

TRAINING MODULES

Upskilling for more
creative circular economy
(U-Eco)

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INTRODUCTION

Introduction

'Take-Make-Dispose': this is the pattern and motto of our current economic model based on a linear economy. Practically, it entails a chain; the process begins with companies harvesting and extracting the materials needed to manufacture products, which are then sold to customers at a later stage or kept until they are no longer needed or disposed of (Ellen MacArthur Foundation, 2013).

However, this model is fundamentally unsustainable; the planet is now reaching its tipping point, as it can no longer sustain a linear production model. Human actions have indeed progressively and significantly pressured and stressed natural systems. The linear production model triggers adverse environmental effects by polluting water and ecosystems, depleting natural resources, and losing biodiversity. Furthermore, it is responsible for high greenhouse gases (GHGs) emissions, negatively affecting human health (World Economic Forum, 2019). Economically, the linear economy causes significant economic uncertainties due to the coupled increasing prices and elevated price volatility of natural resources, therefore putting at risk the world's economy's stability (ibid).

To face the disastrous present and future effects of climate change and the current economic model, there is an urge to modify the extraction and production systems and lifestyles. In this context, the concept of the circular economy (CE) was conceived and developed.

The European Parliament (2018) defined CE as a "model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended."

Therefore, a circular economy is based on the concepts of reducing, reusing, and recycling energy, materials, and waste through a no-end perspective, which aims to trigger social, environmental, and economic changes while promoting sustainable economic and environmental development (Heshmati, 2015).

Entrepreneurship, namely the "process where an entrepreneur develops a business plan and acquires required resources" (ibid), plays a significant role in our societies as it differently impacts the environmental, economic, and social spheres. According to Heshmati (2015), "small businesses and entrepreneurship are considered major drivers of economic growth, breakthrough innovations, and job creation." Evidently, they have great power to create and develop. Therefore, entrepreneurship has considerable potential within the context of a circular economy, for it can positively contribute to CE's implementation.

HOW TO USE THE TRAINING MANUAL

How to Use the Training Manual

As previously outlined, a circular economy presents a more sustainable alternative than the current linear perspective that guides our production patterns and national economies. To implement a business within a circular economy, knowledge is essential. Therefore, this manual has been planned in conjunction with 12 training modules, which aim to broaden knowledge and improve skills and impart the labor market's know-how, which is necessary to transition towards a circular economy.

This manual is designed for trainers who will impart knowledge to others, including:



Professionals interested in learning about circular business models;



Entrepreneurs interested in establishing businesses within a circular economy.

This training manual aims to provide the basics of the circular economy, its practices, and benefits to professionals interested in learning about circular business models. Simultaneously, it strives to empower entrepreneurs interested in establishing businesses within a circular economy with knowledge and tools.

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MODULE 1

A LINEAR ECONOMY SYSTEM

Module 1: A Linear Economy System

1.1 Basics of a Linear Economy

Introduction

“The linear economy responds to an industrial mentality in which production and resources are considered to be unlimited, and economic benefits are placed above all other criteria” (Circular economy vs. linear economy, 2019). This system, which now represents the prevailing model, dates back to the Industrial Revolution (ibid).

The demand for raw materials has exponentially grown in the past century; it is expected to further increase due to the growing world population, the continuous rise of the middle class in emerging economies, and the increasing demand of new technologies. Moreover, the geopolitical situation plays a significant role, for some raw materials are unevenly distributed among countries, which can result in price fluctuations and increases, in addition to the uncertain production of supplies, or sufficient and high-quality primary raw materials.

The use of raw materials has severe environmental repercussions that globally vibrate throughout the entire value chain, starting with extraction, transport, processing, production, distribution, use, and end-use or waste. Not only that, but the linear economy is also responsible for serious damage to the environment, depletion of natural capital, loss of biodiversity, high energy use, and climate change.

The Linear Economic Model

As the name suggests, the linear economic model of production views the manufacturing process of goods and services in a straightforward and direct manner. The majority of the world’s food, shelter, and clothing producers all utilize this production method; they use natural resources to create products to satisfy consumers’ needs. Once this need is met, the consumers dispose of the products. The process's simplicity underlines why the linear economy is said to follow a “Take-Make-Dispose” pattern (Ellen MacArthur Foundation, 2013; Sariatli 2017).

The Ellen McArthur Foundation (2013) explains that this pattern heavily relies on the abundance of natural resources, which are unevenly distributed across the world. This idea was expounded by Sariatli (2017), who explained that there is a large concentration of consumers in the most developed regions of the world, giving western societies as an example. He claimed that the demands of these societies are met by industrial nations, who can supply cheap materials, resources, and labor. The Ellen McArthur Foundation (2013) concluded that the “biggest economic efficiency gains have resulted from using more resources, especially energy, to reduce labor costs.” This means that as producers cut back on human labor, they spend more on energy and raw materials used during the production process. Despite the growing economic profits, more waste has been created as the system inherently fails to consider recycling or reusing materials. Regulations, as well as accounting and fiscal rules have also supported this scheme, by failing to issue any protocol to charge producers for externalities leaving them unencouraged to consider the external costs of their operations (Sariatli, 2017). The fact that a product is destroyed at the end of its service life results in a “severe depletion of natural resources” (Michelini et al., 2017). Hence, the linear economy’s system, which prioritizes economic gains while sacrificing the capital of natural resources, is causing a severe imbalance between supply and demand.

Relying on data provided by the United Nations Environmental Program and the German Advisory Council on Global Change (WBGU), a study revealed that at the current growth rate the world is currently experiencing, neither industrial countries nor other global ecosystems will be able to meet the demand for materials and energy resources needed to meet the necessities of human life (Haas et al., 2015). In this sense, “the growth rate of demand is higher than the growth rate of supply” (Troester, 2012). To offset this imbalance, products' market price has consequently increased; however, several factors, including competition and stagnant demand have prevented some businesses from doing this. Businesses are now experiencing a new trend of unpredictable prices of both natural materials and their end products. For instance, the “price volatility levels for metals, food, and non-food agricultural output in the first decade of the 21st century were higher than in any single decade in the 20th century” (Ellen MacArthur Foundation, 2013). This trend is expected to remain if not worsen over time, as populations continue to grow, natural resources continue to be depleted. The "Take-Make-Dispose" pattern of linear economy reveals that while the system has succeeded in increasing producers and businesses' economic gains, it has caused severe problems by mismanaging natural resources.

1.2 The Negative Impacts of a Linear Economy

Considered a cheaper model to produce end products using natural resources, the linear economic model of production incurs several losses, which reflect the unsustainability of the process.

- **Overproduction:** Products are largely distributed on the market, but not all products end up being sold. This excess stock leads to companies losing money.
- **Reduced Life Cycles:** The accelerated production and consumption rates lead to a proportional generation of waste. Likewise, introducing new models of devices or so-called “planned obsolescence”, in reference to technological products, means that before long the old versions will become outdated and undesirable. While this may generate short-term revenues for a company, it negatively impacts the users' economy.
- **Accumulation of waste:** These accelerated life cycles provoke the unbridled accumulation of waste, which in many cases, are harmful to the environment. A poignant example of this is Plastics, which is not always part of a product itself, but it is often part of its packaging. This waste contributes to global warming and the onset of climate change.
- **Depletion and over-exploitation of natural resources** lead to the increased cause of said resources. This applies to raw materials such as minerals and fossil fuels. Many industries intensively use critical materials in their production processes; these materials are limitedly available.

The Ellen MacArthur Foundation (2013) lists the following unnecessary resource losses of the linear economic model:

- **“Production Chain Waste”:** Throughout the production process, several materials are resources are used to produce the end-product. The Ellen MacArthur Foundation (2013) cites the Sustainable Europe Research Institute (SERI) report stating that 21 billion tons of materials used in production are not incorporated into the final product. In food production, for instance, there are “losses in the field due to pests or pathogens, losses during agricultural production due to poor efficiency, spills or leakages during transport (exacerbated by ever-longer global supply chains), losses during storage and at the retailer's due to food surpassing its sell-by date or being stored in the wrong conditions, and products simply going unused by end consumers” (Ellen MacArthur Foundation, 2013). In this sense, food waste is generated during both processing and end-use.

The fashion industry is another example of how waste is generated through the production chain. McFall-Johnsen (2019) cites the UNECE, WRI, and UNEP studies that have discussed how the

production of “fast fashion” garments has made the fashion industry the second-largest consumer of water worldwide. To produce one shirt, around 700 gallons of water is used, while to produce a pair of jeans, 2000 gallons of water are needed (ibid). Although water is not included in the final output of clothes' production, several hundreds if not thousands of gallons are needed to produce a single garment.

- “End of Life Waste”: According to the Ellen MacArthur Foundation (2013), “for most materials, rates of conventional recovery after the end of their (first) functional life are quite low compared with primary manufacturing rates.” The Business Insider (2015) shed light on the fashion industry, stating that “[a]s consumers worldwide buy more clothes, the growing market for cheap items and new styles is taking a toll on the environment. On average, people bought 60% more garments in 2014 than they did in 2000. In total, up to 85% of textiles go into landfills each year. That's enough to fill the Sydney harbor annually”. These results underline the tremendous loss of materials caused by the system.
- “Energy Use”: “In the linear system, disposal of a product in landfill means that all its residual energy is lost. The incineration or recycling of discarded products recoups a small share of this energy, whereas reuse saves significantly more energy. The use of energy resources in a linear production model is typically most intensive in the upstream parts of the supply chain—i.e., the steps involved in extracting materials from the earth and converting them into a commercially usable form” (Ellen MacArthur Foundation, 2013).
- “Erosion of Ecosystem Services”: Not only is the dependence on “natural capital” increasing human advantages, but it is also increasing the depletion of the world’s “natural capital”. The Ellen MacArthur Foundation (2013) describes this as “the erosion of ecosystems services, those benefits derived from ecosystems that support and enhance human wellbeing, such as forests (which, as an essential counterpart of atmospheric, soil, and hydrological systems, absorb carbon dioxide and emit oxygen, add to soil carbon, and regulate water tables as well as delivering a host of other benefits). The Millennium Ecosystem Assessment examined 24 ecosystem services – from direct services such as food provision to more indirect services such as ecological control of pests and diseases – and found that 15 of the 24 are being degraded or used unsustainably. In other words, humanity now consumes more than the productivity of Earth’s ecosystems can provide sustainably and is thus reducing the earth’s natural capital, not just living off its productivity” (Ellen MacArthur Foundation, 2013).

MODULE 2

THE BASICS OF A CIRCULAR ECONOMY

Module 2: The Basics of a Circular Economy

The concept of a circular economy cannot be traced or attributed to one specific source. As a matter of fact, it is the culmination of the work and thought of multiple different individuals. These ideas began to emerge in the 1700s, progressively gaining attention in the 1970s, until its concretization and labeling in our current time (Ellen MacArthur Foundation, 2013; Cardoso, 2018). The term “Circular Economy, however, was first used by Pearce and Turner (1990).

Cardoso (2018) provides a valuable schematic explanation of the first theoretical stages that have led to the conceptualization of the Circular Economy. For further reading, the reference can be found at the end of the chapter as “suggested literature”. The progress concretization of the concept of circular economy in recent years, however, has been induced by some of the 20th-century school of thoughts, including the Regenerative Design of the American Professor John T. Lyle, the Performance Economy by the architect and industrial analyst Walter Stahel, the Cradle to Cradle™ concept by the German chemist and visionary Michael Braungart and the American architect Bill McDonough, Industry Ecology, and Biomimicry by Janine Benyus. These schools of thought were listed by the Ellen MacArthur Foundation (2013). For further reading, the reference can be found at the end of the chapter as “suggested literature”.

Now, after this brief historical contextualization, what exactly is a circular economy?

There are countless definitions, and none of them are absolute. Some can be relatively concise, while others are more comprehensive. Still, all the existing definitions reflect the main pillars at the core of the circular economy concept. The following are just a few of the different existing definitions that embody the main principles of CE.

“The circular economy refers to an industrial economy that is restorative by intention; aims to rely on renewable energy; minimises, tracks, and eliminates the use of toxic chemicals; and eradicates waste through careful design.”

(Ellen MacArthur Foundation, 2013)

“The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended.”

(European Parliament, 2018)

“A circular economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to

accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations.”

(Kirchherr, Reike and Hekkert, 2017)

“A ‘circular economy’ would turn goods that are at the end of their service life into resources for others, closing loops in industrial ecosystems and minimizing waste. It would change economic logic because it replaces production with sufficiency: reuse what you can, recycle what cannot be reused, repair what is broken, re-manufacture what cannot be repaired.”

(Stahel, 2016)

Therefore, a circular economy can be summarized as an industrial economy that works by “closing economic and ecological loops of resource flows” (Haas, Krausmann, Wiedenhofer and Heinz, 2015) by entirely re-designing a whole system that aims to minimize environmental impacts, and strives to reduce waste through reusing, recycling and redesigning products and materials.

In this sense, a circular economy not only applies to the production and consumption of goods and services but also the entire chain from extraction and production, consumption, and end-of-life stage. Hence, the objective of a circular economy “is to maximize value at each point in a products’ life” (Stahel, 2016).

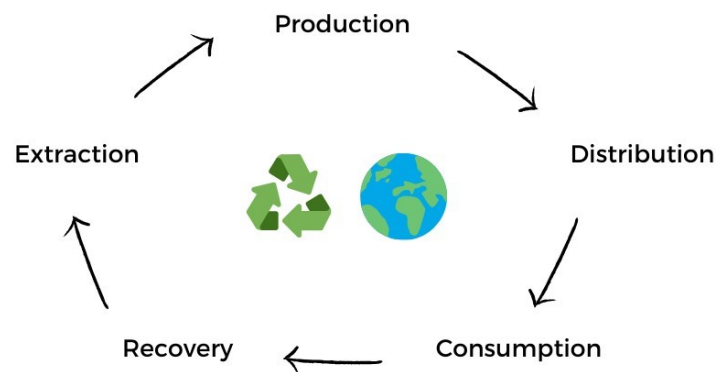


Image created by SwIdeas AB

By applying this approach, at the end of a product’s life cycle, it will be either reused or given a new life. As Stahel (2016) observes, the “circular-economy business models fall into two groups: those that foster reuse and extend service life through repair, remanufacture, upgrades and retrofits, and those that turn old goods into as-new resources by recycling the materials”.

Innovation is, therefore, essential to implement a circular economy. Coupled with research, it needs to create and innovate based on how “industries produce, consumers use, and policymakers legislate” (Prieto-Sandoval, Jaca and Ormazabal, 2018). Both research and innovation are fundamental on the social, technological, and commercial levels (Stahel, 2016). Digitalization is one of the ultimate innovations and one of the circular economy’s prime workhorses, which allows the reduction of materials and energy (Horbach,, Rennings and Sommerfeld, 2015).

According to the Ellen MacArthur Foundation (2013) reports, a circular economy is based on the following concepts:

- “Design out Waste” “Waste does not exist when the biological and technical components (or ‘nutrients’) of a product are intentionally designed to fit within a biological or technical materials cycle, designed for disassembly and refurbishment” (Ellen MacArthur Foundation, 2013). In this sense, the biological discarded materials will be reinserted in ecological cycles, while non-biological materials will “circulate within the socioeconomic system (SES) with reuses and technical recycling” (Haas et al., 2015). Horbach, Rennings and Sommerfeld (2015) also highlight the crucial difference between “consumable (one or few times usage) and durable (years of usage) products”. Within a circular economy, the first category mainly entails the aforementioned “biological ingredients that can be easily returned to the biosphere” (ibid). It is worth mentioning, however, that the only way for a circular economy to function is that “the consumption of these goods is not faster than the regeneration of materials” (ibid). The second category of products, on the other hand, is made out of non-regenerative mineral and non-mineral materials, i.e., houses, vehicles, electronic devices, etc.) (ibid). To serve their purpose and fit within a circular economy, these materials’ reuse and long-lasting life within different forms are fundamental.
- “Build Resilience through Diversity”: To build up resilience, the whole system needs to be versatile and adapt rapidly to changes, especially in a world that is in constant movement and change.
- “Rely on Renewable Energy Sources”: Humans have been relying on natural resources for so long, completely dismissing the fact that some might come to an end. Therefore, it is essential to rely on renewable sources.
- “Think in ‘Systems’”: This entails a holistic approach that does not consider elements as solo entities that do not influence one another. Instead, “elements are considered in relation to their infrastructure, environment, and social contexts” (Ellen MacArthur Foundation, 2013).
- “Waste is Food”: On the biological nutrient level, it is the ability to reintroduce products and materials in the biosphere through non-restorative, restorative loops are at the heart of the concept. However, on the technical nutrient level, it means improving quality in what is called upcycling” (ibid).

A Circular Economy is definitely a multidisciplinary approach as it involves many different disciplines, including architecture, engineering, ecology, design, IT, and many more (Prieto-Sandoval, Jaca, and Ormazabal, 2018).

But, on which levels can it be implemented?

There are three different levels: micro, meso, and macro. The micro-level comprises individual enterprises, while the meso-level includes companies, whose work would impact the regional economy. On the other hand, the macro entails the adjustment of the economy’s industrial composition, which will, in turn, impact the entire economy (Kirchherr, Reike and Hekkert, 2017; Prieto-Sandoval, Jaca and Ormazabal, 2018). This will be further explained in another module.

At the core of a CE, there are different principles. Although the research community has not reached a general agreement on the exact principles, it is understood that the following are undoubtedly prerogatives of a circular economy, which work jointly: the R framework and sustainable design strategies (SDS).

Academics have been speaking about the R framework for decades. These frameworks have developed with the aim “to achieve less resource and material consumption in product chains and make the economy more circular” (Potting, Hekkert, Worrell and Hanemaaijer, 2017). There are different R frameworks, including the

3R, 4R, 6R, and 9R. In brief, the 3R was the first developed framework that comprises the principles of “reduce, reuse, recycle”, which are intrinsic of a circular economy; while the 4R encompasses “reduce, reuse, recycle, recover”. The 6R, on the other hand, entails “reduce, reuse, recycle, recover, redesign and remanufacture”.

For the purposes of this training manual, however, the 9R framework was chosen as it represents the most elaborate and comprehensive framework, which can be applied on various levels. The practices of this framework range to include the ones with both low and high circularity, namely “recover, recycle, repurpose, remanufacture, refurbish, repair, reuse, reduce, rethink, and refuse” (Kirchherr, Reike and Hekkert, 2017; Potting, Hekkert, Worrell and Hanemaaijer, 2017). These nine practices will be further discussed in module 5.

To summarize, each framework outlines the essential strategies that are needed for a circular economy to function, which consequently gives life to sustainable practices that can promote, and enable sustainable development and Redevelopment.

The sustainable design strategies (SDS) act as instruments that “enable sustainable development challenges to be tackled in a coherent and dynamic way” (OECD, 2001). An example of that is the life cycle assessment (LCA) of a product namely ““a technique for assessing the environmental aspects associated with a product over its life cycle” (Muralikrishna and Manickam, 2017). The practice of eco-design has progressively gained attention in recent times as it ““explores opportunities to reduce environmental impacts throughout entire product life cycles by improved product design (whether these products are goods, services, or processes)” (Andrae, Xia, Zhang and Tang, 2016).

Finally, what has been explained so far can be embodied by the so-called business models. The Social Circular Economy (2017) report divides the circular economy business models into the following five broad groups:

- Dematerialization: Digitization, on-demand production and the use of reusable products can reduce the amount of resources needed to create products, examples of that would include Netflix (visual content is available online, and not through materialised items such as DVDs) and Kindle (it substituted paper products as written content is available online through Kindle) (Social Circular Economy, 2017).
- Circular Inputs: this business model employs renewable energy, for instance, solar power, fully biodegradable materials like untreated wood that are made to be sustainable, properly sourced palm oil, and or fully recyclable including pure high density polyethylene for production (ibid).
- “Product Life Extension”: Circular practices such as design for durability and modularity, maintenance and repair, reuse, reconditioning, refurbishing, remanufacturing, repurposing, and part harvesting allow product life extension. “Examples are Patagonia that (designs for) repair of their clothing and Fairphone that designs phones built with durability and modularity in mind using ethical supply chains” (ibid).
- “Resource Recovery”: This can be achieved through practices of recycling, bio-chemical extraction, anaerobic digestion and composting, i.e, at toast ale, beer is brewed using surplus bread (ibid).
- “Product as a Service or Product Service System (includes Sharing Economy)”: This includes “leasing, performance-based payment (pay for success)¹, sharing resources and peer to peer lending, like AirBNB (accommodation), and UBER (transport)” (ibid).

¹ “Financing payments based upon the achievement of specific, measurable events or accomplishments that are defined and valued in advance by the parties to the contract” (Department of Defense - Unites States of America, 2014).

MODULE 3

WHY

IMPLEMENT A

CIRCULAR

ECONOMY?

Module 3: Why Implement a Circular Economy?

3.1 Why implement a circular economy?

Why should we move towards and implement a circular economy?

Simply because the Earth can no longer keep up with our extraction, production, and consumption rates we are currently exploiting natural resources to the extent that we are depleting them. Entire forests, which constitute our plants' lungs, have been destroyed, significant biodiversity lost, water reserves hitting an alarmingly dangerous low, and the list goes on. Not only that but excessive production and consumption, the latter deemed overconsumption in developed countries, are also leading to a rise in the levels of pollution and waste.

Natural resources are extremely valuable, not only in economic terms but also in practical ones. They are essential to our daily survival. Resources, however, are not equally used by the entire population. Statistically speaking, developed countries consume more resources than the developing countries, which creates major imbalances in environmental footprint and economic flow (Sustainable Europe Research Institute- SERI) Austria, and GLOBAL 2000 (Friends of the Earth Austria, 2009). Furthermore, the projected and progressive increase of the global population will lead to a higher demand for natural resources: a condition that will further crunch our natural systems, both in terms of natural ecosystems and ecosystem services. The past and current overexploitation and depletion of natural resources are causing climate change, a dramatic issue that must be addressed.

Without further doubts, there is an urgent need for a new paradigm that integrates the continued development of human societies and the maintenance of the Earth system (ES) in a resilient and accommodating state" (Steffen et al., 2015).

Therefore, a circular economy will provide a "regenerative growth model that gives back to the planet more than it takes, advances towards keeping its resource consumption within planetary boundaries and therefore strives to reduce its consumption footprint" (European Commission, 2020a), without compromising economic development, but actually promoting and boosting it.

Moreover, a circular economy can help achieve several of the 17 sustainable development goals (SDGs), which the United Nations (UN) have set in 2015 to be achieved by 2030. Schroeder, Anggraeni, and Weber (2018) argue that "CE practices can be applied as a 'toolbox' and specific implementation approaches for achieving a sizable number of SDG targets". In this manner, a circular economy can positively contribute, both directly and indirectly, to the following SDGs: the SDG 2 Zero Hunger (through sustainable food production), the SDG 3 A Good Health and Well-Being, the SDG 6 Clean Water and Sanitation, the SDG 7 Affordable and Clean Energy, the SDG 8 Decent Work and Economic Growth, the SDG 11 Sustainable Cities and Communities, the SDG 12 Responsible Consumption and Production, the SDG 13 Climate Action, the SDG 14 Life Below Water, and the SDG 15 Life on land (Triodos Research, 2017; UN General Assembly and ECOSOC, 2018; WHO Regional Office for Europe, 2018). In addition, a circular economy can address the goals towards achieving No Poverty (SDG 1), Quality (SDG 4), Industry, Innovation, and Infrastructure (SDG 9), as well as Reduced Inequalities (SDG4).

3.2 Social, Economic, and Environmental Effects

It is quite evident that the circular economy has a great potential to disrupt the current economic model and offer a restorative and regenerative one. Nonetheless, as Rizos, Tuokko, and Behrens (2017) explain, “such a radical transformation of business practices and the economy as a whole would entail significant economic, environmental and social impacts”. Each impact will affect others since they are all interconnected.

As for the economic impacts, a circular economy is expected to increase productivity while simultaneously saving costs and creating a significantly increasing the number of jobs. Below is an explanation of a few of the expected economic and market benefits of CE:

- Gross Domestic Product (GDP) is the primary indicator of economic growth. It is “the standard measure of the value-added through the production of goods and services in a country during a certain period” (OECD, 2020). An Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment study (2015) show that a circular economy “would allow Europe to grow resource productivity by up to 3 percent annually. This would generate a primary-resource benefit of as much as €0.6 trillion per year by 2030 ... In addition, it would generate €1.2 trillion in non-resource and externality benefits, bringing the annual total benefits to around €1.8 trillion compared with today.” This all would translate into a 7% GDP increase (ibid).
- A circular economy is expected to increase resource productivity, namely “a measure of the total amount of materials directly used by an economy (measured as domestic material consumption (DMC)) in relation to GDP” (Glossary: Resource productivity, 2016).
- A circular economy is entwined with innovation and research, which are key to facilitate this transition. Hence, a circular economy will contribute and lead to progressive technological innovations (The Circular Economy In Detail, n.d.).
- A circular economy is expected to create new jobs and to reintroduce old jobs that have disappeared in recent times (Circular economy a source of job creation and re-creation, 2018). According to the European Commission (n.d.), “new jobs will be created in innovative design and business models, research, recycling, remanufacturing and product development”, for a total of approximately 700,000 new jobs (Cambridge Econometrics, Directorate-General for Environment (European Commission), ICF and Trinomics, 2018).

As for the environmental impacts, the Ellen MacArthur Foundation and Material Economics (2019) study highlights the positive environmental impacts resulting from the implementation of a circular economy.

A circular economy can significantly contribute to reducing the GHGs emissions, allowing us to meet the UN Paris Agreement set target. The goal is to keep “ [...] a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius” (The Paris Agreement, n.d.). The urge calls for utmost actions as GHGs emissions have reached high numbers:

“GHG emissions have risen at a rate of 1.5 per cent per year in the last decade, stabilizing only briefly between 2014 and 2016. Total GHG emissions, including from land-use change, reached a record high of 55.3 GtCO₂e in 2018.”

(United Nations Environment Programme, 2019)

Note: gigatonnes of CO₂ equivalent (GtCO₂e)

An Ellen MacArthur Foundation and Material Economic (2019) study states that out of the total global GHGs emissions of 2010, 55% was caused by energy consumed by transportation, buildings and energy systems, while 45% was linked to the materials, products, and food production, as well as land management. Therefore, renewable energy and energy-efficiency measures alone, as one prerogative of circular economy, can tackle 55% of the current total emissions (ibid). However, the study still argues that “meeting climate targets will also require tackling the remaining 45% of emissions associated with making products”. Therefore, a circular economy can resolve all these issues.

Practically, this means that:

- Suppose construction and vehicles are made using recycled materials instead of using brand-new extracted ones. In that case, the demand for these materials will decrease, which will consequently decrease the emissions caused by their production (ibid);
- As for the food industry, regenerative farming represents a valuable resource. Generally, it entails “growing food in ways that improve soil health, agrobiodiversity, and local ecosystems” (ibid). In this sense, regenerative agriculture practices can help “moving from carbon reduction to carbon sequestration” and building soil fertility levels (ibid);
- A circular food industry will entail the conservation of all used materials, and the elimination of waste to “avoid emissions related to uneaten food and unused by-products” (ibid).

As such, a circular economy would lead to environmental benefits, including:

- Decreased GHGs emissions and use of resources;
- Supported land productivity and soil health (Sustainable Europe Research Institute (SERI), Austria, and GLOBAL 2000 (Friends of the Earth Austria), 2009; The Circular Economy In Detail, n.d.);
- Improved conservation of biodiversity and landscapes that have been subjected to loss and depletion in recent years, given the increased soil health;
- Decreased dependency on supplementary nutrients such as chemical fertilizers, given the return of natural nutrients to the soil (The Circular Economy In Detail, n.d.).

Socially, the expected impacts are the following:

- An increase of net employment accounting for approximately 700,000 new jobs (Cambridge Econometrics, Directorate-General for Environment (European Commission), ICF and Trinomics, 2018);
- Job creation in fields where unemployment rates are high (Rizos, Tuokko, and Behrens, 2017);
- An increase in high-skilled employment for new jobs will demand new skills (ibid);
- Distributed impacts among various income groups (ibid).

MODULE 4

THE POLITICAL FRAMEWORK

Module 4: The Political Framework

4.1 The Political Framework

The political sphere plays a key role in launching and maintaining an actual sustainable transition into a circular economy. Indeed, political incentives and consistent leadership benefit this process and often represent crucial differences in producers' and consumers' behaviors. Several policies tend to reinforce behaviors that are at the core of the linear economy, which support wasteful practices and make it challenging to operate circularly. For instance, some policies grant tax reduction or subsidy, making it possible to profit from large-scale production and excess food disposal rather than reuse distribution.

Consequently, the collaboration between governments and business is of the utmost importance, as “piloting circular projects in a world where costs and prices are in the wrong places is a very difficult convincing exercise” (SB Insight, 2019). Therefore, it is essential to understand that while conscientization is crucial to transitioning into a circular economy, the world still operates within a capitalist system, meaning, unfortunately, that economic incentives may frequently drive producers and consumers towards a linear approach. So, to drive substantial changes of attitude as well as in production and consumption patterns, the political sphere has to play a vital role in shaping new behaviors, and “politicians must be more daring to drive change” (SB Insight, 2019).

The political framework also should encourage innovation by creating markets for new products and services, mainly focusing on circular sustainability, thereby enforcing new solutions and standards (Vinnova, 2019). Moreover, policies should concentrate on creating conditions to transition into a circular economy by “addressing barriers and enabling the development of new markets and business models, bringing in economic, social, and environmental benefits resulting from optimized use of resources in particular, ... creat[ing] of jobs and economic value, and ... slow[ing] down resource depletion” (SB Insight, 2019). Finally, a tax shift that would decrease taxation on renewable resources such as labor, and increase taxation on non-renewable resources is crucial for facilitating this process (SB Insight, 2019).

4.2 The Circular Economy and the European Political Framework: An Introduction to the European Political Framework Regarding the Circular Economy

In the past few years, the European Union has increasingly adopted ambitious initiatives to foreground the transition towards a circular economy. In July 2019, the Commission announced that it will invest €11 billion in new solutions addressing societal challenges and driving innovation-led sustainable growth, a budget that foresaw a support to a circular economy with an investment of €1 billion (European Commission, 2019).

“In 2020, €206 million is earmarked for projects to transform sectors that are traditionally energy intensive into competitive, low-carbon and circular industries and to significantly lower their environmental footprint. €132 million will support the development and production in Europe of the next generation of batteries, as part of the drive towards a low-carbon, climate-resilient future. Ten new topics on plastics with a total budget of €135 million contribute in different ways to the EU Plastics Strategy.”

(European Commission, 2019)

Operating on the EU level drives investments, and creates a common ground to transition into a circular economy, and supports the removal of the single market barriers. As such, the circular economy targets the loss of materials in the EU, and proposes amends to the EU's waste legislation aiming to transform waste into a valuable resource and seeking to foster a win-win situation that prompts savings for EU businesses, job creation, and reduction of carbon emissions².

Accordingly, member states have been encouraged to establish laws to facilitate circulatory, including VAT tax reduction on repair activities, ban of single-use plastics, and toxic chemicals used in agriculture (SB insight, 2019). This leaning is a reflection of the following perception:

“Policy makers have to focus their work now on enabling businesses to redesign projects so that they use less material and access energy differently, to build a culture of repair and to invest heavily in the remanufacturing space. This would lead to factories coming back to Europe, not to feed the world, but ourselves, locally at human scale. Repairing, reusing, redistributing, refurbishing and remanufacturing rely far more on human employment than recycling activities. They should be preferred as they create local virtuous loops. And - as advocated in a Circular Economy 2.0 where equality is critical too - new kinds of genuine jobs are needed within our societies. New tax regimes such as Ex-Tax [A tax system where natural resources are increasingly taxed, and labor is decreasingly taxed] are a response to rebuilding economies where we are part of the equation for success.”

(SB Insight, 2019)

During the previous stages of the U-Eco project, a research was developed shedding light on the initiatives and policies that encourage a transition into a circular economy in Europe, including:

- Seventh Environment Action Program (VII WFP) to convert the EU into a low carbon economy, with efficient use of ecological and competitive resources;
- Paris Agreement on Climate Change (COP 21. 2015);
- The 2030 Agenda for Sustainable Development (2015) - the 17 Sustainable Development Goals (SDGs);
- The New World Urban Agenda (UN-Habitat 2016).

European Policies for Circular Economy

This research outlines three initiatives taken within the European political framework, which aim to drive a transition into a circular economy: the 2015 Circular Economy Action Plan, the European Green Deal, and the 2020 Circular Economy Action Plan. The circular economy, which these three initiatives fostered, also converges with international political frameworks that target climate and sustainability goals. It is especially aligned with the UN 2030 Agenda for Sustainable Development (European Commission, 2018).

The 2015 Circular Economy Action Plan

Acknowledging the significant role of politics and the importance of effectively fostering circular change by involving economic entities and civil society, the European Union launched its first Circular Economy Action Plan in 2015. This represented the “first step to a long-term commitment to establish a European circular

² https://ec.europa.eu/commission/sites/beta-political/files/circular-economy-factsheet-general_en.pdf

economy” (European Commission’s “Circular Economy Action Plan” - United Nations Partnerships for SDGs platform, 2020). The 2015 Circular Economy Action Plan was defined as a:

“political instrument with high replicability”, and “its focus on cooperation and comprehensive action, covering the entire product’s cycle, makes it suitable for different political and economic contexts.”

(ibid)

By launching this plan, the Commission was “working to break policy silos and expand circular economy principles across policy areas” (ibid), focusing mainly on priority areas such as, plastics, biomass, construction, and demolition waste. It also sought, in particular, to revise the legislative framework on waste (Rizos, 2019).

“The action plan sets a concrete action plan from production to consumption and waste management and is meant to close the loop of a product’s value chain.”

(SB Insight, 2019)

Moreover, a Circular Economy Monitoring Framework was adopted “to measure progress towards a circular economy at EU and national level” (SB Insight, 2019). It inspired action by setting clear indications of good practices for policymakers and highlighting areas that needed improvement. The monitoring process is pivotal in identifying success factors in member states and considering the course of actions necessary to foster long-term goals of a circular economy (European Commission, 2018).

Consequently, the Action Plan “allowed the establishment of a more coherent policy framework for sustainable production and consumption” (SB Insight, 2019), driving coherent change across Europe by adopting similar strategies in different countries.

The European Green Deal and the 2020 Circular Economy Action Plan

In December 2019, the European Green Deal was presented, followed by the proposal of a new Circular Economy Action plan in March 2020, which focused on sustainable use of resources, a fundamental block of the EU Green Deal (European Commission 2020b). Circularity is at the heart of the European Green Deal, which seeks to ensure a just and inclusive transition to render the EU climate neutral by 2050.

“The European Green Deal is our roadmap for making the EU's economy sustainable. This will happen by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all.”

(European Commission, 2020c)

The EU Green Deal also highlights some available financial tools and areas that need investments to facilitate the transition (European Commission, 2020c); it covers all economic sectors and foresees significant investments. Besides, it also provides a roadmap with actions “to boost the efficient use of resources by moving to a clean, circular economy and stop climate change, revert biodiversity loss and cut pollution” (European Commission, 2020d).

The transition into a green economy is expected to receive technical and financial support with an overall budget of at least €100 billion over the period 2021-2027. The EU Green Deal also includes key policy areas that constitute the circular economy's essence, which the U-Eco project has identified at an earlier stage.

These areas include “from farm to for”, which aims to provide more sustainable food systems, “clean energy”, which envisions opportunities of alternative cleaner and renewable energy sources, “sustainable industry”, which targets more sustainable, environmentally-respectful production cycles, “building and renovation”, which acknowledges the need for a cleaner construction sector, and finally, “eliminating pollution”, which seeks to efficiently eradicate pollution (European Commission, 2020c).

The March 2020 Circular Economy Action Plan aims to make products more sustainable while actively involving citizens and educating them about the circular economy and its benefits.

“The new Action Plan announces initiatives along the entire life cycle of products, for example, their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.”

(European Commission, 2020b)

The Action Plan is primarily based on the Eurobarometer survey published in March 2020 (European Commission, 2020e), which concluded that 83% of the surveyed group believe that the EU legislation is necessary to protect the environment and that citizens are willing to be more involved to achieve this objective. The survey also deduced that the citizens considered changing production and consumption patterns is the “most effective way of tackling environmental problems” (European Commission, 2020e). The plan also focused on actions that seek to make circularity work for people and municipalities producing more sustainably while aiming to empower consumers; it mainly targets resource-demanding sectors, including electronics, packaging, plastics, textiles, construction, food, water, and nutrients. Accordingly,

“The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.”

(European Commission, 2020b)

The focus on circularity and sustainability as well as the EU Green Deal and the Circular Economy Action Plan is at the center of research, innovation, and investment initiatives foreseen for the upcoming years as part of the Horizon Europe framework program (European Commission, 2019). The initiatives included as part of the European Green Deal Call, announced in May 2020, aiming to urgently and ambitiously respond to the EU Green Deal suggested by Horizon 2020 framework program, received a budget close to € 1 billion. The call aspires to encourage research and innovation to foster the transition into a sustainable society in 11 different fields, including “industry” for a clean and circular economy” (European Commission, n.d.).

Obstacles hindering the Adoption of a Circular Economy in the European Union

Based on the research conducted during the first stages of the U-Eco project, we realized that the political framework represents a barrier hindering the transition into a circular economy. The main challenges are outlined below:

- National legislations’ differences regarding economic incentives to recycling may hinder individuals from recycling packages bought from other countries;
- Different and inconsistent “best before” legislation may set incentives to dispose of food rather than redistribute it. VAT legislation supports this as donated food;

- The global material flow, which entails importing products from countries applying different legislation concerning emissions, may disguise consumers' consumption effects since adversities will be observed in other national contexts.

A 2019 CEPS (Rizos, 2019) research corroborates these deductions. The study concluded that the critical challenges of circular/bioeconomy value chains include the following:

- High administrative burden and costs of waste shipment of materials' recovered within the EU;
- Uncertainty about some of the substances contained in products;
- Slow progress in setting eco-design requirements for non-energy related products;
- Lack of evidence and emphasis on the advantages and disadvantages of circular options;
- Considerable differences in waste management across the member states, and a lack of waste collection and infrastructure processing in several countries.

The research further identified the “lack of support supply and demand network”, “capital”, and “government support” as the main barriers impeding the implementation of circular economy business models (Rizos, 2019). It is important to note that:

“A circular economy goes beyond the pursuit of waste prevention and waste reduction, to inspire technological, organizational, and social innovation across and within value chains. There are many barriers, untapped opportunities, and obstacles to be addressed.”

(SB Insight, 2019)

The research has demonstrated that despite adopting ambitious policy measures, the implementation of a circular economy has been limited in most EU member states. There are many explanations for this. Although several studies point to technical challenges as key obstacles, a recent qualitative research highlighted how cultural barriers also play a significant role in hindering the implementation of a circular economy. For lack of “consumer interest and awareness”, “hesitant company culture”, and operation within “a linear economy” appear to be the main barriers; these are followed by market-related challenges, including “low virgin material prices”, and “high upfront investment costs” of CE business models (Kirchherr et al., 2018). The research underlined that consumers' preferences is a primary barrier; consumers may prefer new products and/or are opposed to buying second-hand products. This finding indicates that circular economy principles have yet to be internalized by our societies as the norm, or the most suitable approach to regulating production and consumption.

Relevant literature emphasizes that the regulatory and political framework are also pressing barriers; lack of “smart regular”, “supportive policy frameworks”, or implementation of a regulation that prevents “cascading material across international borders” (Kirchherr et al., 2018) are real impediments. EU-specific research, however, posits that regulations do not impose a crucial barrier, as a result of the extensive policy and financial incentives given to transition into a circular economy in the EU (ibid). Within an EU context, technological challenges appear to be as pressing as cultural and market barriers.

These conclusions indicate the need to shift the focus from giving incentives to empowering research and innovation, looking into lowering the costs of virgin material and increasing upfront investment needed to secure the transition into a circular economy, which may, in turn, drive crucial cultural changes needed (Kirchherr et al., 2018). In addition, studies generally agree that the government presents a key player in accelerating the transition into a circular economy. It can foster the emergence of a context that is favorable and supportive to a circular economy. Therefore, a substantial political framework and active investment in initiatives supporting this transition are vital.

4.3 Circular Economy and National Contexts

Further information on this matter can be found in Annex I.

4.4. Macro, Meso, and Micro Levels of Circular Economy

Monitoring the transition into a circular economy and assessing the effects of new policies and trends are complex processes. Since actions may occur on different levels and impact different spheres, understanding the distinction between indicators occurring on a micro, meso, and macro levels (despite their overlap) is crucial to forming an accurate and real perception of progress achieved, emerging issues and barriers, and possible solutions. That is because each level is distinctively relevant in making decisions concerning different fields, as explained in the table below:

Level	Support Decisions Concerning	Emphasize on	Example
Macro: focuses on the international sphere and the relations between countries.	Economic, trade and environmental policy integration, sustainable development strategies and action plans, and national waste management, and resource conservation policies.	(Material) exchanges between the economy and the environment, on international trade and on material accumulations in national economies, rather than on flows within the economy.	Macroeconomic indicators describe a country's characteristics or broader region, mostly in relation to interactions with the rest of the world through trade flows. An indicator can zoom through disaggregation on, for example, a specific material category or emission.
Meso: focuses on the economy, with more emphasis on analysis and tracking detailed information.	Material flows within the economy, distinguishing not only categories of materials, but also industries or branches of production and consumption types.	Industry, consumption activity, detecting waste of particular materials, sources of pollution, and opportunities to achieve efficiency in specific sectors or consumption domains.	Mesoeconomic indicators describe the economic, environmental, or social performance of a region, a product group, or an industry. The indicator can zoom through disaggregation on, for example, a specific material category or emission.
Micro: focuses on the local sphere, on specific businesses, resources or products.	The implementation of policies and decisions in areas such as product policies, energy efficiency, and integrated waste management.	A business, a local level, or a specific substance, individual, or product.	Microeconomic indicators describe the economic, environmental, or social performance of a city, product, or company. The indicator can zoom through disaggregation on, for example, a specific material category or emission.

Source: Vercalsteren An (VITO), Christis Maarten (VITO), and Van Hoof Veronique (VITO), n.d.

Based on the table above and additional research, the macro-level compiles indicators related to the regulatory and political framework overseeing the economy from a global to a municipal level (Prieto-Sandoval, Jaca, and Ormazabal, 2018). The meso-level is concerned with industrial symbiosis companies, namely eco-

industrial parks, whose work benefits regional economies and natural environments (Kirchherr, Reike and Hekkert, 2017). The micro-level refers to indicators occurring in a single firm, product, or consumers (Kristensen and Mosgaard, 2020). Given each level's different scope, categorizing indicators may facilitate the monitoring process and assess action plans' results. Although macro level indicators are relatively well measured and documented, studies agree that:

“a detailed understanding of how to measure and document progress towards a circular economy is lacking, especially on a micro level. This poses obstacles to comparing among products or resources This is a barrier for both producers who want to provide circular products and services, and for the consumers who want to know how to compare products.”

(Kristensen and Mosgaard, 2020)

MODULE 5

10 CIRCULAR PRACTICES

Module 5: 10 Circular Practices

Introduction

We live on a planet with limited resources, where human development has led to limitless, constant economic growth. For all the reasons previously mentioned, a paradigm shift towards sustainable development has become imperative. Rethinking the economy and creating new ways of doing and making things has become crucial. Some actions are simple and easy to carry out, such as reducing the rate of consumption and waste, or reusing products; these actions have become compelling strategies to break the dynamics of the “buy-use-throw away”.

5.1.1 Recovery

According to the European Parliament, and the Council Directive 2008/98/EC on the 19th of November 2008, “recovery’ means any operation, the principal result of which is:

1. Waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function
2. Waste being prepared to fulfil that function, in the plant or in the wider economy.”

Waste is the final step in the life cycle and supply chain of any substance or product. ‘Waste’ means “any material which the holder discards, intends, or is required to discard” (Thechemicalcompliancecoah, n.d). The recovery cycle process focuses on the recovery of substances from waste; it aims to give new life to that product or substance to no longer be considered waste.

According to the principles and strategies of circular economy and efficient management of resources, resource recovery is preceded by other processes, including reduction, reuse, and recycling attempting to grant full product recovery.

In case of recycling, the final product is a product, material, or substance; in case of recovery, however, the final product is a “waste serving a useful purpose” (Eurostat, statistics explained, 2014). Another difference is that during the process of recycling no energy is recovered, while a major aim of the recovery process is recovering energy.

Through the recovery process, there are resource recovery and material recovery. Resource recovery comprises “the conversion of non-recyclable waste materials into useable heat, electricity, or fuel through a variety of so-called waste to-energy processes, including combustion, gasification, pyrolysis, anaerobic digestion, and landfill gas recovery” (Ellen MacArthur foundation, 2013). Material recovery, however, means “any recovery operation, other than energy recovery and the reprocessing into materials that are to be used as fuels or other means to generate energy. It includes, inter alia, preparing for reuse, recycling and backfilling” (EUR-LEX.eu, 2008). Backfilling, on the other hand, means “any recovery operation where suitable non-hazardous waste is used for purposes of reclamation in excavated areas or for engineering purposes in landscaping” (ibid).

Recovered products regain the value of that product; they are considered by-products. In terms of circularity, recovered products can be reused for other purposes. Product recovery can raise profits of entrepreneurs who can turn waste into something profitable.

Based on the principles of the economy and waste prevention, it is vital to set a holistic and coherent approach that considers recovery options at every stage of a product's life cycle.

Waste Hierarchy

The concept of recovery can be explained using the “waste hierarchy” which presents waste management alternatives based on what is best for people and the environment. In a circular economy, the top priority for any person or business should be how to prevent waste in the first place. When waste is created, the priority should be how to prepare it for reuse, recycling, recovery, leaving disposal as the last option.

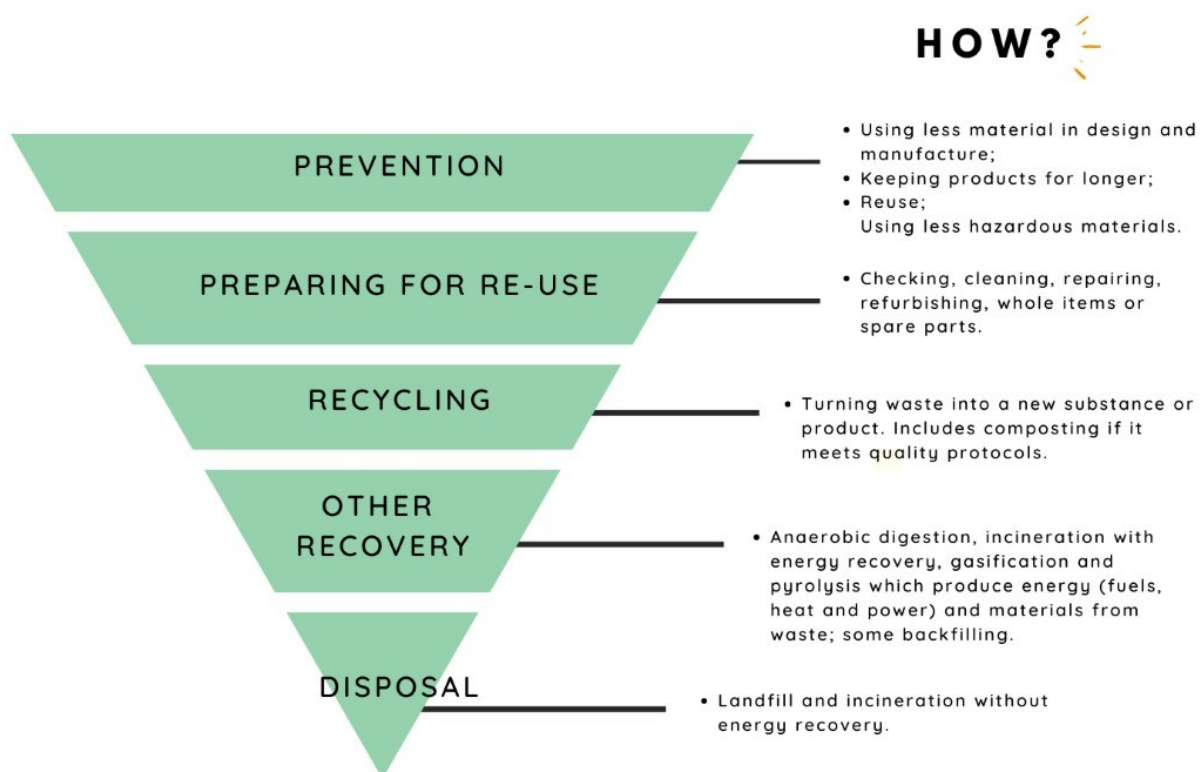


Image content adapted from Defra - Department for Environment, Food and Rural Affairs (2011).

Waste Generation, Treatment and Trends in the EU-28

According to a study published with the help of the European Parliament in relation to the transition into circular economy, “approximately 2.6 billion tonnes of waste were generated in the EU-28 in 2014. Around 46 per cent of wastes are recovered in some form in the EU, contributing to a circular use of resources” (Hollins, 2017).

Recovery Good Practices

- Hazelmere Resource Recovery:

Resource recovery parks are planned to offer sustainability of waste management processes. In this sense, the parks become recovery resources used to receive, process, separate and repair a community's

discarded materials. Therefore, they are good examples of how waste can be managed. Park Hazelmere Resource Recovery Park offers valuable means to reuse materials.

For more details, visit: <https://www.emrc.org.au/waste-services/resource-recovery-project/hazelmere-resource-recovery-park.aspx>

- Waitaki Resource Recovery Park in New Zealand:

This park aims to transform rubbish into resources. It accepts a full range of recycling and resale items and green waste.

For more details, visit: <https://www.resourcewaitaki.co.nz/>

- Allerton Waste Recovery Park:

This park aims to treat household waste that was otherwise going to be sent to landfill, which are then used as a resource to generate energy (Our Operations, n.d.). Each year, the park handles 320,000 tonnes of waste, an amount that can fill more than 2,100 Olympic sized swimming pools (ibid). For more details, visit: <https://www.youtube.com/watch?v=qWl0OFbYz9s&feature=youtu.be>

5.1.2: Recycling

Introduction

Recycling is an effective way to stop waste from going to landfill; it is an essential method to realize the circular economy vision. Recycling returns materials and resources to be utilized again by the economy. In this sense, recycling can help the economy, create jobs, and help the environment as they re-enter these materials into a product lifecycle.

According to the European Parliament and the Council Directive 2008/98/EC, “any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations”.

The recycling process comprises several activities, including collection, separation, and processing, to prepare waste for reuse in another manufacturing process. Basically, the recycled product goes through a mechanical process to change its form, so that its materials can be reprocessed into new products. Since recycling requires time and energy, this method is only recommended when reduction and reuse are impossible.

Therefore, before recycling, people, companies, and manufacturers should consider the following:

1. Reducing the amount of waste created in the first place, and using less plastic bags and packaging;
2. Reusing products, instead of throwing them away (i.e., glass jars for food, or plastic bags for bin liners).

The benefits of recycling (Cleanpedia.com, 2019):

- Reduces the amount the waste sent to landfills and incinerators;
- Conserves natural resources such as timber, water and minerals;
- Prevents pollution by reducing the need to collect new raw materials;

- Saves energy, and reduces the greenhouse gas emissions. For example, “making products from recycled materials requires less energy than creating them from raw materials. Sometimes new aluminium from recycled cans and foil uses 95% less energy than starting from scratch”(ibid);
- Helps create jobs in the recycling and manufacturing industries.

As for plastic recycling, “the benefits are translated into 40% less energy than creating paper from virgin wood fibre and 17 trees saved”(medium.com, 2018). Furthermore, plastic has a long biodegradation time to the extent that a single plastic bottle can take up to 1000 years to biodegrade (Medium, 2018).

The Recycling Process Steps

1. Collection and Separation:

European laws stipulate measures aiming to ensure the source separation, collection, and recycling of priority waste streams. Keeping in line with the objectives and striving to realize a circular vision, waste should be separately collected, before it undergoes any recovery operation to deliver the best overall environmental result. Furthermore, for member states to achieve environmentally sound management, they should take action, as well as encourage and facilitate the separation of waste to improve the potential recovery of waste and prolong the life cycle of products. The recycling process’ value chain “starts with the separate collection of materials in waste bins for a single material or a group of waste materials. This is followed by sorting and compaction before the recyclables are delivered to recycling plants (European Environment Agency, n.d). According to “The case for increasing recycling: Estimating the potential for recycling in Europe” report, the end volume of waste processed in recycling plants is smaller than the amounts obtained for recycling. That is because separately collected materials are often contaminated, such as paper labels on plastic bottles or the collection of mixed materials. When that happens, materials require further mechanical or chemical separation, similar to what Tetra Pak milk cartons need. These processes typically take place in sorting plants, which separate recyclable from rejects.

Recyclable materials include glass, paper, cardboard, metal, plastic, tires, textiles, batteries, and electronics. Other forms of recycling include composting or reusing biodegradable waste as in food or garden waste.

2. Recycling:

There are two types of recycling: mechanical and chemical.

Mechanical recycling entails breaking down collected materials into smaller pieces without changing their basic structure. Chemical recycling, however, is “the process which breaks down the polymers into their chemical constituents and converts them into useful products like basic chemicals and/or polymers for new plastics or fuels” (IGI Global, n.d). Each material requires a different recycling process; in some cases, recycling requires additional processing like cleaning, refining, etc., (ibid).

European Rates

According to a EUROSTAT press release issued on the 4th of March 2019, the recycling rate has increased in the Eu-28.

“Overall, the EU recycled around 55% of all waste, excluding major mineral waste in 2016 (compared with 53% in 2010). The rate for recovering construction and demolition waste reached 89% (2016), the recycling rate of packaging waste exceeded 67% (2016, compared with 64% in 2010) while the rate of plastic packaging was over 42% (2016, compared with 24% in 2005). The recycling rate for municipal waste stood at 46% (2017, compared with 35% in 2007) and for the waste of electrical and electronic equipment such as

computers, televisions, fridges and mobile phones, which include valuable materials which can be recovered (e-waste) in the EU reached 41% (2016, compared with 28% in 2010).”

(Eurostat, 2019)

Despite these growing rates, however, “on average, only 12% of material resources used in the EU in 2016 came from recycled products and recovered materials”(ibid). The same article explained that this number is low because some types of materials cannot be recycled. This means that a new shift from linear to circular economy is vital to retain the value of products and substances and minimize waste generation.

The Symbols of Recycling

Understanding the symbols and plastic codes will help consumers to choose plastics and to know which plastics to recycle.






Symbol	Description
 <p>Image source: Wikipedia</p>	<p>The cut bin symbol indicates that this object must be collected separately. It must not be disposed of with household waste and must be handed in a collection point. Household appliances, mobile phones, IT equipment, or other electrical or electronic products bearing this symbol may be recycled (waste electrical and electronic equipment – WEEE) (Recycling Symbols, n.d.).</p>
 <p>Image source: Wikipedia</p>	<p>The Mobius Loop “indicates that an object can be recycled, not that the object has been recycled or will be accepted in all recycling collection systems. Sometimes it has a percentage figure in the middle, indicating how much of the product comes from recycled materials” (Coda blog, 2016).</p>
 <p>Image source: Opencilipart</p>	<p>The Green Dot does not mean that the packaging can or should be recycled. It is a symbol used on specific packaging in some European countries, indicating that the manufacturer has financially contributed to the recovery and recycling of packaging in Europe (The Green Dot Trademark, n.d).</p>
 <p>Image source: Wikipedia</p>	<p>The symbol asks the consumer to dispose of glass bottles, jars in a glass container. In different European member states, consumers have different containers depending on the color of the bottle.</p>
 <p>Image source: Wikimedia</p>	<p>The aluminum used in the packaging can be recycled (Breniuc, 2015).</p>



Image source: Wikimedia

“Products that have obtained the right to display this symbol can be turned into compost. The certification is granted by the European Bioplastic organization, based on the European standard EN 13432/14955” (Breniuc, 2015).

resin identification coding system



- 1 : PET Polyethylene terephthalate
- 2 : HDPE High-density polyethylene
- 3 : PVC Polyvinyl chloride
- 4 : LDPE Low-density polyethylene
- 5 : PP Polypropylene
- 6 : PS Polystyrene
- 7 : OTHER Other plastics, including acrylic, acrylonitrile butadiene styrene, fiberglass, nylon, polycarbonate and polylactic acid.



The Green Dot Symbol :

UNICODE :



Image source: Free SVG

To find out if a product can be recycled or not, you can check the number located inside the triangle. The number indicates the type of plastic used:

1 – PETE – Polyethylene Terephthalate

This is the easiest type of plastics to recycle. It can be recycled into bottles and polyester fibers (Bloch, 2009).

2 – HDPE – High-density Polyethylene

It is "mostly used for packaging detergents, bleach, milk containers, hair care products, and motor oil" (ibid). It is recycled into bottles or bags.

3 – PVC – Polyvinyl Chloride

These substances can be found in many items, including "pipes, toys, corks, trays, foil, pipes, tubes, light furniture, cards, stickers furniture, packaging" (ibid).

4 – LDPE – Low-density Polyethylene

“LDPE is among the most recycled polymers in Europe. It's commonly found in household flexible packaging applications and commonly used in agriculture” (Plastic Recycles Europe, 2018).

5 – PP – Polypropylene

PP is found in clothing, bottles, tubs and ropes, boxes of margarine, glasses, etc. It can be recycled into fibers (Agentia Nationala Pentru Protectia Mediului, 2014).

6 – PS – Polystyrene

One of the most used plastics is polystyrene, "which is available in 3 forms: expanded, extruded, or foam. This material can be used in glasses, food packaging (yogurt, cream), food pans, and is an excellent thermal insulator. It is difficult to recycle and is not accepted at most recycling points" (Reciclăm împreună, n.d).

7 – Other

Packaging marked with this figure may not be recycled.

5.1.3: Repurpose

Introduction

“Repurposing is the use of a product or material for a different function than it was originally produced for” (Ceguide, 2018). This means that when a product reaches the end of its life, you do not have to get rid of it and replace it with a new one; on the contrary, you can find new ways to use this product. By finding alternative uses for outdated products, you can save costs, reduce waste, and help the environment.

As a circularity strategy, repurposing is the process that enables the life extension of a product in a manner that allows the use of a discarded product or parts of it by converting them into new products with different functions and purposes.

According to Circle Economy and MVO Nederland, 2015, the process of repurposing can be referred to as:

- “Downcycling, when the new purpose of the product or component is at a lower level than the original use”.
- “Upycling, when the new purpose of the product or component is at the same or higher level than that of the original use”.

Benefits of Repurposing

- Saves Energy: Unlike recycling, which consumes energy to break down parts and recreate new products, repurposing products consumes fewer resources, making this strategy more energy efficient;
- Reduces Waste: It reduces the amount of waste by prolonging products’ life instead of discarding them into landfills;
- Extends the life cycle of products: Repurposing takes usable items, including raw materials, and turns them into objects that can be used prolonging their life cycles, instead of disposing of them;
- Preserves the value of products: Repurposing offers higher value preservation; it is a better strategy than recycling and disposal;
- Saves money.

Examples of Items that can be repurposed

- Buildings and Furniture: Circular repurposing of buildings is quite common, especially in abandoned or decaying industrial areas, such as the Former Theatre in Buenos Aires, which has been transformed into a bookstore. Still, “However, “repurposing might not always be environmentally friendly or cost-effective. For example, an old building could be converted to a new use but not updated enough to reduce energy costs” (Kenton, 2019);
- Clothes: Recreating new clothes out of old ones: handbags using old t-shirts, pillows out of sweaters, denim rugs out of old jeans;
- Electronics: some outdated electronic items can be repurposed to serve a specific function;
- Cars and Trucks: They can be given new life through sharing. Less efficient cars and trucks can be sold or used by other individuals or companies.

Repurposing Good Practices

- SuperUse Studios:

An architecture firm based in Rotterdam, Netherlands, has been involved in several projects to repurpose products and components. The firm recovers products and components, including turbine blades, driveshafts, PVC cable reels, etc. and transforms them into playgrounds, storage spaces, among others (SuperUse Studios, 2014).

For more details, visit: <https://superuse-studios.com/en/>

- Hyla Mobile:

This company created a viable model for a circular economy by repurposing mobile devices. The strategy is to collect, analyze, process, and redistribute refurbished devices from developed economies and give them new lives in emerging economies. This method brings economic, environmental, and social benefits to all partners, consumers, and communities it serves. For more details, visit:

<https://www.hylamobile.com/#content2-0>

5.1.4 Remanufacture and Refurbish

Introduction

The processes of manufacturing and refurbishing are not well known to the general public. However, they are an integral part of the circular economy program to promote waste limitation and resource conservation through the reuse of recovered materials.

Remanufacturing, refurbishing, and reuse are all strategies of recovering used products to give them a “new life”. By refurbishing and remanufacturing, “the products’ ‘core’ parts are restored ... to maintain the value-added of the materials” (Rizos, Tuokko and Behrens, 2017). According to the Ellen MacArthur Foundation (n.d.), refurbishing and remanufacturing are two similar, yet different processes of bringing value to a product.

Remanufacturing

Remanufacturing a product means it is “disassembled to the component level and rebuilt (replacing component when necessary) to a new condition with the same warranty as a new product” (Ellen MacArthur Foundation, n.d.).

Benefits of Remanufacturing

- It offers lower prices for consumers due to the cost savings of the products’ recovered materials and energy content;
- It consumes less energy and is more resource-efficient, as it extends and prolongs the use of components and materials. It also reduced energy consumption, which is usually accompanied by a reduction of CO2 emissions. (Remanufacturing, n.d.);
- It uses less raw materials to manufacture new products and prolong the life cycle of products instead of disposing them into landfills;
- It promotes better consumer relationships, where manufacturers have better credentials than those relying on one-off, throw-away purchases.

Refurbishing

It is “largely a cosmetic process whereby a product is repaired as much as possible, usually without disassembly and the replacement of components” (ibid).

Benefits of Refurbishing

- It improves a manufacturer’s environmental credibility and positions the business as green and sustainable;
- It increases market share;
- It helps “a manufacturer achieve higher profit margins, by giving products and parts a second or third life” (DIIgroup, 2018);
- It changes mindsets: consumers may use more or less of products and services;
- It lowers cost of maintenance by prolonging the building lifecycle, new partnerships, and cross value chain cooperation.

Moreover, remanufacturing and refurbishing offer opportunities to:

- Create jobs;
- Develop new manufacturing techniques to transition into a circular economy;
- Invest in people and in material traceability.

Remanufacturing Good Practices

- Canon:
It is a company that aims to reuse resources efficiently, and prioritizes product remanufacturing, component reuse, and recycling. The Canon approach produces tools and devices using entire systems that eliminate waste and close the loop. The company continuously invests in circular economy and manufacturing processes; Canon collects used devices, and breaks them down into parts, which are then washed and cleaned. They also replace any parts that show wear or deterioration. Canon guaranteed a remanufactured device of the same quality level as the new product. For more details, visit: <https://www.ceguide.org/Strategies-and-examples/Make/Remanufacturing> <https://global.canon/en/environment/circulation.html>

Refurbishing Good Practices

- Tata Motors:
This company tries to respond to customer needs offering a cost-effective alternative to nationally guaranteed vehicle aggregates overhaul while maintaining the quality of the first life cycle component. Customers are provided with reconditioned aggregates in exchange for old aggregates, which are subject to simple acceptance standards. Products include reconditioned long block engines, gearboxes, power steering gearboxes, turbochargers, air compressors, and electric components like starter engines, and alternators.

5.1.5 Repair

Repair is the first and most preferred method of circular economy practices. Its ultimate purpose is to maintain the utility of products as long as possible, and replace worn and broken components by fixing the faulty parts and restoring them to a usable condition.

Benefits of Repairing

- It reduces waste, especially WEEE (waste, electrical and electronic equipment) by giving discarded objects a second life;
- It resists premature obsolescence of objects by transmitting and perfecting the skill of tinkering;
- It promotes manual work and repairing as a profession;
- It creates social times, promotes cooperation and solidarity, and strengthens intergenerational relationships;

- It raises public awareness of environmental problems linked to waste and overconsumption;
- It consolidates the repair reflex (Repair Café, 2015).

Another reason to implement repair is that the current system embedded in consumer culture has led to the overconsumption of raw materials by western economies for decades, which contributes to the depletion of many essential natural resources. Since most modern industrial operations based on a linear model involve taking materials, making products and eventually disposing of products when their life spans end, switching to the repair model becomes inevitable for our survival. What differentiates between this method and other traditional recycling methods is that it conserves embodied energy, materials, and water (Ellen MacArthur Foundation, eBay, HP and iFixit, 2016).

Categories of products such as electronics or clothing are starting to catch up as well by introducing new innovative approaches to fix, upcycle and extend product life. Nowadays, there are several businesses and organizations that specialize in repairing objects. Companies like iFixit, a wiki-based platform brings together a worldwide repair community to teach people how to repair various products taking into consideration people's needs. The company also started developing a business model that introduces people to the repair model to spare parts and/or tools. Thanks to this initiative, consumers are provided with all the necessary resources to fix their electronics. Manufacturers, like HP, are also committed to helping people fix products; the company shares service manuals and provides a comprehensive range of service options and product warranties. Consequently, people are able to repair their devices and maintain product quality. Marketplaces, like eBay, play a role as well; they provide a global conduit for the buying and selling of key repair components. Commercial repair is a well-established part of the global economy (Empowering Repair, 2016). "The market size for professional electronics and computer repair in the USA is estimated at 22 billion dollars (Ibisworld, 2015).

According to a Digital Europe published report, 118,000 tonnes of electric and electronic equipment are annually shipped for repair or remanufacture (Empowering Repair, 2016). Although this figure is impressive, the repair sector is still suffering from many issues, one of which is the lack of information needed for fixing products, which is either not easily accessible or rare. Sometimes there is an adequate amount of information, but the spare parts are either too expensive for an average individual or the repair is too time-consuming (Ellen MacArthur Foundation, eBay, HP and iFixit, 2016). According to the Ellen MacArthur Foundation, eBay, HP and iFixit (2016), these issues need to be addressed:

- Making all repair information available: This can be made possible through:
 - Easy-to-search platforms, fixer community websites, forums, and blogs;
 - Manufacturers, who can freely provide repair information after launching products to all interested parties.
- Marking spare parts and accessories available: This can be accomplished through:
 - Manufacturers, who can provide spare parts for a certain period of time after manufacturing to highlight the potential product life to all reasonable parties for reasonable costs;
 - The cooperation of manufacturers, collection schemes, recyclers, knowledge providers and sales platforms aiming to promote the selling of second-hand or harvested components.
- Designing Repairable Products: This can be done through:
 - Reversibly assembling products, for instance using screws instead of glue;
 - Avoiding the use of proprietary fasteners;
 - Producing easily replaceable batteries;
 - Avoiding the complete integration of all components, meaning that all components must be set in a way that facilitates the replacement of individual and functional parts.

Repair Good Practice

- Repair Café:
According to Repair Café (2015), “Repair Cafe is an initiative that was born almost 10 years ago in Amsterdam. After the great success of the first Repair Cafe, the originator Matine Postma founded a foundation aimed at developing this initiative and 1188 Repair Cafes have been created worldwide since 2009. They are the most popular in Germany, but they can already be found on every continent”³ (Biznes Alert, 2016).

At Repair Café, one can repair any sort of item that breaks down, including bikes, TV players, clothes, furniture, etc. People who repair, attend meetings at the Café. This kind of initiative requires willpower and handcraft skills, there is no need for professionals, an adequate space and specific tools. Sharing tools and advice is certainly one of the best ways to promote repair; still, informative sessions are offered aiming to teach various repair techniques. The concept of repairing has positive environmental and social impacts, the latter comprising the promotion of social relationships and joint actions of users (Biznes Alert, 2016).

5.1.6 Reuse

“Reuse is a generic term covering operations where end-of-life products are put back into service, essentially in the same form, with or without repair or remediation.”

(Cole, Gnanapragasam and Cooper, 2017)

Practicing reuse mainly focuses on finding ways to utilize traditional waste either by contributing to earlier stages of production of the same product, or producing a different one. In this sense, it contributes to recovering resources, which is “a key part of making an economy circular” (Bernstein, 2016).

According to Paule Bernstein (2016), this feat can be accomplished by:

- Eliminating material leakage from the production cycle:
 - Reduced material leakage saves costs and increases efficiency;
 - Becomes relatively easier for the company to control. It is important to note that food waste is often a problem in many companies, for which bio-ethanol production may offer a solution. To this end, the companies DSM, POET, and LLC have partnered to create a new bio-ethanol that works with industrial-level corn crop residue. This project is expected to “remov[e] the residue from the farm production waste stream and enter it into the DSM production system” (Bernstein, 2016). This project, which deploys waste to make a new product, can greatly contribute to reducing the impact of the farm system.
- Creating a closed-loop system:

³ To oddolna inicjatywa, która prawie 10 lat temu zrodziła się w Amsterdamie. Po dużym sukcesie pierwszej Repair Cafe pomysłodawczyni Matine Postma założyła fundację mającą na celu rozwój tej inicjatywy i od 2009 powstało już 1188 Repair Cafes na całym świecie. Największym zainteresowaniem cieszą się w Niemczech, ale można je już spotkać na każdym kontynencie”.

Considering the end of the life span of products is important. We can transform a product, reaching its end, into something new, by utilizing waste from a discarded product as the basic resource to develop and produce a new one (Bernstein 2016). Still, this closed-loop system is difficult to conceive, because monitoring and controlling what consumers do with products at the end of life can be a challenging endeavor. In addition, there are some products which can be difficult to recycle such as electronics, which present a major problem for landfills, unlike e-waste which is often exported to developing countries (Ibid). According to Paule Bernstein (2016), "From a life-cycle perspective, using recycled products reduces the need for raw materials to create the new product. It also reduces the impact of the initial product at end of life".

- Enabling the circular economy with LCA:

To achieve a circular economic system, it is imperative to perceive waste as a resource that can be beneficial to reduce costs and make profit. To render waste profitable, however, it is important to be aware of and understand which available option is most beneficial, is it recycling, reuse, or end-of-life recovery. Therefore, LCA and SimaPro may provide good tools. (Bernstein 2016).

Reuse is not just a part of the waste reduction agenda; on the contrary, it is also crucial to transition into a circular economy. Since it can take place through various methods and involves many actors, reuse is both challenging to monitor and promote. It can be implemented through formal channels such as businesses and charity shops, and informal channels such as giving products to friends or relatives, or selling platforms. Charities play a significant role; in the UK in 2014, donated goods accounted for 79% of the income generated by charity shops. (Cole, Gnanapragasam and Cooper, 2017).

Due to the high costs of waste disposal, retailers have been looking for solutions that will allow them to develop sustainable alternatives for items returned during the warranty period or through "take-back" schemes (Cole, Gnanapragasam and Cooper, 2017). Partnership agreements have produced several products, which were originally destined for waste treatment by diverting them to reuse. According to Towards a Circular Economy: Exploring Routes to Reuse for Discarded Electrical and Electronic Equipment, "Reverse logistics involves the movement of a discarded product from a final place of use in order to recapture value or ensure proper disposal and is a form of corporate social responsibility with the potential to increase levels of reuse". However, "the likelihood of products being recovered for reuse increases where retailers view reverse logistics as a potential source of items suitable for resale", meaning that when retailers see in this approach an opportunity for profit. Regarding the collection of products, some approaches to encourage consumers to return items include deposit schemes, and finance from producer responsibility regulations (Cole, Gnanapragasam and Cooper, 2017).

It is important to not mistake reuse for recycling. The first comes first in the waste hierarchy; besides, the variables leading to one may significantly differ from the ones that lead to the other. In the article previously quoted, a charity and private company are interviewed. The article also concluded that goods recovered from the waste stream often have little or no reuse value. In fact, the interviewed highlighted that the charity would prefer to collect items rather than have them disposed of at a waste collection facility, and the private company thinks that goods collected from waste collection establishments have little value for reuse (ibid).

Unfortunately, many people remain unaware of how reuse is connected to environmental values. It rather seems to be a situational practice, one that better works for relatively expensive or rarely used products that retain value for a longer period that exceeds their first use, and can be transported with no damage. Since recycling is carried out by most people today, the same could be done with reuse. For this to happen, however, donating reusable items should become easier with a guarantee that items will reach their new owners in a usable condition (ibid).

More advantages of reuse include:

- General cut down of costs (Ellen MacArthur Foundation, 2019), by refilling reusable containers, packaging and transportation costs are reduced;
- Lowering environmental footprint, since items and materials are reused, energy and resources used in production are saved;
- Preservation of the product's value (Circle Economy and MVO Nederland, 2015).

Reuse Good Practice

There are reuse centers and virtual exchange that facilitate the transaction and distribution of unwanted usable materials and equipment from one person to another. Businesses, non-profits, schools, community groups, and individuals benefit from these services as buyers and sellers. Some services, like reuse centers, use physical space, while others, like virtual exchanges, act as a matching service. Reuse centers make donated materials available for distribution or sale; they usually have warehouses and trucks. Virtual exchanges, on the other hand, have no physical space, and their users post listings of materials available and wanted on an online exchange website. An example of that in the USA is Goodwill Industries or Salvation Army.

5.1.7 Reduce

Reduction is an important concept within a circular economy. The unsustainable nature of our current economic mode caused by the consumption of natural resources, production of waste, GHGs emissions, and social inequalities must be reduced.

One of the biggest challenges of a circular economy is the reduction of waste. The European Union produces more than 2.5 billion tonnes of waste every year every year. To address these issues, the EU is currently updating its waste management legislation to promote a shift towards a circular economy (European Parliament, 2018). "In practical terms, it implies reducing waste to a minimum. When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby creating further value" (Circular economy: definition, importance and benefits, 2018).

Waste can be reduced by individuals, business, and institutions, including hospitals, educational facilities, organizations, municipalities, and government agencies. (Waste Reduction, 2020).

Individuals can reduce waste by:

- Reusing products: this includes refilling water bottles or reusing products instead of discarding them;
- Using products more efficiently: a simple example would be using both sides of a paper when printing;
- Donating or exchanging products/ materials: some products or materials can seem useless, but they can be practical and useful to other second users.

The environmental benefits of reducing waste include the following (Waste Reduction, 2020):

- Reduce waste going to landfills;
- Reduce use of natural resources;
- Lower CO₂ emissions, usually generated by production, transportation, use of materials, recycling, or disposing of waste materials;
- Lower risk of pollution incidents.

The National Recycling Coalition (NRC), a non-profit organization made up of concerned individuals and different organizations, aims to promote the recovery, reduction, and reuse of materials and energy. It suggests different strategies to reduce waste (Waste Reduction, 2020):

- Reduce the use of products (print on both sides of paper);
- Rent and lease products or equipment instead of purchasing new ones;
- Buy remanufactured or rebuilt products, or products that can be refurbished;
- Buy more durable and high-quality products that can have a longer life cycle;
- Buy products that use non-hazardous materials as they are safe for both individuals and landfills;
- Buy returnable, reusable, or refillable products;
- Buy products in bulk;
- Buy products that have sustainable packaging, like products with reused packages or that use less or no packaging;
- Share and reuse resources within an organization.

Given the aforementioned issues and strategies, what can we practically do in our daily life to reduce waste in a circular way? Here are some small tips that we can do daily (Badore, 2020):

- When you go shopping, bring your own reusable bag;
- Do not buy plastic water bottles;
- When you go to a coffee shop, bring your own thermos;
- Use cardboard bottles and bags instead of plastic ones;
- Do not use plastic straws;
- Pay attention to what the products you buy are made of, for instance microplastics are one of the price sources of pollution and are part of mainly products you could be using daily;
- Do not use disposable razors;
- Use cloth diapers instead of disposable ones;
- Avoid non-reusable female health items, for example menstrual pads;
- Avoid unsustainable packages.

Reduction Good Practices

- **BMW:**
In the automotive sector, BMW has attracted many by its latest performance improvements, which have led to a 3.3% CO2 emission reduction per kilometer (Nestle, n.d.).
- **LG Electronics:**
LG has set its own “Greener 2020” goals, which include a 40% reduction of GHGs emissions, and 15% increase of “green” business. LG has reduced its total greenhouse emission by 353,000 tonnes since 2008. The company has also reduced the weight of packaging and logistics to meet the ecological packaging guidelines. LG has also invested 91% of its social investment budget in community initiatives, using the company's technological knowledge to develop public accessibility applications.

5.1.8 Rethink

Linear Economy, which is our current production model, is based on the “take- make- dispose” model (Degórski, 2017), which implies the extraction of raw materials, production, and disposal of products. It is an unsustainable economic model; therefore, it is imperative that we change it. Our mindset and perspective need to be modified; rethinking the whole process has already begun. In this sense, rethinking is an integral part of a

circular economy. The circular economy strives to operate on two cycles: the biological cycle and a products' life cycles.

An example of the biological cycle would be agriculture. Despite its long lifetime, agriculture represents one of the biggest sources of waste and pollution today. Therefore, we need to rethink this cycle to minimize if not eradicate its environmental impact without compromising the economic benefits. How we manage manure is an example. A linear perspective will consider manure as waste partly used to fertilize the fields. When it is excessively left, it causes the pollution of soils, groundwaters, and rivers, because it is a nitrogen source. A circular perspective, however, will consider manure as a product that can generate electricity and heat. The excess of manure is enough to build biogas plants, where waste in the form of manure can be converted into energy (heat, electricity, or both). This way, biological waste from farms will not be wasted or pollute the environment; instead, they will be redirected into other profitable industries (Degórski, 2017).

A circular economy aims to rethink the life cycles of industrial products. In a linear economy, you buy a washing machine, you use it, and when it breaks down, you throw it away and replace it with a new one. The same process can be applied to most household appliances and products. Manufacturers also deliberately age products so that they are replaced faster. In a circular economy, however, rethinking will change the approach of both producers and consumers. If consumers' change, they will act as a further trigger to changing the producers' strategies, because at the end of the day, producers need to adapt to consumers' demands.

In a circular economy, rethinking needs to revisit all practices to ensure they are more circular. The EU is currently working on introducing provisions forcing manufacturers to redesign and reproduce items to render them easier to repair. This is one way to rethink the manufacturing process, but it does not stop there. Even if we embrace the repairing method, it is also necessary to rethink how we can use a product once its life cycle is over and will be unsuitable for use within the same scope. So, we can think in terms of upcycling. This method explores how used products or materials can be reused as products with higher utility values than previously. For instance, ship containers can be upcycled to form the base for the construction of modular homes, meaning their utility value had significantly increased compared to their original use⁴.

Water is also an extremely valuable and precious resource that has to be consciously used. Therefore, we need to rethink the use of water. For instance, in a household, greywater can be a valuable alternative that can be used to wash clothes. If we collect it, it can then be used in toilets, where it will be discharged into biological treatment plants; once it is treated, it will end up in a taken to be used for watering gardens.

There are countless examples. The most important message to remember, however, is that rethinking has to be both an individual and collective effort, for it is the basis to introduce a circular economy leading the way to new practices and changes.

5.1.9 Refuse

Introduction

Refuse is a circular economy concept; it can apply to various manufacturing industries and households. Contrary to appearances and common opinion, household refuse accounts for a significant percentage of the total

⁴ <https://www.youtube.com/watch?v=zCRKvDyyHml>

amount of refuse. Therefore, it is worth raising awareness not only of entrepreneurs, but also individuals on this subject (ekologia.pl).

TFL Trade Refuse

In this section, we will describe the TFL (transport, forwarding, logistics) trade approach. According to D. Golba and K. Toruń (n.d.):

“The TFL industry is a sector that is constantly associated with a negative impact on the environment. This is due to the significant amount of refuse produced during supply chains or the operation of vehicles themselves. Interest in environmental protection in logistics has allowed it to fully develop its field of recovery logistics. The operation of recovery logistics is based on the PDCA (plan-do-check-act) principle, in other words the idea of planning environmental activities, implementing, checking their impact on the environment, society and economy, and improving activity in order to constantly strive for improvement.”

Enterprises have also started to upcycle. Many products previously used in logistics and automotive industries are becoming increasingly popular to upcycle (Golba and Toruń, n.d.). The upcycled product becomes a new product of higher value, which implies the improvement of the initial product by making it more attractive and useful to consumers. Higher value is mainly connected to the quality of the product (ibid).

Municipal Refuse

The EU has a number of legal acts to regulate the management of refuse including municipal refuse. The act establishing the general framework for conducting refuse management is the so-called refuse Framework Directive (75/442/EEC). This directive sets out, inter alia, the hierarchy of activities related to refuse management, where the highest priority is given to “refuse prevention”, followed by the importance of reuse, regeneration, and recycling, and then disposal and energy recovery. At the bottom of this hierarchy comes storage, which is the least preferred option. This directive also defines a number of important principles that member states must follow when creating a municipal refuse management system. One of those principles is “the polluter pay”, which means that the refuse management costs should be borne by those who produce them (Gula, 2010).

The Landfill Directive (99/31/EC) has significant effects on organizing the municipal refuse management system. It sets strict operational and technical requirements for refuse landfills to reduce their negative environmental impact as much as possible. It also imposes an obligation on all EU member states to reduce the amount to biodegradable refuse added to landfills.

Refuse can be prevented in various ways, including the creation of financial incentives promoting less refuse and environmentally friendly packaging, the launch of social educational campaigns to educate consumers. To accomplish this, both municipalities and NGOs can play important roles. (Gula, 2010).

As for the role of local communities/ consumers in implementing activities, where municipalities and NGOs are also actively involved include:

- Promoting home/local refuse composting (organic refuse);
- Running local campaigns to encourage the limitation of refuse production in households;
- Organizing programs to prevent the “unwanted” phenomenon by advertising leaflets distributed by mail;
- Supporting a consumption model based on the use of reusable products;

- Running local campaigns promoting “reasonable” purchases (disposable and reusable products).

Agricultural Refuse

“Agricultural production generates various types of refuse. The type of refuse that arise on farms depends on the kind of production that is carried out on a given farm, and their quantity within the volume of production, but also on the way production is organized. It happens that the same products created on one farm may be a useful product when the market for it is available, or even a raw material for further production. But products can also be refuse when it is not very clear what to do with it on the context it is created. For example, hay, when there is crop and animal production on the farm, is valuable feed. However, when there is no animal and there is no market for hay, it becomes refuse. Similarly, for example, with wool, when there is no demand for processing this valuable material.”

(Freely translated from Kostuch, 2019)⁵

Most agricultural refuse is high in valuable nutrients that can be useful to improve soil fertility, and increase crop yield, since it is mostly organic (Kostuch, 2019).

Various biological and chemical processes are used to process organic refuse of agriculture and the agri-food industry. These processes include composting, anaerobic digestion, electrodialysis, oxidation, pyrolysis and combustion (ibid). Processed refuse can be used as fertilizers, or used on degraded soils for remediation. Organic refuse from the food and vegetable industry can also be used as fodder after prior conservation. Most of the agriculture organic refuse can be used to obtain energy (e.g. methane fermentation of biomass is carried out to obtain a gas mixture, the so-called biogas) (ibid).

Refuse Segregation

Segregation of municipal refuse means the separation of waste generated in households, or non-industrial human waste. Municipal refuse is also known as household waste. Municipal refuse can include waste from other products, but with a nature and composition (ekologia.pl). Therefore, changing people’s mentality is crucial. This will be further discussed in the chapter Rethink.

Refuse Good Practice

- The Refuse-free Palarikovo, Slovakia:

Within five years, the small rural municipality of Palarikovo managed to reduce the amount of mixed municipal refuse deposited in landfill by 70% (Gula, 2010). The municipality states that the key to success is selective refuse collection, home composters, and environmental education. The implementation of the project started in 2000 with a broad educational campaign promoting backyard composting to reduce the amount of municipal biodegradable refuse deposited in landfills.

⁵ Produkcja rolnicza generuje różnego rodzaju odpady. Rodzaj odpadów, jakie powstają w gospodarstwach rolnych, jest uzależniony od kierunku produkcji, jaka jest prowadzona w danym gospodarstwie, a ich ilość od wielkości produkcji, ale także od sposobu organizacji produkcji. Bywa bowiem tak, że te same produkty powstające w jednym gospodarstwie będą produktem towarowym, gdy będzie na nie rynek zbytu, lub surowcem do dalszej produkcji, a mogą być odpadem, z którym nie bardzo wiadomo co zrobić. Na przykład siano, gdy jest w gospodarstwie produkcja roślinna i zwierzęca jest cenna paszą a gdy brak jest zwierząt, a nie ma rynku zbytu na siano staje się odpadem. Podobnie jest np. z wełną, gdy nie ma zapotrzebowania na przetwórstwo tego cennego materiału”.

Twice a year, leaflets about composting in farms and the use of municipal composting installations were distributed to residents. The Ecological Association of the Palrikoyo Commune, a non-governmental organization, produces composters and freely provides them to interested farms along with necessary information materials. The commune also purchases a shredder, used during the pruning period, to process cut branches into wood chips. In 2004, two municipal composting plants were opened, where biodegradable refuse collected from urban greenery maintenance and household refuse. In 2002, the commune began implementing a selective refuse collection system by segregating four types of refuse: glass, paper, plastic containers, PET bottles and multi-material packaging. Today, 18 different types of refuse are segregated including: paper, cardboard, beverage cartons, glass, plastics, metal packaging, electronic refuse, tires, batteries, cables, bulky refuse, hazardous refuse, smaller construction refuse and others. The municipality signed contracts for the collection of each of these types of refuse (Gufa 2010).

5.2 Exercise

1. Based on the Circular Economy Hierarchy of Practices, which one is the most preferred method?
 - a) Refuse
 - b) Repair
 - c) Remanufacture

2. Repair is about:
 - a) Fixing the faulty part of a product and restoring it to a usable condition
 - b) Recycling a product
 - c) Remanufacturing products to improve their quality

3. Rate the following statement: "Some of the advantages of the repair method are: reducing waste, fighting about premature obsolescence of objects, raising public awareness of environmental problems linked to waste and overconsumption".
 - a) True
 - b) False

4. Repair is beneficial to conserve:
 - a) Energy
 - b) Materials
 - c) Water
 - d) All of the above

5. The main point of "Repair Cafe" is that:
 - a) The members of the meeting send broken objects to their volunteer fixers
 - b) The members of the meeting repair broken objects themselves
 - c) The members of the meeting just talk about what could be done in terms of repair

6. What can you do with waste? Choose the best alternatives.
 - a) Reduce, Reuse, Recycle

- b) Reduce, Repurpose, Recover
- c) Refurbish, Repurpose, Recover

7. What can you do with a PET (plastic bottle) using the following methods?

- a) Repurpose
- b) Reuse
- c) Upcycling

Think about it, and give some examples of items that can be created using each method.

8. Can trash be used to generate energy?

- a) Never
- b) Only the recyclable materials
- c) Only the non-recyclable materials
- d) Always

9. According to the EPA, what kinds of materials are commonly recycled?

- a) Paper, glass, plastic, metal, batteries, and compostable materials
- b) Paper, glass, plastic, batteries, and metal
- c) Glass, plastic, metal, and compostable materials
- d) Paper, plastic, metal, and batteries

10. How do you think we can overcome the obstacles hindering Repair?

11. In Reuse:

- a) Broken products are repaired
- b) End-of-life products are put back into service
- c) End-of-life products are recycled

12. Rate the following statement: "Reuse and recycling are the same thing".

- a) True
- b) False

13. One of the problems of reuse is that (more than one answer can be selected):

- a) The broken components are often very expensive or unavailable
- b) Sorting and preparing items for reuse takes a long time
- c) It requires special skills

14. Rate the following statement: "Bio-ethanol is a profitable concept to removing residue from the farm production waste stream".

- a) True
- b) False

15. Rate the following statement: “The reuse method works best for cheap or frequently used products”.

- a) True
- b) False

16. The reduce concept leads to (more than one answer can be selected):

- a) Increasing spending.
- b) Saving money
- c) Environment protection

17. Rethinking means:

- a) Meditating about life
- b) Changing the approach to the use of various products and practices
- c) Thinking more about income

18. The use of a vessel for rain water collection deploys which of the following practices?:

- a) Rethinking practice
- b) Refuse practice
- c) Recycle practice

19. What is the difference between refurbishment and remanufacture?

20. The use of “greywater” in a household deploys which of the following practices? (more than one answer can be selected):

- a) Reuse
- b) Reduce
- c) Recycle

21. Segregating household waste falls under which of the practices below? (more than one answer can be selected):

- a) Refuse
- b) Reduce
- c) Rethink

22. Taking into consideration what you have learned so far, reflect on this quote:

“The goods of today are the resources of tomorrow at yesterday’s resource prices”

(Walter Stahel)

Answer to the following questions:

Q: How does that work?

Q: Are there any examples of this already?

23. Map the life cycling of an everyday product.

The goal of this activity is to think about the full life cycle of a product that we daily use, such as mobile phones or carpets, and to review each stage of the product's lifecycle, including:

- 1) Material extraction
- 2) Manufacturing
- 3) Packing and transportation
- 4) Use
- 5) End of life

Start the life cycle of the mobile phone and reflect on each stage listed above. Find out how the materials are extracted and processed and how you can use them in everyday life. At the end of the life, find alternatives which correspond to the principles of circular economy. Find new ways using the following R's: repurpose, refurbish, remanufacture, recovery and recycling.

Do the same for carpets.

MODULE 6

HOW TO IMPLEMENT A CIRCULAR ECONOMY: TIPS AND EXAMPLES

Module 6: How to Implement a Circular Economy: Tips and Examples

6.1 Good Practices and International Successful Stories

Circular economy business models are rapidly growing. These models range to include completely new business models to circular approaches applied to in traditional business models, which cover a wide range of solutions. Once the transition into a circular economy starts, it will serve as a catalyst changing business models on various levels. Therefore, we need to use systems thinning to better understand this transition. The Ellen MacArthur Foundation classifies circular economy studies accordingly:

- Ownership Access;
- Biological Cycle;
- Cascade;
- Cradle to Cradle;
- Design;
- Disassembly;
- Product Life Extension;
- Industrial Symbiosis;
- Internet of Things;
- Recycling;
- Refurbishment;
- Remanufacturing;
- Reuse;
- Reverse Logistics;
- Sharing Economy;
- Supply Chain.

Most case studies fall into more than one of those categories, especially that circular solutions tend to be a mix of different solutions given that they function in complex systems.

1. Kalundborg Symbiosis

Industrial symbiosis

For more information check:

<http://www.symbiosis.dk/en/>

<https://www.ellenmacarthurfoundation.org/case-studies/effective-industrial-symbiosis>

2. MUD Jeans

Access over Ownership, Product Life Extension

For more information check:

https://www.youtube.com/watch?v=JaX60U2_lbw

<https://www.ellenmacarthurfoundation.org/case-studies/pioneering-a-lease-model-for-organic-cotton-jeans>

3. Cora Cup

Product life extension

For more information check:
<https://cora.life/products/cora-cup>

4. Re-Tek

Refurbishment, Reverse Logistics

For more information check:

<http://re-tek.co.uk>

<https://www.ellenmacarthurfoundation.org/case-studies/establishing-a-reverse-supply-chain-for-electronics>

5. Toast Ale

Biological Cycle

For more information check:

<https://www.toastale.com/>

<https://www.ellenmacarthurfoundation.org/case-studies/brewing-beer-from-surplus-bread>

6. The City of Phoenix Clean Palm Program

Biological Cycle, Cascade

For more information check:

<https://www.palmsilage.com/>

<https://www.ellenmacarthurfoundation.org/case-studies/palm-fronds-to-cattle-feed-valorising-a-costly-waste-stream>

https://www.youtube.com/watch?v=6ru498TkH_8

7. Piñatex

Biological Cycle, Cascade, Supply Chain

For more information check:

<https://www.ananas-anam.com/about-us/>

<https://www.youtube.com/watch?v=gCNUFqH4VCc>

6.2 Exercise/ Roundtable

The roundtable/open discussion suggestion can be found in Annex III.

MODULE 7

UPCYCLING

WORKSHOP

Module 7: Upcycling Workshop

A National training suggestion can be found in Annex II.

MODULE 8

**AREAS WITH
EXPECTED
GROWING
POTENTIAL WITHIN
A CIRCULAR
ECONOMY**

Module 8: Areas with Expected Growing Potential within a Circular Economy

8.1- 8.2 How does your sector look right now? How can it become more circular?

Although a circular economy can be applied to all sectors, some sectors have higher opportunities when circular economy is implemented. While preparing for this training module, each consortium partner shared a questionnaire aiming to identify the most relevant topics for our training modules. The most mentioned sectors were the following: construction, agriculture and food industry, packaging and product design, manufacturing, ICT, and transportation. These sectors are aligned with key sectors that the Circular Economy Action plan for a cleaner and more competitive Europe have prioritized (European Commission, 2020a). The plan focuses on key value chains that pose sustainability challenges by setting comprehensive and coordinated actions to develop Circular Economy. These key sectors include:

- Electronics and ICT;
- Batteries and vehicles;
- Packaging;
- Plastics;
- Textiles;
- Construction and buildings;
- Food, water and nutrients.

The Core of the Key Sectors detailed in the Action Plan (ibid) are described below:

Electronics and ICT

How does it look like right now?

Electrical and electronic equipment continues to be one of the fastest growing waste streams in the EU, with a 2% current annual growth rate. It is estimated that less than 40% of electronic waste is recycled in the EU (Eurostat, 2016a). Value is lost when fully or partially functional products are discarded because they are not repairable, batteries cannot be replaced, software is no longer supported, or materials incorporated in devices are not recovered. About two in three Europeans would like to keep using their current digital devices for longer, provided performance is not significantly affected (Eurobarometer, 2020).

How can it become more circular?

The Commission will present a 'Circular Electronics Initiative' mobilizing existing and new instruments to address these challenges. In line with the new sustainable products policy framework, this initiative will promote longer product lifetimes and include the following actions:

- The Ecodesign Directive's regulatory measures for electronics and ICT, including mobile phones, tablets, and laptops, ensure that devices are designed to guarantee energy efficiency, durability, reparability, upgradability, maintenance, reuse, and recycling.
- Focusing on electronics and ICT as a priority sector for implementing the 'right to repair' and updating obsolete software is foregrounded.
- Regulatory measures controlling mobile phone chargers and similar devices, including introducing a standard charger, improving the durability of charging cables, and incentivizing decouple chargers' purchase instead of new devices are introduced.
- Improving the collection and treatment of electrical and electronic equipment waste (Directive 2012/19/EU) and exploring the options for an EU-wide take-back scheme to return or sell back old mobile phones, tablets, and chargers.
- Reviewing EU rules regarding the restriction of hazardous substances in electrical and electronic equipment (Directive 2011/65/EU) and providing guidance to improve coherence with relevant legislation, including REACH (EC Regulation No 1907/2006) and Ecodesign.

Batteries and Vehicles

How does it look like right now?

Sustainable batteries and vehicles underpin the mobility of the future. To progress swiftly on enhancing the sustainability of the emerging battery value chain for electro-mobility and boost the batteries' circular potential, the Commission will propose a new regulatory framework for batteries this year. This legislative proposal will build on the evaluation of the Batteries Directive (Directive 2006/66/EC) and the work of the Batteries Alliance with the consideration of the following elements:

How can it become more circular?

- Rules for recycling content and measures to improve the collection and recycling rates of all batteries, ensure the recovery of valuable materials, and provide consumers guidance.
 - Progressively phase out the use of non-rechargeable batteries, when alternatives exist.
 - Implement sustainable and transparent requirements for batteries, keeping in mind the battery manufacturing's carbon footprint, the ethical sourcing of raw materials, the security of supply, facilitating reuse, repurposing, and recycling.
 - The Commission will propose revising the rules of end-of-life vehicles (Directive 2000/53/EC) to promote more circular business models by linking design issues to end-of-life treatment, considering restrictions on mandatory recycled content for specific materials and components, and improving recycling efficiency. Moreover, the Commission will consider the most effective measures to ensure the collection and the environmentally sound treatment of waste oils.
 - The forthcoming Comprehensive European Strategy on Sustainable and Smart Mobility will enhance synergies to transition into a circular economy. It will focus on applying product-as-service solutions to reduce virgin material consumption, use sustainable alternative transport fuels, optimize infrastructure and vehicle use, increase occupancy rates and load factors, and eliminate waste and pollution.
-

Packaging

How does it look like right now?

The amount of materials used for packaging is growing continuously. In 2017, packaging waste in Europe reached its highest record of 173 kg per inhabitant.

How can it become more circular?

To ensure that all packaging on the EU market is reusable or recyclable in an economically viable way by 2030, the Commission will review Directive 94/62/EC²⁷ (European Commission, 1994) to reinforce the mandatory essential requirements for packaging to be allowed on the EU market and consider other measures, with a focus on:

- Reducing (over)packaging and packaging waste by setting targets and other waste prevention measures;
 - Driving design for reuse and recyclability of packaging, enforcing restrictions on using some packaging materials for specific applications, especially when alternative reusable products or systems are available, or consumer goods that can be handled safely without packaging;
 - Reducing the complexity of packaging materials, including the number of materials and polymers used.
-

Plastics

How does it look like right now?

The EU Strategy for Plastics in the Circular Economy (European Commission, 2018) has set in motion a comprehensive set of initiatives responding to a challenge of grave public concern. However, as plastics' consumption is expected to double in the coming 20 years, the Commission will take further targeted measures to address the sustainability challenges posed by this ubiquitous material and promote a concerted approach to tackle plastics pollution at the global level.

How can it become more circular?

- Keeping in mind, the Circular Plastic Alliance activities, the Commission will propose mandatory requirements for recycled content and waste reduction measures for critical products such as packaging, construction materials, and vehicles to increase the uptake of recycled plastics and contribute to plastics' sustainable use.
 - In addition to reducing plastic litter, the Commission will address the presence of microplastics in the environment by:
 - Restricting intentionally added microplastics and tackling pellets taking into account the European Chemicals Agency's regulations;
 - Developing labeling, standardization, certification, regulatory measures on unintentional microplastics release, and increasing microplastics' capture at all relevant stages of products' life cycle;
 - Designing and harmonizing methods to measure the unintentional release of microplastics, especially from tires and textiles, and delivering harmonized data on microplastics concentrations in seawater;
 - Narrowing down the scientific knowledge related to the risk and occurrence of microplastics in the environment, drinking water, and foods.
 - Address emerging sustainability challenges by developing a policy framework on:
 - Sourcing, labeling, and using bio-based plastics, based on assessing where the use of bio-based feedstock results in genuine environmental benefits, going beyond reducing the use of fossil resources;
 - The use of biodegradable or compostable plastics, when their application is beneficial to the environment stating the strict criteria of such applications. It aims to ensure that 'biodegradable' or 'compostable' labeling of products do not mislead consumers to dispose of them in any way that would cause plastic littering or pollution due to unsuitable environmental conditions or insufficient time for degradation.
 - The Commission will ensure the timely implementation of the new Directive on Single-Use Plastic Products (EU Directive 2019/904) and fishing gear to address the problem of marine plastic pollution while safeguarding the single market regarding:
 - Harmonized interpretation of the products covered by the Directive;
-

-
- Labelling of products such as tobacco, beverage cups and wet wipes and ensuring the introduction of tethered caps for bottles to prevent littering;
 - Developing for first time rules for measuring recycled content in products.
-

Textiles

How does it look like right now?

Textiles are the fourth highest-pressure category using primary raw materials and water, preceded by food, housing, and transport, followed by GHG emissions in fifth position (EEA, 2019). It is estimated that less than 1% of all textiles worldwide are recycled into new textiles (Ellen McArthur Foundation, 2017). The EU textile sector, predominantly composed of SMEs, has started to recover after a long period of restructuring, while 60% of value clothing in the EU is produced elsewhere.

How can it become more circular?

The Commission will propose a comprehensive EU Strategy for Textiles based on industry and stakeholders' input. The strategy will aim at strengthening industrial competitiveness and innovation, boosting the EU market for sustainable and circular textiles, including the market for textile reuse, addressing fast fashion, and driving new business models. This will be achieved by a comprehensive set of measures that include:

- Applying the new sustainable product framework to textiles by developing eco-design measures to ensure that textile products are fit for circularity, providing secondary raw materials, tackling the presence of hazardous chemicals, and empowering business and private consumers to choose sustainable textiles and facilitate their access to reuse and repair services;
 - Improving the business and environment regulations for sustainable and circular textiles in the EU by increasing transparency through international cooperation, and providing incentives and support to product-as-service models, circular materials and production processes, and increasing transparency through international cooperation;
 - Guiding and encouraging the achievement of high levels of separate collection of textile waste, which the Member States have to ensure by 2025;
 - Boosting the sorting, reuse, and recycling of textiles through innovation, encouraging industrial applications and regulatory measures such as extended producer responsibility.
-

Construction and Buildings

<i>How does it look like right now?</i>	The built environment has a significant impact on many sectors of the economy, including local jobs and quality of life. It requires vast amounts of resources and accounts, reaching 50% of all extracted material. The construction sector is responsible for over 35% of the EU's total waste generation (Eurostat, 2016b). Greenhouse gas emissions from material extraction, manufacturing of construction products, construction, and buildings' renovation are estimated at 5-12% of total national GHG emissions. Greater material efficiency could save 80% of those emissions (Hertwich et al., 2020).
<i>How can it become more circular?</i>	<ul style="list-style-type: none"> ● Ensure coherence across the relevant policy areas such as climate, energy and resource efficiency, construction and demolition waste, accessibility, digitalization, and skills. ● Promote circularity principles throughout the lifecycle of buildings by: <ul style="list-style-type: none"> ○ Revising the Construction Product Regulation (EU regulation No 305/2011), including the possible introduction of recycled content requirements for certain construction products; ○ Promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design (European Commission, 2020b) and developing digital logbooks for buildings; ○ Using levels (European Commission, 2020c) to integrate life cycle assessment in public procurement and the EU sustainable finance framework and exploring the appropriateness of setting carbon reduction targets and assessing the potential of carbon storage. ● Promoting initiatives to reduce soil sealing, rehabilitate abandoned or contaminated brownfields, and increase the safe, sustainable, and circular use of excavated soils. ● The 'Renovation Wave' initiative announced in the European Green Deal, leading to significant improvements in energy efficiency in the EU, will be implemented in line with circular economy principles, notably optimized lifecycle performance and longer life expectancy assets.

Food

<i>How does it look like right now?</i>	The circular economy can significantly reduce the negative environmental impacts of resource extraction and use and restore biodiversity and natural capital in Europe. Biological resources are a key input to the EU's economy and will play an even more critical role in the future. Although the food value chain is responsible for significant resource and environmental pressures, an estimated 20% of the total food produced is lost or wasted in the EU.
<i>How can it become more circular?</i>	<ul style="list-style-type: none"> ● The Commission will propose a food waste target reduction as a primary action under the EU Farm-to-Fork Strategy, comprehensively addressing the food value chain;

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- The Commission will also consider specific measures to increase the sustainability of food distribution and consumption;
 - Under the sustainable products initiative, the Commission will launch analytical work to determine the scope of a legislative initiative on reuse to substitute single-use packaging, tableware, and cutlery with reusable food services products.
-

Water and Nutrients

How does it look like right now?

Water reuse contributes to the broader water sector, a critical component of the EU eco-industrial landscape. The world water market is overgrowing, and it is estimated to reach 1 trillion € by 2020. Therefore, water reuse encompasses significant potential in creating green jobs in the water-related industry. It is estimated that a 1% increase in the water industry's growth rate in Europe could create up to 20,000 new jobs. At present, about 1 billion cubic meters of treated urban wastewater is annually reused, which accounts for approximately 2.4% of the treated urban wastewater effluents and less than 0.5% of annual EU freshwater withdrawals. But the EU potential is much higher, estimated at around 6 billion cubic meters – six times the current volume (European Commission, 2020).

How can it become more circular?

- The new Water Reuse Regulation will encourage circular approaches to water reuse in agriculture;
 - Facilitate water reuse and efficiency in industrial processes;
 - Develop an Integrated Nutrient Management Plan to ensure more sustainable application of nutrients and stimulate the markets for recovered nutrients;
 - Reviewing directives on wastewater treatment and sewage sludge and assessing natural means of nutrient removal such as algae.
-

MODULE 9

CHOOSING A CAREER PATH WITHIN A CIRCULAR ECONOMY

Module 9: Choosing a Career Path Within a Circular Economy

Introduction

The change of design and production models to achieve sustainability means modifying the core of economic activity. A whole new unprecedented paradigm is needed to transition into a circular economy that is more time and environmentally sustainable.

The circular economy created new opportunities. Every new paradigm necessitates that employers and employees adopt new perspectives and acquire new needed skills. To achieve a sustainable and circular economy, some sectors and jobs will become highly relevant.

In this module, new career paths and opportunities within a circular economy will be presented and discussed.

9.1 Sectors with the Highest Growth and Employment Potential within a Circular Economy

We have closely followed the Circular Economy approach to examine which jobs and careers have higher growth potential within a circular economy. Circle Economy is a non-profit impact organization aiming to accelerate the practical and scalable implementation of the Circular Economy.

Circle Economy's initiative "The Circular Jobs" defines and identifies circular jobs. According to the initiative, "recent estimates have highlighted the potential of the Circular Economy to generate net employment increases of about 700.000 jobs in Europe alone by 2030. This systemic shift will also change the type of work that will be done, how it is carried out, and by whom" (Circle Economy, n.d.).

According to Dufourmont and Goodwin Brown (2020), the circular labor market encompasses all kinds of jobs of various sectors that range from manufacturing and creative industries to waste and resource management. Circular jobs, like all kinds of jobs, contribute to the so-called DISRUPT framework (ibid):

1. Design for the future - enabling job;
2. Incorporate digital technology - enabling job;
3. Sustain and preserve what's already there - core job;
4. Rethink the business model - enabling job;
5. Use waste as a resource – core job;
6. Prioritize regenerative resources - core job;
7. Team up to create joint value - enabling job.

These circular jobs can be grouped in the following sectors:

- 1. Recycling, Repairing, And Upcycling Waste Management:**

The use and reuse of one's personal belongings and what already exists is fundamental to the circular economy. Durable products and materials that can be used, sustained, reused, and repaired when needed

are highly recommended rather than purchasing new ones. Thus, the life cycle of a product does not end quickly. Besides, the upcycling of products will demand human labor to give them new purposes and uses (Larsson and Lindfred, 2020). Despite our efforts, sometimes a product is no longer usable, and the only option is its disposal. In this case, sorting is imperative to properly manage waste. The recycling of products and materials is an essential step to achieve a circular economy. According to Circle Economy (2020), the transition into a circular economy is expected to be labor-intensive at the beginning, that for every 10,000 tonnes of resources to be recycled instead of incinerated, 36 additional jobs will be created (ibid).

2. **Designers, Engineers, and Architects:**

As the European Commission (2020) stated in the Circular Economy Action Plan, up to 80% of the products' environmental impacts are determined at the design phase. Thus, eco-designing is to need to be revised. The products' design phase can range to include designing packaging and buildings; the scope is extensive.

3. **Resources, Food and Water Management:**

A circular economy wants to employ the core materials and products we currently have to reuse and utilize as resources before their disposal. Shifting towards more sustainable resources will create new opportunities. Agriculture and stock breeding present a vital sector. However, its high demand for water and waste generation needs revisiting to responsibly reduce the loss of raw materials. It is crucial to ensure the efficient use of renewable, reusable, and non-toxic resources such as materials and energy.

4. **IT and Digitalization:**

Digitalization is continuously growing; it is necessary to transition into a circular economy. Digital and online platforms and technologies will significantly improve tracking, optimal use of resources, and strengthening the connection between the supply chain's actors. These areas are dependent on each other; they are all intersectional and cross-functional. Trainers and educators can share knowledge and skill with workers, while public procurement professionals can boost and support these additions to further implement circular products and technologies.

5. **Management and Public Sector:**

The circular economy is initially expected to be labor-intensive, but all jobs and growth areas will need management and monitoring. According to the European Commission in their Circular Economy Action Plan, the public sector is the biggest purchaser of green solutions, which benefits the European Commission. For the circular economy, these decision-making roles are crucial because they facilitate the negotiations and organize the transition process.

9.2 Job Profiles Expected to be Most-in-Demand

Considering the five discussed sectors, many job profiles are presented.

1. **Recycling, Repairing, and Upcycling Waste Management:**

The Circle Economy's report stated that the transition into a Circular Economy is initially expected to be labor-intensive.

The recycling processes, reverse logistics, resource sorting, and cleaning components for refurbishment require practical and physical work. Since this sector includes recycling, repair, and reuse of products, which form the basis of a circular economy, it demands roles in resource management and repair, meaning jobs requiring monitoring and physical skills will be needed.

According to the European Commission's Circular Economy Action Plan, packaging and batteries are two of the key Product Value Chains; therefore, their recycling presents a significant source of employment.

Ecoembes, an environmentally conscious Spanish non-profit organization that recycles and eco-designs packages, states that recycling has a high employment potential. Recycling, directly and indirectly, creates jobs (Ecoembes, 2013). Directly created jobs include those related to packaging and paper collection, selection in treatment plants, and recovery of materials, while indirectly created jobs include those in enterprises in charge of providing recycled goods and services. As previously mentioned, most jobs are labor-intensive, especially those in treatment plants, collection jobs, recovery, and recycling plants.

To promote the repair of goods and products, there will be a greater need for repair technicians. Giving consumers the option of repairing a malfunctioning or broken product and extending its life will prove that there is no need to manufacture products with a short life.

Jobs related to waste management are considered "dirty work", since they take place in sorting plants. But they are of great importance, for there can be no recycling or reuse of materials and products without proper sorting.

A transition into a circular economy means it is necessary to be sustainable and inclusive. Therefore, it is imperative that jobs regarded as physical and set in bad conditions be safe and dignified.

In addition, jobs related to management and logistics will be of high importance; sorting and recycling managers and supervisors, logistics managers and drivers will be in high demand.

2. **Designers, Engineers, and Architects:**

Designers, engineers, and architects are designing more circular and sustainable ideas. A sustainable and circular design phase has been conducted to reduce waste and limit negative environmental impacts.

The European Commission's Circular Economy Action Plan highlighted four main value chains, namely packaging, plastics, textile, and buildings. Despite the difference in these value chains, they all need a more environmentally driven purpose and redesign of materials, products, and goods.

The environmentally conscious designers of packaging and textile production processes will be in the spotlight. Circular Economy designers will have to present the impacts of the materials they plan to use in their designs. This is where their skill will be of primary value. Similarly, the designers of plastic creation, use, packaging, and its derivatives will also be at the forefront; the designers will be expected to make plastics more sustainable. Designers will need to conduct extensive research to stay up-to-date and make innovative and environmentally conscious choices. Textile designers must be avid researchers to remain up-to-date with creative green options to manufacture designs that are less polluting and wasteful. Designers, engineers, and architects all must reduce the carbon impact and generation of waste.

Since the construction sector is accountable for high use of materials, waste generation, and greenhouse gas emissions, architects must consider all that as well as the shift to green sources for the designed buildings.

3. **Resources, Food and Water Management:**

This area encompasses agricultural engineers, agronomic advisors, and farmers. For more circular and sustainable water management, as a resource, and food production, jobs such as process operators and agronomic advisors will be of importance. According to the Circular Jobs Initiative,

process operators sort waste for sellable products, for example, to produce livestock feed made from waste flows (Circle Economy, 2020). Although classed as practical-skill work, knowledge of the quality of incoming raw materials is also crucial. Another job is agronomic advisors who support healthy soil nourishment with organic fertilizer from composted manure and crop remnants.

4. IT and Digitalization:

Digital technology is critical for the shift to a circular economy. It allows us to track and optimize resources, use, and strengthen connections between the supply-chain actors through digital, online platforms, and technologies. Therefore, building information managers to integrate and interpret virtual information management systems will be in high demand.

Professionals need to maintain data of construction components and track all physical assets. IT professionals need to develop different software for tracking, supervision, and support of other core circular economy jobs.

In this sector, durability plays an important role. Electronic devices and software tend to have a default lifetime and are upgraded continuously. Therefore, it is vital to regulate against planned obsolescence, giving consumers the option to follow technology and device upgrades, resulting in more jobs in the repair and IT sectors to develop compatible options.

According to Larsson and Lindfred (2020), “digital technology is vital in order to keep track of the information flow, transactions, logistics and communication between all actors in the value chains”. This highlighted the interconnection between all sectors and stresses how the digital sector jobs are required to keep others in the value chains informed.

5. Management and Public Sector:

This sector encompasses several jobs such as managers, public procurers, civil servants, regional and national practitioners, advisors, and demand planners.

Not only are the roles of engineers and designers essential and have the potential to grow within public procurement, but the role of public works, who must negotiate, create a dialogue, educate the citizens, and organize calls to find opportunities, will be extremely valuable.

9.3 Skills Expected to be Most-in-Demand

Uncertainty leads to skills gaps. Despite being a hotly debated topic on national and international agendas, we are often unclear about what constitutes different skills or how they should be taught.

There is a collective uncertainty about the skills needed and the potential job losses at sectors transition into a circular economy. Without a proper understanding of emerging and future skills needs, industries and governments are hesitant to invest in their development. Skills gaps are occurring at a high pace in innovative sectors wanting to become more circular due, for example, to the digital tracking of building materials and components (Dufourmont and Goodwin Brown, 2020).

There is a difference between the skills needed during the hiring process and those required to conduct tasks. This difference is between “**hard**” and “**soft**” skills and has taken on more importance during the last years. They are different sets of skills necessary for various reasons:

- **Soft skills** are related to attitudes or intuitions, making this a more abstract and volatile definition of skills. They are essential for jobs where one has to make decisions and deal with a group of people. Even if these skills relate to one’s personality, it is also possible to work on them and improve their capacity. Soft skills are also those talents that enable people to correctly communicate, manage a

group of people, or solve a conflict between colleagues and motivate others. They can be grouped as follows:

1. Communication skills include active listening, non-verbal communication, asking questions, being present, clear and concise, clarifying and summarizing, being empathetic, praising feedback, and developing trust and rapport;
2. Creativity skills are necessary to find new solutions to new perspectives and views;
3. Analytical skills include decision-making and problem solving of any problem (European Commission, 2018).

These skills are essential for entrepreneurship.

- **Hard skills** are those related to one's expertise; the skill set required for a job. One acquires those skills by training and experience. They can be directly linked to the different areas that have been described in the previous sections (Doyle, 2020).

1. **Recycling, Repairing, and Upcycling Waste Management:**

Jobs in this sector require hard skills since they probably are labor-intensive. Resource sorting, cleaning of components, products' refurbishment, and waste collection jobs need skills like organization and use of machines acquired through practical training.

Repairing and upcycling jobs require technical skills depending on the materials or products needing repair or upcycling (technology, electronics, furniture, etc.).

Still, soft skills are mandatory to conduct all these jobs, especially when working within a team. One needs to have good team values and communication skills to successfully perform tasks. For managerial positions, soft skills, including organization, team management, leadership, and empathy, are essential, especially when managing physically demanding and exhausting jobs that, unless managed properly, could turn into precarious work conditions.

2. **Designer, Engineers and Architects:**

For this particular sector, hard skills also seem to be the most essential skills, but for some jobs, creativity can be more valuable than one's training.

For designers, it is crucial to have a strong training foundation, but creativity is key. It is necessary to develop new and innovative ideas, understand the challenges of the Circular Economy, and comprehend the purpose of every designed product or component. For engineers and designers, hard skills are the most valuable since their jobs are more technologically driven. Nonetheless, both jobs need soft skills, including creativity and communication.

3. **Resources, Food and Water Management:**

For process operators and agronomic advisors, hard skills, including knowledge of workers, especially on ecological matters, past work experience, and training, are mandatory. Soft skills are also needed. Strong interpersonal skills and adaptability are vital to perform well in various situations and develop creative solutions.

4. **IT and Digitalization:**

Primarily hard skills demonstrating the candidate's training foundation and capabilities based on experience and background are a must. Mechanical skills, cloud computing, scientific computing, and database management are some of the hard skills to consider. Building information managers need soft skills since managing requires good communication and organization skills.

5. **Management and Public Sector:**

Such a general sector demands a broad spectrum of hard skills. Therefore, it is better to focus on common soft skills, including the entrepreneurial spirit, collaborating with others, communication, and empathy.

MODULE 10

BASICS OF ENTREPRENEUR -SHIP

Module 10: Basics of Entrepreneurship

10.1 Basics of Entrepreneurship

“The entrepreneur always searches for change, responds to it, and exploits it as an opportunity.”

(Peter Drucker)

The world is changing, and certainly, entrepreneurs are among the initiators of such change. It is hard to provide one universally accepted definition of entrepreneurship, a comprehensive concept that can be applied to several sectors, including the educational, social, economic, and political sectors. However, it is mainly associated with economic and environmental issues, establishing and running a business, and personal attitude to life. Entrepreneurial activities can be undertaken within corporations or existing small businesses; entrepreneurial can also be local communities working for their environment (Glinka and Gudkova, 2011).

The term "entrepreneurship" first appeared at the turn of the 18th and 19th centuries and was associated with the industrial revolution and nascent capitalism. Jean Baptiste Say was the first to introduce the term in the scientific literature. "Entrepreneurship" defined a person investing resources in an unknown and risky future. Say believed that an entrepreneur transferred the capital from an area with lower profitability to an area with higher efficiency and profit (Piasecki, 1998).

Based on the European Council's definition, entrepreneurial competencies include the ability to seize opportunities and ideas and transform them into value for others. Entrepreneurship relies heavily on creativity and critical thinking. Indeed, it is vital to take initiatives and solve problems. Furthermore, entrepreneurial competencies include perseverance and the ability to work in a group to plan and manage projects with a cultural, social or financial value (Zalecenie Rady Unii Europejskiej w sprawie kompetencji kluczowych w procesie uczenia się przez całe życie , 2018).

According to the "European Reference Framework" (Zalecenie Parlamentu Europejskiego i Rady w sprawie kompetencji kluczowych w procesie uczenia się przez całe życie, 2006), the following essential knowledge, skills and attitudes characterize an entrepreneur:

- *Knowledge*, encompassing "the ability to identify available personal, professional or business opportunities" (Zalecenie Parlamentu Europejskiego i Rady w sprawie kompetencji kluczowych w procesie uczenia się przez całe życie, 2006). Broad Knowledge of issues that constitute the context to people's lives and work, such as understanding the basic principles of economy and identifying and comprehending opportunities and challenges faced by employers and organizations. An awareness of ethical issues related to business operations and a willingness to bring positive change through fair trade or social ventures.
- *Entrepreneurial skills refer* to practical project management, including planning, organization, management and commission tasks, analysis, communication, preparing reports, evaluation, and reporting. They also refer to effective representation and negotiation skills, and the capacity to work individually and in a team. It is essential to assess and identify one's own strengths and weaknesses, and assess and take risks when needed.

- An *entrepreneurial attitude* is characterized by a sense of initiative, proactiveness, independence, and innovation, both professionally and personally. It is defined by the motivation and determination to achieve goals, both privately and professionally.

The next question is: Are we born entrepreneurs, or can we be educated to acquire this skills? Piasecki (1998) explains, "No one is born as an entrepreneur, you only become it (...). Discovered features that distinguish entrepreneurs from others are not genetically defined or fixed forever in early childhood. They are fooled by experience. They are happily instilled during education and are a matter of personal choice and decision."⁶

There are different types of entrepreneurs. However, for the purposes of this module, we will introduce two categories: social entrepreneurs and ecopreneurs.

Social Entrepreneurship

The concept of a social enterprise rose in opposition to the traditional commercial enterprise; it was developed in the UK in the late 1970s. Social enterprises are basically located at the intersection of the private and voluntary sectors (Barone, 2020).

The definition of "social enterprise" includes two attributes: "entrepreneurship" and "socialization". Entrepreneurship refers to an organization that conducts innovative and significant economic activity, producing products or services by creating added value. Moreover, a social enterprise conducts activities that involve economic risks and verification of this activity (Hausner, 2008).

The "socialization" attribute indicates the basic resources that the company uses, i.e., social capital. Not only does social entrepreneurship capitalizes on social ties and interpersonal contacts based on trust, communication, and cooperation, but its activity leads to the multiplication of the resources of this capital and its mobilization.

Social entrepreneurship's primary goal is social integration on a given local community's scale and countering social exclusion through professional and economic activation (Hausner, 2008). According to Hausner (2008), "the function of social entrepreneurship is not only to produce specific goods and services but also to mobilize social capital, generate innovation and expand the market by including people who have been excluded so far. A social enterprise is a part of the market economy, but specific, because it places its mission and goals outside the market"⁷.

According to Barone (2020), "a social enterprise or social business is defined as a business that has specific social objectives that serve its primary purpose. Social enterprises seek to maximize profits while maximizing benefits to society and the environment. Their profits are principally used to fund social programs." A social entrepreneur intended to trigger a positive change in society. Therefore, the main driver is not the pursuit of profits but social objectives (ibid).

⁶ Odkryte cechy wyróżniające przedsiębiorców od innych nie są określone genetycznie lub utrwalone na zawsze we wczesnym dzieciństwie. Nabiera się ich dzięki doświadczeniom. Są one szczęśliwie wpajane w trakcie edukacji i są sprawą osobistego wyboru i decyzji.

⁷ Funkcją przedsiębiorstwa społecznego nie jest tylko wytwarzanie określonych dóbr i usług, ale też mobilizacja kapitału społecznego, generowanie innowacyjności oraz poszerzanie rynku przez włączanie do uczestnictwa w nim, osób dotychczas wykluczonych. Przedsiębiorstwo społeczne jest częścią gospodarki rynkowej, ale specyficzną, bowiem lokującą swoją misję i cele poza rynkiem

Ecopreneurship

Ecopreneurship must be explained in the context of the globally increasing environmental problems, many of which have been directly or indirectly caused by human activities, most of which are economic. These severe problems drive people to transition into a more sustainable economy, where business activities have to take into account these three following dimensions: economic, social, and environmental.

Ecopreneurship is a term coined to represent the application process of entrepreneurship principles to create businesses that solve environmental problems or operate sustainably.

"Ecopreneurs are entrepreneurs whose business efforts are not only driven by profit, but also by a concern for the environment. Ecopreneurship, also known as environmental entrepreneurship and eco-capitalism, is becoming more widespread as a new market-based approach to identifying opportunities for improving environmental quality and capitalizing upon them in the private sector for profit".

(Schuyler, 1998)

An ecological entrepreneur can run an ecological company in various ways. He can choose ecological products, support ecological solutions, use ecological solutions, systems, raw materials, or produce ecological products or supply of ecological services. Kainrath (2009) concluded that successful ecopreneurship is based on three elements:

- **Eco-innovation:** It is about creating innovative solutions to address environmental problems;
- **Eco-opportunity:** It is about identifying innovations and opportunities to simultaneously help solve environmental issues and achieve sustainable business development;
- **Eco-commitment:** It means to provide and implement policies that will enforce people's commitment to green activities.

Those concepts' main ideas are based on innovating to decrease ecological impact (ibid).

10.2 Launching a Business within a Specific National Context

The information related to launching businesses in Belgium, Poland, Romania, Spain and Sweden can be found in Annex IV.

10.3 Ideas and Tips on How to Utilize New Technology and Social Media Platforms to Promote your Business

Contrary to popular belief, companies do not need a huge budget to run marketing campaigns on the internet. Therefore, even small enterprises can effectively use e-marketing and reach customers creatively at every stage of the sales cycle. Indeed, more and more entrepreneurs are discovering the benefits of using e-marketing (Czym jest marketing internetowy?, n.d.).

E-marketing, also known as online marketing, digital marketing, or web marketing, is an all-inclusive term used to describe marketing activities conducted online (Shaw, 2019). Belyh (2017) explains,

“E-marketing is the mix of modern communication technology and traditional principles that marketers usually apply. When we talk about modern communication technology, this is electronic media”.

The importance of e-marketing has increased during the last years due to the increased number of Internet users. The internet has become the most popular way to find information or search for a product (Ghareeb, 2016). Although there are many e-marketing methods, it is preferable to be familiar with them to choose the kind (or the combination of methods) that will help you achieve your marketing goals. The different type and methods of e-marketing are the following (Law, 2018):

- **Email marketing:** it is one of the first and the best methods of e-marketing because of its low cost, concise targeting of the correct category, simplicity of use, and high return of investment (Ghareeb, 2016).
- **Search engine optimization (SEO):** It is considered the art of increasing the ranking of your website in the first results of search engines, mainly Google search engine, to increase your website's visits and outreach. You can target keywords on your website to appear in the search's top results (Law, 2018).
- **Paid advertising:** it is a form of "internet marketing where advertisers pay to show their ads on search engines and other online platforms, as well as social media platforms like Facebook, YouTube, LinkedIn, and Instagram". Paid advertising is often referred to as "pay-per-click" or "PPC", as advertisers are required to pay a fee each time their ads are clicked by a user (Law, 2018).
- **Social media marketing:** it is a type of communication through which you can directly engage with your customers to highlight the value of your company's products and services, increase the company's popularity and outreach through several social media channels such as Facebook, Twitter, Google Plus, LinkedIn, YouTube and Instagram. This type of marketing can either promoted organically, a free process that relies on the engagement of the community/consumers, or through payment, each platform has its options (Ghareeb, 2016; Law, 2018).
- **Content marketing:** it is the process of consistently creating, distributing, and promoting relevant online materials in a way that's strategically designed to attract, engage, and convert your target market into customers. There are several options that businesses use for this purpose, such as blog posts, videos (that are often shared to social media platforms like Facebook and YouTube), infographics summarizing reports and studies, e-books, Podcasts, Case studies, Emails, Webinars (Law, 2018).
- **Affiliate marketing:** it "involves partnering up with a more established e-commerce entrepreneur in your niche and asking them to promote your product to his or her audience. In return, you will give the affiliate a percentage of revenue from each sale he/she generates. Affiliate marketing can be a great channel for first-time e-commerce entrepreneurs because it's one of the only marketing channels, where you can get a 100% return on investment, every time" (Raghav, 2017).
- **Influencer marketing:** it is the process of working with influencers (e.g., bloggers, YouTubers, and other individuals who operate on different social mediums and enjoy less or greater popularity) "to promote a product or service to their online following" (Law, 2018). Research shows that 88% of internet users believe recommendations on the web to the same extent as personal recommendations. Generating reliable messages by influencers become the key to gaining or improving attention (ibid).

It is worth mentioning that the type of payment the platforms charge may differ based on the advertiser's market objectives, as stated below (Law, 2018):

1. "Cost-per-thousand-impressions (also known as "cost-per-mille" or "CPM"): this means you'll be charged each time your ad is viewed 1,000 times;
2. Cost-per-view (CPV): this means you'll be charged for each view your video receives;
3. Cost-per-action (CPA) (also known as cost-per-acquisition): this means you'll be charged each time a user takes a specific action or converts into a customer."

Big or small, many businesses are using e-marketing because of various features and multiple advantages. Some of the important features are given below (Shaw, 2019):

1. **Instant Response:** on e-marketing, the response is instantaneous, and it can reach millions of people right away.
2. **Cost-Efficient:** it is much cheaper than other advertisement types, or even free of cost for unpaid methods.
3. **Less Risky:** there is no risk, for there is zero or minimal cost.
4. **Greater Data Collection:** there is the possibility of collecting a vast range of data from consumers, which can be used to improve your outreach.
5. **Interactive:** it allows for great interaction with people through comments and feedback from your target market.
6. **Way to Personalized Marketing:** it is easy to personalize online marketing, which helps address customers in a more direct and personalized manner.
7. **Greater Exposure of your Product:** this is especially the case of posts that go viral, which can widely increase a service/product exposure.
8. **Accessibility:** anyone can access it from anywhere.

Online visibility plays a vital role in e-marketing. Because even if a business has a great website or product, how are users expected to find it if it's not visible?

Online visibility is the "presence of a brand or its products in the consumer environment" (BigCommerce, n.d.). The reasons why online visibility include (BigCommerce, n.d.):

- "It lets people find your site on their own
- Unique visitors, or new daily visitors, are customers supporting your business
- Online visibility helps with brand reputation, or how people perceive the business
- Brand reputation helps a website stand out from its competition."

To increase online visibility, the best marketing activities you can invest in are (Murphy, 2013):

1. **Blog:** it is the most powerful marketing tool! Your small business or marketing strategy center can attract incoming customers to your blog. Your blog can present your expertise and provide value to your target audience. The more content you provide to help your target audience, the more visible your online presence will be. It is good to hire a freelance writer that can create your posts (especially when writing is not your strength).
2. **Learn about SEO:** thanks to SEO, you can increase your online visibility. You do not need to be an expert! When you create high-quality content and use basic on-page search engine optimization techniques, you make your content more visible in search engine results. "Use a plugin like WordPress SEO points out exactly where and how you should optimize your pages and posts. Its built-in page analysis guides you on some of the finer points of SEO".
3. **Share content:** your content does not need to be original to be perceived as a source of useful information. You can find and share content written by others and enhance it with your thoughts, views, and commentary. This way, you provide a valuable service to your followers. Spend some time each day on uploading posts on your social media pages, scheduling posts, and responding to comments or messages.
4. **Check customer review:** Generally, Happy customers will not take the initiative to post a review, but a customer with a negative experience will likely find the time to post. As a part of your customer service process, you can encourage customers to write reviews. You can ask customers to leave reviews using a feedback form or set up a process for customers to provide testimonials to your website.

Your goal is to get many reviews because a mix of good reviews with a couple of negative ones is better than just one positive review.

5. **Be active on social media:** social media activity can benefit every business. Select the right platforms for your business, become active (post content, ask questions, and interact with other people). This will help with make you visible! Some tips for writing your posts: “Make sure all of your social media profiles are well written, consistently branded, and optimized according to how you wish to be found. Make sure you include complete contact information across all profiles”. You must be sure that there are many ways for people to find you! Use one or two social media platforms that are more relevant to your business, develop your content strategy, and work those consistently. Given its dynamic and expanding nature, social media marketing can be overwhelming. Therefore, create a plan, define your priorities, and commit to spending some time every day to promoting your business.

MODULE 11

HOW TO BUILD A SUCCESSFUL BUSINESS PLAN

Module 11: How to Build a Successful Business Plan

11.1 SMART Criteria

Starting a business is not easy. Not only does it require financing, but it also needs tremendous research, planning, coordination, assembling resources, risk assessment, marketing, and much more. Above all, it requires patience, perseverance, and motivation, for it takes time to reach visible results. Creating your business plan is the foundation of any business; indeed, it outlines every single aspect of your business, including your primary goals, how to achieve them, who you need to target, and how you will finance it, among other things.

SMART Criteria is a useful tool to build a successful business plan. It helps you ensure that your business goals are clear and feasible (SMART Goals – How to Make Your Goals Achievable, n.d.). Therefore, they should be:

- **Specific**
- **Measurable**
- **Achievable**
- **Relevant**
- **Timely**

Source: SMART Goal (n.d.).

The first letter of the acronym stands for *specific*: this means that the goal should be “clear, well defined and unambiguous” (ibid). The five “W” questions can help to further define this goal accordingly:

- **Who:** Who is involved in this goal?
- **What:** What do I want to accomplish?
- **Where:** Where can this goal to be achieved?
- **When:** When do I want to achieve this goal?
- **Why:** Why do I want to achieve this goal?

Source: ibid.

The second letter of the acronym stands for *measurable*. It involves the means to measure the progress of the goal. The following questions, therefore, help analyze the progress status:

- How much/many?
- How do I know if I have reached my goal?
- What is my indicator of progress?

Source: ibid.

The letter A of SMART stands for *achievable*. Your goals need to be feasible and attainable. You need to reflect on how achievable your goals are or can be; you should ask yourself whether you have access to the required resources and capabilities to accomplish your goals, and if not, what do you miss and how can you attain it (ibid).

Your goal also needs to be *realistic*. This means that you need to consider how practical, reasonable, and likely you can achieve your goals, given the available resources and time (ibid).

Finally, the last important step is to consider the *time-bound*; you need to achieve your goal in a timely manner. The plan has to have a specific start and end date: a time frame to achieve it. Otherwise, the absence of time limitations will negatively affect your motivation and, consequently, the goal's realization.

A SMART criteria help address all the variables concerning your business idea. Now, you are ready for the next step: building a successful business plan.

11.2 Building a Business Plan

Let's start by asking: why do we need a business plan?

- To apply for a loan/investment.
- To establish business milestones.
- To better understand your target audience.
- To have a more in-depth knowledge of your market.
- To help you reach your goals.
- To monitor your finances.
- To be aware of your business' weaknesses and to mitigate risks.
- To improve your strategic planning.

Before Building your Business Plan:

Now you are aware of why it is essential to have a business plan that can guide, support, and inform you once you start. Section 11.1 explained what SMART criteria are, and how useful it can be to outline specific business ideas before developing your business plan. Still, there are many more questions that you should ask yourself and research while building your plan.

Discover your passion and interests by making a list with questions such as:

- What do you spend your money on?
- What do you love to do? Hobbies?
- What are your skills/talents? What are you good at?
- What do you want to do every day? What makes you get up in the morning?
- What impact can you make on the world?
- What would your dream life look like?

Research and get to know your industry by answering questions such as:

- How are people already making money in the industry?
- What are the leading companies in the field?
- Can you get a position or internship to learn about the industry first?
- How has the industry changed in the last 5, 10, 20 years? Where is it headed?
- What niches are unserved? Where are the loopholes in the market?

Improve your network researching questions such as:

- Where does your target market hang out?
- Who are the local leaders in your industry?
- What skills do you have, and what skills do you need in a business partner?
- Are their groups/meetups around your passion?
- What can you learn from your competition?

Finally, figure out some concrete aspects by asking yourself and researching things such as:

- Is there a healthy competition around your industry? Why or why not?
- Is the market for your business big enough to support your idea?
- What is the most effective way to reach your customers?
- How much money will my idea cost to start?
- Will this idea make me money?
- What are my goals? Short term? Long term?

Source: Under 30 CEO, 2010. 50 Questions to Ask Before You Start a Business.

Business Plan Components:

A business plan is composed of different sections, including the following:

1. **Executive summary:** Write a short introduction to your company, explaining what you want to do and what you want from the readers. We advise that you write this section at the end; it will be easier to conceive and phrase it once you have all the details. It should also act as a stand-alone document that comprises all the aspects of your business plan, for investors commonly just read this part before reading more about your business.
2. **Opportunity:** Include a brief description of what you are marketing and what your product is.
3. **Execution - Action plan and milestones:** Inform your reader how you will turn your idea into a business, include your marketing and sales plan, milestones, and metrics of success.
4. **Company and management summary:** Describe your team, the equity distribution, your legal structure, location, and history, if applicable. Add your CV to inform people about who you are. Collect the following information about the company's management structure:
 - (Name of the company)
 - The company is managed by a Managing Director under a multidisciplinary Board of Directors.
 - Managing Director
 - Chairman of the Board
 - Board Members
 - Deputy Board Members
 - Founders
 - Board
5. **Financial Plan:** Include your sales forecast, cash flow statement, income statement and balance sheet. Brainstorm to include the foreseeable business risks, including:
 - Risks
 - Start-up risks
 - Financial risks
 - Failure and Deal Conclusion

Startup cost and estimated initial cost for Year 1 in SEK/Euro				
Item	Figure	Share	Total shares	Comment
Registration Cost				
Start-up Office				
Post Box				
Auditor/Accounting				
Communication				
Stationary/Office Supplies				
Transportation				
Shares Total per Person				
Total Expenses				

6. **Appendix:** Add any additional information, such as product images, etc.
7. **Mission Statement: Explain** the company's goals, and clarify why it operates the way it does. Identify your products or services produced/provided, and define your primary customers (Mission Statement, n.d.).
8. **Vision Statement:** Provide your vision statement, which should address the future and not the present. Specify where the company wants to head, setting a direction for the future (What Is A Vision Statement?, n.d.).

Some points to keep in mind:

- Keep it short: you want your business plan to be read.
- Know your audience: use language that your target group will understand.
- Don't be intimidated: although you might not be an expert, no one knows your business better than you!

Source: How to Write a Business Plan [Updated for 2020] (2020).

Additional resources to build a successful business plan can be found here:

- Almi, "10 steps to create a winning pitch deck" (<https://www.almi.se/en/almi-invest/pitch-your-startup/pitch-deck/>);
- The Canva business model can be found on different websites; an example, <https://www.strategyzer.com/canvas/business-model-canvas>.

MODULE 12

**WORKSHOP: HOW
TO CREATE A
CIRCULAR
BUSINESS PLAN
USING CIRCULAR
ECONOMY
PRINCIPLES**

Module 12: Workshop: How to Create a Circular Business Plan using Circular Economy Principles

A suggestion for National Trainings can be found in Annex V.

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ANNEX I

Annex I

4.3 Circular Economy and the Belgian Political Framework

4.3.1 The Belgian Context

The federal structure of Belgium means most environmental issues are regional competences. The three regions (Flanders, Wallonia, and Brussels Capital Region) have the authority to manage socio-economic matters, such as zoning and planning, housing, agriculture, employment, and energy. The Federal Government and the regions share environmental competences, so while the Federal Government is in charge of protecting and managing coastal waters, the regions define waste, green areas, forests, continental waters, and waterways policies in their respective regions.

4.3.2 Adopting Measures and Policies Fostering Circular Economy in Belgium

On the 5th of May 1997, Belgium established a legal framework elaborating on implementing the Federal policy for sustainable development, culminating in the first Federal strategy for sustainable development. The strategy was developed in consultation with four actions responsible for specific and additional policy tasks, namely the Federal Institute for Sustainable Development (FIDO), the Interdepartmental Commission for Sustainable Development (ICDO), the Sustainable Development Task Force of the Federal Planning Bureau (TFDO) and the Federal Council for Sustainable Development (FRDO). Each federal public service has its sustainable development cell that also contributes to the federal strategy.

The Federal Institute for Sustainable Development (FIDO):

FIDO's mission includes "policy preparation for sustainable development, coordination of the implementation of sustainable development policy, provision of expertise" (FIDO, 2020). FIDO develops initiatives for other federal public services and civil society to integrate sustainable development into their operations and policies. Since the launch of the UN's 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), FIDO has also been working on integrating the SDGs into federal policy.

Interdepartmental Commission for Sustainable Development (ICDO):

Striving to achieve sustainable development goals requires a transversal policy approach. The Interdepartmental Commission for Sustainable Development (ICDO) primary task is preparing this transversal policy. The ICDO includes representatives from all federal public services and the Department of Defence. The regions and communities are also invited to appoint representatives.

The Taskforce Sustainable Development of the Federal Planning Bureau (TFDO):

The Federal Planning Bureau is a public utility institution. It studies economic prospects, social and environmental policy issues, and examines the integration of those issues in a sustainable development context. As part of the sustainable development policy cycle, the TFDO draws up federal reports on sustainable development, forming a new five-year policy cycle.

The Federal Council for Sustainable Development (FRDO):

The Federal Council for Sustainable Development is primarily an advisory body. It includes representatives from various social groups: government organizations, development cooperation organizations, consumer,

employee and employer organizations, energy producers, and academics. The federal government, communities and regions, and environmental and socio-economic councils representatives are also part of the FRDO. The FRDO provides advice to the federal government on sustainable development policies.

Sustainable Development Cells:

Every federal public service (FOD) has a sustainable development policy cell. These policy cells “are responsible for the internal coordination of the implementation of the measures of the federal plan for sustainable development and the reporting on this in the ICDO” (Actoren, 2020).

Furthermore, the Federal Government published a comprehensive roadmap with its "21 measures to boost the circular economy" (Samen de economie doen draaien dankzij de circulaire economie in ons land, 2016). Several studies followed in the government's footsteps working on possible policies to counter programmed obsolescence (L'obsolescence programmée : politiques et mesures belges de protection du consommateur, Rapport Final, 2017). The Benelux study offers a methodology to measure the recoverability and recyclability of products (Repairability criteria for energy related products, Study in the BeNeLux context to evaluate the options to extend the product lifetime, Final Report, 2018).

Significant efforts were and continue to be made at the three regional levels in Belgium.

Brussels Capital Region:

In 2016, the Regional Programme for Circular Economy (GPCE), also known as BeCircular, was launched. By implementing the GPCE, the region wants to put itself on the map as an incredibly innovative European region and a pioneer in public policy supporting the circular economy. The GPCE is a multi-stakeholder program involving 91 organizations. The program is managed by Brussels Environment, together with hub.brussels, Innoviris, and Net Brussels. It has three general objectives:

- Transforming environmental goals into economic opportunities.
- Anchoring the economy in Brussels, when possible, to produce locally, thus reducing travel, optimizing land use, and creating added value for Brussels residents.
- Contributing to job creation.

The program (BeCircular, 2020) comprises 111 measures, divided into 4 strategic axes: transversal, sectoral, territorial, and governance. The program's cross-cutting measures cover all economic operators aiming to create a favorable regulatory framework, providing economic support, developing innovation, sustainable and innovative public markets, and creating training. Specific sectoral measures focus on the construction sector, resources, waste, logistics, trade, and food. Territorial measures aim to mobilize all actors in the territory, from neighborhoods to the metropolitan area.

The governance measures define the framework within which the three ministries and 13 public administrations of Brussels capital region work together to coordinate their actions and make the GPCE a success.

Flemish Region:

To successfully continue the transition to a circular economy in Flanders, the three pillars of the former Flemish Materials Programme (Plan C, SuMMa, and Agenda 2020) continue to operate under the heading “Vlaanderen Circulair” (Circular Flanders) since January 2017. Building on the Flemish Governments’ strategy Visie2050 that sets out to have an entirely circular Flanders by 2050, Vlaanderen Circulair is

“the hub, the inspirer and mediator for the circular economy in Flanders. It is a partnership of governments, companies, civil society, and the community that takes action together. In addition, it is also a broader

movement of citizens, entrepreneurs, civil society organizations, local authorities ... who want to set up initiatives in the circular economy.”

(Vlaanderen Circulair, 2020)

The partnership is embedded within the multidisciplinary team of OVAM (Openbare Vlaamse Afvalstoffen Maatschappij).

Vlaanderen Circulair currently focuses on three pillars of action: circular procurement, circular cities, and circular businesses and entrepreneurship. These actions tackle five themes: materials, biomass, water, environment, and energy (Vlaanderen Circulair, 2020).

Furthermore, in 2019, Flanders launched the Green Deal on Buildings and Construction, through which construction “companies, building material producers, local and regional authorities, private builders, researchers and other organizations work together to make circular construction a daily reality” (Circular Flanders - Retrospective report 2017-2019, 2019). More than 300 organizations have already registered.

Since 2015, Flanders has been tracking its food waste and initiated a Food Supply Chain Roadmap on Food Loss, a public-private partnership to reduce food loss by 15% by 2020. (Vlaamse Overheid, Departement Omgeving, n.d.)

Walloon Region:

On February 28, 2019, five Walloon deputies presented a preliminary report on Wallonia's circular economy state. This report gave an overview of the circular economy in Wallonia and a series of recommendations. On May 3, 2019, the Walloon Parliament unanimously adopted these recommendations. The circular economy is already present in several areas in Wallonia. It mainly operates on waste prevention and management, particularly after adopting the Walloon waste-resource plan in March 2018. The social economy sector is also active in terms of reuse.

Novalia provides backing, financing, and support actions, circular economy checks, Next, and the "call for plastic" projects. There is also a growing number of initiatives, support, projects, and offers in functionality economics and eco-design.

The Green Deal Circular Procurement, whose objective is to promote the circular economy through public and private organizations' purchasing policy, was officially launched on November 27, 2019. (Economie Circulaire | Développement Durable, n.d.)

Wallonia also has an action plan focused on tackling food waste to reduce loss and waste at all food chain levels by 30% between 2015 and 2025. (Plan REGAL : Réduction du Gaspillage Alimentaire en Wallonie, n.d.)

Fostering Circular Entrepreneurship:

On the entrepreneurial level, important stakeholders such as VBO (Association of Belgian Enterprises) have fostered the uptake of circular economy by enterprises through publications such as "Circular Economic: an important leverage for your company". (Circulaire economie: hefboom voor uw bedrijf, 2015) Other inspiring initiatives include VLAIO's CircleAid (www.circleaid.be, n.d.), a database where entrepreneurs can find experts to maximize their companies' circularity. Flanders DC's Close The Loop initiative promotes a circular fashion industry (Flanders DC and Vlaanderen Circulair, n.d.). OVAM's Ecolizer ecodesign tool helps designers determine their product's environmental impact (OVAM, n.d.); while hub.brussels Greenlab accelerator for sustainable start-ups (hub.brussels, n.d.) and its Circlemade network (hub.brussels, n.d.) aim to spread the circularity.

4.3.3 Obstacles Impeding the Adoption of a Circular Economy in Belgium

Need for Policy Integration:

As mentioned before, Belgium is a Federal State, and the country's administration lies in the hands of several bodies: federal, regional, and even local. These bodies independently exercise their functions in their

respective regions and areas of competence. Despite the importance of strong horizontal and vertical policy integration, challenges for integrated planning, coordination, and decision-making remain at all policy-making levels. Hence policy coordination is required between and within all levels, be it European, Federal, regional, and local. It's also crucial to achieving maximum coordination with other policy areas such as climate, water, space, mobility, and transport (Sociaal-Economische Raad van Vlaanderen, 2019).

Other Bottlenecks:

Current rules and legislation were often approved with a linear economy model in mind. Therefore, several specific bottlenecks hindering the proper implementation of the transition into a circular economy in Belgium:

- **Waste law within a circular economy and the classification of a material and/or product as waste:** Under current law, "waste" cannot qualify as a product, nor as raw material. This has an ambiguous and resilient nature. The term "waste" appears to offer insufficient guidance to determine in a sustainable (business) process whether waste law may or may not apply.
- **Sustainable/circular public procurement rules in Belgium and its regions**
- **Product standardization:** Many product properties, both at the national and European levels, are strictly regulated through so-called product standards. These standards regulate the properties of all products placed on the market in terms of manufacturing, intended use, and disposal, without any distinction regarding the actual production method (linear production, 3D printing, circular recovery, etc.). Such product standards serve to protect consumers from health issues and environmental pollution. Therefore, the lack of circularity in these product standards impedes the transition into a circular economy. When buyers require specific product standards implying traceability of materials and product standards, this presents a significant obstacle for companies focusing on reusing raw materials to extend life-cycle. It is by no means an easy task to collect information in the (long-term) circular chain about the original material's correct composition or the original producer. Paradoxically a total absence of product standards can also hinder creating certain innovative products and materials. It is suspected that a complete lack of product standards can/will generate a deterrent effect, with many consumers and buyers dropping out.
- **Lack of a clear definition of sharing platforms and product-as-service:** Belgian legislation currently has no definition of the term "sharing economy," nor is there a universally accepted definition. Various terms are now in circulation ("collaborative economy", "platform economy", "peer-to-peer economy", "on-demand economy"), which are used without distinction to refer to phenomena perceived as similar, but which are hardly ever used. This implies that platforms with entirely different (and even opposite) properties are identified using the same term. A clear definition of concepts is nevertheless essential before a legal framework for the sharing economy (e.g., taxation, social conditions, liability (distribution), etc.) can be established. Products-as-a-service raises questions about liability, property rights, and the forms and limits of their insurability (OVAM and Vlaanderen Circulair, 2019).

4.3 Circular Economy and the Polish Political Framework

Introduction

The depletion and prices increase of non-renewable resources and Poland's growing dependence on exported supplies endanger the country's economic development and challenge environmental protection regulations. Therefore, the public sector has to take immediate action to support the transition into a circular economy and create a low-carbon, resource-efficient, innovative, and competitive Polish economy (GOZ, 2019).

Where are we in terms of implementing the CE?

In September 2019, the Polish Council of Ministers adopted the CE road map project.

The CE road map is a document expanding on some legislative tools, among others, designed to create conditions to implement Poland's new economic model. The proposed activities relate primarily to the analysis and conceptualization of information, promotion, and coordination in the areas belonging to each department.

Chapter I, "Sustainable industrial production," draws attention to the industry's significant role in the Polish economy and new opportunities needing development.

Chapter II, "Sustainable Consumption," demonstrates the potential, often overlooked, and life cycle stages.

Chapter III, "Bioeconomy," deals with the management of renewable raw materials (biological cycle CE), which have great potential in the Polish context.

Chapter IV, "New business models," indicates the possibilities of reorganizing the various functions of market participants based on CE business models.

Chapter V deals with the implementation and monitoring of a CE.

The CE Road Map is one of the projects of the Strategy for Responsible Development (Serwis Rzeczpospolitej Polskiej, 2018).

Life Cycle Assessment in Polish Governmental Documents

In Polish governmental documents, LCA (*Life Cycle Assessment*) has been highlighted in the Road Map to transition into a circular economy. The Road Map provides guidelines for implementing certain milestones related to the Circular Economic by the end of 2020. It develops information and educational materials to assess the impact of products and economic activities on the environment. These materials are based on methodologies developed by the European Commission (Serwis Rzeczpospolitej Polskiej, 2018).

The environmental footprint takes precedence in the Productivity Strategy currently being prepared by the Ministry of Economy. This Strategy emphasizes the context of increasing resource efficiency throughout the entire life cycle. Environmental footprint regulations can be an essential political tool driving transformation, mainly regarding (Serwis Rzeczpospolitej Polskiej, 2018):

- Determining the criteria for selecting products and services for public procurement
- Establishing support instruments for enterprises and industries
- Differentiating tax rates depending on the result of the environmental analysis.

Where are we now?

Poland is currently developing detailed documents and a CE implementation strategy. To this end, various researches are conducted, and competitions are announced to encourage the development of measurement indicators to assess progress in the transition into a circular economy. Besides, more initiatives are developed to assess the circular economy's impact on socio-economic development (www.gov.pl).

Obstacles Hindering the Implementation of CE in Poland

These are the three main barriers impeding implementation of the CE in Poland:

1. **Legislative barriers:** Legislative paths are very complicated and last long. In light of the legislation, the CE must be in line with EU guidelines, which further extends the whole bureaucratic process.
2. **Infrastructural barriers:** Changing and adapting the infrastructure to the needs of CE takes a lot of time. It also requires substantial financial outlays. Therefore, this process will be will span over years, and will be difficult to implement.
3. **Mentality barriers:** These barriers are the most difficult to overcome, requiring a long-term impact strategy. Designers, scientists, inventors, engineers, extractive industry, manufacturers, trade, transport companies, agriculture, packaging producers, and consumers must be involved in implementing a CE. Many educational activities should address local governments responsible for managing a significant waste management space (GOZ, 2019).

4.3 Circular Economy and the Romanian Political Framework

Introduction

In recent years, Romania has made continuous efforts to align itself with the European Union's new circular economy plan. It has also worked on optimizing its resources to minimize waste production and maximize reuse. Despite these initiatives, the country is still falling behind compared to other European member states promoting a circular economy (Târțiu et al., 2018).

To stimulate and facilitate the transition into a circular economy, Romania has adopted several regulations, including:

- **DECISION no. 3 February 2, 2016, about the Circular Economy Package "Closing the loop - an EU action plan for the circular economy":** Romania declared its commitment to promoting public policy to achieve a circular economy. According to this, Romania supports the Circular Economy Package's primary objective - to stimulate the development of new markets and business models to develop the economy and create new jobs. The decision further highlights the importance of adopting a circular economy from the Romanian's perspective; however, it recognizes its complexity. It recommends that the proposal consider the national circumstances and the different starting points regarding waste management, among others (Indaco Systems, 2016).
- **Emergency Ordinance no. 68/2016 for the amendment and completion of Law no. 211/2011 on the waste regime:** Two main points take center stage:
Firstly, the Ordinance encourages the design of products that have a low effect on the environment and generate a small amount of waste during production, subsequent use, recovery, and disposal.

Secondly, it encourages the production and marketing of multi-use products that are technically sustainable and can be easily recovered or safely disposed of once they become waste (Monitorul Oficial, 2016).

Further, this Ordinance points out that waste should be collected separately to facilitate and improve recovery and ensure the technical, economic, and environmental protection when possible. Waste and materials of different properties should not be mixed. Therefore, economic operators who collect and/or transport waste must ensure separate collection material and segregate them during transport.

Another significant issue is that Romania decided to apply the economic motto "pay for what you throw away" to stimulate the separate collection of waste and facilitate economic operators' process. This aims to increase the reuse and recycling rate, and reduce waste in storage, stimulating the separate waste collection. The same Ordinance mentions that the waste producers and local government authorities are required to reach a level of preparation for reuse and recycling of at least 50% of the total mass of paper, metal, plastic, and glass waste from households and similar sources by 31 December 2020 (Ibid). Finally, operators carrying out the waste collection and transport operations must deliver and transport waste only to installations authorized for carrying out treatment operations.

- **National Strategy for Sustainable Development of Romania Horizons 2013–2020–2030:** This initiative has been enforced since 2008 (Minister of Environment and Sustainable Development, 2008). According to this document, Romania aims to reach ambitious targets until 2030 and transform the current economy to become more sustainable in the future. Some of the targets proposed within the strategy are:
 - Halve per capita food waste at the level of retail and consumer;
 - Reduce food loss along production chains and supply, including losses post-harvest;
 - Recycle 55% of municipal waste by 2025 and 60% by 2030;
 - Separate waste collection of hazardous household waste by 2022, bio-waste by 2023, and textiles by 2025;
 - Establish a mandatory scheme of extended liability to manufacturers for all packaging by 2024 (Descrierea CIP a Bibliotecii Naționale a României, 2018).

Romania further follows the following EU legislative initiatives:

- **Environmental Management System (EMAS):** Romania registered 11 EMAS organizations in 2017, compared to one in 2008 (Celac, S. and Vădineanu, A., 2018). **EU Ecolabel:** According to a Ministry of Environment press release, Water and Forests, the updated list of economic operators in Romania shows a list of 21 economic operators that have obtained the European eco-label (Ministerul mediului, apelor și pădurilor, 2020).
- **Green Public Procurement, 2016, Law no. 69 on green public procurement:** This is the legal framework governing the development of the market of green products in Romania. The Ministry of Environment, together with the National Agency for Public Procurement, have developed a guide to green public procurement, including environmental protection requirements for certain groups of products and services required at the level of specifications.

Regarding Romania's waste management policy, the Government aims to align the national waste management policy with the European waste prevention policy objectives. It further seeks to reduce resource consumption and the practical application of the waste hierarchy.

The preventive action principle is in line with the Government Emergency Ordinance no. 195/2005 on environmental protection, as subsequently amended and supplemented, and the Directive 2008/98/EC on waste, transposed into national law under the Law no. 211/2011 on the waste regime. It presents the waste hierarchy that "applies as an order of priority in the legislation and policy on waste generation and management, as follows: prevention, preparation for reuse, recycling, other waste management operations, recovery, for example, energy recovery and disposal" (Ministry of Environment and Climate change, n.d).

To modernize waste management and implement European legislation, Romania must take all necessary measures to set all related economic instruments. Besides the economic instruments mentioned above, the "pay for what you throw away," and the extended obligation for economic operators of waste, Romania must also implement the "strategy deposit system."

Obstacles Hindering the Implementation of CE in Romania

According to the study, "Transition towards a circular economy, from the waste management to a green economy in Romania," the obstacles identified by respondents impeding the implementation of a circular economy directive include (Târțiu.V et.al., 2018):

- Necessary infrastructure costs (62.75%);
- Lack of high-performance recycling solutions in Romania (68.73%);
- Lack of a public-private partnership (50.98%);
- Operation costs (43.14%) - others - detailed specifics of respondents - regarding poor education (e.g., the need to improve an educational curriculum which includes approaches in line with the circular economy, resource efficiency, etc.);
- Lack of viable economic instruments, and the inefficiency of state institutions (23.53%).

Furthermore, the study points out some threats that slow the process and transition into a more circular economy in Romania. These include:

- Tendencies to excessive consumption and fewer actions to increase resource productivity;
- Delays in implementing measures to ensure the separate collection of waste;
- Lack of national and local environmental authorities (including Environmental guard);
- Lack of tools for strategic planning and decision-making process consequently affecting the implementation of solutions;
- Low awareness of the public regarding the importance of a sustainable consumption model focusing on waste prevention, reuse, and recycling (ibid).

4.3 Circular Economy and the Spanish Political Framework

The Circular Economy has been a priority in Spain for a long time, being an essential part of many initiatives at the national, regional, and local levels. Traditionally the efforts have been made in the area of waste management, but more recently, a more systemic approach has been implemented, with specific Circular Economy plans and strategies. Some of the more significant CE initiatives are summarised below:

- Spanish Strategy for Circular Economy 2030 (June 2020): All the efforts in the past years have converged in the recently published Spanish Circular Economy Strategy that lays the foundations to promoting a new model of production and consumption, where the value of products, materials, and resources remain in the economy for as long as possible. The Strategy also aims to minimize the generation of waste, and when unavoidable, to use materials and products to the greatest extent possible. Thus, it contributes to Spain's efforts to achieve a sustainable, decarbonized economy, competitive and efficient in using resources. The Spanish Circular Economy Strategy (EEEC) is aligned with:
 - The European Union's two circular economy action plans objectives, "Closing the loop: an EU action plan for the circular economy" of 2015, "A new 2020 Circular Economy Action Plan for a cleaner and more competitive Europe",
 - The European Green Pact
 - The 2030 Agenda for sustainable development.
Available on: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular2030_def1_tcm30-509532.PDF
- Draft Law on Climate Change and Energy Transition (May 2020): Ministry for Ecological Transition and Demographic Challenge drafted this law to normalize and institutionalize a framework to facilitate the progressive adaptation of our reality to the demands that regulate climate action. This tool will enable

and guide the socially fair decarbonization of the Spanish economy by 2050. Available at: <https://www.miteco.gob.es/es/prensa/ultimas-noticias/la-ley-de-cambio-clim%C3%A1tico-y-transici%C3%B3n-energ%C3%A9tica-entra-en-la-recta-final-de-su-tramitaci%C3%B3n-administrativa/tcm:30-506983>

- Action Plan for the Implementation of the 2030 Agenda towards a Spanish Strategy for Sustainable Development :The Action Plan for the Implementation of the 2030 Agenda, towards a Spanish Strategy for Sustainable Development (Government of Spain) (the Circular Economy is included as a “lever policy” to accelerate the implementation of the Sustainable Development Goals (SDG)) 2019 . Available at: https://www.cooperacionespainola.es/sites/default/files/plan_de_accion_para_la_implementacion_de_la_agenda_2030.pdf
- Spanish Urban Agenda: The Spanish Urban Agenda, taken into consideration by the Council of Ministers on February 22, 2019, is the road map that sets the strategy and actions to be carried out until 2030 aiming to make our towns and cities more friendly, welcoming, healthy and aware of coexistence. It includes the strategic objective of promoting sustainable resources and the circular economy. Available at: <https://www.aue.gob.es/>
- State Program for the Prevention of Waste 2014-2020 and the State Plan for Waste Management 2016-2022: By implementing the State Program for the Prevention of Waste 2014-2020 and the State Plan for Waste Management 2016-2022, the generation of all types of waste is expected decrease by 10% in 2020. Likewise, it is noteworthy that Spain has been the first country in the EU28 to establish specific reuse objectives, both in the regulations of electrical and electronic equipment waste and in vehicles at the end of their useful life. Available at: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/planes-y-estrategias/Programa%20de%20prevencion%20aprobado%20actualizado%20ANFABRA%2011%202%202014_tcm30-192127.pdf
https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/planes-y-estrategias/pemaraprobado6noviembrecondae_tcm30-170428.pdf
- Spanish Bioeconomy Strategy Horizon 2030 (2015): Spain adopted The Bioeconomy Strategy at the end of 2015 after a political agreement between the Ministry of Economy, Industry and Competitiveness, and the Ministry of Agriculture, Food and Environment. This strategy defines the bioeconomy as the set of economic activities that obtain products and services, generating economic value, using fundamental elements, resources of biological origin efficiently and sustainably. Available at: <http://cytema.es/files/2012/09/Estrategia-Espa%C3%B1ola-de-Bioeconom%C3%ADa.pdf>
- Ecological Public Procurement Plan (2019):
- It will serve as an instrument to promote and facilitate economic growth, based on a circular, low-carbon, resource-efficient, waste-free, non-polluting, and eco-innovative economy. Available at: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2019-1394
- National Plan for Treatment, Sanitation, Efficiency, Savings, and Reuse Plan: DSEAR Plan (planned for publication in 2020). Available at: https://www.miteco.gob.es/es/agua/temas/planificacion-hidrologica/pn_dsearmemoria_consultapublica_tcm30-481891.pdf

At the Regional Level:

- Strategy to Promote the green economy and the circular economy of Catalonia (2015);
- Smart Development Strategy of Navarra (2016);
- Andalusian Strategy for Sustainable Development 2030 that includes the development of the Circular Economy (2018) and Andalusian Strategy for Circular Bioeconomy (2018);
- Extremadura 2030: Strategy for Green and Circular Economy (2018);
- Euskadi Circular Economy Strategy 2030 (2019);
- Circular Economy Strategy of the Region of Murcia (2019);

- Circular Economy Law of Castilla la Mancha, first CCAA that legislates the Circular Economy of Spain (2020).
Available at:
<https://www.boe.es/cca/ docm/2019/244/q48437-48442.pdf> <https://www.jcyl.es/junta/cp/estrategia-economia-circular-cyl.pdf>;
- Circular Economy Strategies of the Canary Islands, Galicia, and Castilla y León are under development.

At the Local Level:

- Pact for a Circular Economy (2017) Ministry of Agriculture, Fisheries, Food, and Environment. Available at: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/170911pacto_ec_def_tcm30-425902.pdf
- Local Strategy of Circular Economy promoted by the Spanish Federation of Municipalities and Provinces (2019). Available at: <http://www.femp.es/comunicacion/noticias/la-estrategia-local-de-economia-circular>

Obstacles Hindering the Implementation of CE in Spain

According to the Cotec report on the Situation and Evolution of circular economy in Spain (Cotec, 2017), the main barriers hinder the adoption of a CE are:

- **Legislation and Regulations:** The main obstacles facing legislation are related to the integration and harmonization between the different European legislative levels with the national, regional/autonomous, and local levels regarding the management of material/energy and waste resources.
- **Economy/Finance:** The Circular Economy requires a comprehensive Tax Reform on the medium term, which includes measures to direct society towards sustainability, through incentive systems, monetary and non-monetary, both for economic activities and for consumers. This will give impetus to the circular economy's transition, especially in reducing non-renewable materials and energy consumption.
- **Education and Training:** The education system at all levels has a central role in supporting the constitution of more responsible users/consumers/citizens, who are more informed about their consumption patterns and can make daily decisions, focusing on preserving resources. Education, mainly at the university level, has a strategic role in forming professional profiles and essential capacities to transition into a Circular Economy. Continuing education is also vital to train professionals who are already part of the workforce.
- **Technology:** It is necessary to encourage the development of cutting-edge technologies that favor the reduction of raw materials, and their reuse and recycling of these materials at the end of their life cycle, through upcycling and efficiently recycling raw materials. Technological development will increase energy efficiency and the economic viability of renewable sources, promote, for example, the consumption/production of energy from renewable sources jointly and disseminated, and radically improve the energy storage system through cleaner and higher capacity batteries.
- **Business models:** The transition to the Circular Economy requires the promotion and development of new business models to transform existing economic activities and create new ones. In this sense, the business-to-business and business-to-consumer models have a particular interest in providing advanced services, either to companies or consumers, based on services and not on material products.

4.3 Circular Economy and the Swedish Political Framework

Introduction: A Circular Economy Pioneer?

While the EU has made significant efforts to build the foundations to smoothly transition into a circular economy, the national context is still crucial, given that “national circular road maps drive the policy and business landscapes in each and every country” (SB Insight, 2019). These must be “customized for each country depending on their stock of resources and flows of energies that can be captured within one’s geography” (SB Insight, 2019). However, it is important to note that Swedes, in particular, place enormous responsibility on the EU regarding policy and consumer awareness; as a matter of fact, Swedish media highlighted that “many environmental-related policies in Sweden are determined on the EU level” (SB Insight, 2019).

Historically, the Nordic countries have been known for their high environmental awareness and technological innovation initiatives. Regionally and internationally, Sweden is one of the countries that is particularly exploring its role as a consistent green leadership. Interestingly, people in the Nordic countries seem to be generally receptive to shifts in the tax paradigm towards increasing the taxation on physical goods and decreasing it on services and labor (SB Insight, 2019). Additionally, in convergence to the Swedish population’s environmental awareness, over 99% of the Swedish household waste is recycled (Nederlandwereldwijd.nl, 2018).

In the last years, the Swedish coalition government has adopted ambitious policies and goals to transition into a green economy (Un-page.org., n.d.). This goal links with the **Fossil-Free Sweden** initiative, which aims at making Sweden one of the world's first fossil-free welfare states. This initiative's core lies in its belief that a resource-effective circular, bio-based economy is the key to achieving a fossil-free and green economy (Stephen Hinton Consulting, 2019).

Accordingly, large Swedish companies are investing in ambitious and innovative initiatives related to a circular economy. H&M, for instance, aims to achieve 100% circularity in 2030; IKEA implemented circular initiatives of reuse and sharing and has committed to phasing out all single-use plastics from stores and restaurants by 2020; Mathem.se, which partnered with online stores, offers efficient returns (SB Insight, 2019). Sweden has also increased the budget for investments in renewable and sustainable energy sources, particularly solar energy. Indeed, several businesses in Sweden are incorporating this green approach, exploring green innovation and circular perspectives.

In light of the above, the country has made consistent efforts to encourage businesses and individuals to adopt more circular approaches and green initiatives. Some of the initiatives are listed below:

- In the period between 2016-2019, municipalities could apply for receiving help covering the cost of special climate and energy coaches. These coaches provided targeted advisory services to small and medium-sized enterprises to increase energy efficiency and reduce greenhouse gas emissions while boosting a company's competitiveness and opening new opportunities for growth at reduced costs (Swedish Energy Agency, 2017);
- In 2017, the government appointed a Delegation for Circular Economy "to investigate and put forward policy recommendations" (SB Insight, 2019), as a suggestion from the 2017 state's investigation regarding the circular economy. The government has been allocating SEK 5 million per year since 2018 to support the delegation and stimulate the transition to a resource-efficient and circular economy. Furthermore, the investigation suggested further tax relief for circular and resource-efficient practices such as services to rent, repair, and second hand, as well as carpools;
- On the 1st of January 2017, the government reduced VAT reliefs for bicycles, clothing, textiles, and leather goods repairs from 25% to 12% (SB Insight, 2019).
- In 2016, the government launched a National Strategy for Sustainable Consumption. This strategy focuses on "what the State can do, together with municipalities, the business sector and civil society, to make it easier for consumers to act sustainably" (Regeringskansliet, 2019).

- The National Food Strategy is a platform that directs the Swedish Food Policy until 2030 to create stability and ensure a long-term plan that includes the whole food supply chain (Government Offices of Sweden, 2016/17).

Obstacles Hindering the Implementation of CE in Sweden

Despite the initiatives previously mentioned, the Swedish political framework can still adopt further measures to enforce the transition into a circular economy, especially by emphasizing the areas that have tremendous potential and supporting a clear common national strategy for what to prioritize (Vinnova, 2019).

"The value of public procurement in Sweden is estimated to SEK 683 billion per year or 17.5 percent of Sweden's GDP. At the same time, Sweden's municipalities and county councils account for emissions of 18 million tonnes of carbon dioxide. Public enterprises have as objective to create the conditions for a circular sustainable economy, but many still do not know how."

(ibid)

There is a need to establish parameters to measure a product's circularity and/or initiative in a standardized manner (Vinnova, 2019). Further, countering the high private consumption of new goods is necessary, while research in Sweden has shown that the population is still resistant to renting products. Many also find it cheaper and easier to buy new products instead of repairing old things, and 32% of Swedes believe that selling secondhand items takes too much time (SB Insight, 2019). Additionally, although Sweden is very successful in its recycling strategy, it is essential to note that recycling an end product is very much aligned with a linear economy. This implies a greater need to invest in initiatives to reuse and recycle resources throughout the whole supply chain, repair, and other circular practices.

"One issue that is debated in Europe, both on the national level and within the EU, is how to recycle materials to create a circular flow in the production phase. Instead of focusing on how you can recycle existing products, you should focus on how to design products to be part of a circular flow. Another major challenge that many people work with is how to measure the circularity of a material or product."

(Vinnova, 2019)

Finally, research has shown that although 20% of the Swedish consumers want to actively save or invest in circular companies, funds, or stocks, most consumers are unaware of the possibilities to invest in circular companies.

ANNEX II

Annex II

Introduction

According to Oxford's dictionary, the term upcycling means "reuse (discarded objects or material) in such a way as to create a product of higher quality or value than the original" (Lexico, n.d).

Basically, upcycling involves the opportunity to use waste products and convert them into new products.

Upcycling in the circular economy context means:

- reuse of materials to add extra value;
- produce new products.

It is important to mention that "upcycling is a form of recycling, but unlike recycling, it strives not to use new materials to improve the finished product" (Futurelearn, n.d). Moreover, in contrast with recycling, the upcycling process tries to "eliminate the need for additional energy and natural gas consumption in the supply chain" (Green business network, 2019).

Businesses Using the Upcycling Strategy

An excellent example of a business using the upcycling solution is Geetanjali Woollens that produces post-consumer mechanically recycled yarns, fabrics, and 100% post-consumer discarded textiles without using any harmful dyes, chemicals, and very little water.

Solution:

The business decided to upcycle old discarded used clothing, which otherwise was destined for disposable, preventing waste from going to landfill. Geetanjali Woollens aimed to keep textiles away from landfills in an ethical and socially compliant manner.

Impact:

Geetanjali Woollens has been engaged "since 1982, solely in recycling used textiles, with inherently circular core functions and capabilities. Its feedstock is 100% comprised of recovered resources. For each kilo of fiber it produces, Geetanjali Woollens contributes to extending the life cycle of products that are often worn a limited number of times before being discarded" (Thecirculars, 2019).

The Benefits of Upcycling

Environmental Benefits

- Prevents sending materials to landfills. Many brands and designers are making very fashionable stuff using old stuff, giving them a new life. In the fashion industry, there are countless options to turn used materials into new products like T-shirts, headbands, handbags, etc.
- Reduces air pollution, since the breaking down of wasted materials process is no needed.
- Extends the lifetimes of used product components or materials, with minimal use of natural resources.
- Reduces energy consumption.
- Reduces manufacturing costs, decreasing the need for production using new or raw materials.

Social and Economic Benefits

- Saves money and promotes creativity.
- Provides an environment-friendly alternative for dealing with different types of waste.
- Creates business opportunities by creating jobs or new businesses and supports small local businesses and rural village industries.

In terms of “social benefits, the upcycling could offer jobs for disadvantaged groups, invest in the emotional wellbeing of consumers because they can buy unique pieces and you’ve done something great for the planet” (Futurelearn, n.d).

Upcycling ideas you can try from the comfort of your home workshop

Objectives:

- Familiarize yourself with the upcycling concept.
- Reflect on different methods where an object, product, materials can be reused.
- Practice some upcycling techniques and methods.

Reusing an item and giving it a new life is a great skill and grants a wonderful feeling. You can practice upcycling at home/office through this workshop, with few or no additional tools or cost. Here are three examples with instructions on how to recycle old furniture and old tires.

[Converting useless tires into jardinière activity](#)

What do you need?

- Old tires
- Paint box
- Paint brush
- Fertilize soil
- Plants flowers
- Plastic bag
- Drainage rocks

1. Clean the tires with water and soap before applying the paint. Leave them to dry.

2. Apply the paint with the color you want. Wait for the paint to dry.
3. Go to the garden.
4. Put the plastic bag inside the tires, and trench some drainage rocks inside. Make sure you drill some holes in the plastic bag. Add the fertilized soil and the flower/plant.

[Make a Compost bin for the office](#)

A compost bin is a great way to transform old food discarded from the office into rich compost, which can then be used either in your planter or in various gardens in your community.

What do you need?

- Food waste
- Compost bin
- A partnership agreement with some agriculture farmer or agriculture university
- Sawdust

How does it work?

Place containers for composting in the office kitchen, food preparation area, or snack room. You can use kitchen waste cans or smaller lidded buckets; you can add coffee grounds, tea bags, vegetable wastes, and eggshells to these bins, but avoid adding meat or dairy waste.

1. Collect compost (fruit and vegetables, eggs shells, coffee ground)
2. Throw the compost into a compost bin
3. Layered with sawdust to obtain a better compost and also helping the food to decompose
4. Let composting sit to make healthy dark soil.

[How to make furniture from old pallets activity](#)

This example is inspired by Skill.ro website, which explains the steps to build furniture (SKIL, n.d).

What do you need?

- Large pallet
- Sander
- Sanding paper
- Varnish
- Paint brush or cloth for varnish application
- Table legs
- Screws and nails

Step 1: Clean the entire pallet before you start working with it. The easiest way to remove the dirt is using a brush, for if the pallets are not treated they will contain many splinters. Therefore it is a good idea to sand them to smooth and remove the splinters.

Step 2 (bench and table): Place two pallets on top of each other, face down, for the bench seat and two pallets for the table. Secure the pallets with screws to prevent them from slipping. Secure the 4x50 mm screws with a cordless drill next to the nine blocks.

Step 3 (bench): Cut the intermediate slats under the backplate. This will create a space for the backrest to be placed.

Step 4 (bench): The last remaining pallet will have the backrest function of the bench. Cut the row of back blocks and the two top plates (using a hammer and chisel as needed). Note: Leave the vertical plates intact. Cut them to a length of 16.5 cm.

Step 5 (bench): Slide the backrest into space on the seat to rest at an angle. Use 5 70 mm screws to secure the backrest firmly.

Step 6 (table): Cut the slats to the appropriate length to fill the spaces at the top of the table in the pallet and secure them with nails and/or wood glue. This will get rid of all the cracks at the top of the table.

Step 7 (table): Use a sander to smooth the top of the table from the pallet.

Step 8 (mass): Apply a coat of white paint. You can paint the whole table or just the top.

ANNEX III

Annex III

Instructions for a suggested roundtable/ open discussion.

Part 1:

Read about these two business models, compare and analyze them.

Beyond Coffee - Coffee grounds into mushrooms (DENMARK)

Kaffe Form - Coffee cups made from coffee grounds (GERMANY)

<http://www.beyondcoffee.eu/>

<https://www.kaffeeform.com/en/story/>

"When you make coffee, you only use 0.2% of the coffee's nutrients. Only the coffee aroma ends up in the coffee you drink. The remaining 99.8% is disposed of as coffee grounds. That is a waste of resources! Instead of disposing of the coffee grounds, Beyond Coffee collects it. We use it to grow delicious oyster mushrooms. Because oyster mushroom loves coffee grounds."

"A bicycle courier collective gathers used coffee grounds from selected cafes and roasteries in Berlin and brings them to a social workshop. There, the grounds are dried and preserved. At small plants in Germany, the material is then compounded and shaped into coffee cups. Once back in the social workshop in Berlin, the cups receive their final polish, are packaged, and sent to cafes, shops, and end customers."

Suggested questions:

- What type of business model do they present?
- What are the benefits of these circular solutions?
- What problems are they solving?
- Do they present innovative ideas?
- Which of them is a better solution for coffee grounds?

Note that there are not right and wrong answers for many of these questions.

Part 2:

Read the article "Reusable coffee cups life cycle assessment and benchmark" and discuss the results presented with your peers. Reflect on how "the best" product solutions highly depend on the posterior use.

https://www.researchgate.net/publication/328600555_Reusable_coffee_cups_life_cycle_assessment_and_benchmark

Topics for discussion:

- Circular solutions in general, based on other known success stories.
- Different circular solutions for coffee residues.
- Circular solutions in complex systems.
- Life Cycle Assessment as a tool for circular economy.

- Cross-cutting topic: The importance of critical thinking to avoid green washing in the transition into a Circular Economy.

Trainer's Guidelines:

The objective of this exercise is to stimulate critical thinking and reinforce the contents previously learned.

In part 1, trainers will guide the students to discuss the topics, compare them with the previously learned success stories, and encourage them to give their opinion. They will initiate an open discussion to point out the absence of universal solutions, rather than tailored solutions depending on every business model/ sector/country's context.

In part 2, the article "Reusable coffee cups life cycle assessment and benchmark" as an example of how Life Cycle Assessment can serve as a powerful tool to compare circular solutions.

ANNEX IV

Annex IV

10.2 Starting a Business in Belgium

10.2.1 Before Starting a Business in Belgium

You should be able to describe your project, analyze the environment, commercialize your idea, organize your company, and finance your project. Here are some guiding questions that can help:

- Which activities do I want to perform?
- Who are my competitors? What services do they offer? What can I do provide a better service/product? How can I distinguish myself? What future do I see for my professional sector?
- Which products and services do I want to offer? Which pricing policy am I going to implement? Where will my products be available? How do I market my products? Where and how do I place orders? how do I organize deliveries?
- Which legal status do I choose? Who will run my company? Where do I establish my company? Am I going to recruit employees?
- Which organizations should I contact to prepare my dossier or take the necessary steps to set up my company?
- How will I finance my project? What investments do I foresee? What are my costs? What is the minimum profit margin to cover those costs? What type of financing do I want?

10.2.2 How to Set up a Company in Belgium

- One needs to be of legal age (usually 18).
- One needs to enjoy his/her civil rights (e.g., right to perform public offices or relations, wear medals of honor or use nobility titles, testify as witness or expert, run for political office, join the military, vote, be an appointed guardian or curator, etc.).
- One has to be legally competent.
- Citizenship: people with Belgian, EU, Liechtenstein, Norwegian, Icelandic, and Swiss citizenship can start a business without any problem. Other nationalities need a residence permit and a professional card from the business counter. When you do not live in Belgium, you have to apply for a professional card at the Belgian diplomatic or consular post in the country where you reside.
- Choose a legal status: sole trader/sole proprietorship (natural person) or company (legal person).
- Set up the company by depositing and registering a deed of incorporation.
- Register the company at a recognized business counter for your registration in the Central Databank for Enterprises (KBO). This counter checks whether the company meets the requirements set. After registration, you will receive a unique company number, consisting of ten digits that also serve your VAT number.
- Register and activate your VAT number and fulfill the administrative requirements.
- Request a customs identification and EORI number.
- Join a social insurance fund for the self-employed and pay social security contributions.
- Join a health insurance fund to be eligible for sickness and disability benefits.
- Take out the minimum required insurance policies.

- When recruiting staff, join a social secretariat and take the necessary steps to register with the National Organ for Social Security (RSZ).
- Open a current account with a financial institution based in Belgium, under the company's name. It is also best to open a new account for a sole proprietor (instead of using a private account), which grants you the advantage of separating your commercial and personal transactions for more transparency. You must state the account number (together with the financial institution) on all commercial documents (letters, invoices, etc.).
- Depending on the region, a certificate of basic knowledge of business management and accounting could be required. The Federal and regional governments can foresee several initiatives for mentoring, coaching, and education in this respect.
- Depending on the sector, you'll launch your business in, you may require several certified skills or competencies. This is mainly the case for professions in the construction sector, food industry, care of persons, and motorized vehicles' sale and maintenance.

10.2.3 Types of Enterprise

Type of Business	Description	Specific Requirements or Rules (other than the ones listed under 10.2.2.)
<i>Liberal Professions</i>	<p>Independent professions that provide intellectual services or deliver certain goods.</p> <p>Some examples:</p> <ul style="list-style-type: none"> • Financial professions: accountant, auditor, tax consultant, etc. • Legal professions: lawyer, notary, bailiff, etc. • Construction sector: surveyor, architect, real estate agent, etc. • Health care: doctor, nurse, pharmacist, physiotherapist, psychologist, etc. • Other intellectual services: car expert, journalist etc. 	<ul style="list-style-type: none"> • Hold specific diplomas. • Present existing Training. • Respect the deontological code. • Work under the supervision of professional organizations called "order, institute, federal council, committee, or chamber." These professional organizations check whether you meet the conditions for exercising the profession involved.
<i>Sole Trader</i>	<p>This is the most common form of business among starters. You do not need a separate legal entity and therefore act as a natural person. One natural person with unlimited liability can set up the sole proprietorship/sole trader company.</p>	<ul style="list-style-type: none"> • No need to draw up articles of association. • No minimum starting capital required. • Usually (depending on turnover) simplified accounting is sufficient. • Profit made is taxed through your personal income tax; you do not file a separate tax return for your business. • The assets of professional activities are not separated from the personal assets of the entrepreneur. Therefore, the entrepreneur is responsible for meeting his company's obligations with all his property, which is not without risk. For example, in the case of bankruptcy, even the partner's assets may also be used to pay the company's debts unless a marriage contract provides otherwise. • The primary resident's risks are mitigated by a measure that may make the self-employed person's primary residence not subject to an attachment if certain conditions are met. That protection only applies to the self-employed person's principal residence, or in other words, the building where he resides for most of the year. The protection is not automatic; the self-employed person must have a declaration of seizure drawn up by a notary.
<i>Public Limited Company (NV/SA)</i>	<p>It is a company where at least two shareholders are willing to invest. Large companies mainly choose this form, but some SMEs also prefer it. This form of company is preferable when a lot of capital is</p>	<ul style="list-style-type: none"> • Emphasis on the financial contribution of the shareholders

	needed because it can appeal to new, foreign capital or savers, which allows for faster growth.	<ul style="list-style-type: none"> • Completely separate from its shareholders. Their liability is, therefore, limited to their investment. The shares can generally be easily transferred without restriction. It is a company form that has less of a familial character. • Must be established by notarial deed. • Starting capital of at least 61,500 euros. • More administrative requirements, in terms of accounting and decision making.
<i>Private Limited Liability Company (BVBA/SPRL)</i>	It is a company formed by one or more persons who only commit themselves to what they invest. Partners' rights can only be transferred under certain conditions. A single natural person can establish this company form. It is generally considered the most appropriate legal form for a small or medium-sized company.	<ul style="list-style-type: none"> • The company has its own legal personality and is, therefore, a legal person apart from the shareholders or the sole shareholder. • The company has its own equity. • Limited liability: shareholders only commit to their investment. In the event of bankruptcy, creditors cannot sue the private assets of the shareholders. However, there are exceptions to this principle for the shareholders, who are also founding partners. • Articles of association must be drawn up by notarial deed. • No minimum requirement for the initial capital, but it must be sufficient to take into account the company's activity.
<i>Co-operative Company with Limited (CVBA/SCRL) or Unlimited Liability (CVOA/SCRI)</i>	It is a company where the members work on shared objectives and share common values. It is a specific form of a commercial company characterized by a variable number of partners and capital. If the planned entrepreneurial project is part of the social economy, the cooperative legal form is the only one that allows the application for recognition as a social enterprise.	<ul style="list-style-type: none"> • It requires at least three founders. • It must be established by notarial deed. • The company has limited liability, where the shareholders are only liable for the amount of their investment. • The company's objective is to meet its shareholders' needs or interested third parties or develop their economic and social activities, including forming agreements, supplying goods, providing services, executing and performing various actions. • Investment the contribution in kind is the subject of a report drawn up by a company auditor (art. 6: 8 of the Companies and Associations Code). • The cooperative finality and the CV values are described in the articles of association and, where appropriate, supplemented by a more detailed explanation in internal regulations or a charter.
<i>General Partnership (VOF/SNC)</i>	It is a company established jointly and separately by liable partners. Its corporate purpose is exercising a civil or commercial activity under a company name. Every decision must be made unanimously.	<ul style="list-style-type: none"> • No imposed minimum capital. • Its existence is bound by the fate of the partners. • A company form with few formalities. • Partners remain jointly and separately liable for the obligations of the company.
<i>Ordinary Limited Partnership (GVC/SCS)</i>	This company has working and silent partners. The working partners are involved in the management. The silent partners are financial backers but have no say in the administration.	<ul style="list-style-type: none"> • Working partners participate as part of the board, while silent partners are only backers who have no say in matters. • No imposed minimum capital. • Only the working partners are unlimitedly liable for the debts and losses of the company. Silent partners are solely liable for their investment unless they have (co)-managed the company.
<i>Limited Partnership with Share Capital (CVA/SCA)</i>	It is a company established by one or more jointly and separately liable partners, referred to as managing partners, and one or more sleeping partners who provide a specific investment.	Due to a change in the Company and Associations Legal Code in 2019, this company form is phasing out. It is no longer possible to establish this type of company. Now NV/SA is what you should opt for.
<i>Non-Profit Organisation (VZW/ASBL)</i>	It is a group of natural persons or legal entities with a selfless purpose. The ASBL comprises at least three people.	<ul style="list-style-type: none"> • Established by a minimal private deed. • Members may not receive any material benefits/profit from the association.

		<ul style="list-style-type: none"> • Obligatory to draft articles of association "statutes," setting out the basic principles of the association • A General Assembly is required. This organ has to meet at least once a year to approve the financial accounts, take decisions such as changes in the statutes, nominate or reject members or directors. • A Board of Directors is required. This organ has to meet at least once a year to prepare the annual accounts and budget. The Board also represents the association in and out of court. • Keep an updated list of the members. • A non-profit organization's income must not be taxed. However, as compensation, the government has subjected non-profit organizations to a few other taxes, including the property tax and the legal entity tax. • Small non-profit organizations submit their annual accounts to the registry of the commercial court of their district, while larger non-profit organizations submit theirs at the National Bank of Belgium. • Small non-profit organizations may do a simplified accounting. Double-entry accounting is mandatory for large associations. Huge non-profit organizations must allow additional checks on their double-entry accounting by appointed supervisory directors/auditors.
<p><i>International Non-Profit Organisation (IVZW/AISBL)</i></p>	<p>It is a group of natural persons or legal entities with a non-profitable international purpose.</p>	<ul style="list-style-type: none"> • A company seat must be set in Belgium. • The statutes representing the organization's principles must be drawn up by notary deed. • The law does not require a minimum number of members, but an association means at least two members. However, to avoid inactivity, it is recommended that the association is composed of at least three people. • The Establishment of a Governing Body and General Management Body is obligatory. The statutes determine the form, composition, working method, and powers of these two bodies. • Small international non-profit organizations submit their annual accounts to the registry of the commercial court of their district, while other/larger organizations submit theirs at the National Bank of Belgium. • Small international non-profit organizations may do a simplified accounting. Double-entry accounting is mandatory for large associations. Huge organizations must allow additional checks on their double-entry accounting by appointed supervisory directors/auditors.

10.2.4. Financial support

There are various sources of financing for a company. The own resources are the resources that you can personally invest when starting your business (savings, goods in kind, etc.). However, in some cases, external resources are necessary, such as being financed by a bank loan based on a business plan.

The [recognized business counters](#) (link NL) can advise or refer you to the most suitable partners to finance your project.

The three regions also propose various aids and subsidies to help finance your business, depending on the sector of activity:

- Brussels Capital region (link EN): <http://werk-economie-emploi.brussels/en/support-and-subsidies>
- Flanders (link NL): <https://www.vlaanderen.be/kapitaal-en-krediet-voor-ondernemers>
- Wallonia (link FR): <https://www.wallonie.be/fr/demarches/demander-une-prime-investissement-pme-ou-grande-entreprise>

10.2 Starting a Business in Poland

Introduction

In Poland, most businesses are micro, small, and medium-sized enterprises. Establishing a new company in Poland has been significantly simplified in the last decade. Nevertheless, a company's administrative registration is just the beginning of the journey of setting up your business.

How to start?

After determining how you want to run your own business and what you want to do, you must apply for entry into the CEIDG (Central Register and Information on Economic Activity). You can do it electronically or traditionally by submitting a document to the municipal office.

For your company to be included in the CEIDG register, you must provide the following information:

- Company address;
- NIP, PESEL, (tax identification number and personal identification number);
- Activity code consisting of five characters arranged according to the Polish Classification of Activities;
- Email address, contact phone number (voluntarily);
- Type of taxation;
- Business start date;
- Bank account details (Poradnik Przedsiębiorcy, 2020).

Applying for a business activity of natural persons (CEIDG-1) in the city or commune office simultaneously notifies ZUS/KRUS (social security), GUS (statistic office), and the head of the tax office. This facilitates the administrative procedures for all future entrepreneurs. After applying for entry into the CEIDG, the entrepreneurs can start their activities (Poradnik Przedsiębiorcy, 2020).

Tax Declaration

It is necessary to submit information about your choice of taxation. As stated on the platform poradnikprzedsiębiorcy.pl (Poradnik Przedsiębiorcy, 2020), the new entrepreneur has four forms to choose from, as follows:

1. Taxation on general principles using the tax scale - 17% or 32%. This form does not have to be reported to the tax office; it is granted automatically.
2. Taxation at a 19% flat tax rate -; this form should be disclosed to the tax office. The immutability of the flat rate is its main advantage, especially if the income limit is exceeded.

3. Lump-sum tax on registered revenues; this form mandates tax to be paid only on revenue, and it is impossible to decrease tax-deductible costs. However, not everyone can choose this method of taxation.
4. Tax card is an option only for a person who does not use other companies' services, the spouse does not conduct the same activities and does not employ employees based on a mandate contract or a specific task contract.

Social Security and VAT Registration

It is necessary to fill in the appropriate form (known as "ZUS ZUA") to register a person who has both health and social insurance, or "ZUS ZZA" to register a person who only has health insurance. An entrepreneur starting a business can benefit from the so-called relief for start-up, which exempts him from any obligation to pay security contributions for the first six calendar months from the date of launching his business (Poradnik Przedsiębiorcy, 2020).

The VAT-R declaration necessitates the registration or update of your data on Value Added Tax (VAT). Thanks to this, the entrepreneurs can decide whether they want to be active VAT taxpayers or exempt under an act. The form also includes fields needed to register to conduct UE transactions (VAT-EU).

Other Obligations

Setting up your own business has several advantages, but entrepreneurs have numerous obligations, including keeping accounts in a manner that is consistent with the law. For instance, these programs may help the quick and convenient settlement of a company. Technology and online software have simplified accounting; besides all the essential functions of conducting independent accounting, they also offer several necessary tools to improve company management. This solution combines the accuracy of online software with accounting, tax and labor laws, and insurance expertise. Now, the entrepreneur can become a specialist in program operation (Poradnik Przedsiębiorcy, 2020).

10.2 Starting a Business in Romania

To legally conduct business, entrepreneurs have to register their companies. Legally registered companies allow entrepreneurs the opportunity to obtain financing (especially if it is European funds, for example), take credit from the bank, hire people, conclude business partnerships, and credibly collaborate with suppliers and customers.

In Romania, the person/group of people wanting to start a business can easily do so by following the legal regulations regarding the kind of establishment, registration, and forms as explained under Law 31/1990, with amendments (Law no. 163/2018).

An Entrepreneur's Journey

As a potential entrepreneur, before starting your own business for the first time, you must choose your organization or company's legal form. It can be SRL, limited liability company, SRL start-up, Individual Enterprise (II), Family Enterprise (IF), PFA (self-employment person).

To register your company, you must submit a request to the Trade Register Office in the area where your company is located. Depending on the type of the company you chose, the submission includes more or fewer documents that are listed below:

There are several steps to register a company. First, you must request verification of availability and/or firm reservation (original), which you must submit to the Trade Register Office. Second, you must register at the

Trade Register Office by filling in several documents and forms, including (Oficiul Național al Registrului Comerțului, 2014):

- Application-form O.N.R.C (National Office of the Trade Register);
- Constitutive Act (authenticated by a lawyer or notary public) that must elaborately clarify the primary and secondary objectives of the company, name of the company (with the reservation number issued by the O.N.R.C), associations, company administrators, contribution and share capital of each associate;
- Fiscal record of each of the associates and administrators of the company;
- Copy of the ownership deed over the space where the registered office, loan, or contract is established;
- Rental of the respective space;
- The owners/tenants association's agreement;
- The neighbors' (riparians') agreement;
- Copy of the C.I./Passport of the associates;
- Specimen signature of the administrator(s) of the company;
- The company associates' authenticated statements;
- The power of attorney of the associates for the person empowered to submit the file to the O.N.R.C. (Authenticated);
- Proof of depositing the share capital at the bank chosen by the company's associates;
- A statement (O.N.R.C. form) signed by one of the associates.

The most commonly used types of companies in Romania are SRL (Limited Liability Company and PFA (self-employed person).

Other formalities

To register as a new company, the future entrepreneur should deposit the share capital. For instance, “the share capital for limited liability company is 200 lei. After being deposited in the bank and the company is established, the money can be withdrawn from the share capital account and used”(Startup cafe, 2015). Furthermore, you must pay a judicial fee and stamp duty to register the company.

Regarding the VAT regulation, it's good to mention that any newly established company in Romania is a non-paying VAT. To become a VAT payer, “it is necessary for the company to exceed a turnover threshold (around 300,000 lei) or if it has not exceeded it, to apply for obtaining the VAT status to ANAF” (Planul de afaceri, 2017).

Different European and national programs allow entrepreneurs to apply for funds to develop their business ideas. To have access to funding, “young” entrepreneurs have to follow several steps as mentioned below:

1. Develop your business idea, and identify a specific need;
2. Search for a funding program (like start-up nation, Regional Operational Program, Competitiveness Operational Program, National Rural Development Program, and Fisheries Operational Program);
3. Ensure that you are an eligible applicant;
4. Develop your business plan;
5. Collect all the documents to demonstrate that you are a qualified applicant;
6. Submit the project to the responsible authority.

Once your business idea is approved, you have to sign a contract, implement the project, and monitor if everything goes accordingly.

10.2 Starting a Business in Spain

Entrepreneurship and innovative business solutions will probably play a vital role in the next years to better adapt to the rapidly changing environment we live in and become more resilient to face global challenges.

According to Ipyme (n.d.), you can start your business with the Information Center and Business Creation Network (CIRCE) information system in Spain. This information system allows you to carry out a telematic form, procedures for constituting, and launching commercial companies. The CIRCE system facilitates the communication and finalizes agreements between entrepreneurs and all organizations and administrations involved in establishing companies. The entrepreneur will only have to fill in the Single Electronic Document (DUE) that includes several forms. CIRCE will automatically carry out all the necessary procedures to establish the company, communicating with all the agencies involved (Tax Agency, Social Security, Mercantile Registry, Notary, etc.).

The types of companies that can be established through CIRCE are:

- Individual Entrepreneur (Autonomous);
- Limited Liability Company (SRL or SL);
- Successive Formation Limited Company (SLFS);
- New Company Limited Company (SLNE);
- Community of goods;
- Civil society.

You can also go to an Entrepreneur Service Point (PAE)⁸, where you can receive advice related to defining your business project and initiating the company formation procedures.

The procedures to be carried out depending on the type of business you want to create are detailed below (Plataformapyme):

Generals		
Procedure	Description	Organization
Registration in the Census of entrepreneurs, professionals and retainers	Census declaration of commencement, modification or cessation of activity to be submitted for tax purposes by individual entrepreneurs, professionals and companies.	Tax Agency (AEAT)
Economic Activities Tax	It is a tribute derived from the exercise of business, professional or artistic activities.	Agencia Tributaria (AEAT)
Registration in the Special Regime of Self-Employed Workers (RETA)	It regulates the Social Security contribution of self-employed workers (individual entrepreneurs), community members and the partners and administrators of some companies	General Treasury of Social Security
Registration of Partners and Administrators in Social Security Regimes	Registration in the corresponding Social Security system will be conditioned by the type of company and/or participation in the share capital.	General Treasury of Social Security
Obtaining and legalizing the Guestbook	Companies are not required to acquire or fill out any kind of book to record the actions of the Labor Inspection.	Provincial Labor Inspection
Legalization of the Book of Minutes, the Register Book of Partners, the Book-register of registered shares and the Record Book of contracts	The current legislation obliges mercantile companies to keep some record books (of minutes, of partners or of shares) and	Provincial Commercial Registry

between the sole partner and the company	annually present them in the Provincial Mercantile Register.	
Legalization of the Daily Book and the Inventory and Annual Accounts Book	All businessmen, who keep their accounts according to the provisions of the Commercial Code, must prepare the following accounting documents: a Daily Book and an Inventory and Annual Accounts Book.	Provincial Commercial Registry
Obtaining an Electronic Certificate	The electronic certificate makes it possible to sign electronic documents and unequivocally identify the owner of the signature.	Certification Authorities

Depending on the activity

Procedure	Description	Organization
Activity License	Installation and work licenses, activity licenses and operating licenses.	Town Halls
Registration in other official bodies and/or registries	Depending on the activity carried out, the start of the activity must be communicated to those administrations, authorities and/or registries.	Other official Bodies and/or Registries

In case of Hiring Workers

Procedure	Description	Organization
Company Registration	Registration is the administrative act by which the General Treasury of Social Security assigns the employer a number to identify and control their obligations (contribution account code).	General Treasury of Social Security
Affiliation of Workers	Administrative act by which the General Treasury of Social Security recognizes natural persons their inclusion for the first time in the Social Security System	General Treasury of Social Security
Registration of workers in the Social Security Regime	Every employer, who hires workers, must report the registration in the corresponding Social Security Regime.	General Treasury of Social Security
Registration of Employment Contracts	This procedure consists of carrying out the legalization or registration of the employment contracts of workers employed by others.	Spanish Public Employment Service
Communication of the Opening of the Work Center	Once the Company is established or decided by the employer to initiate its activity, the opening of the workplace must be notified in order to control the conditions of Occupational Health and Safety.	Regional Employment services (autonomous communities)
Obtaining the Work Calendar	Companies must reveal the work calendar in the workplace make it visibly accessible.	Provincial Labor Inspection

Complementary

Procedure	Description	Organization
Registration of Distinctive Signs	The Distinctive Signs are used in industry and commerce to distinguish the products or services of a company from other competitors in the market.	Spanish Office of Patents and Brands

Specific Procedures

Procedure	Description	Organization
Bars, cafes, restaurants and hotel establishments	Opening Authorization	General Directorate of Tourism of Autonomous Communities
Travel Agencies	License Title Application	General Directorate of Tourism of Autonomous Communities
Fixed Capital and Variable Capital Investment Companies	Authorization of Incorporation	General Directorate of the Treasury and Financial Policy (Ministry of Economy and Business)
Industrial activities, repair shops, warehouses for toxic or dangerous substances, manufacturing companies for any product	Industrial Registry	General Directorate for Industry, Energy and Mines of Autonomous Communities
Security Companies	Registry	Secretary of State for Security (Ministry of the Interior)
Food industries and establishments (No retailers, supermarkets or hypermarkets)	Registry	Regional Health Service
Game material companies (all)	Registry	General Directorate for the Regulation of Gambling (Ministry of Finance)
Construction activities, electrical installations and/or repairs, wood and cork sector and engineering and consulting activities	Business Qualification Documentation	General Directorate for Industry, Energy and Mines of Autonomous Communities
Individuals who are engaged in electrical, gas, air conditioning and pressure equipment installations	Card or Certificate	General Directorate for Industry, Energy and Mines of Autonomous Communities

10.2. Starting a Business in Sweden

Introduction

Despite its high taxes and living costs, Sweden has the highest survival rate for new companies (74%) and a considerable number of start-ups (companies that have existed for over three years), amounting to 20 start-ups per 1,000 employees (The Atlantic, 2017). Indeed, “Stockholm produces the second-highest number of billion-dollar tech companies per capita, after Silicon Valley” (ibid).

The fact that Sweden seems to be attractive and supportive of new businesses can be traced back to several deregulation processes in place since the 1990s, culminating in significant tax breaks for starting and owning a business and reduced corporate taxes. The country’s collaborative culture and welfare system also play an essential role in encouraging new businesses to start.

As such, “Sweden does prove that a dynamic economy can coexist with relatively high taxes and a robust safety net” (ibid). However, to start a new business and profit from this context, knowing the country’s system and particularities is crucial to achieving success.

How to start a business in Sweden:

1. Define your business idea;
2. Develop a clear business plan and related financing;
3. Choose the type of business enterprise you want to establish (sole trader business, trading partnership, limited partnership, limited company, economic association);
4. Register your business at Swedish Tax Agency;
5. Select the correct SNI (Standard Industrial Classification; in Swedish, Svensk Näringsgrensindelning);

6. Protect your business and all the related information.

Source: Verksamhet.se (2019).

Types of Business Enterprises:

Type of Business	Description	Number of owners	Capital Requirement	Registration	Taxation
Sole trader (enskild firma)	A sole trader runs and is responsible for a business as a private person. Your personal identity number will identify the business. You can, but it is not mandatory, to register the business with the Swedish Companies Registration Office; this can protect your business name in the country, where you are registered.	Only one individual	No	With the Swedish Tax Agency and, possibly, the Swedish Companies Registration Office	F or FA tax (FA tax for income of both business and employment)
Trading Partnership	It is a type of business that is run by at least two individuals. It must be registered with the Swedish Companies Registration Office. The registration number and business name of the company are obtained through the registration. The trading partnership name is protected in the county where it is registered. A "partnership agreement" or "articles of partnership" needs to be established before registering the business with the Swedish Companies Registration Office. This written agreement demonstrates both partners' commitment to operating a trading partnership and sets aspects such as, e.g., the division of labor, the distribution of profits or losses, what happens if a partner wants to leave, etc.	At least two individuals or enterprises	No	With the Swedish Companies Registration Office and the Swedish Tax Agency	The partnership: F tax Partners: SA tax (special debited A tax)
Limited partnership	A limited partnership is similar to a trading partnership. However, what differs is that in a limited partnership, there are two different kinds of partners:	At least two individuals or enterprises	Not for a general partner; at least SEK 1 for limited partners	With the Swedish Companies Registration Office and the Swedish Tax Agency	The partnership: F tax Partners: SA tax (special debited A tax)

	general partners (responsible for all the debts of the partnership) and limited partners (responsible only for the capital that they invested in the company).				
Limited Company (Aktiebolag)	A limited company can be established by one or more natural persons or enterprises. It requires a minimum of SEK 25,000 in share capital, which can comprise funds or property that the company uses. Before registering the company, a document called a "memorandum of association" is necessary to start the company. This document contains a draft of the articles of association and the shares of the company. Once registered, the limited company will receive a registration number. Moreover, the registration provides nationwide protection of the company name.	At least one individual or enterprise	Minimum of SEK 50,000	With the Swedish Companies Registration Office and the Swedish Tax Agency	The company: F tax The owners: A tax (employees)
Economic Association	An economic association is established by the members of the association, who also write the regulations. An economic association is based on democracy, commitment, and responsibility. An association "is created to enable members to benefit financially from the association's operations" (Verksamt.se, 2019). Typically, every member gets to vote at the general meetings of the association. Once registered with the Swedish Companies Registration Office, the economic association will receive a registration number, which protects the company name nationwide.	At least three individuals or enterprises	In the form of a cash or work investment	With the Swedish Companies Registration Office and the Swedish Tax Agency	The association: F tax The members: A tax (employees)

Table adapted from Verksamt.se (2019).

Source: Verksamt.se (2019).

Other important procedures:

- Open a bank account.
- Get an insurance.
- Establish a bookkeeping system and learn about the taxation system.

Important taxation dates in Sweden: 2nd May Declaration Deadline and 12th May VAT Declaration Deadline.

Requirements for Starting a Business in Sweden:

- Be a citizen, have a temporary or permanent residency, or be in the process of obtaining asylum (coordination number needed)
- Have a reliable financial history and current situation
- Do not be accounted for commercial prohibitions (näringsförbud)
- Be 16 years-old or older

Learn more about starting a business in Sweden on:

- <https://www.verksamt.se/>
- <https://www.skatteverket.se/serviceankar/otherlanguages/inenglish/businessesandemployers/registeringabusiness/startingabusinessinsweden.4.12815e4f14a62bc048f51be.html>

Tax Declaration in Sweden:

- A-tax (A-skatt): is paid by individuals who have a taxable earned income.
- F-tax (F-skatt): is paid by companies/business owners who have income from business activities
- Value-Added Tax, VAT (Moms): all business owners dealing domestically in goods or services in professional business activities are liable to pay VAT. However, entrepreneurs are entitled to decrease VAT, paying the difference between the VAT charged on your sales and that paid on your purchases.
- Personal contributions (Egenavgifter): is paid by a sole trader or partner in a trading partnership, i.e., a person with income from active business activity. The fee is based on the profit of the company and is used to finance social security systems such as sickness benefit, unemployment benefit, pension, and health care, but their design and size vary between countries.
- Employer contribution (Arbetsgivaravgifter): when you pay wages and remuneration, you as an employer must report and pay employer contributions and deducted tax to the Swedish Tax Agency.

Source: Verksamt.se (2019).

Common Ways to Acquire Funding for your Business:

- Own funds or Internal financing
- Loan from bank
- Loan from ALMI
- Credit from suppliers
- An advance payment from customers
- Bank Business credit.

Other Possibilities:

- Vinnova: funds research and innovation projects that may not become a reality without government support. This involves everything from climate-smart meat alternatives to researching and experimenting with how robots can help the elderly. Check www.vinnova.se.
- Start-your-own business grant from Arbetsförmedlingen (if you are unemployed or might be):
- Apply for stipends
- Crowdfunding
- Investment Companies
- Investment from individuals. Check: <https://connectsverige.se/>.

More advice can be found here: <https://www.verksamt.se/starta/finansiera-starten/hitta-offentlig-finansiering>.

Additional Information and Support:

National networking opportunities

- LunchIn networking (<https://lunchintra.net/>)
- BNI Network (<https://bni.nu/>)
- Start-Up Bar (<http://startaochdriva.se/startupbar/>)
- Events by Företagarna (<https://www.foretagarna.se/>)
- Global Women Club (<https://globalwomanclub.com/clubs/stockholm/>)

Malmö based Networking Opportunities:

- Djäkne kaffebar
- MINC
- STPLN
- Media Evaluation
- Start-Up Bar Malmö

Support Centers for Business Coaching and Advice in Sweden:

- Skatteverket: organizes webinars and face-to-face courses to explain how the Swedish tax system works.
- Nyföretagarcentrum: offers business counseling and seminars. Check: <https://www.nyforetagarcentrum.com/>.
- Drivhuset offers business coaching and seminars. Check: (<https://drivhuset.se/en/>).
- Almi offers business counseling, seminars, and providing loans. Check: (<https://www.almi.se/>).

Examples of Local Support Centers (around Malmö):

- Almi Företagspartner Malmö (<https://www.almi.se/>)
- [Companion Skåne](https://skane.companion.se/) Malmö (<https://skane.companion.se/>)
- Nyföretagarcentrum Östersund (<https://www.nyforetagarcentrum.se/>)
- Drivhuset (<https://malmo.drivhuset.se/en/>)
- Ideon Innovation Lund (<https://www.ideoninnovation.se/>)

- Malmö Stads Företagslots at the Kontaktcentrum (<https://www.malmobusiness.com/malmo-stads-foretagslots/>)
- International Women's Organisation Malmö (<https://www.ikf.se/>)
- Medeon incubator (<https://www.medeon.se/sv-se/Om-Medeon/Om-Medeon>)
- Tillväxt Malmö (<https://tillvaxtmalmo.se/>);
- STPLN (<https://stpln.org/>)
- MINC (<https://www.minc.se>)

Websites with Business Advice Information:

- Verksamt: (www.verksamt.se)
- Driva Eget: (<https://driva-eget.se/>)
- Företagande: (www.foretagande.se)

ANNEX V

Annex V

The circular economy is a complex process that requires new ways of conducting business and a new vision to create value and extend the products' life cycles.

For entrepreneurs attempting to start their own business, it is challenging to introduce circular principles and find solutions like recycling, reducing resource consumption, extending products' life span, etc.

We designed this workshop to help entrepreneurs embrace the essence of circular economy and facilitate experimentation. This workshop is addressed to any entrepreneur to familiarize them with the circular economy principles and exercise a circular business model.

Objectives of the workshop:

- Familiarize the attendees with the circular business model concept;
- Explore the circular business model canvas;
- Reflect on how the circular economy principles can help your business grow.

Introduction

What is a Business Model?

In the simplest terms, the business model represents the method and strategy a business or organization uses to operate, including the vision, the people involved in the organization systems, the services offered, and the relation with customers. According to Investopedia dictionary, a "business model is a company's plan for making a profit. It identifies the products or services the business will sell, the target market it has identified, and the expenses it anticipates" (Kopp, M.2019).

A Business model in Circular Economy

The business model in a circular economy represents a shift in how goods are produced and consumed. In a circular economy, a "business and organization, has the potential to drive the transition towards a more resource-efficient and significantly reduce the environmental pressure resulting from economic activity" (Organisation for Economic Co-operation and Development, 2018).

Unlike the traditional business model, the circular business model modifies the flow of products and materials within the economy; it reduces the adverse environmental side-effects resulting from the extraction or disposal of materials. The circular business model can be perceived as a long-term business that can create a fundamental change in production and consumption patterns. Therefore, a circular business model tries to respond to some emerging questions regarding climate change and scarcity of resources, reduce virgin resources and find alternatives to extend products' life, minimize resource extraction and waste generation rates, and efficient use of products, etc.

The Circular Business Principles

The circular business model aims to redefine classical businesses by focusing more on the circular benefits of social and environmental reality than the consumption of finite resources and profit.

According to the Ellen MacArthur Foundation (2017), the circular business model is based on three principles:

- Design out waste and pollution;
- Keep products and materials in use;
- Regenerate natural systems.

The first principle entails redefining waste and how we perceive pollution. The objective is to change people's mindsets and to come up with new ways to design and use materials and products to ensure that businesses do not generate waste in the first place.

The second principle promotes the idea of circular and continuous use of products and materials within the economy. Before launching a new business, businesses can design products and components that can be re-used, repaired, or remanufactured.

The third principle focuses on actively contributing to protect and improve the environment. In this matter, "by returning valuable nutrients to the soil and other ecosystems, we can enhance our resources" (Ibid) and adopt the principles of circularity.

"The forum of young global leaders, The circulars 2019" brochure offers good examples of circular business models; its goal is to present and promote the best individuals and organizations who have made notable contributions to the circular economy. All awarded businesses show circular innovation and implementation, among which are:

1. Close The Loop has created "an asphalt additive that significantly improves the characteristics of asphalt, making superior quality road surfaces that have a 65% increase in fatigue life and improved resistance to deformation"(The circulars, 2019). Close The Loop utilizes the equivalent of 530,000 plastic shopping bags and waste toner from over 12,500 printer cartridges for every kilometer of road.
2. Olleco is a company with a very holistic approach operating in the food industry. Their unique perspective consists of bringing together food businesses in their attempt to embrace the circular economy and respond to their needs by providing both sustainable waste processing and renewable fuels. Their method involves continuous investment in national collection and processing infrastructure in the food industry. By "deploying advanced anaerobic digestion and biorefinery facilities, Olleco completes the loop for businesses, helping them promote sustainability agendas"(ibid).

Workshop Preparation

Osterwalder & Pigneur developed the business model canvas, which incorporates the principles of a circular economy.

The CANVAS circular business model can be completed individually or run through a workshop with 3-5 participants. To prepare the workshop, print out the CANVAS circular business model, annexed to this document.

Step One:

Fill in the CANVAS circular business model. Consider each section from a business perspective and what you would like to include. When you fill it in for the first time, expect there to be gaps. It's okay not to know exactly how everything will work.

Step Two:

Reflect on each point written in the canvas model and its approaches to implement each one.

Where can you include the circular economy principles in the business model?

Is your organization creating value for the next generations?

How do you plan to solve the waste problem?

Will the legislation help you to create a circular business model?

Please keep in mind that you can continuously come back, and improve your business plan strategies, taking into account the circular economy context.

Step Three:

Pitch your idea to the team, share the outcomes with them. Elaborate on how the implementation of different circular strategies can help your business plan.