

**THE ROLE OF CIRCULAR ECONOMY ON GLOBAL COMPETITIVENESS****PhD. Student Dumitrița NUCĂ***Stefan cel Mare University of Suceava, 720229, Romania  
dumtrita.nuca@usm.ro***Abstract**

*Lately, society is increasingly concerned about the threat of a possible resource crisis, which could affect the whole globe, and the economic models developed have not always considering the characteristic of resource depletion. Thus, the transition to another type of economy - the circular economy - was designed to cover the problems that society is currently facing and that it could have in the future due to massive pollution and climate change worldwide. In this sense, the purpose of this paper is to clarify the notion of circular economy, as well as its benefits in order to create a sustainable and competitive system at the same time, because these are the key points in achieving success.*

**Key words:** *circular economy; sustainability; development; competitiveness*

**JEL Classification:** *F64*

**I. INTRODUCTION**

Today's society is characterized by an overflowing dynamic, and its needs change in direct proportion to the changes that have occurred around the globe. Phenomena such as the intensification of the urbanization process, the development and diffusion of information and communication technology, the continuous increase of the standard of living, the reduction of the life cycle of products have contributed to the increase of the volume and the diversification of waste flows. Therefore, there is a growing concern both for waste management in order to reduce it as much as possible and for its reuse.

At present, the aim is to raise the standard of living, a more suitable environment for economic development, additional aid for developing countries most in need of such strategies. However, the reality of the present confirms that not only an increase based on economic factors is enough, but also on the involvement of social and environmental factors.

The paradigm of the new economy is characterized and influenced by several factors with a direct impact on it, as well: greening prosperity, redefining the role of the state, remaking finance, Europe beyond markets, making globalization work of all, reducing inequality and last but not least - Corona crisis (Forum for a New Economy). All these factors have an important role to play in maintaining a global balance, but especially in creating a prosperous and competitive economic system.

The transition to a circular economy, in which the value of products, materials and resources is kept in the economy for as long as possible and the production of waste is kept to a minimum, has gained special attention, being on the agenda of public authorities, of the business environment, research institutes and non-governmental organizations. "The use of circular models is also strongly encouraged by the European Union, which has placed this approach at the heart of its development strategy, supporting it through the European Structural and Investment Funds" (European Commission, 2019).

The challenges associated with the circular economy bring to the fore the need for a political commitment to the circular economy, the development of standards for the efficient use of resources on each waste stream or other types of resources, the financing of innovation and research in the development of new technologies. , but also to promote initiatives in the field of information technology.

In this paper, the main goal is to clarify the concept of circular economy, as well as its impact on global sustainability and competitiveness. Therefore, we refer to the following aspects: waste recovery in a circular approach, operationalization of the transition to the circular economy, considering the challenges and opportunities associated with this approach. To this end, the research aimed to promote a systemic perspective of the circular economy by identifying basic strategies and actions that would lead to sustainability and competitiveness.

II. THE MECHANISM OF THE CIRCULAR ECONOMY AND ITS IMPORTANCE

Nowadays, all of humanity is facing an economic, social and environmental imbalance. The uncertainty that characterizes today's society requires primarily an analysis of the factors of influence, but especially an understanding of how it works in order to maintain a balance.

For a long time, the linear economy has been considered the best way to achieve economic growth. In this linear economy, natural resources are purchased, turned into products, consumed or used, and then turned into waste. Over time, it has been shown that this economy is not sustainable. Consequently, the circular economy has emerged that emphasizes the regeneration and maximization of the potential of natural resources by recycling reusable components of products so that they can be used as much as possible in the economic process (see Figure 1). The sustainability and competitiveness of the circular economy is thus described by a low demand for natural resources and the generation of a reduced amount of waste (Rizos, Tuokko & Behrens, 2017).

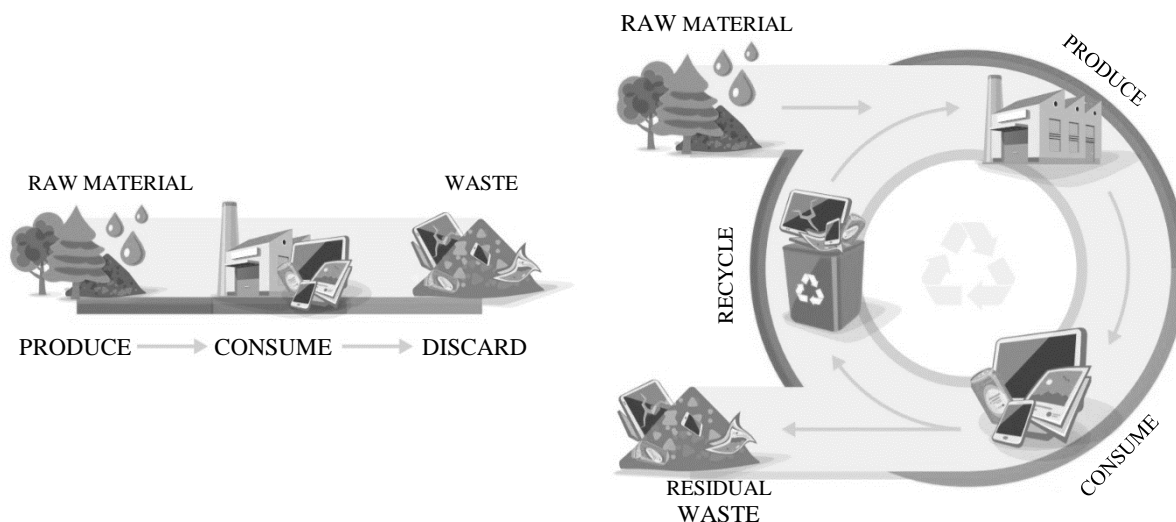


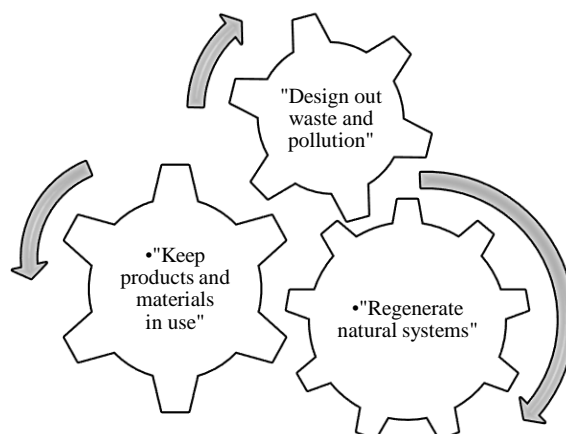
Figure 1 – Linear Economy versus Circular Economy

Source: Fundación EU-LAC, 2018

The prosperity of the environment is a factor of global importance and is characterized by a number of environmental policies aimed at reducing the risk of air pollution, protecting endangered species and combating other environmental hazards. It is from this "care" for the environment that the term "circular economy" was born. In the literature there are several approaches to the definition of the term circular economy that focus on key concepts such as: sustainable development, the framework of the 4R ("Reduce, Reuse, Recycle, Recover"), the systemic approach (micro, meso, macro), waste hierarchy (Kirchherr, Reike & Hekkert, 2017). There is no clear origin of this term, but among those who have tried to define this term is the professor John Lyle and his student William McDonough, the German chemist, Michael Braungart, and the Swiss architect and economist, Walter Stahel (Ellen MacArthur Foundation, 2013). For example, Bonciu (2014) considers that "the circular economy can be a comprehensive solution to the complex problems that exist in Europe and around the world"; and the Ellen MacArthur Foundation (2013) associates this concept with: "An industrial economy that is restored or regenerated by intention and design". In accordance with the European Parliament's (2018), the circular economy represent "a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible". Therefore, the concept of circular economy aims to implement "an economy based on the principle of 'closing the life cycle' of products, the production of goods and services, while reducing consumption and waste of raw materials, water and energy" (Circular Economy Foundation).

The concept of circular economy comes from different reference sources of eco-intelligence. Eco-intelligence is the ability to live trying to harm nature as little as possible, it consisted in understanding the consequences it has had on the environment, the decisions that are made every day and trying, as much as possible, to choose the most beneficial to the health of the planet (Ramírez & Galán, 2012).

In other words, three principles underpin the circular economy model, each responding to the many challenges facing the resource and system industries. The principles that formed the basis of the formation of the circular economy are shown in Figure 2.



**Figure 2 – The principles of circular economy**

Source: Ellen MacArthur Foundation, 2013

Therefore, according to the first principle, we must prevent intense environmental pollution, reducing the level by ensuring the correct and efficient collection of waste, but also to preserve and improve natural capital by maintaining control over limited reserves and balancing resource flows. The second principle refers to the optimization of the use of resources, namely by distributing products, components and materials with maximum utility in terms of their technical and biological cycles. Last but not least, it is necessary to promote the efficient regeneration of the natural system by detecting and suppressing negative factors.

There are also three basic levels of action in the circular economy (Balboa & Somonte, 2014):

- First level: the organization sought greater efficiency through 3R: reduction of resource consumption and waste emissions; reuse resources and recycle component;
- Second level: resources have been reused and recycled in eco-industrial parks and related industries so that they can be fully circulated in the local production system;
- Third level: different local production and consumption systems, resources circulated between industries and urban systems have been integrated. This level required the “local development of product collection, storage, processing and distribution systems”.

The effort at the 3 levels influenced: the development of resource recovery, cleaner production companies and public facilities. This has increased the size of economic development through investment in new companies; therefore, the circular economy offered new business opportunities.

### III. THE BENEFITS OF TRANSITING TO A CIRCULAR ECONOMY

A circular economy model can offer to companies the opportunity to optimize their activity by extracting the maximum value from production materials, thus contributing to reducing the consumption of the Earth's depletable natural resources. Once used, all products provide by-products that can be reused in other manufacturing processes, creating a more environmentally friendly virtuous cycle.

If we considering the applicability of the concept of circular economy, according to the literature, it considers three categories: “political tools and approaches; value chains, material flows and product-specific applications; as well as technological, organizational and social innovation” (Winans, Kendall & Deng, 2017). The first category refers to regulatory and economic policy instruments, which describe government interventions such as eco-industrial park initiatives to “minimize the use of energy and raw materials, reduce waste and build sustainable economic, environmental and social relations” (Boix, Montastruc, Azzaro-Pantel & Domenech, 2015) The second section refers to a United Nations study in 2014 that aimed to discover “the potential priorities and policy options to support the Circular Economy concept in the European Union” which in turn served to organize resources into subsections: “wood and paper, plastics, metals, agricultural products and waste and phosphorus (and other chemicals)”. Last but not least, innovation - an indispensable factor in this economy, which should be extended in the development of biological and technical processes, economic and business models, flows of materials and systems with reverse cycle, as well as favorable conditions and systems for the energy sector (Ellen MacArthur Foundation).

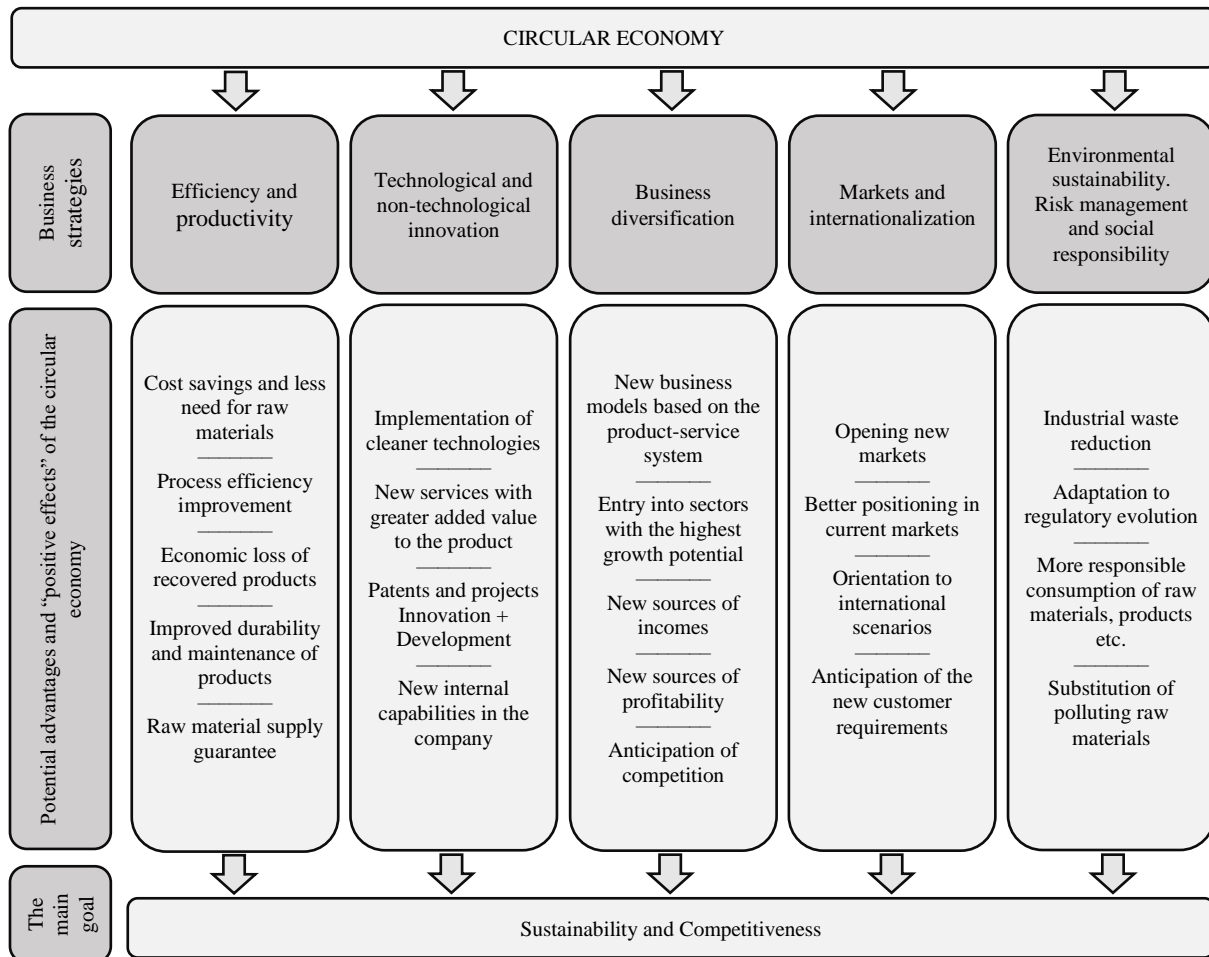
The implementation of these principles brings a number of benefits to both the environment and society, as the circular economy also considers social inclusion a key point. These benefits of the circular economy include:

- Decreased use of resources, reduced waste production and limited energy consumption;
- The circular economy contributes to the creation of wealth and employment;
- It allows to obtain a “competitive advantage in the context of globalization, because it reduces the

dependence on external and uncertain supply”;

- Opens the prospect of sustainable growth.

From Figure 3 we can see the advantages, benefits and objectives of the circular economy that focus on achieving sustainability without losing competitiveness. These strategies, as well as their positive effects, are probably a slower but safer way to achieve the sustainability of the circular economy.



**Figure 3 – Circular economy process according to sectors (Circular Thinking)**

Some studies estimate that resource efficiency could reduce raw material needs by between 17% and 24% by 2030 (Meyer, 2011). Another estimate shows that companies in the European Union could reduce annual costs by up to 600 billion euros, which is about 8% of annual turnover, if they implement measures such as green design, waste prevention and reuse. At the same time, these measures could help reduce greenhouse gas emissions by 2-4%. (AMEC, 2013). According to European forecasts (European Parliament, 2018) a circular economy as a whole would offer several benefits, such as: “reducing pressure on the environment, improving security of supply of raw materials, increasing competitiveness, stimulating innovation, stimulating economic growth, creating jobs the work”. In this way, consumers will benefit from products characterized by increased durability and innovation, the basis for a significant increase in their quality of life.

These benefits in Europe could be considerable by reducing environmental pressures and drastically reducing dependence on imports, which, in the event of gradual growth, can become a source of vulnerability. As new circular perspectives advance, the frictions between the existing linear system and new innovations increase. This can be considered as a threat by some parties involved and an opportunity by others.

**Table 1. The impact of the circular economy on the activity sectors**

Circular economy							
Recycling	Efficient use of resources	Utilization of renewable energy sources	Products with longer life spans	Remanufacturing, refurbishment and reuse of products and components	Product as service	Sharing models	Shift in consumption patterns
↓							
Examples from different sectors							
“Recycling of critical raw materials”			“Using biological resources in the forest sector”		“Product lifecycle extension and remanufacturing in the building sector”		
↓			↓		↓		
Effects in different sectors and value chains							
Reduced material costs (once a secondary raw material market functions), change in demand patterns of primary materials, investment in take-back systems, business opportunities in product disassembly			Development of new products, high upfront investment, designing products in contact with customer, need for marketing of new products, cross-value chain cooperation, business opportunities for SMEs		Longer lifecycle of building leading to reduced maintenance costs, industrial symbiosis leading to cost savings, changes in cost structure, establishment of new partnerships and cross-value chain cooperation		
↓							
Indirect effects on the economy							
Impact on value chains: “inputs from different sectors might be purchased or different delivery channels might be used”		Trade effects: process changes may lead to a reduction of imports or to an increase in exports		Changes in consumption spending patterns may impact other sectors if consumers spend either more or less on other products and services		Change of usage patterns: “consumers may use more or less of the product or service”	
↓							
Impacts at the EU and national level							
Economic: “net GDP impact, net employment effects, investment opportunities”			Environmental: “decreased GHG emissions, decreased primary material consumption, avoided land-use, water use savings”			Social: “growth in high-skilled employment, job creation in areas where unemployment is high, distributional impacts among different income groups”	

Source: Rizos, Tuokko & Behrens, 2017

European Commission experts from DG Environment (Henry, 2016) assessed and quantified the potential benefits of achieving such an economic model in the EU-28 by 2035, of which we mention:

- Economic growth and job creation:
  - a 7% increase in GDP;
  - Savings of up to 600 billion euros or the equivalent of 8% of annual turnover for EU companies;
  - 580 thousand new jobs created by 2035, of which 170 thousand in the waste management sectors;
- Increasing competitiveness and ensuring security of supply;
- Economic and environmental flexibility;
- Encouraging innovation;
- Annual reduction of total greenhouse gas emissions by 450 million tons or 2-4% / year.

Globally, according to a report by the McKinsey Center for Business and Environment (2015) the transition to the circular economy could add \$ 1 trillion to the world economy by 2025 and create 100,000 new jobs in the next 5 years. With regard to the European Union, the same source considers that manufacturing industries could

benefit the fastest, given their dependence on raw materials. It is argued that a new branch of the EU manufacturing industry can achieve net savings in material costs of over \$ 630 billion per year by 2025.

#### IV. CONCLUSION

Even though the term circular economy is relatively new, it has become one of major importance today. It aims at an optimized model of society that aims at the efficient use of resources, but also the correct management of waste.

The implementation of a circular economy model requires fundamental changes in the value chain, by modeling both production and consumption systems, by introducing new processes and business models. In this way, recycling will turn waste into a resource, and extending the life of products will help preserve (preserve) natural resources. Therefore, this fundamental transformation of trade practices and policies will have a significant impact on the economic, social and environmental arm.

The benefits of the circular economic model consist of visible results such as reduced costs, increased sustainability and competitiveness, increased innovation, increased environmental quality, and also the creation of new jobs. In order for the circular economy to be truly implemented in practice, it is necessary to involve all state structures, both the public sector (with initiatives from government and ministries), as well as the private sector and NGOs.

In conclusion, approaches to the opportunities of the circular economy are directly associated with both environmental protection and sustainability, as well as increased competitiveness, innovation and technological research.

#### REFERENCES

1. AMEC, Bio Intelligence Service. (2013). *The opportunities to business of improving resource efficiency*. Retrieved September 10, 2020 from: [http://ec.europa.eu/environment/enveco/resource\\_efficiency/pdf/report\\_opportunities.pdf](http://ec.europa.eu/environment/enveco/resource_efficiency/pdf/report_opportunities.pdf).
2. Balboa, C., H., Somonte, M., D. (2014). *Economía circular como marco para el ecodiseño: el modelo ECO-3*. Informador técnico, 78(1), 82–90.
3. Bonciu, F. (2014). *The European Economy: From a Linear to a Circular Economy*. Romanian Journal of European Affairs, 14 (1). Retrieved August 31, 2020 from: [http://rjea.ier.ro/sites/rjea.ier.ro/files/articole/RJEA\\_2014\\_vol14\\_no4\\_art5.pdf](http://rjea.ier.ro/sites/rjea.ier.ro/files/articole/RJEA_2014_vol14_no4_art5.pdf).
4. Boix, M., Montastruc, L., Azzaro-Pantel, C., Domenech, S. (2015). *Optimization methods applied to the design of eco-industrial parks: a literature review*. J Clean Prod, 87, 303–317.
5. Circular Economy Foundation (n.d.). *Circular Economy - Towards an eco-efficient economy in the use of resources*. Retrieved September 22, 2020 from: [http://economiecirculaire.org/EN/?page\\_id=62](http://economiecirculaire.org/EN/?page_id=62).
6. Ellen MacArthur Foundation. (2013). *Towards the Circular Economy: Opportunities for the Consumer Goods Sector*. Retrieved September 8, 2020 from: <http://www.ellenmacarthurfoundation.org/business/reports/ce2013>.
7. European Commission. (2019). *The European Green Deal*. Retrieved September 26, 2020 from: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640&from=ET>.
8. European Parliament's. (2018). *Circular economy: definition, importance and benefits*. Retrieved August 28, 2020 from: <https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits>.
9. European Union. (2017). *LIFE and the Circular Economy*. Retrieved September 25, 2020 from: <https://ec.europa.eu/environment/archives/life/publications/lifepublications/flippingbook/circulareconomy/HTML/files/assets/common/downloads/publication.pdf>.
10. Forum for a New Economy. (n.d.). Retrieved September 22, 2020 from: <https://newforum.org/en/>.
11. Fundación EU-LAC. (2018). *Estudios de caso sobre modelos de Economía Circular e integración de los Objetivos de Desarrollo Sostenible en estrategias empresariales en la UE y ALC*. Retrieved September 8, 2020 from: [https://eulacfoundation.org/es/system/files/economia\\_circular\\_ods.pdf](https://eulacfoundation.org/es/system/files/economia_circular_ods.pdf).
12. Henry, P. (2016). *Circular Economy package – what's in it?* In Making it happen: European Commission seminar on circular economy financing. European Commission, DG Environment, Unit "Eco-innovation and Circular Economy".
13. Kirchherr, J., Reike, D., Hekkert, M. (2017). *Conceptualizing the circular economy: An analysis of 114 definitions*. Resources, conservation and recycling, 127, 221-232.
14. Meyer, T. (2011). *Theorie der sozialen Demokratie*. Wiesbaden: VS Verlag für Sozialwissenschaften.
15. McKinsey Centre for Business and Environment, Report. 2015. UK.
16. Ramírez, E., Galán, L. (2012). *El eco-diseño como herramienta, básica de gestión industrial*. Universidad de Sevilla, España. Retrieved September 7, 2020 from: <http://www.ingefraf.es/XVIII/PDF/Comunicacion17007.pdf>
17. Rizos, V., Tuokko, K., Behrens, A. (2017). *The Circular Economy: A review of definitions, processes and impacts*. Centre for European Policy Studies.
18. Thinking circular. (n.d.). Retrieved September 30, 2020 from: <https://thinking-circular.com/consulting/>.
19. United Nations. (2014). *Towards a circular economy: A zero waste programme for Europe*. Retrieved August 19, 2020 from: <http://ec.europa.eu/environment/circular-economy/pdf/circular-economy-communication.pdf>.
20. Winans, K., Kendall, A., Deng, H. (2017). *The history and current applications of the circular economy concept*. Renewable and Sustainable Energy Reviews, 68, 825–833. doi:10.1016/j.rser.2016.09.123.