

Circular Economy as an Alternative to Green Economy

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ABSTRACT

There are two approaches to environmental conservation. The green economy replaces the negative impact of fossil fuels with more environmentally friendly alternatives. The circular economy, extending the life cycle of a product, is a model of production and consumption, including sharing, leasing, reuse, repair, restoration and recycling of existing materials and products for the maximum possible period. Are these two approaches complementary or mutually exclusive? In February 2021, the European Parliament adopted a resolution on a new circular economic action plan, demanding additional measures to achieve a carbon-neutral, environmentally sustainable, non-toxic and completely closed economy by 2050. There is a tendency to shift the emphasis from the green economy to the circular economy.

Keywords: *Green economy, Circular economy.*

1. PROBLEMS OF THE GREEN ECONOMY

The green economy requires a transition to the production of green energy based on renewable energy sources to replace fossil fuels, as well as to energy conservation and efficient use of energy. Obviously, the share of the green economy in the capitalization of the world market is growing, while the fossil fuel sector is shrinking. In particular, as of 2020, the "green" economy accounts for 6 % of the market capitalization of global listed companies [4].

The circular economy, which is also referred as a "closed-loop economy" [2], is "a model of production and consumption, including sharing (including leasing), reuse, improvement, recycling, and disposal of existing materials and products for as long as possible" [3]. Theoretically, the designated model does not easily contribute, it can be assumed that it is aimed at solving global problems, in particular, climate change, loss of biodiversity, reduction or even elimination of waste and pollution, perhaps with the exception of thermal, which is not explicitly discussed within the circular economy. This is the fundamental difference between the circular model of the economy and the linear (it can be defined as a traditional) model of the economy; of which we will consider the green economy to be a part.

Despite all the evidence, it should be pointed out that in a linear economy, extracted (both renewable, for example, wood, and fossil, for example, hydrocarbons) natural resources turn into products that, due to the manufacturing method, eventually become waste. This process is often referred as "withdraw, make, throw away" [4]. In contrast to this approach, the circular economy relies on reuse (including shares), including repairs, as well as reconstruction, modernization and recycling, and all of the above – to create a closed system that minimizes the extraction of resources and the formation of waste, pollution and emissions (including carbon) [5]. The practical orientation of the circular economy is the preservation of products, materials, equipment and infrastructure for as long as possible [6]. Hence the possible increase in the productivity of resources, and energy should start the process of increasing the value of waste: either as a new component or as a revived resource to continue production. As a result, there should be restored natural resources (for example, compost). The Ellen MacArthur Foundation (EMF) defines a circular economy as an industrial economy that is regenerative or regenerative by design and goals [7, 8], which one cannot disagree with.

The circular economy is based on three main components of the economic system – suppliers of resources, processors of waste, sources of utility – and

advocates the cyclical use of resources for creation, supply and consumption manufactured products. We are talking about extending the shelf life of products that are produced within the production system, as a result of which they become more profitable and sustainable over time. At the moment, the global initiative to promote the circular economy paradigm belongs to the Ellen MacArthur Foundation, whose goal is to facilitate the transition to it as an established practice.

In any case, we will have to deal with the inevitable – the circular economy is inherently embedded in nature and cannot function without a focus on supporting ecosystems.

Karl Burkart defined a green economy based on six main sectors:

- Renewable energy
- Green construction
- Eco-friendly transport
- Water resources management
- Waste management
- Land management

Renewable energy is produced from renewable resources that are naturally replenished on a human time scale. It includes sources such as sunlight, wind, rain, tides, waves and geothermal heat. However, there is a silence here about the expiration of the useful life of the infrastructure and components (and they can be broadly toxic) with which renewable energy is produced.

Green building (also known as green building or sustainable building) refers to both the structure and the application of processes that are environmentally responsible and resource efficient throughout the life cycle of a building: from planning to design, construction, operation, maintenance, repair and demolition. However, there is a silence about the suitability of demolished structures for further use as building materials. Perhaps this is a problem of compliance with formal standards of permissibility of reuse.

Eco-friendly transport refers to a wide range of issues related to transport that is sustainable in terms of social, environmental and climate impacts. Components of sustainability assessment include specific vehicles used for road, water, or air transport; an energy source; and infrastructure used to accommodate transport (roads, railways, airlines, waterways, canals, and terminals).

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One of the biggest challenges related to water resources in the future is the sustainability of the current and future allocation of water resources. [1] As water becomes scarce, the importance of water resources management increases significantly – finding a balance between people's needs and an important step in ensuring the sustainability of water resources in the environment.

Here, some vagueness in the understanding of management attracts attention. By the way, it is in this case that thermal pollution of reservoirs may occur, for example, discharges of clean or purified water having an elevated temperature into reservoirs in the absence of closed water use cycle (which also has its own problems, for example, the rise in the cost of production and the selection of territories).

Waste management (or waste disposal) includes the processes and actions necessary to handle waste from its creation to its final disposal. This includes the collection, transportation, treatment and disposal of waste, as well as monitoring and regulation of the waste management process, as well as laws, technologies and economic mechanisms related to waste. In principle, this direction is a dead end, because with increasing consumption, it is impossible to expect that ecosystem will cope with the neutralization of waste faster than their accumulation or also quickly.

Land management is a process of managing the use and development (both in urban agglomerations and in rural conditions) of land resources. They are used in various directions, including subsistence agriculture, reforestation (especially relevant when replacing soil-losing species soil-improving deciduous, and then with soil-neutral coniferous), water resources management and ecotourism. Land management can have a positive or negative impact on ecosystems. (1) Unfortunately, here the positive effects are postponed to the relatively distant future, and the positive effects can be eliminated by the negative impact on the associated ecosystems.

2. TRANSFORMATION INTO A CIRCULAR ECONOMY

Let's highlight the main features of the transition from a linear (including green) economy to a circular economy, in particular:

1. Economic growth remains a priority, environmental sustainability is clearly not pursued, only by default. Sustainability is ensured through the transformation of natural capital into human capital (although the authors are cautious refer to the

application of the concept of capital in relation to the value of people).

2. Natural and man-made capital cannot be considered interchangeable. The negative impact on the environment can be partially avoided by increasing the environmental efficiency while ensuring economic growth (for example, it is possible and necessary to seek to expand the use of the calculated cutting area in order to ensure the natural cycle of achieving technical ripeness of rocks).

3. Economic growth and environmental sustainability can be coordinated and have mutual positive feedback. This process is supported by natural solutions, for example, environmental adaptation and sustainability; they are conceived in contrast to or in addition to solutions based on technical knowledge.

4. Technological development does not meet the needs of human society. The natural limitations of the planet lead to a reduction or collapse of economic growth.

5. Natural and man-made capital cannot be considered interchangeable. Economic growth is not excluded if it is possible to avoid a negative impact on the environment by increasing environmental efficiency. Thus, environmental sustainability can become a constraint to economic growth.

6. Solutions based on techno-knowledge are replaced or supplemented by solutions based on nature, environmental adaptation and sustainability.

The circular economy forces us to consider waste and pollution as unaccounted costs (from the standpoint of economic theory, these are externalities; from the standpoint of management, these are design flaws), which are transferred to society in an unmonetized state. These costs need to be returned to production, in other words, monetized, and society, as before, will have to pay for everything. Moreover, it is necessary to exclude the trade in quotas (they are also called labels) for pollution.

Although recycling is a necessary component, it is necessary to ensure that products and materials are designed to be reused, repaired and restored from the very beginning. It is the consequences of decisions made at the design stage that determine most of the environmental impacts. Moreover, it is already obvious that manufacturers are exploring ways to “design” waste when products are still under development. It is appropriate to recall here that in the paradigm of linear economics, recycling begins at the end – at the stage of “getting rid” of the product life cycle. The circular economy, however, goes back to preventing the formation of waste and pollution in the first place – this is the fundamental principle of the new paradigm. The level of environmental problems is such that recycling

will not be enough to overcome the huge amount of waste that humanity produces.

In a well-structured circular economy, one should focus on avoiding the recycling stage at all costs. This idea may seem quite simple, although it is difficult to do. However, first of all, the prevention of waste generation is the only realistic strategy on the way to becoming a circular economy.

3. CONCLUSION

The traditional production model is based on a linear economy, which means that products are not intended for reuse, repair, or even for subsequent processing.

After consumption, the products are automatically treated by the manufacturer and the user as waste, ending their life cycle in landfills. Due to globalization and mass production, the amount of waste generated per year in the world has increased dramatically, inevitably polluting our environment. The linear traditional economic system has reached its limit.

The green economy can only partially solve the problems of the linear economy as it represents one of its branches. Of course, the level of pollution is decreasing, but the regenerative capabilities of nature are insufficient to solve the conservation of the environment. Waste, though slow, will still accumulate, not decrease. The reason is obvious – the growth of consumption.

One of the possible solutions, the authors sees the transition to a circular economy, which theoretically will eliminate the formation of waste.

These two concepts are actively discussed both in scientific circles and in policy development as key areas for the development of sustainability. Often these concepts are used synonymously, not being equivalent in meaning. This is due to the fact that despite their obviously different assumptions and operationalization strategies, the concepts of circular and green economy are united by common ideals to harmonize economic, environmental and social goals.

Analysing scientific publications over the past ten years, we have found that most often in terms of environmental sustainability, the green economy acts as an umbrella concept that includes elements of the circular economy concept.

The green economy traditionally defines the problem; the circular economy is aimed at creating tools for solving environmental and energy problems.

Considerable efforts are needed to promote a regulatory and legislative framework that ensures the expansion of the influence of the circular economy, which will allow companies to remain competitive and

profit from their activities, preserving the environment and benefiting society.

As for the social dimension, the green economy largely includes some aspects at the local level (for example, ecotourism, education), while the literature on circular economy increasingly discusses local processes from the point of view of biosafety. At the same time, both concepts remain limited, calling into question economic growth. Comparing the various sustainability strategies promoted by these concepts, we are not in favour of their substitutability, but for their clarification and mutual integration. The results are discussed in light of the synergy and limitations of the concepts in order to inform research and policy implementation.

In general, these two concepts demonstrate a wide range of underlying assumptions, common goals and objectives, specific focus, level of detail in policy guidelines and practical application of sustainability. When compared, it turns out that they have different points of view and, perhaps, imply different views on sustainability.

Nevertheless, despite the different assumptions and ways of promoting strategies, the concepts of circular economy and a green economy are linked by a common ideal for coordinating economic, environmental and social goals. These two concepts are currently widely used in scientific circles and in policy development as key areas of sustainability, but there is no comparative analysis of such concepts. The authors express the hope that they have made their contribution in this direction.

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