



Module 7. Rethink the business model for sustainable development

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MODULE 7. RETHINK THE BUSINESS MODEL FOR SUSTAINABLE DEVELOPMENT

Despite the rising environmental concerns, the climate change/crisis, and the high-tone alert that the world's resources are becoming even more scarce, the majority of the world's economies continue to rely on the **conventional linear economic model of cheap energy and easily available resources**. This approach is distinguished by a one-way flow of materials: from raw materials to products and, eventually, to waste.

On the other hand, **sustainability**, is a concept which is gaining more and more traction in today's economic world, and it is mainly achieved through exploring and implementing the concept of **circular economy**. Circular economy strongly emphasizes on an economy which is restorative and regenerative by design, and aims to keep products, components and materials at their highest utility, and value at all times. This economic model seeks to ultimately decouple global economic development from finite resource consumption.

The majority of businesses have made some efforts to become more sustainable, yet we frequently find organizations that are trapped in this transitional phase. The emphasis put on specific cost centres, frustrates the holistic decision-making, and is frequently the source of the delays in embracing a more sustainable way of operations. Businesses are often faced with a situation where specific departments make divisive judgments based on what works best for them, and their financial success, and not for the whole well-being of the company, its social, environmental and economic impact. **This fragmented decision-making frequently fails to see and analyse the complete resource cycle of an organization, as well as the broader benefits of taking a totally different strategy.**

Therefore, in this module, we will explore the importance of rethinking the current business models of SMEs across Europe, and examine the benefits of transitioning to a more sustainable way of thinking. After completing this module, you will be able to:

- *Distinguish between the linear economic model vs the circular model*
- *Understand basic terms around sustainability*
- *Explore a business model based on Circular Economy*
- *Understand the environmental consequences of choosing the linear economic model*
- *Practice your sustainable way of thinking through Case Studies*

Looking towards a more sustainable future, we need to consider that **“We cannot solve our problems with the same thinking we used when we created them”**, thus adapting our business models is the key to achieving a real change.

7.1. The linear economic model vs the circular model

“Circular economy embraces the need to redesign our economy, in a way that we can re-design products so they can be ‘made to be made again’. This sustainable way of thinking, helps to work effectively at all scales – for large and small businesses, for organisations and individuals, globally and locally. Moving to a more circular approach, requires mostly a systemic change that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits”. (Ellen Macarthur Foundation, 2020)

The World Economic Forum has officially defined Circular Economy as below: “A circular economy is an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse and return to the biosphere, and aims for the elimination of waste through the superior design of materials, products, systems, and business models.”

In today’s economy, society is benefiting from many of products that are both diverse and cover almost every need a human brain can imagine! This increased growth has been however fuelled by the continuous use of natural resources. Today, more than ever, the industry is heavily and extensively using the world’s natural resources. But based on pure economic principles, resources are scarce. So, it is only expected that natural resources will not be available for quite a long time still. Bare also in mind, that the planet’s ability to regenerate itself is slow, and such a process could take hundreds of years.

Therefore, with the clock ticking, a more circular approach as to how we reduce consumption, reuse materials and products, and recycle waste, is essential if we want to continue to enjoy products that cover all our needs without wasting all earth’s resources and damaging the environment!

Did you know that adopting a circular approach could boost EU’s resource productivity by 3% by 2030, generating cost savings of 600 EUR billion a year, and 1.8 EUR trillion more in other economic benefits? (McKinsey & Company, mapping out circular economy benefits, 2016)

The numbers really speak for themselves. Let’s check out some more benefits.

But first, let’s observe the 3 basic principles of the circular economy model:

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

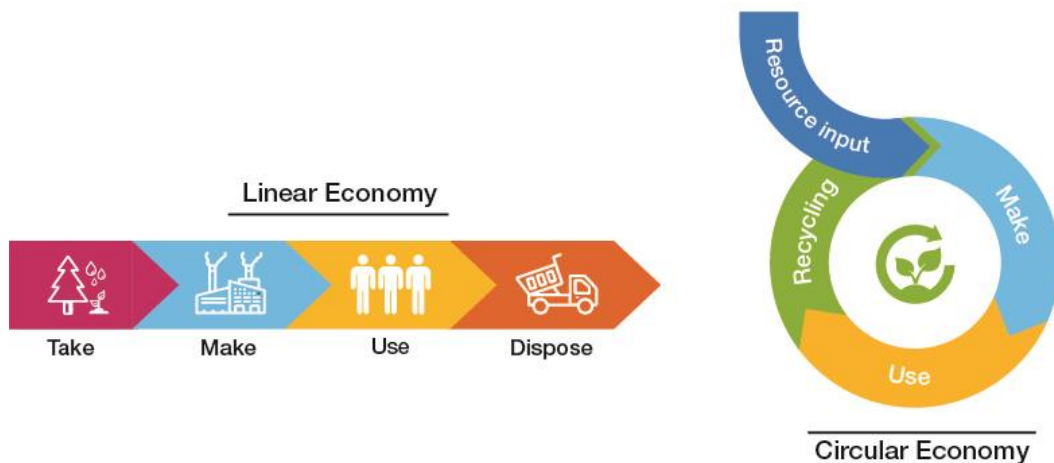
Can you imagine what would happen if waste and pollution never happened in the first place? Or what about, building a world which uses things rather than using things out? Last but not least, what if we could, not merely protecting the environment but, actively helping to improve it?

A circular economy approach can really help to achieve the cornerstones of this model. In terms of designing out waste and pollution, the circular economy model, can, in fact, design the negative impacts of economic activity, so these can be prevented. In an

effort to map out such negative impact examples, we could refer to hazardous substances, air pollution, land and water alike, etc.

Circular economy, applicable to the conservation of goods and resources in use, achieves the design longevity of products, reuse, remanufacture and recycle to sustain the circulation of products, parts and materials in the economy. Additionally, the CE model is strongly emphasizing the effective use of bio-based material, in a way that it promotes different uses of these materials; a cycle is created and these materials are circulating between the economy and natural systems. Lastly, in relation to improving the environment, the circular economy model invests in the use of renewable resources; a typical example being the area of mobility, which encourages the use of renewable.

Figure 1. Energy instead of fossil fuels.



Source: <https://www.locusresearch.com/think/blog/2019/08/business-value-circular-economy>

Referencing again the concept's definition CE aims to improve resources' performance and fight the volatility that climate change might bring to businesses. The CE model brings so many benefits on a multiscale level (i.e., economy, business, environment and society) and as such it carries the potential of creating value in systems and economies alike.

So how is circular economy basically different from a linear economy?

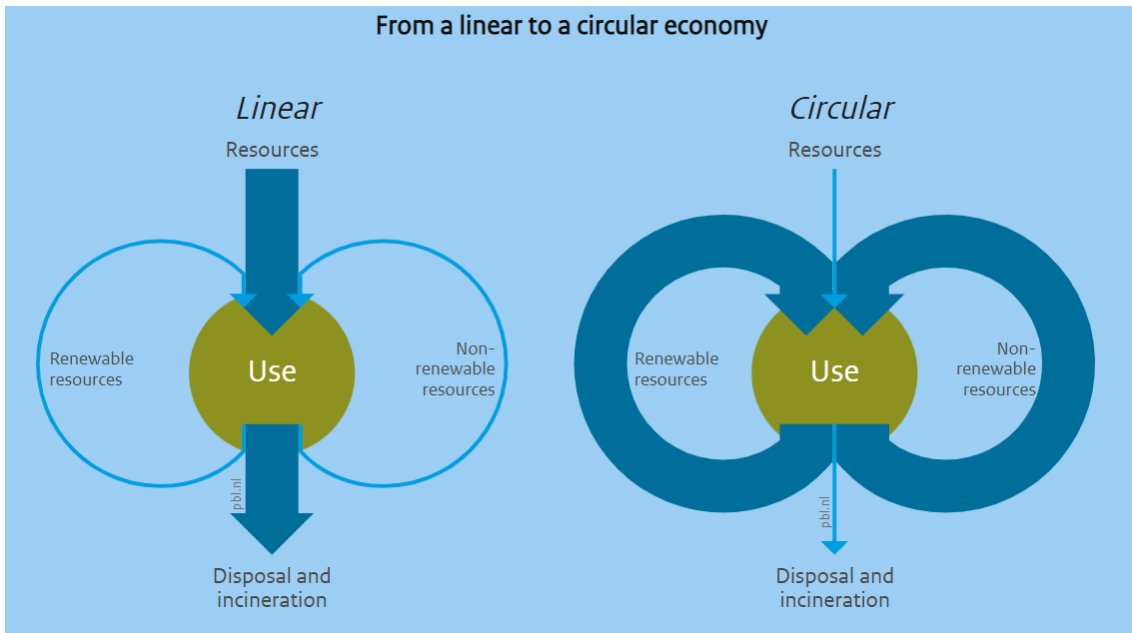
To put it simply, **“in a linear economy we mine raw materials that we process into a product that is thrown away after use. In a circular economy, we close the cycles of all these raw materials. Closing these cycles requires much more than just recycling. It changes the way in which value is created and preserved, how production is made more sustainable and which business models are used”**¹.

Therefore, in contrast to what is happening when basing your operations on the linear economic model, the circular economy model, **is making optimal use of raw materials and resources**².

Figure 2. From a linear to circular economy

¹ <https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/how-is-a-circular-economy-different-from-a-linear-economy/>

² <https://themasites.pbl.nl/o/circular-economy/>



Source: <https://themasites.pbl.nl/o/circular-economy/>

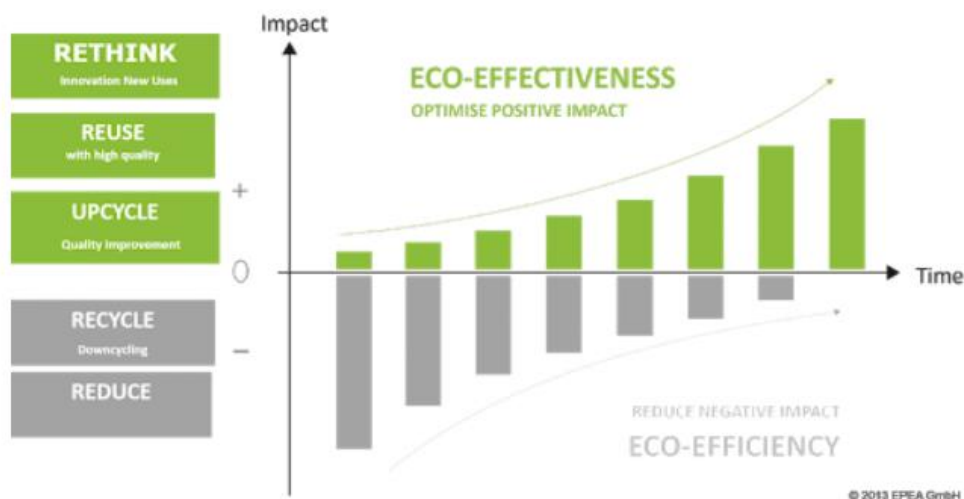
It is very important to understand, that converting a linear economy to a circular economy necessitates system modifications, or transition. Other designs or techniques (for example, 3D printing), items that can be repaired or regenerated, material recycling, and a different way of thinking about things (for example, sharing them) are all parts of such a transition.

	Linear	Circular
Step plan	Take-make-dispose	Reduce-reuse-recycle
Focus	Eco-Efficiency	Eco-Effectivity
System boundaries	Short term, from purchase to sales	Long term, multiple life cycles
Reuse	Downcycling,	Upcycling, cascading and high grade recycling.
Business model	Focuses on products	Focuses on services

Prioritizing strategies based on the 'Rs' is a good rule of thumb for selecting the greatest value reuse of resources within the cycle (Rethink, Redesign, Reuse, Repair, Remanufacturing, Recycling, Recover). There will, however, always be exceptions.

A circular economy has a different view on sustainability than a linear one. When working on sustainability within a linear economy, the emphasis is on eco-efficiency, which implies minimizing the ecological effect while producing the same output.

Figure 3. Effectiveness



Source: EPEA GmbH, 2013

This will increase the time it takes for the system to become overwhelmed (Di Maio, Rem, Bald, and Polder, 2017). In a circular economy, sustainability is pursued via enhancing the system's eco-effectiveness. This indicates that not only is the environmental impact minimal, but the environmental, economic, and social impact is even beneficial (Kjaer, Pigosso et al., 2019). By focusing on eco-effectivity to make a beneficial influence, we boost the ecological, economic, and societal systems.

Summary

In this subunit we have identified the basic terminologies behind the Circular Economy and the Linear Economic Model. The main differences have been identified, while the adoption of Circular Economy has been linked with the broader sense of sustainability.

Questions for reflection

- How is a circular economy different from a linear economy?
- Why is a sustainable way of thinking so important for businesses?
- What is needed to change our way of thinking on all levels?

7.2. Circular Economy Business Model

“Currently, over 90% of the resources that are used globally do not return in the economic system. Only 9,1% of our society can be characterised as circular.” (De Wit et al., 2018b).

Our society is a society comprised of organisations.

Everything we are is organized by, for, and with one another. The pattern that underpins how we organize is based on the industrial model, which aims to turn raw resources into products. This is done extremely efficiently within the organization. The (implicit) premise is that the lifespan of items should be as brief as feasible, even if they are fully usable from a material standpoint. Based on the notion of 'planned obsolescence,' this results in a stimulation of as high a turnover rate as feasible.

This means that things are broken down or rendered obsolete after a specific and restricted time period, and it underlies the so-called **'take-make-waste' manufacturing paradigm, which is built on linear value chains.**

The implementation of the circular economy necessitates fundamental structural transformation. This new system necessitates the development of new business models. Companies must get insight into which business model matches the organization and is promising for the chain in order to adopt the various business models.

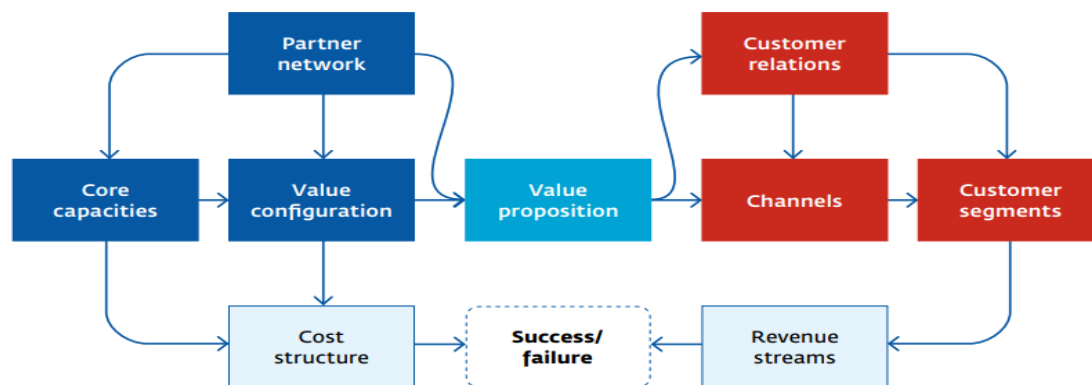
In a nutshell, the circular economy is founded on the concept of keeping resources in circulation for as long as possible and utilising them at the maximum potential value throughout their lives. To do this efficiently, a large-scale strategy is required since material fluxes must be of significant volume. When compared to a linearly organized economy, such an economy will shrink considerably. Less mining and manufacture of new items is required, but things are used for considerably longer periods of time, contributing to value creation and value retention.

“Value retention as a collective task means that a **shift occurs from an organisation-centric perspective to co-creating and co-maintaining a cycle that creates value over time at various moments by re-entering that what already exists ((raw) materials, products) into new transactions.** This results in a collective business model, based on a value cycle-centric organisational perspective. Recycling shifts from something that occurs at the end of the value chain to a central principle for the design and organisation of a cycle.”

“Over 61% of the total input of materials are being used for so-called 'short-lived products'; the lifespan of these products is usually less than a year.” (De Wit et al., 2018b)

A business model (BM) is the method through which organizations organize the generation of value. The traditional definition of a business model (see figure 2) consists of three components. First, consider the logic of value creation, or the value proposition: what extra value is being generated financially, as well as socially and environmentally? Second, how this value generation is organized inside a single organization or, in certain situations, across numerous parties. To do this, various building elements like as clients, channels, expenses, and activities must be linked logically to enable the fulfilment of the aim, the profitable supply of a certain commodity or service.

Figure 4. Business Model



Source: Business model (Adapted from Osterwalder, A. 'The Business Model Ontology', 2004)

In the new era of sustainable business models there are three types of business models, worth mentioning:

- *platform business models*

We live in a world full with 'things. Many of these items are rarely or infrequently used (for example, automobiles, parking places, but also clothes and tools). Wouldn't it be preferable to enhance the usage of such features (drilling, dressing, mobility) by allowing more people to benefit? Capacity and availability can be considerably better 'brokered' using a platform, which means less stuff has to be built. Intensifying use is thus prudent, but not always sustainable. Anyone who can combine capacity, need, and accessibility in an intelligent way has a business model. Thus, platform models contribute directly to the move to services and may be very successfully coupled with the other two types of business models.

- *community business models*

People are more eager to invest in their own means, community, power, and so on, as long as these investments offer some type of 'return.'

New business models develop when these two phenomena intersect.

As a result, we are seeing individuals form energy cooperatives, shared mobility schemes, local do-it-yourself energy supported by blockchain technology as a method of transaction, and so on. Ordinary folks contribute money (crowdfunding) and time (time banking) to create a community business model.

- *circular business models*

The organization of value retention between and by organizations around the redesign of several interrelated material and product cycles is at the heart of circular business models.

The parties concerned must agree on a joint business proposition.

A circular business model, in essence, is a description of how value generation and retention are organized amongst partners (at a certain moment, in a specific place, and

given the available resources). A circular business model demonstrates the logic of value generation via the use of a set of building blocks.

Often, the above mentioned business models can be very well combined.

A circular business model, however, consists of several other building blocks, and together with the contextual factors in which business models exist. The introduction to this model occurred during the Dutch national research on Business Models for the

Circular Economy (BMCE) which took place in 2016 and 2017.

It is worth mentioning the five building blocks:

Cycles: the core concept of circular entrepreneurship is the organization of cycles in which products, components, or (raw) resources may be used repeatedly. The nature of the cycle, as described above, determines how frequently it occurs and at what cost.

Value: Organizations that strive for numerous value creations, including social, ecological, and financial; companies that end a cycle but do not produce any long-term value cannot be described as a circular business model. They make no contribution to an economy that runs within the confines of the earth.

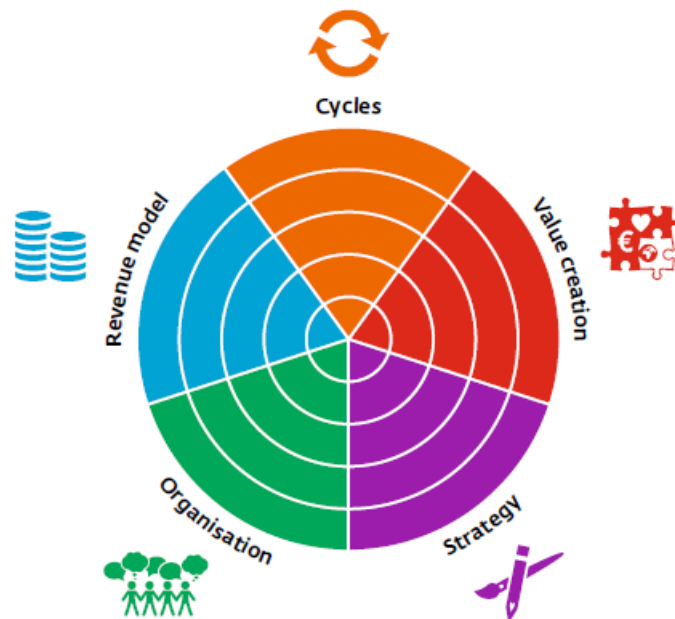
Strategy: It is critical that the point of sale of a product is no longer the primary determinant of value creation, but rather the delivery of added value throughout the product's existence. This **Creating** implies a greater long-term engagement with one or more clients for a single product.

Organisation: a CBM (Coordinated and cooperative organisation) requires the coordination and cooperation of numerous value production processes. This must be supported by a proper underlying organizational model. Because no organization can conclude a full cycle on its own, organizational frameworks must facilitate communal organizing.

Revenue: CBMs must be accompanied by appropriate revenue models.

Turnover is produced differently than in traditional value chains, for example, over time (e.g., centered on product-as-a-service with a leasing contract) or as a result of value co-creation. When single transactions are no longer the focus, but rather the 'lending' of a product's function, a slew of new revenue models develop, including leasing structures, but also pay-per-view, pay-per-print, and so on.

Figure 5. Building blocks of circular business models



Source: CBM (Original)

Finally, but most critically, one feature of the model should not be overlooked. Closing a cycle is not a goal in and of itself, but it is all about partners cooperating and working together to arrive at a collective value or collective business offer. When working on the CBM, the proposal serves as both the beginning point and the end point. The collective value proposition is the heart of the company model and hence not a component. We can now see the basic line of reasoning if we combine the CBM model, the key principles of the circular economy, and the linked building blocks.

In this submodule we have learned about the importance to transitioning to a circular business model, and how it can be achieved.

Questions for reflection

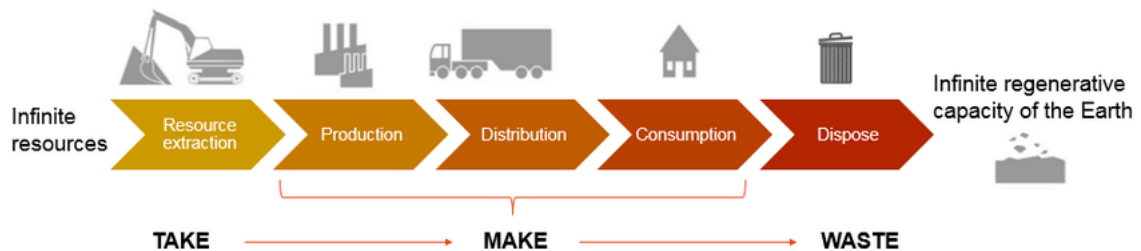
Which are the five building blocks of CBMs?

What is needed to achieve the shift to a more circular business model?

7.3. Environment and the Linear Economic Model

The environmental impacts of today's "take, make, waste" or "linear" economy are dramatic and extensive. Resource extraction has tripled since 1970 and it is projected to grow by another 70% by 2050, with the impacts of climate change, biodiversity loss and pollution being felt all around the world.

Figure 6. Type of conversation



The statistics showing the adoption of the circular model show that only 8.6% of operations is circular. A rapid shift to a more circular economy, could dramatically cut resource use, and coupled with decarbonization, can deliver a low carbon and lower environmental impact future.

It is becoming increasingly evident that "business as usual" is unsustainable for both people and the environment. The sixth Global Environment Outlook (GEO-6) demonstrated how a healthy environment is vital to human health and well-being.

Aside from serious environmental problems and the danger of variable resource prices, businesses are confronted with substantial technology advancements as well as the following external change factors, which are promoting the move to more circular business models:

- *policy environment changes,*
- *investor demands,*
- *the need for greater business and supply chain,*
- *resilience,*
- *changing consumer preferences,*
- *the impact of COVID-19.*

Overall, the cornerstone of circular business strategies revolves around these areas:

- *designing products and services with minimal,*
- *resource use from the start to allow for circularity,*
- *and longevity,*
- *designing out waste and keeping chemicals of concern away from recycled material streams at,*
- *all stages of the value chain,*
- *designing in renewable and recyclable resources,*
- *to help develop the market for sustainable and second-life materials and to reduce a company's,*
- *reliance on virgin materials,*

- *designing in regenerative raw materials to help reduce material use.*

The circular economy's original purpose is to have a beneficial influence on natural systems without depleting or overloading them. This is evident in the circular economy's environmental advantages. A circular economy, for example, emits less greenhouse gases, preserves land, air, and water, and protects natural reserves.

So, what are the environmental benefits of circular economy?

Less greenhouse gases

By following the principles of the circular economy, greenhouse gas emissions are automatically reduced on a global scale. Climate change and the use of materials are closely linked. According to Circle Economy calculations, 62% of global greenhouse gas emissions (excluding those from land use and forestry) come from the extraction, processing and production of goods to meet society's needs; only 38% are emitted in the supply and use of products and services (Circle Economy, 2019).

Vital soil, air and water bodies

The economic use of circularity provides important ecosystems such as soil, air, and water bodies. These ecosystems provide cleansing services, goods such as productive farmland, pollination, and safe drinking water. In a linear economy, these services are eventually exhausted by continual product extraction or overwhelmed by toxic dumping. When these goods are employed in a cycle, the soil, air, and water bodies stay resilient and productive. (SYKE, 2018).

Conservation of nature reserves

Raw material extraction and waste disposal have a detrimental influence on natural reserves. These natural spaces are critical for the preservation of ecosystem services (as previously described), as well as natural and cultural heritage. Currently, many governments and organizations are primarily concerned with safeguarding nature from the exploitation and disposal of raw resources and garbage. To systematically protect wildlife, exploitation and dumping must be stopped in general. This is accomplished through the circular economy (SYKE, 2018).

In this submodule we have learned about the benefits of circular economy to the environment.

Questions for reflection

Is circular economy important for the protection of the environment?

Which are the benefits of the model towards protecting the environment?

7.4. Case studies

Case study 1. The model linear economic model vs the circular

Stora Enso

Website: <https://www.storaenso.com>

One of the largest private forest owners in the world, Stora Enso is a market leader in sustainable goods including paper, wood, biomaterials, and packaging. According to company's philosophy everything that is currently made of fossil-based products can be produced from trees in the future. In 2021, Stora Enso had 10.2 billion euros in sales and employed about 22,000 people. Shares of Stora Enso are traded on Nasdaq Stockholm AB and Nasdaq Helsinki Oy (STEAV, STERV) (STE A, STE R). Additionally, the shares are traded as ADRs in the USA (SEOAY).

With its renewable goods, Stora Enso addresses the challenges of global sustainability and adds value to the bioeconomy. The company concentrates on innovation while also satisfying consumer need for environmentally sustainable and circular solutions.

Characteristics of the subject and description of the problem

Stora Enso has made a commitment to advancing a more sustainable future that supports the bioeconomy rather than fossil fuels. The business support the use of wood as a renewable resource in the creation and consumption of goods. Products composed of wood fibers can absorb carbon while also replacing non-renewable resources such as plastic, steel, concrete, and fossil fuels. The dedication of the company to renewable resources extends beyond its raw materials. Additionally, it is connected to logistics and supply chain, resource traceability and responsibility, and manufacturing and material efficiency. From the plantation or forest to the finished product, they work responsibly and in accordance with local laws and regulations. Along with their continued emphasis on human rights and direct involvement in the areas in which they operate, Stora Enso also continues to advocate for carbon neutrality. Every action the company does, strives to satisfy customers and position Stora Enso as the finest provider of renewable solutions.

Challenges & Contribution to environmental protection

The business strategy of Stora Enso places sustainability at the center of their business activities. Climate change, biodiversity, and circularity are the three areas where the company has the greatest influence and potential to modify the materials system.

Stora Enso has set new 2030 goals for these three key sustainability priorities through its enhanced science-based targets. Stora Enso pledges to cut its operational absolute scope 1 and 2 greenhouse gas (GHG) emissions by 50% by 2030 compared to the base year of 2019. Additionally, Stora Enso makes a bold commitment to reduce scope 3 GHG emissions by 50% from the base year of 2019, by 2030. The science-based targets have been accepted by the Science Based Targets initiative. The company commits to use active biodiversity management to achieve a net-positive impact on biodiversity in its own forests and plantations by 2050. Finally, a collection of initiatives have been devised and launched to increase biodiversity on a species, habitat, and landscape level by the year 2030.

Solution introduced

Stora Enso produces wood-based solutions to help create a society that is more sustainable and circular. Stora Enso offer products and services through six corporate divisions: Biomaterials – sells pulp, Packaging materials – sells paperboard, Forest – sells wood, Packaging solutions – sells corrugated fiberboard, Paper – sells paper for printing and Wood products – sells construction products.

Case study 2. Circular Economy Business Model

Circular Computing

Website: <https://circularcomputing.com/about/>

Circular Computing is a British startup which remanufactures laptops. Its goal is to alter how people throughout the world purchase computers. The Circular Computing team developed a vision in 2015 to build the first factory in the world designed only for remanufacturing laptops. Circular Computing opened a remanufacturing and worldwide distribution hub in February 2017 in UAE, because of the country's capacity to attract skilled and creative technicians.

Characteristics of the subject and description of the problem

In order for people to live in a better world with a brighter future, Circular Computing delivers sustainable laptops without sacrificing performance or quality. After breaking down each laptop into its component pieces, Circular Computing fixes and repaints the covers, palm rests, bezels, and keyboards to resemble the original models. These repairs and paints come in matt, gloss, and soft-touch finishes. The process of remanufacturing also includes replacing broken components. Each laptop then goes through Aiken testing and a least 3-hour stress test that puts all of the major components under heavy use. The startup then offers remanufactured laptops with a warranty of at least 12 months.

Hewlett-Packard (HP) which is a well-known computer manufacturer has taken an unprecedented step by promoting Circular Computing carbon-neutral laptops to customers alongside a brand-new model. Additionally, HP is currently undertaking a direct mail campaign in Denmark for the new Elitebook 840 G6 laptop, which also includes the Elitebook 840 from Circular Computing. The mailer explains that the Circular Computing Elitebook 840 functions and looks just like a brand-new machine under the headline "We believe in reincarnation." This highlights a very important support for Circular Computing's strategy for sustainability in IT market.

Challenges – Contribution to environmental protection

The goal of Circular Computing's carbon reduction project investments is to mitigate the effects of global warming by collaborating with reforestation partners in Africa, India, and the USA. Circular Computing, plants five trees for every laptop it delivers and invests in people and the planet. Just 240 Circular Computing laptops are needed to cover a space the size of a football field with trees. Over trees lifetime the trees will absorb on average 600kg of CO₂ and will help to compensate the carbon emissions associated with each laptop, including 3 years of use. So far Circular Computing has planted 267,783 trees.

The reuse and sustainability benefits per laptop are:

- 40-50% saving against the cost of new,

- 380 kg of CO2 eq saved,
- 1,200 kg of natural resources saved,
- 190,000 l of water preserved,
- zero eWaste as laptops are taken back and the process is repeated,
- no labour or human rights issues (not 'made' in sweatshops),
- 5 trees are planted creating a CO2 reduction benefit of around 600 kg over 20 years,
- sustainable IT.

Solution introduced

Many of the Earth's finite resources, including water, precious metals, minerals, and greenhouse gas emissions, that are used in the initial production of every new laptop are directly avoided throughout the remanufacturing process. Additionally, the method prevents e-waste from growing as a result of the needless disposal of a functional laptop.

Through the unique Circular Computing remanufacturing process, 99% of the original materials required to make a laptop are reused while the remaining 1% is recycled and turned into pallets. There are more than 180,000 spare components in Circular Computing inventory, and nothing is ever thrown away.

Case study 3. Environment and the Linear Economic Model

Excess Materials Exchange

Website: <https://excessmaterialsexchange.com>

Excess Materials Exchange (EME) is a Dutch start-up that offers a digital business-to-business (B2B) matching platform for recycling materials or waste products. It provides the products or materials with a digital identification using barcodes, QR codes, and RFID chips. The digital identity offers a summary of the substance, source, toxicity, and safety of releasing such compounds. The software then makes recommendations for potential reuse options based on the materials' monetary, environmental, and social value.

Characteristics of the subject and description of the problem

EME is a young, creative technology company that works with businesses to identify new, high-value reuse alternatives for materials, products and waste streams which are considered worthless.

EME is committed to fundamentally altering the waste game by introducing a cutting-edge method of doing business that quickly will become the standard. This will expedite the transition to a circular economy and help everyone to do his part to maintain a clean environment for future generations.

Challenges – Contribution to environmental protection

Too many valuable resources and materials are currently wasted or ill-designed, for which the planet pays a heavy price.

By demonstrating the economic and ecological value of materials, pressuring businesses to design and create their products in a more efficient and circular way, and setting up alliances, Excess Materials Exchange is dedicated to hasten the transition of the world to a circular economy.

Solution introduced

A digital platform offered by EME maximizes the utilization of the surplus commodities and products in the world by matching them to their most valuable applications.

According to EME's experience, material flows have an average financial value increase of 110% and an average ecological footprint reduction of 60%. The EME approach depends on four tools:

1. **Resources Passport:** The Resources Passport is a standardized, modular format that gives any material a unique identity. This (digital) passport provides information on the item or product, such as its composition, origin, toxicity etc.
2. **Tracking and Tracing:** Using barcodes, QR codes, and chips as tracking and tracing identifiers, EME can successfully compare physical items to their digital twins, which is the Resources Passport. The ability to do so allows for the possibility of life-cycle observation.
3. **Valuation:** By quantifying the monetary, environmental, and social effects of materials, products, and waste streams, EME enables data-driven decision making between a range of potential next uses.
4. **Matchmaking:** EME links the material, product, or waste stream to a new, high-value reuse option across sectors using a combination of artificial intelligence and human knowledge.

7.5. Quiz

- 1. What are the steps of circular economy model?**
 - a. Take – Make – Use
 - b. Take – Make – Use – Dispose
 - c. Reduce – Reuse – Recycle
 - d. Take – Make – Recycle
- 2. What is the difference between circular and linear economy?**
 - a. In linear economy model products are thrown away after their use vs in circular economy model raw materials and resources are used as long as possible
 - b. Linear economy model emphasizes on resources conservation vs circular economy has no concern of products ecological footprint
 - c. Linear economy model aims only to high profitability vs circular economy model targets sustainability
 - d. Correct answers a & c
- 3. Which are the most common sustainable business models?**
 - a. Platform business model & Community business model
 - b. Platform business model & Community business model & Circular business model
 - c. Circular business model & Platform business model
 - d. Circular business model & Business model canvas
- 4. Which are the environmental benefits of circular economy?**
 - a. Less greenhouse gases
 - b. Vital soil, air and water bodies
 - c. Conservation of nature reserves
 - d. All the above
- 5. What is the main purpose of the circular economy?**
 - a. To have a beneficial influence on natural systems without depleting or overloading them
 - b. To help reduce material use
 - c. To design products with minimal resource use
 - d. To change consumers preferences
 - e. To stop the disposal of raw materials
- 6. Which are the 3 basic principles of circular economy business model?**
 - a. Design out waste and pollution & Regenerate natural systems
 - b. Keep products and materials in use
 - c. Options a & b
 - d. Option b & Regenerate natural systems

7.6. Figures

Figure 1. Energy instead fossil fuels

Figure 2. From a linear to circular transition

Figure 3. Effectiveness

Figure 4. Business Model

Figure 5. Building blocks of circular business models

Figure 6. Type of conversation

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