ENSURE

EntrepreNeurs for plasticS'circUlaR Economy

IO1 – Training Course Material

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1. Desktop research

1.1. The concept of Circular Economy

1.1.1. Origins

The origins of the concept “closing the loop”, come from the report of the Club of Rome “The Limits To Growth” published in 1972. A few years later, Walter Stahel (Swiss architect) and Geneviève Reday (socio - Swiss economist) presented the concept in a report for the European Commission in 1976 with the aim of creating jobs and reducing energy consumption.

The circular economy also finds its origins in two theories that appeared in the 1970s: the regenerative economy (“Regenerative design” by John T. Lyle, landscaper) and the performance economy (“The Potential for Substituting Manpower for Energy by Walter Stahel and Geneviève Reday).

The term "circular economy" was first used in 1990 in the book "Economics of Natural Resources and the Environment" by David W. Pearce and R. Kerry Turner. In the years that followed, the Cradle-to-Cradle concept presented by William McDonough and Michael Braungart also aimed to convert the linear model into a circular model.

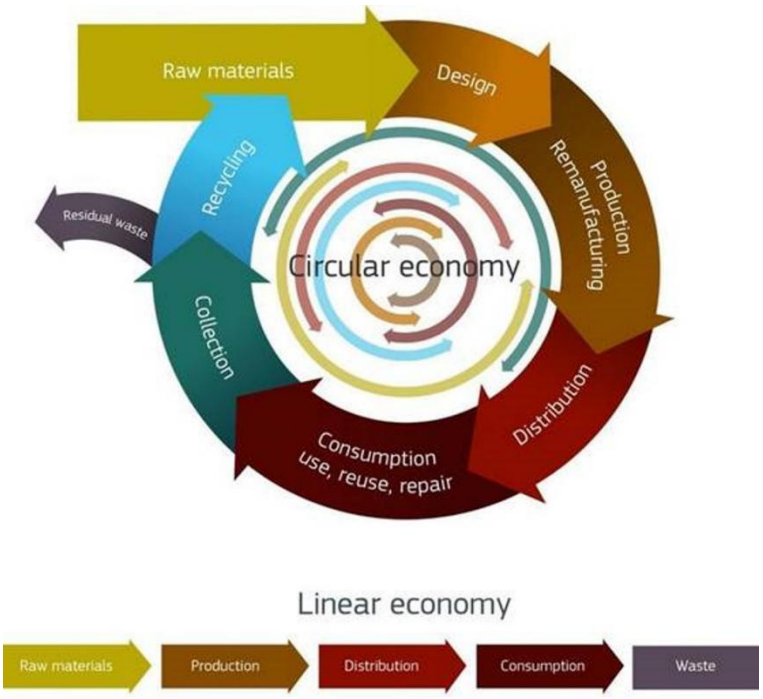

Figure 1 : Circular Economy versus Linear Economy

Source: https://gbbinc.com/in-the-news/circular-economy-creating-an-industrial-ecosystem

1.1.2. Definitions

The circular economy (CE) is a regenerative system in which resource consumption and waste production, emissions and energy use are minimized by slowing, reducing, and closing energy and material cycles.

This can be achieved through durable and repair-friendly design, maintenance, repair, re-use, remanufacturing, refurbishing, and recycling. Whereby Recycling is the means of last choice.

The opposite of the circular economy is the linear economy or throwaway economy. In this process, a large proportion of the resources used are landfilled or incinerated after the respective useful life of the products, and only a small proportion are recycled or reused. Since the industrial revolution, the global economic system has had a linear structure: Lifestyles are thereby oriented towards the consumption and one-time use of goods, resulting in the sequence of extraction, production, disposal in the supply chains. This linear economic model of mass production and mass consumption is obviously at odds with our global boundaries and the idea of sustainability.

The basis for considerations of the closed-loop principle is therefore the realization that in a world with finite resources, only production processes with a true material loop can continue indefinitely.

The rapid climate change that is currently underway on planet Earth and endangers our habitat should further spur us to use our finite resources more sustainably, produce less waste, and thus reduce our CO_2 consumption.

The circular economy basically distinguishes between the technical and the biological cycle in which economical activities take place:

In the biological cycle are exclusively materials in use that can be returned to nature. The products are designed to be harmless to the environment. The renewable products are used to create new products that are harmless to humans and the environment too. Examples for businesses in the biological cycle include organic farming, biogas plants or producing products out of renewable and compostable materials.

The technical cycle includes all production- and input-materials taken from the earth by mining and extraction of fossil fuels. Circular businesses in the field of the technical cycle are e.g. repair services, returnable systems or rental services (e.g. “Use instead of own!” or “Product as a service”).

In one sentence: The circular economy tries to use resources, materials, and products as long and as sustainable as possible and then to return all components of the product to the technical or biological cycle.

In the case of the technical cycle, it is also important to remember that every time the product is destroyed in his structure, e.g., while recycling, the energy that was used to manufacture the product gets lost. Therefore, measures like repair and reuse are always much more sustainable than recycling at material level. Only when all upstream life-prolonging measures have been exhausted, recycling is an appropriate choice of the circular economy.

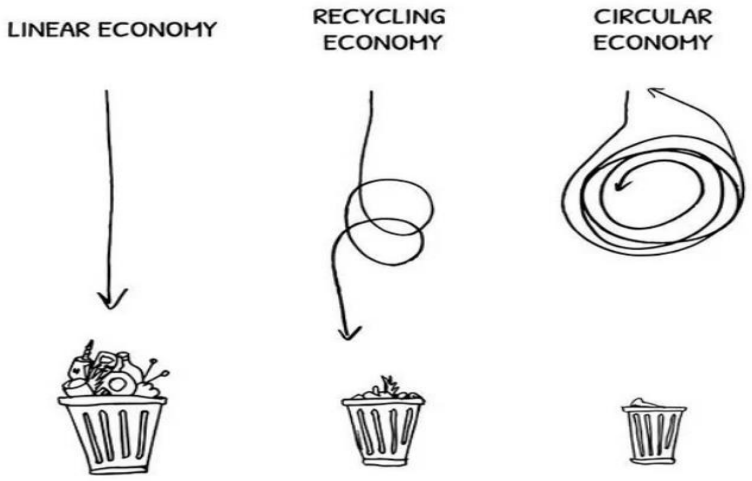

Figure 1: Different waste management concepts

The transformation of our economy from a linear to a circular model will enable us to save money, achieve more efficient use of resources, generate jobs, and reduce the impact of production and consumption on the environment. The circular economic model recognises that raw materials and other resources are not infinite and proposes 'circularity' as a solution to reduce waste. However, more than being just a shift to waste reduction and increased recycling, the circular economy represents a paradigm change, a new way of thinking and a new approach to economic activity. In a circular economy, materials that can be recycled are injected back into the economy as new raw materials, thus increasing the security of supply. These "secondary raw materials" can be traded and shipped just like primary raw materials from traditional extractive resources.[1]

Various areas face explicit difficulties with regards to the circular economy, as a result of the specificities of their products or value-chains, their environmental footprint or dependency on materials from outside Europe. These areas should be tended to in a designated way, to guarantee that the collaborations between the various phases of the cycle are completely considered along the entire value chain. An example of these materials that are still part of the linear economy are plastics; increasing plastic recycling is essential for the transition to a circular economy. According to The *Monitoring Framework for Circular Economy,* circular economy indicators are water, waste management, energy, raw materials, and urban metabolism.[2]

The circular economy offers opportunities to the environment, the economy, and society. It is therefore an essential vehicle for aligning existing efforts towards environmental, economic, and social impact. As the circular economy puts forward new ways of creating value and relating to the world around us, it changes the world of work.[3] CE has gained popularity in recent years, owing to the potential for economic gains linked with it. Indeed, a circular strategy lowers costs, both for businesses and society while also mitigating risks, promoting economic activity, creating jobs through product and service innovation, and reducing the negative environmental effects of business. The time dimension

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52015DC0614&from=FR
[2] https://epale.ec.europa.eu/en/blog/circular-economy-promoting-entrepreneurship-and-self-employment-initial-findings-u-eco-project
[3] https://assets.websitefiles.com/5d26d80e8836af2d12ed1269/5e6897dafe8092a5a678a16e_202003010%20-%20J%26S%20in%20the%20circular%20economy%20report%20-%20297x210.pdf

is key with any significant shift in any economic model, and while there are immediate benefits, the biggest pay-off from adopting a circular economic model comes in the long run.

In March 2020, the European Commission approved a New Circular Economy Action Plan (CEAP), one of the cornerstones of the European Green Deal, the EU's new strategy for long-term growth. The EU's move to a circular economy will relieve pressure on natural resources while also generating long-term growth and job opportunities.[4] It is also a requirement for meeting the EU's 2050 climate neutrality goal and halting biodiversity loss. The new action plan details actions that encompass the whole product life cycle. It tries to prevent waste and keep resources utilised in the EU economy for as long as possible by focusing on product design, promoting circular economy activities, and encouraging sustainable consumption. It introduces legislative and non-legislative initiatives that are aimed at areas where action at the EU level brings real added value. The CEAP refers as plastics as one of the main concerns regarding the CE transition because the use of plastics in the EU has grown steadily, but less than 25% of collected plastic waste is recycled and about 50% goes to landfills.[5]

The Seven Pillars of the Circular Economy:

1. **Sustainable supply** chain concerns the mode of exploitation, extraction of resources, by limiting waste and energy consumption for both renewable and non-renewable energy. This pillar is related to private and public purchases (companies and public sectors).

2. **Eco-design** is considering the entire life cycle of a good or service form its elaboration, construction, use and end of life by minimizing its environmental impact. It is an important element for the product strategy of a company.

3. **Industrial and territorial ecology** constitutes new types of collaborations and exchanges between companies through mutualization. This pillar aims to optimize the resources on a territory, whether in terms of energy, water, materials, waste but also equipment and expertise, via a systemic approach inspired by natural ecosystems.

4. **The functional economy** favors the use over possession and tends to sell product-related services rather than the products themselves.

5. **Responsible consumption** must lead the buyer, whether he is an economic actor (private or public) or a citizen consumer, to make oriented choice by considering the environmental impacts at all stages of the product's life cycle (goods or services).

6. **The extension of the period of use** by the consumer leads to repair, sale or second-hand donation, or second-hand purchase as part of reuse.

7. **Recycling** aims to use raw materials from waste.

[4] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
[5] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52015DC0614&from=FR

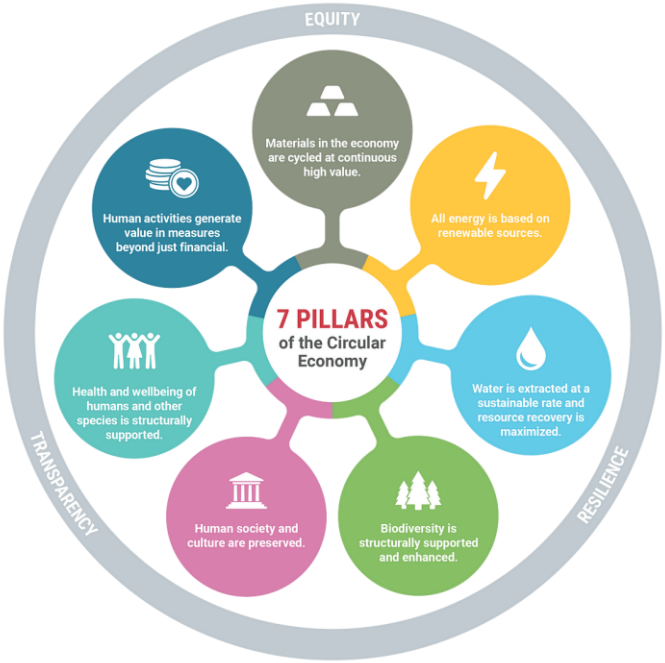

Figure 2: The Seven Pillars of the Circular Economy

Source: https://www.metabolic.nl/news/the-seven-pillars-of-the-circular-economy/