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A Circular Economy Sustainable Development Model for Georgia

Abstract

Background: The unsustainability of the traditional linear production model (production–consumption–disposal) has clearly indicated the need for a new model – circular economy. This article examines both the existing environment and infrastructure of Georgia and international experience, the exchange of which is important for the ecological and economic development of the country.

Research objectives: The main objective of the article is to analyze the concept of circular economy, to identify its global and local significance, and to assess the opportunities and challenges that Georgia faces.

Research design and methods: This article uses case study and analysis methods.

Results: The article presents recommendations for policy makers, business and society that can serve as a basis for the country's transition to a strategic path of circular economy. The study shows that despite the current low level of circular economy (1.3 percent), Georgia has significant potential, including natural resources, youth motivation and international support.

Conclusions: The circular model is not only an environmental necessity for Georgia, but also an economic opportunity – to promote innovation, new jobs and sustainable development.

Keywords: *circular economy, sustainable development, renewable energy, recycling, linear economy*

Introduction

In the 21st century, the world economy faces complex challenges such as climate change, resource depletion and environmental pollution. These processes have clearly shown us that the traditional linear economic model (“production–consumption–disposal”) is no longer sustainable. It is in this reality that the circular economy emerges as an alternative, ecologically balanced and economically favorable way of development.

The circular economy involves the sustainable use of resources, minimizing waste and recovering, recycling and reusing products. This model is based on the principle that all resources should remain in economic circulation for as long as possible. It is an economic model that seeks to maximize the efficient use of resources, reduce waste and keep materials in a continuous cycle.

The circular economy is one of the most innovative and promising trends in the context of sustainable development. This approach is already receiving a lot of attention in developed countries and is becoming part of one of the main strategic policies in the face of environmental, social and economic crises.

Currently, a linear economic model is still functioning in Georgia, which is manifested in inefficient use of resources, a low level of waste recycling and increased pressure on the ecosystem. Accordingly, the adoption and implementation of circular economy principles is an opportunity not only for environmental, but also for economic and social progress. The relevance of the topic is also increased by the fact that the transformations taking place at the global level will inevitably affect Georgia, and the country's competitiveness will be directly related to its environmental policy and innovative approaches.

The article “Development of circular economy in agriculture” by Lomishvili M. and Lachkepiani T. defines the essence of circular economy and the principles of its implementation in the agricultural sector. Successful experience of the introduction of the closed production cycle in the agricultural

sector abroad is shown. It is established that the circular economy is recognized as a tool for reducing waste and food losses (Lomishvili & Lachkepiani, 2022).

Relevant literature in Georgia is rather scarce, which further aggravates the need for research.

According to the Ellen MacArthur Foundation, the circular economy is “an industrial system designed with a recovery-oriented principle. It replaces the concept of ‘end of life’ with recovery, shifts to renewable energy, eliminates the use of toxic chemicals that inhibit resource reuse, and aims to eliminate waste through better design of materials, products, systems and business models.”

According to the World Business Alliance for Sustainable Development, “the circular economy can stimulate innovation, create new business opportunities and jobs, and improve the competitiveness of companies and regions. It also improves resource efficiency, reduces costs and increases resilience.” By creating new jobs and business opportunities, the circular economy contributes to the goals of decent work and economic growth. It also promotes innovation and technological progress, especially in the areas of industry, infrastructure and innovation. For example, the circular economy supports the development of small and medium-sized enterprises, which contributes to more inclusive and diverse economies.

The circular economy can make a significant contribution to the United Nations Sustainable Development Goals, which aim to eradicate poverty, protect the planet and ensure peace and prosperity for all.

Various factors contribute to the transition to a circular economy. One central aspect is product design, which includes the creation of products that serve closed-loop systems and environmental sustainability. Artificial intelligence also contributes to more efficient resource management. Business models that utilize circular economy principles such as the 3R (Reduce, Reuse, Recycle) or 6R (Refurbish, Rethink, Restore) foster innovation and business development. Stakeholder engagement plays an important role in promoting the circular economy.

Global action on the circular economy over the past decade has shown that the concept has now become a key element of many countries' policies to address environmental challenges.

Globally, the amount of waste increases every year. According to the World Bank, in 2020, an average of 0.79 kg of waste was generated per capita per day, equivalent to 2.24 billion metric tons per year. Of this amount, only 17% was recycled, while the remaining 83% (1.86 billion tons) was dumped, incinerated or otherwise disposed of. With increasing urbanization, the annual amount of waste is expected to increase by 73% compared to 2020 and reach 3.88 billion tons by 2050, which means an average of 1.09 kg of waste per capita per day. Against this backdrop, many countries are trying to reduce waste generation and create conditions for its reuse and recycling. In 2015, the European Commission approved an action plan to accelerate the transition to a circular economy.

Research

The study is based on secondary data analysis and a comparative approach. The following methods are used:

- Document analysis – reports from international organizations (EU, UNEP, Ellen MacArthur Foundation) and local agencies;
- Synthesis and interpretation – processing of received information and development of country-specific recommendations.

Results and discussion

International strategy and policy. The European Union's Closed Loop Economy Action Plan 2020 is one of the most advanced policy frameworks for implementing the circular economy. It focuses on the development of environmentally friendly products, sustainable consumption and waste minimization.

- The Netherlands is one of the most ambitious countries in this regard. They have a plan called “Closed Loop Economy in the Netherlands by 2050,” which aims to reduce resource use by 50 percent by 2030 and fully transition to a zero-waste closed loop economy by 2050.

- France approved the Closed Loop Economy Roadmap in 2018, which includes 50 actions for a 100% closed-loop economy. A law was passed in 2020 to eliminate waste and phase out single-use plastic packaging by 2040.

- Germany passed a law on the circular economy and waste management back in 1996. The Resource Efficiency Program (ProgRes) was approved in 2012 and covers six main areas: raw materials, production, consumption, construction, information technology and legal framework.

- Italy's 2020 budget law includes investments to support green projects. The country is also one of the leaders in the EU's environmental management and labeling system.

- Japan was one of the first countries to enact a law to establish a circular society in 2000. Its plans are for five years and are regularly updated. The government updates the plan every five years. The plan emphasizes that financial institutions and investors should allocate resources to companies, non-governmental organizations and projects that work to create a “healthy material cycle society.” To further develop the circular economy, Japan announced the “Circular Economy Vision 2020” in 2020, which aims to develop digital technologies, introduce new business models and improve resource efficiency. In addition, the Resource Circulation Strategy for Plastic was established to address the problem of single-use plastic waste.

- China. In 2021, China's National Development and Reform Commission approved the Circular Economy Development Plan for the 14th Five-Year Plan (2021–2025). One of the main goals of the plan is to increase resource productivity by 20 percent by 2025 compared to 2020.

It is interesting to look at the dynamics in Georgia. It is worth noting that the first steps in this direction have been made in Georgia as well, although, ultimately, the principle of recycling is still far from being properly implemented and achieving effective results.

- In recent years, the level of waste recycling in Georgia has been low. The country's recycling rate is 1.3%, which is significantly lower than both world (7.2%) and European (11.5%) averages. This means that 98.7 percent of resources are used linearly (consumption waste).

- In 2020, 760,942 tons of waste were generated in urban areas of Georgia and 300,065 tons in rural areas, for a total of 1,061,007 tons.

- In 2021, this increased to 1,104,952 tons, of which 768,257 tons were generated in urban areas and 336,695 tons in rural areas. Ninety percent of the waste is not recycled and is thrown directly into landfills.

- Plastic consumption is increasing in the country due to the low price and availability of plastic bags, weak regulation and lack of monitoring mechanisms.

- Between 2010 and 2020, plastic production and imports in Georgia increased by about 71 percent, leading to an increase in illegal dumping, especially in rural areas.

- According to the World Bank, more than 95 percent of waste on the Black Sea coast consists of plastic, which has a negative impact on environmental pollution.

Georgia has embarked on an accelerated path towards a circular economy, and its main challenge is to replace the concept of “recycling” with an economic system in which material cycles are closed. Through the concerted efforts of the government, civil society organizations, the academic sector and international partners, Georgia has started to develop a strategy and roadmap for a circular economy. They aim to apply an integrated approach in many areas, including production, consumption, waste management, secondary raw materials, innovation and investment, as well as ongoing projects in different areas, implemented by different players in different sectors and belonging to different parts of the value chain or at different stages of development.

Georgia has a rather large potential for the development of a closed-cycle economy:

- Abundance of natural resources – Georgia has rich biodiversity, water resources and renewable energy, which favors the development of cleaner production;

- Strategic location – Georgia can become a green logistics hub and develop clean transport and efficient resource management;

- Active young generation – eco-social awareness is growing, especially among young people, which creates a fertile ground for green innovations;

- International support – the country is actively involved in a number of international environmental projects, which increases opportunities to attract financial and technical assistance;

- Agricultural potential – cyclical approaches in agriculture (organic fertilizers, waste reuse) can become one of the pillars of the regional economy.

The transition to the circular economy in our country is accompanied by certain challenges, among which are:

- Low awareness – both in society and in the business sector there is often a lack of information or skepticism about the principles of the circular economy;
- Underdeveloped infrastructure – the country lacks a full-fledged system of separate collection and recycling of valuable waste;
- Insufficient regulatory framework – the direction of the circular economy is not yet fully defined in legislation;
- Passivity of business – many companies consider investing in green technologies a risky and unprofitable business;
- Lack of incentives – there are insufficient tax and financial incentives to support green startups and initiatives.

At the same time, the country has reasons for optimism:

The Georgian private sector is keen to enter European markets, which is based on the free trade agreement and the country's status as a candidate country for EU membership. These important prospects can be realized by improving quality, which is linked to compliance with European production and packaging standards, the development of environmentally friendly production and the introduction of closed-loop economy practices.

Georgia's civil society is another asset and hope on the road to building a circular economy. Environmental sustainability and rights are at the center of attention of NGOs, activists and media, especially in recent years (UNDP: Environmental Justice for All). Ninety percent of the Georgian population, especially young people, are fairly well informed about climate change (UNDP: What Georgians Think About Climate Change?, 2021).

At the same time, Georgia's relatively small economy and impressive track record of rapid and effective reforms create a unique opportunity to make the systemic changes needed to transition to a circular economy.

UNDP is actively assisting our country through this challenging journey of transition to a circular economy. Its support is based on cooperation with the public, private and civil society sectors, as well as sharing international best practices and experiences, including those of the European Union, Norway and Sweden. In 2019, with the support of the Government of Sweden, the civil society organization Georgian Society of Nature Researchers “Orchis” is implementing an awareness-raising program to promote circular economy in Georgia. This program provides guidance to stakeholders on how to accelerate the implementation of circular model principles at different levels of economic activity.

Legal framework and enabling conditions

The most important existing legislative framework that can be used to develop the circular economy in Georgia is related to waste management. In this field, Georgia has already approved the Code and corresponding technical regulations (see 2.2. Status quo of local waste management system, including EPR in Georgia). Georgia has not yet adopted a national legal framework devoted specifically to the circular economy, and municipalities have not formulated corresponding political documents. However, with the European Union's assistance, Georgia is working on a National Waste Prevention Program (2022–2024). The waste prevention program is based on the waste management hierarchy of the EU's waste management framework directive. The hierarchy includes waste prevention, preparing for reuse, recycling, recovery and disposal. The program includes short-, medium- and long-term objectives that aim to turn Georgia into a country committed to waste prevention and recycling. The project will involve the preparation of a Waste Prevention Plan, which will bring Georgia's waste management sector closer to the EU standards.

In 2022, the Government of Georgia commissioned an important document on Georgia's circular economy mapping: an assessment of the circularity level of the Georgian economy. According to the assessment, the share of circularity in the Georgian economy is 1.3%, translating into a circularity gap of 98.7%. The size of the gap points to the fact that the vast majority of resources being consumed in Georgia are of a primary nature. The country's economy is largely linear (GSNE Orchis, 2022).

Georgia's economy consumes 315 million tons of resources per year, which amounts to 78 tons per capita. Over the past few years, the figure has been rising. A circularity level of 1.3% does not mean that 98.7% of resources end up as waste. Several factors contribute to the circularity gap: the majority of raw material consumed (40,056,014 tons) is added to material assets in the form of buildings and infrastructure, while 1,355,355 tons of raw material exist in the form of potentially recyclable biomass, such as wood products and cash crops. The target for the next 5–10 years is to improve the share of circularity from 1.3% to 6.6%. It is important to mention that Georgia is currently working on a National Roadmap to a Circular Economy. The Government of Georgia established the Inter-Ministerial Coordination Board to facilitate the transition to a circular economy in the country. The Plenary Meeting in October 2023 was organized by the MEPA and GSNE "Orchis" to discuss the main steps required for the development of the National Roadmap to a Circular Economy for Georgia.

Challenges for implementation

Georgia's most important political document on waste management contains no national indicators for the reuse of packaging material but establishes overall target values for recycling.

Table. 1. Minimum Targets for Waste Management

Packaging materials for deposit	2026	2030
Recycling Targets	80%	91%
Plastic (bottles)	80%	91%
Metals (cans)	80%	91%
Non-deposit packaging material	2026	2030
Recycling Targets	41%	57%
Paper	51%	69%
Plastic	10%	10%
Glass	48%	66%
Metals	31%	46%
Wood	13 %	21%

We can identify several main challenges related to the implementation of the main principles of circularity and the development of reuse systems in Georgia:

- Waste prevention mechanisms and related incentives are insufficient. Georgia lacks a well-functioning eco-labelling system and mechanisms. There is relatively low awareness of the importance of plastic waste prevention, reuse, sorting and recycling among the public.
- The need to understand best practices related to the involvement of EPR organizations in developing reuse systems.
- The need to raise awareness among business operators and the general public.

In Georgia, total municipal waste produced in 2021 reached 1,104,952 tons, of which cities produced 768,257 tons and rural areas were responsible for 336,695 tons. An analysis of waste streams and studies of their composition shows that municipal waste consists of a combination of organic waste (54.7%), plastic waste (13.8%), paper and cardboard (10.6%), glass (2.3%), metals (1.4%) and other (11%) (The Decree of the Government of Georgia, 2022). Packaging waste is responsible for a significant share of municipal waste, which points to the importance of developing reuse systems. Within the broader category of packaging waste, single-use packaging waste (plastic, paper/cardboard) is responsible for the largest share. Such packaging is common in the hospitality, HoReCa, beverage and retail sectors. Accordingly, it would be appropriate to target these sectors for promoting reusable packaging alternatives.

Conclusions

Circular economy is a game-changer for Georgia, which is trying to take steps towards sustainable development and address serious issues such as efficient waste management, depletion of natural resources and environmental pollution. The country's geographical location, biodiversity and commitments under the Association Agreement with the European Union create favorable conditions for integrating the circular model into both economic and environmental policies.

Georgia has already taken some steps in this direction, but deeper structural changes and a systemic approach are needed. In particular, it is necessary to integrate circular principles into national strategies, transform the education system to increase environmental awareness, improve infrastructure, encourage the private sector and actively cooperate with international partners.

Timely and consistent actions will not only accelerate the country's transformation towards a green economy but also create new economic opportunities, jobs and innovative markets. Circular economy for Georgia is not just an alternative approach, it is a necessary strategy for creating a clean, sustainable and competitive environment for future generations.

The transition to a circular economy is a shared responsibility of both governments and stakeholders. National governments must provide a comprehensive set of policies, regulations, financial and economic instruments that enable local and regional authorities to shape their vision based on shared goals. Raising awareness and teaching about the circular economy in the education system is also necessary.

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