non-monetary - which provide business owners with a means to address differences in consumer motivation. The authors of the business model identified the following barriers:

- Need to create interaction with stakeholders;
- Create easily understandable eco-credits and reward system with transparent conditions;
- Ensure an adequate amount of incentive – if the amount is too low, citizens may not be motivated, but if it is too high, the system can promote unsustainable behaviours;
- The temporal distance to the reception of the incentive. If the time elapsed is too long, end-users can lose motivation, and incentives may be useless;
- Other barriers related to cultural, economic, and social aspects may appear.



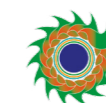
This business model uses smart bins for recycling and reuse because a selective recollection is needed. The problems associated with smart bins are:

- High cost
- Technical problems
- Lack of consumers' knowledge or habits on how to use it

According to Oto (2020), one of the biggest challenges is “finding a means acceptable to recyclers and manufacturers of creating a fair, impartial and simple method to estimate incentives for the end-user”.

1.4. THE IMPORTANCE AND RELEVANCE OF THE COLLABORATIVE RECYCLING/REUSE BUSINESS MODEL TO THE CIRCULAR ECONOMY

- The business model is relevant as it allows the business owner to turn inefficiencies in linear value chains into business value. These inefficiencies look beyond production waste, premature product lives, unsustainable materials, wasted end-of-life value, and unexploited customer engagements.
- The model is tested in Spain's two cities and sectors – Getxo and Bilbao. An intelligent bin is dedicated to tablet, smartphone, and laptop collection. Rewards collected can be used as discounts on new IT products or for planting trees. Collected devices will be sorted and donated to schools, sold in second-hand stores, or recycled. In Lorca, Murcia, an intelligent bin collects urban biowaste. Here the rewards can be converted into theatre tickets provided by the municipality. Biowaste can be converted into compost or biogas. As a result of testing, the business model can be characterised as (1) Attractive – to customers and an alternative to current existing collection methods; (2) Powerful – to change to circular behaviour that is sustainable for all the actors involved and (3) Replicable – in different sectors, also beyond urban biowaste, electric or electronic wastes and applicable to other regular urban wastes such as plastics, clothes, etc.



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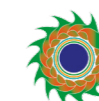
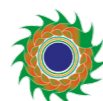
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2. COLLABORATIVE RECYCLING/ REUSE MODEL: INTRODUCTION

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INTRODUCTION

To have a clear idea of how to deal with the Collaborative Recycling/ Reuse Model, this second part offers some insights into ways to go and aspects that users must have in mind.

This part offers insights into organisational issues. You will be introduced to the creation of a Strategic Climate-focused Vision, a way of undertaking a market assessment, opportunities to establish product and service design principals, a possibility to establish a net-zero supply chain, ideas for building innovative business processes and routines, a chance to evaluate production, manufacturing, and service operations as well as a method to build a talent strategy-knowledge in the circular economy.

All our ideas can be transformed into company-specific KPIs – key performance indicators (see Maar, 2012; KPI.org, 2022; Zhang et al., 2017)), which are key targets to track. This helps to enhance the impact on your strategic business outcomes, and therefore KPIs support your strategy. In addition to that, they help your staff members and teams to focus on what is important. Examples of KPIs are customer satisfaction, internal process quality, employee satisfaction, and financial performance (Marr, 2013).

The approaches presented here can also be a basis to derive OKRs – objectives and key results (Doerr, 2018). This will help to ensure that ambitious objectives go hand in hand with the proof of key results. If this is seen together, it is a basis to find long-term solutions for deploying strategies and visions.

To get a general overview of how actors are involved in the circular economy, the OCCE - Organisation for Climate and Circular Economy (2022), offers some core information about the involvement of Start-ups, Investors in the Circular Economy, Territories, and local communities as well as organisations, who are involved.



2.1 HOW TO CREATE A STRATEGIC CLIMATE-FOCUSED VISION

In many cases, and here concerning our 'Strategic Climate-Focused Vision', such a statement is a written declaration clarifying your strategic ideas and, in some cases, also your business purpose and core ideas for stakeholders. Developing a strategic climate-focused vision includes several aspects which are usually used to formalise different types of visions. There are many tips for creating a vision statement. Kamran Akbarzadeh (2022) addresses five essential elements of a powerful vision statement:

1. "Your vision statement should be positive [...]"
2. Your vision statement should be in present tense [...]"
3. Your vision statement should be short [...]"
4. Your vision statement should be challenging [...]"
5. Your vision statement should be relating"

See, for example, also the ideas of Peek (2022), who provides in some cases, similar approaches to the one mentioned hereafter.

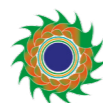
To have a stable and clear vision, you must:

- have a future-related focus, which means that you are creating a strategic vision which projects about five to eight or ten years into the future to clarify desired long-term results.
- guide a strategic direction and, therefore, it's helpful to agree on and design strategic focus areas.
- align your strategic climate-focused vision with your business and educational aims, values, and goals.
- clarify your dream and ideas as well as your specific focus on success and how that can be achieved.
- use present tense when writing the strategic climate-focused vision.
- use clear and concise language and keep the strategic climate-focused vision short.

- provide your audacious ideas and high-reaching thoughts with a passion to your stakeholders, and this means that the text must be inspiring.
- communicate your vision to your employees and stakeholders therefore, you must create a communication plan.
- communicate your strategic climate-focused vision in positively and directionally way.
- create a time schedule and an implementation plan.

With specific regard to the climate focus, you also must

- clarify the sustainability of your products, services, and approaches.
- explain why your vision is a part of the next generation of climate innovation.
- provide a particular focus on positive environmental and climate impact.
- in which way you recognise the importance of adapting to climate change.
- in which way you are active in protecting nature in finding innovative solutions concerning the use of renewable energies.
- clarify how you are involved in green economy aspects.
- ensure that your strategy is informed by climate science.
- establish ideas on how to ensure low emissions and a resilient economy as well as preventing waste.
- recognise ways how strategy is approachable and scalable.



But have in mind that there is a variance between a vision statement and a mission statement. Wright (2022) put this into the following words to clarify the difference:

“A vision statement describes a long-term, idealistic state of the FUTURE. **A mission statement** is a roadmap to a specific destination (your VISION) that explains how you will achieve it” (Wright, 2022).

Furthermore, the Climate Change Expert Group of the OECD provided hints on how long-term visions shape short- and mid-term action (OECD,2020). For FALDUTO / ROCHA, it is important to build up long-term strategies which provide “an economy-wide vision for long-term decarbonisation, capable of capturing the long-term infrastructural transformations needed to reduce emissions.” (OECD,2020, p. 22).

2.2 HOW TO UNDERTAKE A MARKET ASSESSMENT

Consumer research is a deeply involved process where researchers gain knowledge about how and why people make decisions according to a product for example (Nilsson, 2018, p. 87). Nilsson uses the example of a supermarket in which the environment is shaped according to the ideas of the consumers. It is produced by researchers to the benefit of those who want to sell the products to a specific target group He defines market research as follows:

“[...] Market research is produced through managing sometimes unreliable respondents and executed under pressure to deliver results to commissioning clients. Market researchers deal with respondents to get to consumers and with clients both to make ends meet and fill the purpose of market research: to help market actors in their decisions about how to attract you as you walk in the supermarket aisles or move elsewhere in society”.

Market research can also be seen as having an inclusive characterisation where the opinions of individuals and their interpretations are used to encompass not only one area of consumerism. Therefore, the definition

by the International Chamber of Commerce (ICC) and ESOMAR (2016) can help in a deeper understanding of market research:

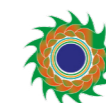
“[Market] Research which includes all forms of market, opinion, and social research and data analytics, is the systematic gathering and interpretation of information about individuals and organisations. It uses the statistical and analytical methods and techniques of the applied social, behavioural, and data sciences to generate insights and support decision-making by providers of goods and services, governments, non-profit organisations, and the general public” (ICC/ ESOMAR 2007, p.6).

In the definition provided by ICC/ ESOMAR, it is mentioned that decision-making is the result of market research, and therefore, it frames the production of knowledge about the market in direct relation to the remitter of the research.

To clarify the idea of why the market research should be done is the first step of the whole research process. A precise definition of the product or service should be given: Its usefulness or the value that it adds, as well as its strength and weaknesses. The idea could also be tested among friends, family, or other people, even at an early stage, to become aware of the positive and negative aspects of the product or the service. At the end of this process, the researcher gets a first idea of possible market research methods³. So, doing market research means referring to specific key elements that define a successful long-term market strategy. According to Steves et al., (2008, p. 7-8), the following steps should be made in a marketing research project:

1. Define the management problem
2. Specify research objectives
3. Develop research methodologies
 - a. Define information problem -specific needs
 - b. Define the population to be studied
 - c. Develop a sampling technique and determine sample size

³ For Market Research Methodologies see: TAKHAR-LAIL, A. & GHORBANI, A. (2015). Market Research Methodologies: Multi-Method and Qualitative Approaches, Hershey (USA): IGI Global. OR: BELK, R.W. (2006). Handbook of Qualitative Research Methods in Marketing, Cornwall: MPG Books.

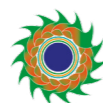


- d. Determine how to measure variables or attributes to be studied
 - e. Determine how to collect data
 - f. Determine how to analyse data
4. Collect data
 5. Analyse and interpret data
 6. Present findings
 - a. Technical report
 - b. Popular report



2.3 HOW TO ESTABLISH PRODUCT AND SERVICE DESIGN PRINCIPLES

When dealing with product and service design principles, it is all about dealing with the user's and customers need for a certain service or product. Product and service design principals can also be used to improve an existing service or product to create a new one from the feedback given. In our case, product and service design principles are defined as "a creative and practical way to assess, improve and innovate [...] [an] existing service or help [...] [to] design new ones. It's the method of planning and implementing practical changes to meet the needs of all the users of [...] [the] services" (NEXA, 2021).



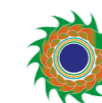
Therefore, Morelli (2006) proposed that different service design methodologies must operate in three different directions. The design activity should focus on the generation of cohesion, which means that the designers of the product and service design principle should focus on the following three methodologies:

1. The actors that take part in the service must be identified. This can be done by using analytical frameworks.
2. Work should be done on different product and service design principle scenarios, "verifying use cases, sequences of actions and actors' role, defining the requirements for a product and service design principle and the logical and organisational structure" of product and service design principles.
3. "Work on possible representation and management tools to represent a [product and service design principle] in all its components, i.e., physical elements, logical links and temporal sequences" (Morelli, 2006, p. 1496).

To put it in a nutshell, product and service design principles should be established along and together with the actors that take part in the service or product process. Different scenarios offer the possibility to define the requirements that are needed for the organisation an establishment and a prototype can visualise all aspects of the product and service design principles.

2.4 HOW TO ACHIEVE A NET-ZERO SUPPLY CHAIN

What is a net-zero supply chain? It might seem to be a dream to those who take part in climate protection or do research on it. But it relates to an actual discussion that companies have according to their carbon footprint and how to make it as small as possible, nearly up to zero. So, it is an actual discourse that needs a solution (Jaber, 2021, p. 115). Going net-zero means that the entire process of manufacturing needs to be considered. Therefore, the supply chain also must be low-carbonated to provide a climate-positive business. A definition of what net zero is and how it can be achieved is given by Jaber (2021):



“Net zero. The GHG emissions from a building, a product supply chain, or an organization are offset by reducing an equivalent amount of GHG from outside the boundaries of that building, product, or organization. This could be achieved by installing enough renewables onsite to where you’re selling as much energy to the grid as you’re pulling from it.”

According to this definition, net zero means to reduce GHG (Green House Gas)⁴ emissions by selling back as much energy to the grid as taken. It not only offers a solution to climate change, “but an opportunity to create a cheaper, more resilient energy system, a more productive economy, and a better quality of life for everyone on the planet” (Hampshire-Waugh, 2021, p. 8).

According to the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety Germany (BMUB), there are seven steps to provide a sustainable supply chain management system that leads to net-zero (BMUB 2017, p. 13-51):

1. MAPPING THE SUPPLY CHAIN

Mapping the supply chain is the starting point regarding risks and impacts for sustainability. By mapping and visualising the supply chain, the company gathers information that is available within the company and prepares it for further analysis. Furthermore, “visualising the supply chain is useful for presenting the connection between activities in the supply chain and/or of suppliers. It also offers a basis for identifying sustainability impacts risks in the next process steps, and for planning and implementing pinpointed improvement measures”.

2. IDENTIFYING SIGNIFICANT SUSTAINABILITY IMPACTS, ASSESSING RISKS, AND DETERMINING ACTION AREAS

For companies, it is necessary to gain information and subsequently determine present and potential impacts that direct suppliers or sub-suppliers have on the environment along the value chain, which also affects the company itself. It is not about a precise quantitative determination, but an assessment of the sustainability aspects and

their effects along the chain should be made. Furthermore, the company should assess “[...] and prioritises the risks of negative effects on the environment and people, as well as risks that arise for the company (liability, reputation, etc.)” Therefore, it is important to determine action areas to effectively use the company’s own human and financial resources.

3. ANALYSING GAPS AND DERIVING MEASURES

Based on the previous analysis, where significant sustainability impacts, assessing risks, and determining action areas were analysed, “[...] the company should record the objectives, measures, and processes that can be used or adapted within the framework of sustainable supply chain management”. Once the collection of impacts, as well as the identification of key sustainability topics and action areas, is finished, the company can use and determine the measures to optimise the supply chain from a sustainability perspective.

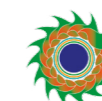
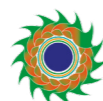
4. ADAPTING INTERNAL STRUCTURES AND PROCESSES

Based on the results of the materiality analysis and the inventory, new and already existing processes within the company are adjusted. Fulfilling this step, it is important to provide the needed financial, human, and technical resources as to set up the internal structures that support net-zero chain supply management.

5. FORMULATING SUPPLIER REQUIREMENTS AND MAKING THEM BINDING

Formulating supplier requirements and making them binding means developing a code of conduct for the company. The code of conduct can be seen as a communication tool which “[...] communicates the requirements of direct suppliers and asks for a self-assessment of their implementation capabilities”. The results are then used for a conventional supplier evaluation. This means “if a supplier relationship is being established or continued, the code of conduct is integrated into the supplier contract and is thereby binding for the direct suppliers and, if applicable, for the sub-suppliers as well”.

⁴ GHG = Greenhouse Gas



6. EVALUATING THE SUSTAINABILITY PERFORMANCE OF SUPPLIERS AND BUILDING COMPETENCES

The goal of the evaluation of the suppliers and consolidation of competences is “[...] to ensure compliance with the code of conduct and/or the contractual arrangements and implementation of the measures”. Furthermore, in order to improve the supply chain, the most effective way is to extend and strengthen appropriate supplier capabilities, which results in the suppliers meeting their customers’ expectations”. It is important for companies to incorporate sustainability criteria in the selection and confirmation process of a new supplier. Therefore, the information gained from the materiality analysis and from the suppliers’ self-assessments should be used in the process.

7. REPORTING

A part of the reporting process is the disclosure of information on sustainable supply chain management. In this process, transparency is built up by companies to inform about their engagement in sustainability. Furthermore, specific meaningful indicators⁵ are used for communicating the information internally and externally.

To put it concisely, all seven steps must be fulfilled when decisions about net-zero supply chain management have to be made. This means that not only the company itself oversees changing its own processing structures, but also the suppliers and sub-suppliers must be adjusted according to the companies’ criteria of sustainability. But, at the very beginning of supply chain management, a profound analysis of all areas must be made.

⁵ For further information on the indicators see: BMUB (2017) pp. 50-51.

2.5 HOW TO BUILD NEW BUSINESS PROCESSES AND ROUTINES

According to Feldman and Pentland (2003), business processes and routines, as well as organisational structures, are key factors in executing work. Routines are defined as “[...] repetitive, recognisable patterns of interdependent organisational actions carried out by multiple actors” (Feldman and Petland, 2003, p. 95). A business process is defined as a “[...] collection of activities that takes one or more kinds of input and creates an output that is of value to the customer” (Hammer and Champy, 1993, p. 35). Whereas a routine strives to establish agreement, coordination and a truce between different acting groups, a business process transforms an input into an output to create a certain value that can be measured by specific performance indicators (Wurm et al., 2020, p. 2). This input-output transformation can increase productivity by practising and continually reviewing and improving each business process within the company (DeBara, 2019).

Therefore, according to DeBara (2019), five different steps help to build up new business processes and routines:

1. “IDENTIFY WHAT’S WORKING-AND WHAT’S NOT”

Feedback from key stakeholders that are involved in the processes and who are using the processes every day can give insight into how the processes in their part of the business or work life can be improved or streamlined.

2. “SET YOUR BASELINE AND YOUR GOALS”

Once the business processes that should be improved are identified, it must be determined where the improvement should start and what outcome it should have. Therefore, data collection as a baseline and clarity of the subject to be changed, as well as the motivation behind the effort should be a prerequisite to implement new business processes and routines.

3. “LEVERAGE YOUR TEAM AND BUILD A ROADMAP FOR SUCCESS”

A key step in the implementation of new business processes and routines is the compilation of a roadmap that guides the process from the beginning to the end. The main question is: How would the process need to be changed to be quicker, more effective, and more productive? This question can be answered by building a “cross functional team” that looks at the process from different perspectives. “The key is not to have an excess of people from the same functional areas that the process is in.”

4. “LOOK FOR OPPORTUNITIES TO AUTOMATE”

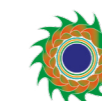
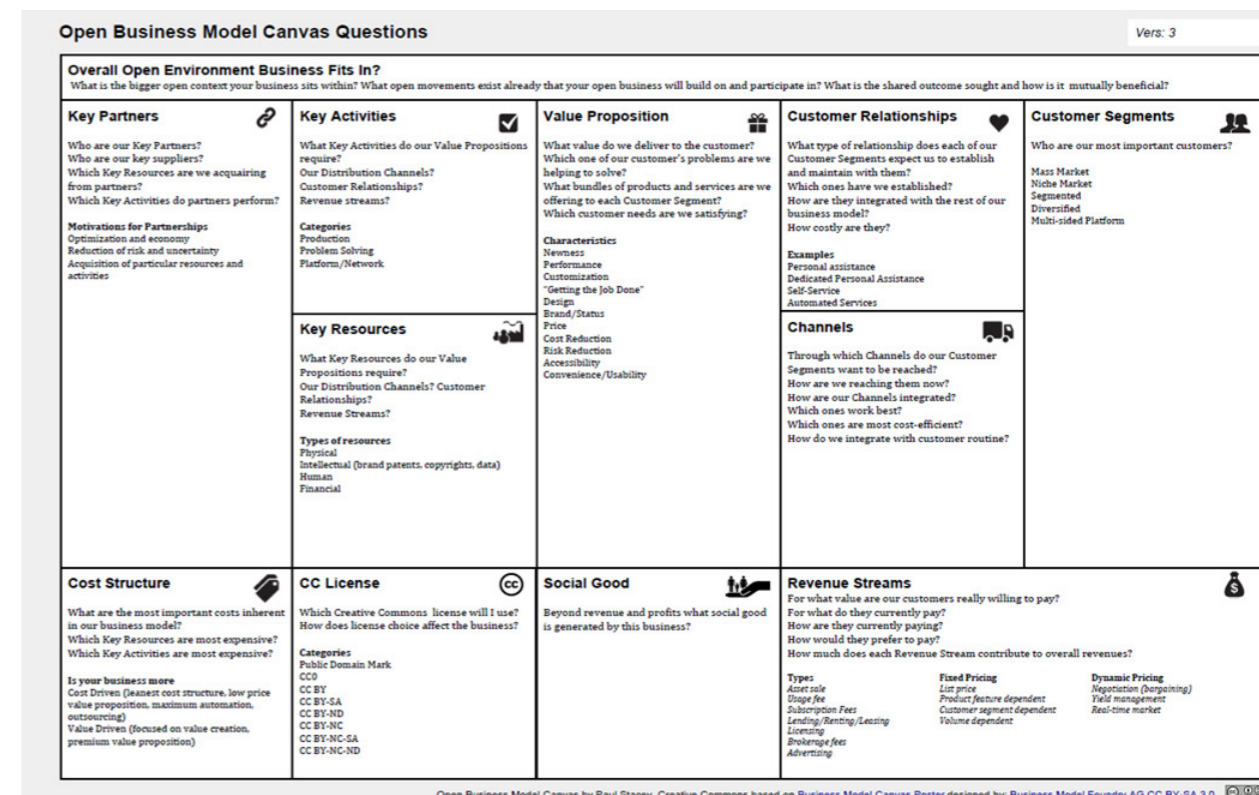
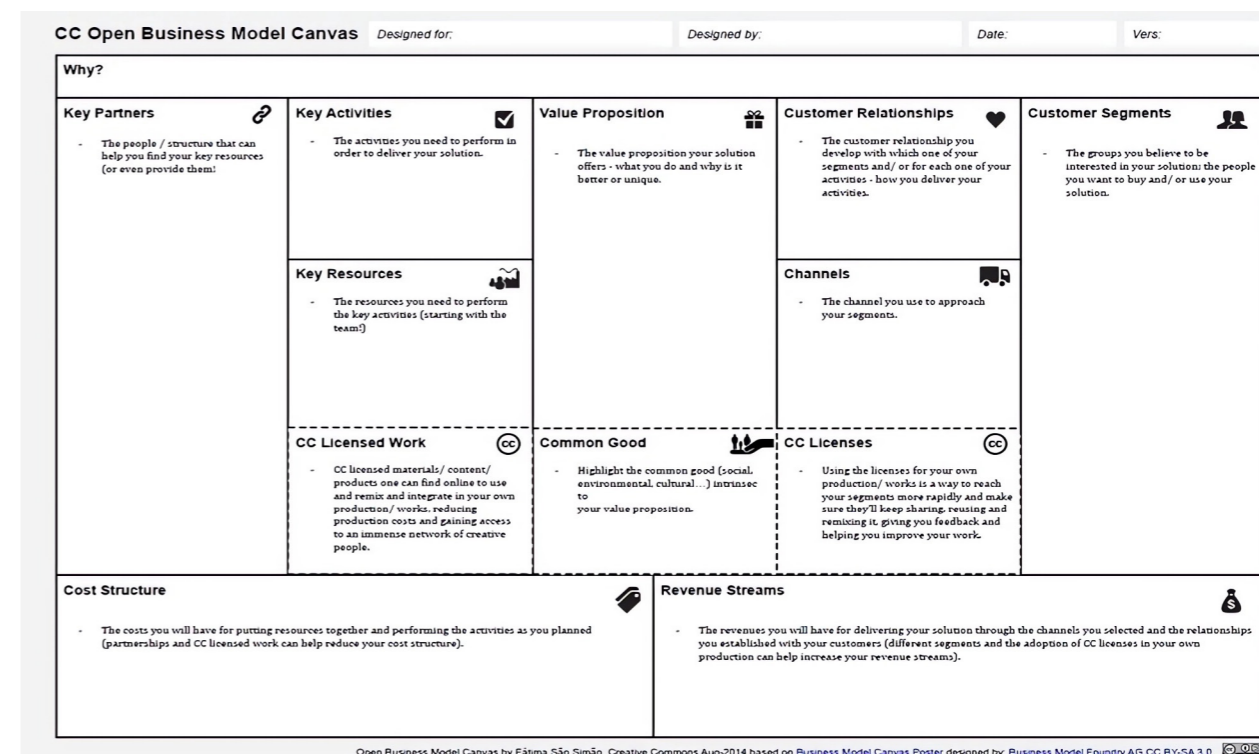
According to McKinsey (2017) “[...] about 60 percent of all occupations have at least 30 percent of constituent activities that could be automated” (McKinsey, 2017, p. 3). Automation is a key factor to build business efficiency and to make every process more engaging and fulfilling for all participants of that process. Therefore, opportunities that allow business processes to be automated or digital should be used.

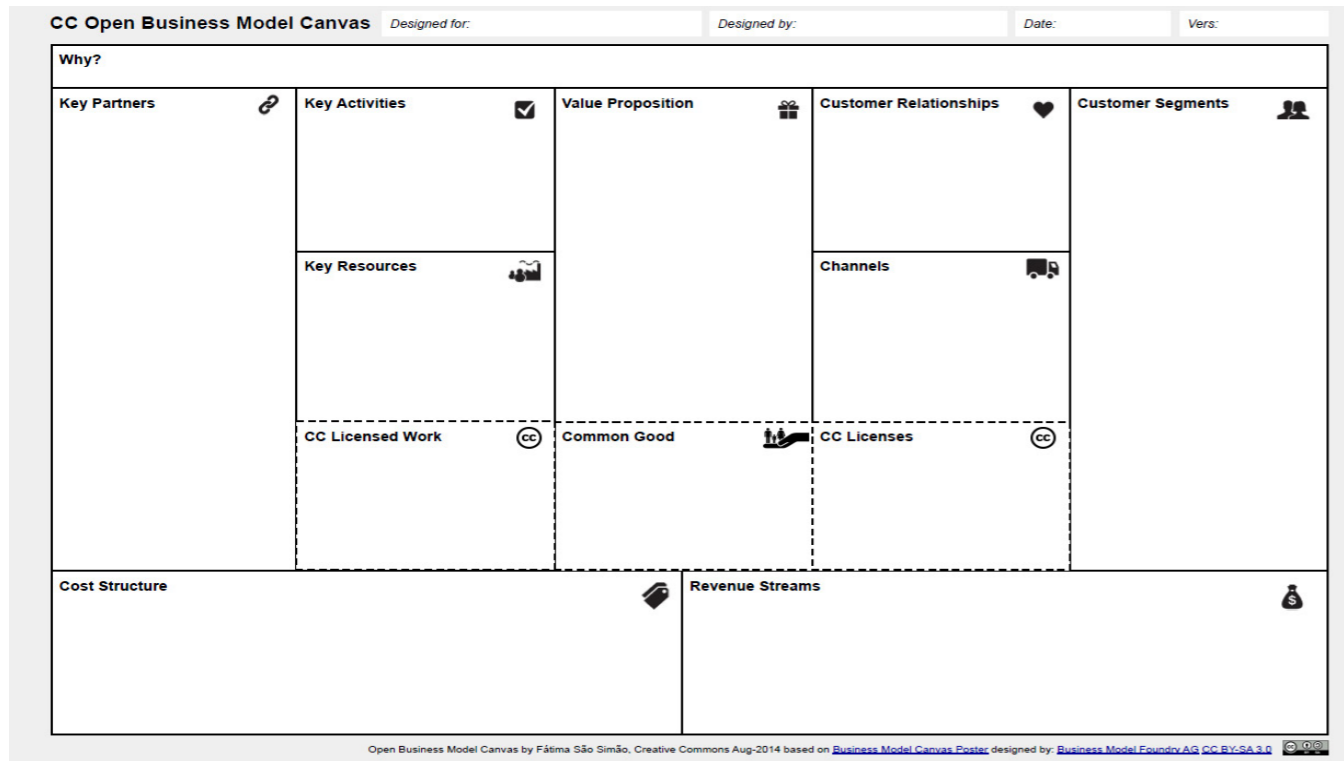
5. “ROLL OUT YOUR NEW PROCESS AND CONTINUE TO GATHER FEEDBACK”

From the moment, a business process that could be improved is identified, a plan to improve that process is set up, and opportunities for automation are pinpointed, the process can be implemented in the company. The focus group in this part are all members of the company that should use the new process structures. Jour fixes with stakeholders to get their feedback on how the process is working (or not working) and what can be done to continue and improve it should take place regularly.

2.6 HOW TO (RE) EVALUATE PRODUCTION, MANUFACTURING AND SERVICE OPERATIONS

Production, manufacturing, and service operations can be (re) evaluated by using the Business Model Canvas:





3. Identify Pivotal Roles. [...]
4. Define Success Profiles with Precision. [...]
5. Make the Buy-Versus-Build Decision. [...]"

All these actions are aimed at creating and maintaining a high-performing workforce. Organisations use a talent strategy to find the right people for jobs and tasks. Such people should be able to push the organisation’s business development strategies further.

Talent management means to creating adequate job descriptions, ensure the fit between person and organisation, offering chances for collaboration, and ensuring that there will be rewards and recognition as well as possibilities for continuous improvement (see Gosh, 2021, p. 1).

For Circular Economy it becomes important to create a basic talent strategy and to plan the workforce and design a basis for employee engagement and retention as well as to implement reward strategies. On this basis, talent acquisition can be done. To address potential employees who possess the needed skills and competences an employer value proposition can be helpful (see BountiXP, 2020) to identify, attract and select talent. Also, the management of employee performance becomes important after onboarding (see Lucas, 2022). The need for skills related to the green economy is rising (see World Economic Forum, 2022). There is a need to find adequate skilled staff members but also a need for reskilling and upskilling.



2.7 BUILDING YOUR TALENT STRATEGY KNOWLEDGE AND TECHNOLOGY

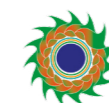
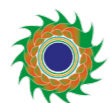
A talent strategy highlights a way **how to “source, hire, onboard, engage, and retain talent”** (Slayton, 2022, p. 1).

Slayton (2022, p. 1) shows seven steps to build or rebuild a talent strategy:

1. “Shift the internal mindset [...]
2. Identify skills gaps [...]
3. Draw from within [...]
4. Use AI to streamline your process [...]
5. Support them from the start [...]
6. Keep them engaged [...]
7. Measure your effectiveness [...]"

But this is not all. According to Heckman (2020, p. 1: See Also Heckman, 2018), you must

1. “Create Alignment with Business Strategy. [...]
2. Identify the Role of Organisational Structure. [...]



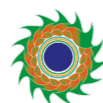
For Green Economy and Circular Economy, the following six skill categories, according to World Economic Forum (2022), are mentioned:

- “Science skills [...]
- Architectural and planning skills [...]
- Green engineering and tech skills [...]
- Agriculture skills [...]
- Environmental justice skills [...]
- Systems skills [...]”

In addition to that green energy skills, skills concerning environmentally friendly technologies and complex problem-solving skills are needed in the field of circular economy (see World Economic Forum, 2022; see United Nations Environment Programme, p. 145).

Heckman also addresses the biggest pitfalls when an organisation creates a talent strategy. At first, he points out that there exists an implementation problem if there is a “lack of courage to abandon business-as-usual” (Heckman, 2020, p. 1). The second aspect is directly related to the Human Resources (HR) department. If HR is not able or has not the capabilities to deliver on talent strategy (see Heckman, 2020, p. 1), a basis for a talent strategy and to build up knowledge about this is not given. Especially regarding the specific challenges in the field of green economy and circular economy, HR must be a solid basis for all work to be done. Heckman also points to external influences and states that not recognising such influences is important (see Heckman, 2020, p. 1). This goes hand in hand with changes in contexts, and inadequate attention to influences can lead to wrong decisions and actions. Heckman also draws attention to the fact that there is a need to have a “horizontal alignment of talent processes” (see Heckman, 2020, p. 1). Furthermore, he sees pitfalls in “Unoriginal talent strategies” (Heckman, 2020, p. 1) and “Failure to consider the impact of culture.”

To create a knowledge base for such a talent strategy and to avoid the pitfalls, it is critical to be aware of skill gaps in the local and regional labour market.



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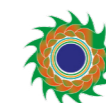
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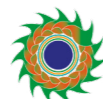
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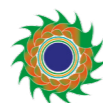
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3. COLLABORATIVE RECYCLING/REUSE: MASTERCLASS SUPPORT MATERIALS



3. COLLABORATIVE RECYCLING/ REUSE: MASTERCLASS SUPPORT MATERIALS

The link to the Masterclass Slide Deck can be found on the Green-4-Future eLearning Platform: <https://elearning.green4future.eu/>

1. SUPPORT VIDEOS

Title of the Video

Creative houses from reclaimed stuff

Purpose of the Video

Houses built from recycled and reclaimed materials with brilliant, low tech design ideas

Link to the video

[https://www.ted.com/talks/dan_phillips_creative_houses_from_reclaimed_stuff?referrer=playlist-reuse_recycle&autoplay=true](https://www.ted.com/talks/dan_phillips_creative_houses_from_reclaimed_stuff?referrer=playlist-reduce_reuse_recycle&autoplay=true)

Reference for the Video

This talk was presented to a local audience at TEDxHouston, an independent event.

Self-reflection Activity

How many of us, when needing to fix a broken part of the house, have the mindset of “It’s broke, let’s buy a new one” and how many of us think “How can I fix it to maintain its proposed function.”

What circular business model could you start in the building industry?

Title of the Video

Ink made of air pollution

Purpose of the Video

What if we could capture pollution in the air around us and turn it into a deep black ink?

Link to the video

<https://tinyurl.com/yk3sbf76>

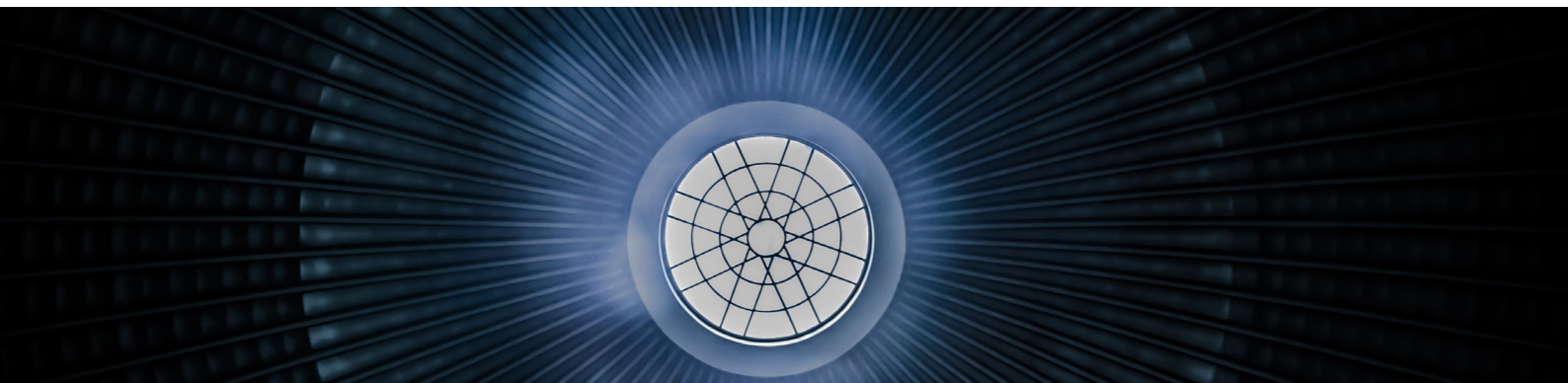
Reference for the Video

This talk was presented at a TED Institute event given in partnership with BCG.

Self-reflection Activity

Identify a waste that is present in your everyday life that can be valorised and propose a solution.

Identify innovative solutions to valorise waste of which you are aware.



Title of the Video

3 creative ways to fix fashion's waste problem

Purpose of the Video

Clothes designed to be recycled, compostable, and showing individuality

Link to the video

https://www.ted.com/talks/amit_kalra_3_creative_ways_to_fix_fashion_s_waste_problem

Reference for the Video

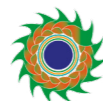
This talk was presented at a TED Institute event given in partnership with Tommy Hilfiger.

Self-reflection Activity

Do you take in consideration the recyclability of your clothes before buying them?

What do you do to your clothes when they are no longer useful? Did you ever think of buying or exchanging used clothes?

Do you know what happen to your clothes after disposal?



2. CASE STUDY

Company Name

EDIA

How has the company implemented the business model

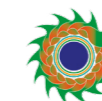
The URSA project aimed to address the problem of the low organic matter content in the irrigated agricultural soils managed by Empreendimento de Fins Múltiplos de Alqueva (EFMA). Different solutions can be applied to increase soil organic matter but to achieve fast, measurable, and sustainable results in the EFMA modern and intensive agriculture, the most applicable solution is to add organic fertiliser. To accomplish this solution, the project aimed to create and develop a network of composting facilities to produce organic fertiliser with the available agriculture by-products. Giving wings to the circular economy concept, local farmers deliver their by-products and take in return organic fertiliser to apply in their agricultural soils.

Case study summary

Years without conservation agriculture led to a critical level of soil organic matter with a direct negative impact on freshwater resources, farming, and the ecosystem as a whole. It was necessary to find a solution to mitigate the negative impact of the low organic matter content on par with a solution to create a sustainable destination for the huge quantity of by-products with origin in the region.

The project was created to solve the soil low organic matter issue in the EFMA area of influence. To develop a solution, the promoters identified focus areas such as:

- Soil characteristics;
- Available by-products;
- Composting process;
- Farmers' information and involvement;
- Composting unit dynamic.



The project started in May 2018 with a six-month dead line and involved the next six key actions: 1) Development of specifications and collection channels for the first/experimental URSA installation; 2) Facility implementation; 3) Experimental process and monitoring plan development, identification of soil necessities, experimental tests, and compost and by-products characterisation; 4) Conception of a business plan; 5) Project communication and dissemination; 6) Project management and evaluation.

Benefits accruing

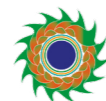
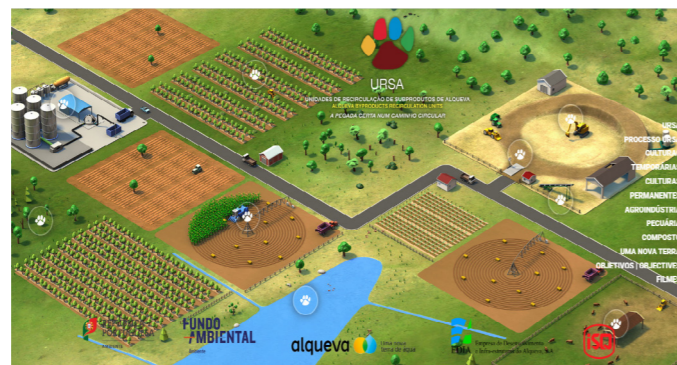
- Rehabilitation of soil as a quality agricultural support and as a filtering barrier;
- Efficient use of water and nutrients, reducing global needs;
- Reduction of the application of mineral fertilisers and increase of agricultural profitability;
- Greater soil cohesion, with less vulnerability to erosion and desertification;
- Conservative circular use of organic by-products produced in EFMA;
- Better water quality and less susceptibility to invasive aquatic species;
- Promotion of soil life, plant health and fertility;
- Carbon sequestration in soil, as opposed to burning, with reduction of greenhouse gases.

Recommendations

Visit the URSA website for more detailed information via informative videos at: <http://www.edia.pt/ursa/>

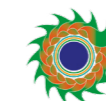
Video https://www.youtube.com/watch?v=s_y_5jk_1yE&t=17s

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3. GLOSSARY OF KEY TERMS

Term	Explanation	Source
Circular design	<p>We use circular design as a shorthand for the practice of applying circular economy principles at the design stage of everything. It is a practice that embraces systems thinking to address some of the biggest interconnected challenges we are facing today.</p> <p>The circular design offers a direction of travel towards a regenerative and resilient future. A future where we design products, services, and systems with the bigger picture in mind. A future where we zoom in on user needs while zooming out to consider the system in which we are creating. A future where we unlock a new frontier of creativity to address global challenges at their root.</p>	<p>Ellen Macarthur Foundation</p> <p>https://ellenmacarthurfoundation.org/articles/design-and-the-circular-economy</p>
Circular business model	<p>Circular business models represent fundamentally different ways of producing and consuming goods and services. They have the potential to drive the transition towards a more resource-efficient and circular economy and, in doing so, significantly reduce the environmental pressure resulting from economic activity.</p>	<p>OECD, Business Models for the Circular Economy: Opportunities and Challenges from a Policy Perspective, OECD Publishing, Paris. © OECD 2018</p> <p>https://www.oecd.org/environment/waste/policy-highlights-business-models-for-the-circular-economy.pdf</p>
Waste valorisation	<p>Process of converting waste materials into more useful products including chemicals, materials, and fuels.</p>	<p>Advances on waste valorisation: new horizons for a more sustainable society</p> <p>Rick Arneil D. Arancon,Carol Sze Ki Lin,King Ming Chan,Tsz Him Kwan,Rafael Luque</p> <p>First published: 01 July 2013</p> <p>https://onlinelibrary.wiley.com/doi/full/10.1002/ese3.9</p>



Recycling	Recycling is the action or process of converting waste into reusable material.	Ellen Macarthur Foundation https://ellenmacarthurfoundation.org/articles/recycling-and-the-circular-economy-whats-the-difference
Composting	Composting is the natural process of recycling organic matter, such as leaves and food scraps, into a valuable fertiliser that can enrich soil and plants.	NRDC (Natural Resources Defence Council) https://www.nrdc.org/stories/composting-101#whatis
Organic fertilizer	Organic fertilisers are naturally available mineral sources that contain moderate amounts of plant essential nutrients.	Controlled Release Fertilizers for Sustainable Agriculture, Hitha Shaji, Vinaya Chandran, Linu Mathew. School of Biosciences, Mahatma Gandhi University, Kottayam, Kerala, India Available online 16 October 2020, Version of Record 16 October 2020. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/organic-fertilizer
Circular economy	A circular economy is a system, which maintains the value of products, materials, and resources in the economy for as long as possible and minimises the generation of waste. This means a system where products are reused, repaired, remanufactured, or recycled.	EUR-Lex, Access to European Union Law https://eur-lex.europa.eu/EN/legal-content/glossary/circular-economy.html
By-product	An incidental product deriving from a manufacturing process or chemical reaction and not the primary product or service being produced. A by-product can be useful and marketable, or it can have negative ecological consequences.	European Commission https://knowledge4policy.ec.europa.eu/glossary-item/product_en

4. USEFUL LINKS (RESOURCES, ARTICLES, ETC.)

Title

Environment Working Papers

Brief Description

This series is designed to make available to a wider readership selected studies on environmental issues drawing on the work of the OECD Environment Directorate.

Link

<https://www.oecd.org/environment/workingpapers.htm>

Title

Circular design: turning ambition into action

Brief Description

Design is a force for change. From innovative products or disruptive business models to entire companies and supply chains, design has the power to reshape our economy.

Link

<https://ellenmacarthurfoundation.org/topics/circular-design/overview>

Title

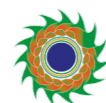
Circular economy examples and case studies

Brief Description

Get inspired by new business models, policies and strategies that demonstrate how we can fundamentally change the way we design, make, and use the things we need.

Link

<https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/examples>



Title
The Circular Business Model

Brief Description

More and more manufacturing companies are talking about what is often called the circular economy—in which businesses can create supply chains that recover or recycle the resources used to create their products. Shrinking their environmental footprint, trimming operational waste, and using expensive resources more efficiently is certainly appealing to CEOs. But creating a circular business model is challenging—and taking the wrong approach can be expensive.

The authors argue that success depends on many factors, but perhaps the most important is choosing a strategy that aligns with the company's capabilities and resources—and addresses the constraints on its operations. In this article, they identify the three basic strategies to achieve circularity and offer a tool to help manufacturers identify which is most likely to be economically sustainable. Their recommendations draw on decades of research and consulting with dozens of manufacturers across the world.

Link
<https://hbr.org/2021/07/the-circular-business-model>

Title
The circular economy: Moving from theory to practice

Brief Description

Collection of articles on the circular economy

Link
<https://tinyurl.com/3dm27s6m>

