

CIRCULAR ECONOMY IN THE EUROPEAN CONTEXT

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Abstract:

The authors start from the present status of the linear development model that leads towards a deficit of resources, prices volatility, a growing volume of waste, pollution, and, in the end, climate changes. It is shown that the Europe 2020 Strategy regarding intelligent, sustainable and inclusive growth needs a transition towards a circular economy. This is based on the industrial system of recovery, waste disposal and obtaining subsidiary material resources. In the authors' vision, stimulating transition towards circular economy will increase the global competitiveness of E.U., will support sustainable economic development and will generate new jobs. In the end of the article there are highlighted the main elements of the European Union action plan regarding circular economy, as well as the implementing measures.

Key words: circular economy, linear development model, sustainable economic growth, secondary material resources, waste

JEL Classification: A12.

1. Let's leave the linear model.

The economies of the developed countries in the West, as well as the global economy in general, are based on the consumer consumption current supported by the **linear growth model**. In such a model, the primary resources are taken over, processed, sold (consumed, used and then discarded). The residues that take the form of **waste** are stored or incinerated. In other words, this linear growth model involves large quantities of processed raw materials and **a lot of energy**. Symbolically, such a linear pattern can be represented as in Fig. 1:

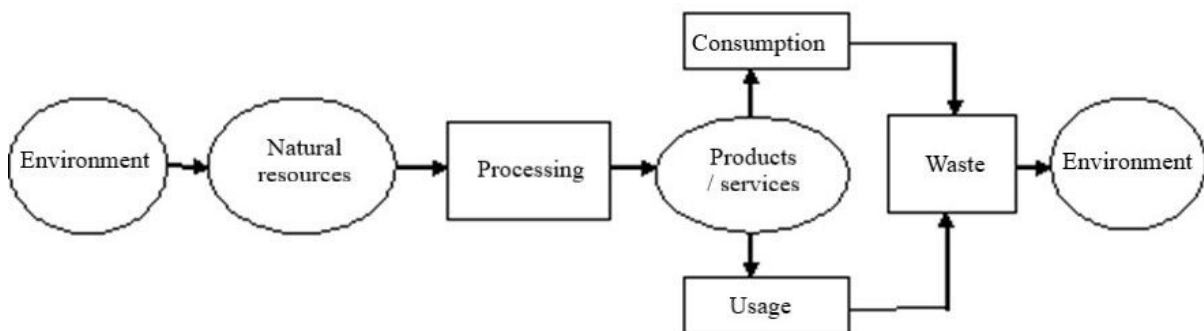


Fig 1. The linear model

In a resource wasting awareness video³, it is shown that after processing, there is left very little useful material in the finished product. Some papers show that over 90% of natural resources become waste in the manufacturing industry. Moreover, as a result of **the planned wear and tear**, almost 80% of the finished products are thrown into the first six months of their **life cycle**. As a result, such a model is not sustainable in the foreseeable future of the world's **population**, the intense **demand** for natural resources and energy as well as the environmental degradation (as a result of pollution and usage of technologies by **the consumer society**). There is a need for a production-consumption binomial responsible for

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³ ovestea lucrurilor (bunurilor de consum) - Story of stuff - Annie Leonard - Romanian subtitles, <https://www.youtube.com/watch?v=nhEKMf7FFOk>

the sustainable development. The economists in dialogue with ecologists and politicians increasingly highlight the unsustainability of the **linear model** and its **negative** effects:

- resource shortage
- the price volatility of these resources;
- the waste generation;
- the environmental pollution;
- the degradation of the health of the living whole (Popescu and Tasnadi, 2009);
- the climate changes.

The studies on the European economy, especially of the EU countries, show their significant dependence on the **import** of natural resources. EUROSTAT data show, in the last decade (2008-2018), a significant **trade deficit** of around 1000 million tonnes.

Resources are becoming less accessible and more expensive. All companies in the EU economy are facing a **strong competition** (in terms of access to resources) being ultimately affected by the **competitiveness** of the European economy.

2. The need for a new model. Change of mentality.

"We cannot solve problems using the same type of thinking we used when we created them" – Einstein said.

Therefore, **mitigating**, even **limiting**, those negative effects of the linear model implies a new approach, a change of mentality. By **recycling** (The Circular Economy Engine), **secondary resources** can be obtained in order to reduce the **resource** and **environmental** stress.

The transition to a circular economy model can lead to an increase in the **competitiveness of the EU economy**. It is the opinion of the experts of the European Commission.

Those products at the end of their life cycle are to be **recycled** or **dismantled**. They can then be reused by turning them into secondary resources. Because the circular economy is based on the "loop closure" principle, its construction implies:

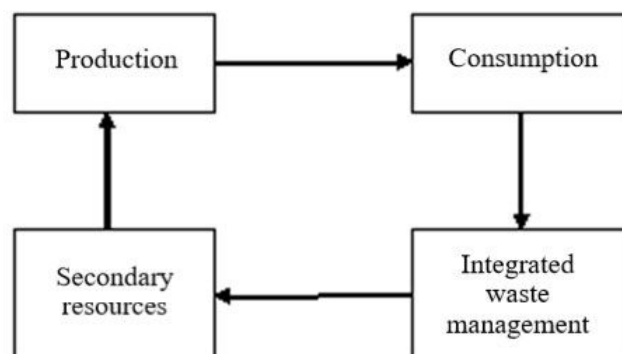
- the repair and reuse;
- the waste and secondary raw materials management;
- dismantling and reuse.

This will **increase the value** obtained on the production-consumption binomial. Switching to this model will contribute to:

- waste reduction;
- Decreasing environmental degradation;
- Lower production costs.

At the same time, the **circular economy** facilitates the retention in the economy of a longer duration, the value of products, the value of resources and materials. It helps to minimize the production of new waste. The process could be illustrated in a simple way as in Fig. 2:

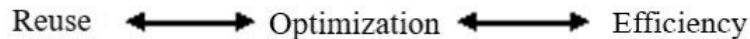
Fig. 2. Running the product life cycle



The Ellen MacArthur Foundation (Circular Economy Overview, 2016) shows that the circular economy model contributes to reducing the **carbon emissions** and **protecting the environment**. Keep in mind that this model is the basis for the green, smart and inclusive economic growth. Such a growth is generating jobs.

The assimilation of this model also involves several risks. Firstly, investments in machinery and technology for integrated systems can have an impact on short-term profits. Secondly, there is a relatively small market for products resulting from recycling, dismantling, repair or reprocessing.

The principles underlying the circular pattern form a triad:

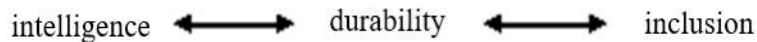


Within this it is reused the natural resources transformed by the waste processing. Thus, there is obtained the protection of the **natural capital**. The organic household waste follows the **biological cycles** that turn them into compost. The materials coming from recycling follow a **technical cycle**. The efficiency in the use of primary resources generates positive effects. This leads to the reduction of pollution, to health, to the release of toxic substances and to the mitigation of climate change.

3. Thinking about the future generations.

The implementation of the circular model in the EU Member States' economy also takes into consideration the transition to a new type of growth: **smart, sustainable** and **inclusive**. As a result, more and more emphasis will be placed on the key development directions in the 2020 Strategy for future generations mentioned in the **concept of sustainability** as well as in the creation of new industries and new **jobs**.

The model of circular economic development envisages the triad:



These three directions, implemented through concrete actions of **economic policy** (at both Community and national level) aim at:

- A. **Smart Growth** – which focuses on Knowledge, Innovation, Education and the Information Society (including Artificial Intelligence).
- B. **Sustainable Growth** – which takes into account the resource efficiency in connection with increasing competitiveness, expressed by the symbolic relationship:

where: e – resource efficiency

Q – production (output)

R – resources (input)

c – the competitiveness factor.

Such a policy alleviates the scarcity of resources (saving for future generations).

- C. **Inclusive growth** – which refers to (directly or indirectly) future requirements:

- participation in the labor market (employability);
- assimilation of new skills;
- identifying new ways to reduce poverty.

The actions of the 2020 Strategy, through their implementation, are aimed at the **recovery of the European economy**. The 2008 economic crisis has highlighted unsustainable trends (such as the linear growth model). These tendencies cannot be ignored in the future because their proliferation will lead to the downfall of the living for the future generations.

During the crisis, Europe has experienced a **development deficit** that needs to be recovered.

In this sense, it is necessary to exploit the benefits that we have (for example, waste recycling technologies) through the Community and the national **economic policies**. Since 2012, after the crisis, the World Economic Forum in Davos (Switzerland) put the problem of "The Great Transformation" and, within it, adopting new models based on knowledge, low carbon emissions and new jobs generators. It is actually a "battle" of all the significant actors of Europe, to move to a new **paradigm of development**.

Let's go back to Einstein's thought: "The world we have created is a process of our thinking. It cannot be changed without changing the thought." In this sense, we can adopt "ecology", a new way of thinking and living (Popescu, 2017). Of course, this is a **global, holistic** approach. No EU Member State can find on its own effective solutions to respond to the global challenges. All 27 savings are interconnected. Everybody must learn lessons from the economic and financial crisis.

At the same time, this is the **synergistic effect** of the community economy, as a result of the collaboration, of working together. Only by **coordinating the economic policies** the effects can be positive. A failure of the 2020 Strategy may mean the "lost decade", which has as its ingredients: the unsustainable growth, the environmental and human health degradation, the decline in the living standards and the permanent rise of the unemployment.

The economic development promoted by the mentioned triad (intelligent, sustainable, inclusive) takes place parallel to the realization and support of social and territorial cohesion. The 2020 strategy requires bringing **social responsibility** to a higher level.

It is up to the Heads of State and Government to assume and support the programs and packages of measures adopted by the European Commission. The commitments made by each country are translated into concrete actions that are monitored by the European Commission. Looking ahead, actions under the Europe 2020 strategy and the Growth and Stability Pact will lead to a change of mentality, a change of dialogue between politicians, economists and ecologists, towards ever more significant harmonization of the connections between the economic system and the natural system.

4. Hope for tangible results.

Europe's transition to a circular economy is based on the "closing the loop" principle. This takes into account the product life cycles through increased recycling and reuse of production waste. The actions carried out in this process will influence the interference between the natural system and the economic system. The community and national programs built on this will lead to:

- the maximum use of raw materials and waste;
- saving energy;
- reducing the carbon emissions.

"Closing the loop" involves co-ordinating the whole life cycle:

production → consumption → waste generation → secondary raw materials

This package of actions (measures) monitored by the European Commission is funded from three sources:

- a) Horizon 2020 (EU funding and innovation program) – 650 million euro;
- b) Structural Funds for waste management – 5,5 billion euro;
- c) National investments in the circular economy.

The packages adopted by the European Commission in December 2015 and May 2018 focus primarily on **general policies** regarding the climate change and the productive system pressure on the **environment**. The measures adopted, correlated with the ones at national level, will produce **tangible effects** on: the economic growth, the investments, the labor market, the social equity.

Our planet (as a provider of natural resources) and the world economy will not survive if it continues with the **linear development model** (Wijkman and Rockström, 2013).

In order to preserve the **natural capital** as long as possible, it is necessary to make the best possible use of its economic value. The circular economy implies a profound **transformation** of the economic system. The adopted measures set the trajectory for a good waste management in the European economy, taking into account the "closing the loop" principle. It is a **synergistic effect** generated by the binomial: regulations - incentives, which will determine that profound transformation of the economic system. Of course, the implementation throughout these measures is done with the help of national and local authorities.

Through the action of the regulations – incentives binomial, signals are sent to the productive economic actors to invest in the **circular economy**. Thus, Europe is becoming an attractive location for **sustainable** and **environmentally friendly** businesses.

The measures adopted by the European Commission, the incentives used generate innovative and efficient ways for the production-consumption complex. The rules adopted in May 2018 are the most modern legislation on waste management. Referring to the municipal waste, the evolution of the recycling rate is as follows:

By 2020	By 2025	By 2030
55%	60%	65%

Estimating the recycling rates of these wastes helps to better measure and monitor the tangible progress achieved in the evolution towards the circular economy. Regarding recycling of the main waste, we have the following objectives:

Waste type	By 2025	By 2030
Plastic materials	50%	55%
Wood	25%	30%
Ferrous materials	70%	80%
Aluminum	50%	60%
Glass	70%	75%
Paper and cardboard	75%	85%
All	65%	70%

Therefore, the basic idea is **recycling** and **not** the waste **storage**. In this respect, the provisions of the new norms aim at storing up to 10% of the municipal waste. In the transition to the circular economy, manufacturers play a significant role. They become more and more responsible with their products and the ways in which they become waste (European Commission, 2018).

Every European citizen consumes an average of 14 tons of raw materials per year. At the same time, he produces 5 tons of waste in a year. These products, waste and materials could be repaired, recycled and reused. This involves the transition to the **circular economy** where the product life is expanded (European Parliament, 2017).

In order to increase the economic, social and environmental benefits resulting from the better management of municipal waste, the Romanian legislation is considering the development of **secondary raw materials market** (of a high quality) is envisaged. At the

same time, consideration is given to the assessment of the added value of the criteria for determining the termination of waste, applicable to different materials (Kipper, 2015).

The European Parliament proposes combating the planned wear, meaning designing a product so that it is no longer usable after a certain period of time.

Conclusions:

The package of measures adopted by the European Commission to accelerate the transition to the circular economy could lead to savings (in EU companies) of about 600 billion euros. This accounts for almost 8% of their turnover. It would also reduce the greenhouse gas emissions by 4%. The effects of these measures are multiple: reducing the environmental pressure, increasing competitiveness, reducing the import of natural resources (especially rare materials), stimulating innovation and investment in "green" sectors, moving to a green growth, creating new jobs. At a European level, about 600 thousand new jobs would be created on the labor market. This would influence the unemployment rate. Consumers will benefit from more sustainable and innovative products. All those listed will lead for the European citizens to an increase in the quality of their lives.

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