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ARTICLE

The Role of Circular Economy in Achieving Responsible Consumption (SDG 12)

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ABSTRACT | Objective: This study aims to explore the connection between circular economy practices and the United Nations' Sustainable Development Goal 12 (Responsible Consumption and Production), emphasizing how circular economy models contribute to sustainable resource use and environmental preservation. **Method**: A review of existing literature, including United Nations reports and academic studies on circular economy and responsible consumption, was conducted. The analysis focuses on circular economy practices, such as recycling, reuse, and sustainable production, and their impact on achieving SDG 12. **Results**: The study finds that circular economy methods significantly contribute to reducing environmental impacts and promoting resource efficiency. By rethinking production and consumption patterns, circular economy practices reduce waste and greenhouse gas emissions, playing a vital role in achieving not only SDG 12 but also other related goals like climate action. The study highlights the need for increased adoption of circular economy policies, especially in rapidly industrializing countries like Turkey. **Conclusions**: Circular economy practices are essential for achieving responsible consumption and production. Integrating these practices into national policies can drive sustainable development by decoupling economic growth from resource depletion. Countries must prioritize circular economy models to meet global sustainability targets.

Keywords | Circular Economy, Responsible Consumption, Sustainable Development, Resource Efficiency, SDG 12

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INTRODUCTION

With industrialization increased waste due to resource use brings various problems. Limited resources are gradually decreasing, access to raw materials is getting harder, competition is increasing, and the inevitable consequences of climate change are strikingly visible. Countries have begun to explore various remedies as a result of rising environmental degradation and climatic crises. Every product generated in the production system trash is recycled, so that raw material costs are minimized, resource efficiency is at the highest-level sustainable production model circular economy, these solutions come first. Many governments are taking initiatives and drafting policies about about the circular economy. This topic has risen to the top of the political agenda in Turkey in recent years.

"The natural biosphere operates according to a system of nutrients and metabolisms, in which there is no such thing as waste"(Bockholt 870). However, the take-make-dispose (linear) economic model, which has utilized raw materials indefinitely since the Industrial Revolution, is not the best model for ensuring the efficient use of nature's transformation system and resources. With the current unsustainable production and consumption system, the global consumption rate has expanded eightfold in the previous few decades. Global resource consumption is anticipated to quadruple by 2050 due to rising consumption rates. The following are some of the issues that have arisen as a result of the linear economy paradigm are following.

Industrialization has led in an economic structure that is dependent on resource utilization. The linear economy, which does not account for limiting natural resources, does not appear to be sustainable as the danger of resource shortages grows considerably. As a result of globalization, supply chains have become more complicated, market competitiveness and price volatility have grown, and industrial operations have gotten more complicated. Likewise, the existing economic system's linearity hastens its disintegration from sustainability. This circumstance also creates a barrier to the attainment of the United Nations' 17 Sustainable Development Goals.

A new economic model is needed that adopts the principle of cycle continuation by making end-of-consumption or production-based outputs the input of the same or another sector, which is more applicable, increases inter-sectoral cooperation, ensures resource efficiency, and reduces the concept of waste.

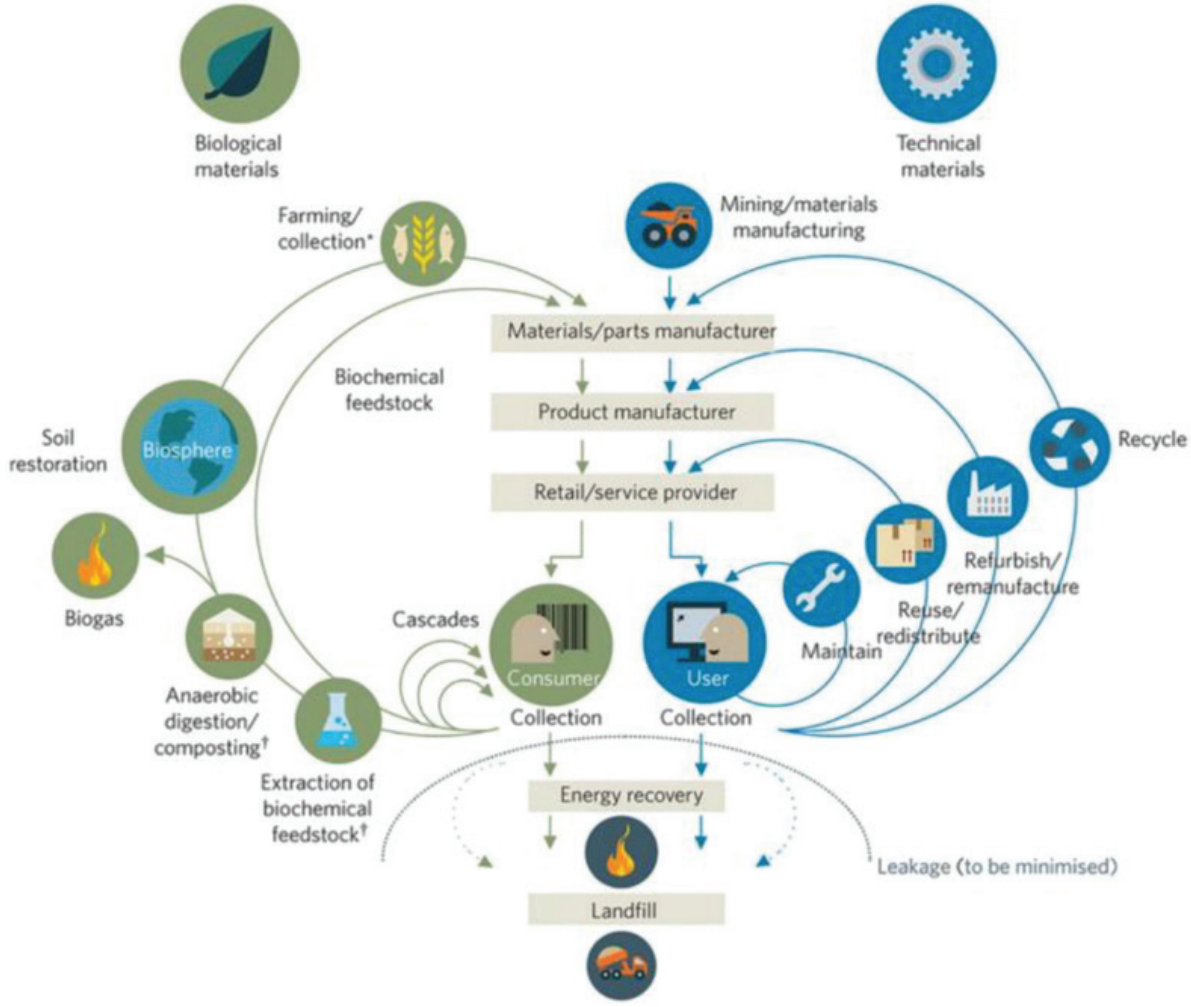
THE PLACE OF CIRCULAR ECONOMY IN PRACTICE OF SDG 12

Sustainable consumption and production entails encouraging resource and energy efficiency, as well as giving access to essential services, green and decent jobs, and a higher quality of life for everybody. Its implementation contributes to the achievement of overall development goals, the reduction of future environmental, and social costs, the strengthening of economic competitiveness, and the reduction of poverty.

Within SDG 12, the concept of a circular economy, which is an alternative economic framework, has gained major importance in recent years, likewise considered as presenting a "approach for achieving local, national, and global sustainability" (Schroder 77). Circular economy practices consist of various techniques and business models which are reuse, repair, refurbishment, remanufacturing, recycling, rethinking, reducing, redesigning, and repurposing.

Our present economic strategy is built on a linear economy model based on the concept of "take, make and dispose." The circular economy model, on the other hand, is prioritized because of the rapid increase in consumption as a result of the use of resources to serve a rapidly growing population with rising living standards; it is a regenerative system that attempts to optimize the resources we use and keep them in cycles for as long as possible.

"The concept is characterised, more than defined, as an economy that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles. It is conceived as a continuous positive development cycle that preserves and enhances natural capital, optimises resource yields, and minimises system risks by managing finite stocks and renewable flows. It works effectively at every scale"("Ellen MacArthur Foundation" n.p.).



The Ellen MacArthur Foundation defines the circular economy using the graphic above, which incorporates the two cycles:

a) A biological cycle in which after-use leftovers are returned to nature;

b) A technological cycle in which products, components, or materials are intended to reduce waste.

Materials, whether biological or technological, are reused in cycles in a circular economy, reducing the environmental effect of products and services along the value chain.

WHY IS CIRCULAR ECONOMY NEEDED?

Each year, more than 100 billion tons of resources are transferred to the economy, with more than 60% of them resulting in waste and an increase in greenhouse gas emissions, which is one of the causes of the climate catastrophe.

WHERE SHOULD BE STARTED?

Raw Material

End-of-life items should be reconsidered as potential sources for a new cycle, and unused material losses and stockpiles should be avoided within the value chain. There are several options for rational raw material usage, including material reduction and optimization, industrial symbiosis, recycling, reuse, redistribution, resale, refurbishing, remanufacturing, maintenance, repair, and service which are circular Rs.

Design

During the design stage, about 80% of the product's environmental implications may be found out. A good design benefits to cost saving, time, energy, and materials. The scope of eco-design criteria would be broadened beyond energy efficiency to encourage enhanced repairability, upgradeability, durability, and recyclability of items, according to the circular economy action plan presented as part of the EU's 'circular economy' package. It is a bottom-up technique that tries to reduce resource needs and environmental effect on the life cycle of a product from an early stage of product design (Mendoza 526).

Supply Chain

Redesigning your goods and operations to utilize fewer material benefits both the environment and your business. Instead of acquiring virgin material, picking alternate sources of supply, such as recycled material is a new option. Instead of using fossil fuels, choosing sustainable energy sources is an alternative. Improving supply chain entails finding the weakest links in the chain rather than just lowering numbers. It shows dependency on crucial raw materials.

Circular Supply Chain

The circular supply chain paradigm entails replacing traditional industrial inputs with biodegradable, renewable, or recyclable / recycled resources. This concept may be viewed of as a type of resource recovery in which material recovery is considered much earlier in the product life cycle. The theory underpinning the circular supply chain is known as "cradle to cradle" product design. In the cradle-to-cradle strategy, endless use of materials become inputs in the manufacturing of new goods.

Extending the Product's Life

At the stage of classic long-life model, the goal of this business strategy is to make assets last longer. Changes in product design lengthen the product's projected life. Reusing models provides to products which will be discarded before reaching their expire date are redistributed and repurposed. Maintenance and repair guarantee that damaged items fulfil their full life cycle by repairing or replacing damaged components. The final stage which are renovation and remanufacturing provide "new life" to products by mending and restoring them.

Sharing Economy

Sharing economy starts with the idea of every underutilized resource is a wasted resource. It creates a platform for product users to collaborate, allowing them to share surplus capacity or underuse, as well as increased productivity and user value generation.

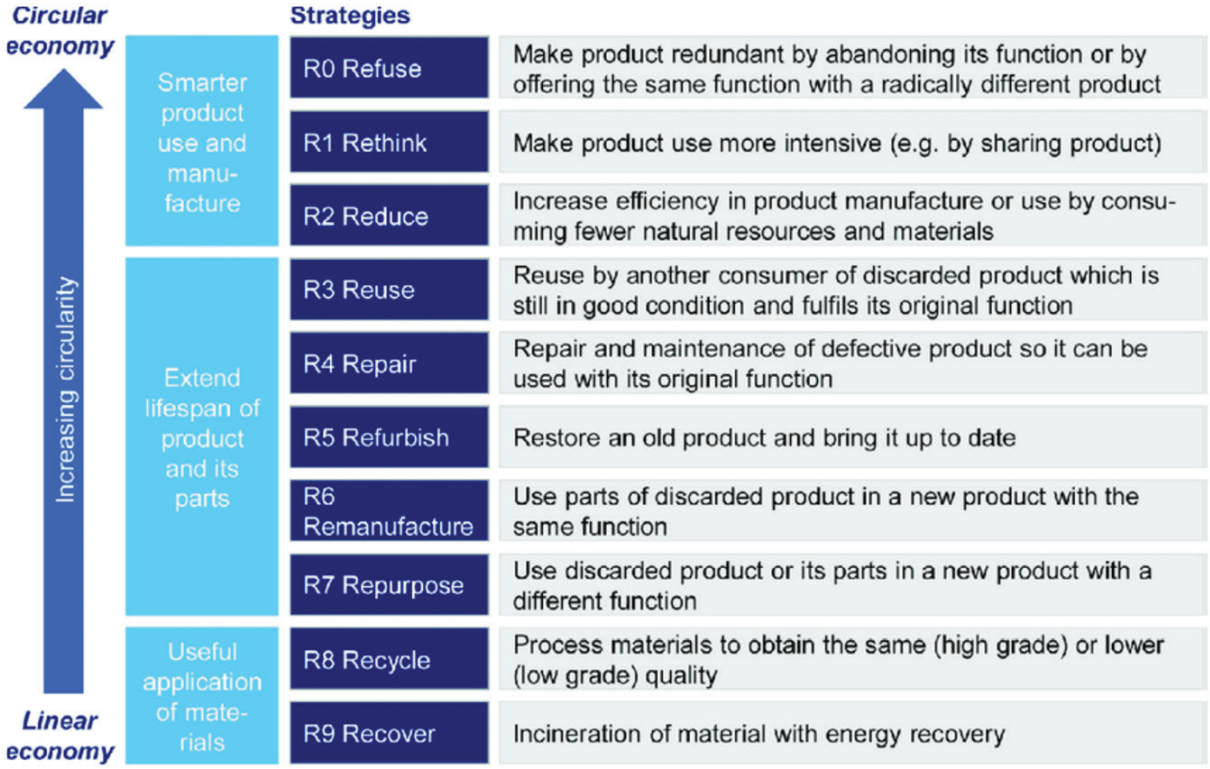
Product Services System

The product services system business model combines a physical product with a service component, providing an alternative to the classic "buy and own" paradigm. It has described as a marketable product and service group that can fulfill its consumers' demands in a cost- effective and long-term way. Customers rent or pay for products they utilize.

Resource Recovery

Production of secondary raw materials from trash is one of the resource recovery business strategies. Collection, sorting, and secondary production are the three major tasks here. The resultant secondary raw materials (metals, plastics, paper, and so on) are subsequently sold to a variety of manufacturers. The usage of materials in the waste stream is at the heart of resource recovery models.

According to the European Union Commission's Categorisation System for the Circular Economy, there are four core models. First of all, circular design and production strive to improve resource efficiency through design innovation and reengineering. Implied applications provide benefits after-use phases, which also reduces need of raw materials. Secondly, circular use aims to increase resource efficiency through product and asset lifespan extension based on circular Rs. Thirdly, circular value recovery aims to increase resource efficiency by recovering waste in preparation for circular Rs which are carried out at the stage after-use period. Lastly, the circular support category group's goal is to enable other circular practices and provide contribution to increased resource efficiency ("European Commission" n.p.).



TURKEY'S TRANSITION TO CIRCULAR ECONOMY

According to the Turkish Statistical Institute (TURKSTAT) sustainable development indicators, whereas our country's raw material consumption was 500 million tons in the 2000s, this value has more than doubled, surpassing 900 million tons with a moderate growth in the 2010s. Similarly, home energy consumption has increased to 3900 (Bintep) from 2054 (Bintep - tep: ton equivalent oil), and whereas dependency on foreign energy reached from 66 percent in the 2000s to 74 percent in the 2010s. In the last ten years, the EU has prioritized the circular economy, with Northern European nations leading the way. Turkey is likewise aware of the situation and is attempting to

take appropriate action. Since restructuring of the EU market will have an impact on Turkey, the circular economy issue is critical for our country. Turkey's primary development difficulties, in light of population and industrial expansion, are pollution prevention and waste minimization. On the other hand, the number of research on the circular economy is progressively expanding, and the idea of circular economy is gaining prominence in Turkey, as evidenced by the fact that activities on this subject are expanding day by day. The Environment Chapter was launched in 2009, with the start of full membership discussions with the EU, and legislative harmonization began under this framework. During this time, significant efforts were taken in the waste industry, including the publication of communiqués and rules on a variety of topics, including waste oils, packaging, electronic trash, and batteries. The inclusion of the circular economy on Turkey's agenda is based on the EU's Circular Economy Package, which was enacted in 2015. Due to the EU's scarce and restricted resource dilemma applies to Turkey, and Turkey is a candidate nation for the EU, Turkey should take comparable actions and adopt / align with this law. Aside from that, within the context of the circular economy: Zero Waste Regulation and Zero Waste Project, Sustainable Consumption and Production Action Plan and Near Zero Waste (NØW) Turkey Program application and actions can be given as an example.

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