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Circular Economy and Waste Management in Georgia: Policy Challenges and Pathways for Reform

ცირკულარული ეკონომიკა და ნარჩენების მართვა საქართველოში: პოლიტიკის გამოწვევები და რეფორმების გზები

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Abstract

Advancing a circular economy in Georgia presents a significant challenge and opportunity for the country's environmental and economic policy-making. This article explores the significance of the circular economy within Georgia's broader sustainable development agenda, paying particular attention to the evaluation of national waste management policies. The Association Agreement (AA) between Georgia and the European Union has played a vital role in promoting waste and chemical management reforms, contributing to the development of national strategies and strengthening the legislative framework. The paper analyses Georgia's progress in waste management and identifies the key obstacles that continue to hinder full alignment with EU standards. While meaningful progress has been made, the establishment of a comprehensive, EU-compliant system is still incomplete. The assessment highlights persistent gaps in political commitment, institutional capacity, financial resources and legal enforcement, including limited regulatory and monitoring mechanisms, a lack of personnel within the Ministry of Environmental Protection and Agriculture (MEPA), and insufficient financial resources. Other barriers include the inadequate implementation of extended producer responsibility (EPR) schemes, limited waste-including specific waste-recycling performance, lack of technological innovations and insufficient waste processing infrastructure. Nevertheless, the study also identifies opportunities and proposes policy recommendations to improve the effectiveness of Georgia's waste management system by incorporating circular economy principles. These recommendations aim to facilitate the country's transition towards a more sustainable, resource-efficient, cost-effective and resilient waste management System.

Keywords: Georgia, circular economy, waste management, environmental policy, sustainable development.

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აბსტრაქტი

ცირკულარული ეკონომიკის განვითარება საქართველოში წარმოადგენს ერთ-ერთ მნიშვნელოვან გამოწვევასა და შესაძლებლობას ქვეყნის გარემოსდაცვითი და ეკონომიკური პოლიტიკის ფორმირებისთვის. სტატია იკვლევს წრიული ეკონომიკის მნიშვნელობას საქართველოს მდგრადი განვითარების დღის წესრიგის კონტექსტში, განსაკუთრებული ყურადღებით განიხილავს ეროვნული ნარჩენების მართვის პოლიტიკის შეფასებას. საქართველოსა და ევროკავშირს შორის ასოცირების შეთანხმებამ (AA) მნიშვნელოვანი წვლილი შეიტანა ნარჩენებისა და ქიმიკატების მართვის რეფორმების ხელშეწყობაში, ეროვნული სტრატეგიების შემუშავებასა და სამართლებრივი ჩარჩოს გამყარებაში. მოცემული ნაშრომი აანალიზებს საქართველოს პროგრესს ნარჩენების მართვის სფეროში და აღწერს ძირითად ბარიერებს, რომლებიც კვლავაც აფერხებს ევროკავშირის სტანდარტებთან სრულ შესაბამისობას. მიუხედავად არსებითი წინსვლისა, ევროკავშირის მოთხოვნებთან შესაბამისი ყოვლისმომცველი სისტემის შექმნა ჯერ კიდევ არასრულად არის მიღწეული. შეფასების შედეგად გამოვლინდა პრობლემები პოლიტიკური ნებაყოფლობის, ინსტიტუციური შესაძლებლობების, ფინანსური რესურსებისა და სამართლის აღსრულების მიმართულებით - მათ შორის სუსტი რეგულატორული მექანიზმები, კადრების დეფიციტი გარემოს დაცვისა და სოფლის მეურნეობის სამინისტროში (MEPA), არასაკმარისი დაფინანსება და შეზღუდული პოლიტიკის ეფექტიანობა. დამატებით გამოწვევებად რჩება გაფართოებული მწარმოებლის პასუხისმგებლობის (EPR) მექანიზმების არასათანადო განხორციელება, დაბალი გადამუშავების მაჩვენებლები, ტექნოლოგიური ინოვაციების ნაკლებობა და ნარჩენების გადამამუშავებელი ინფრასტრუქტურის შეზღუდული შესაძლებლობები. მიუხედავად აღნიშნული სირთულეებისა, კვლევა ასევე განსაზღვრავს ახალ შესაძლებლობებს და სთავაზობს პოლიტიკის რეკომენდაციებს, რომლებიც მიზნად ისახავს საქართველოს ნარჩენების მართვის სისტემის გაუმჯობესებას ცირკულარული ეკონომიკის პრინციპების ინტეგრაციის გზით. აღნიშნული რეკომენდაციები ხელს შეუწყობს ქვეყნის გადასვლას უფრო მდგრადი, რესურსთმოყვარე და გამძლე ნარჩენების მართვის მოდელისკენ.

საკვანძო სიტყვები: საქართველო, ცირკულარული ეკონომიკა, ნარჩენების მართვა, გარემოსდაცვითი პოლიტიკა, მდგრადი განვითარება.

რეკომენდირებული ციტირება: ხათუნა ჩიკვილაძე, ნუგზარ ბუაჩიძე, გურანდა ჭელიძე. (2026). ცირკულარული ეკონომიკა და ნარჩენების მართვა საქართველოში: პოლიტიკის გამოწვევები და რეფორმების გზები. ჯანდაცვის პოლიტიკა, ეკონომიკა და სოციოლოგია, 10 (2). DOI: https://doi.org/10.52340/healthecosoc.2026.10.01.10.

Introduction

Waste generation is an inherent and inevitable process of modern societal functioning, largely reflecting inefficiencies within production and consumption systems. Over recent decades, the scale of waste generation has increased at an unprecedented rate, driven by population growth, accelerating urbanization, and transformations in consumption patterns. The quantitative increase in waste generation is accompanied by a growing complexity and diversification of its morphological composition (Vergara & Tchobanoglous, 2012), which, in turn, complicates the efficiency of waste management systems. Moreover, the continuous accumulation of generated waste is widely recognized as a significant loss of valuable resources, as it contains materials such as metals, glass, plastics, and paper/cardboard that hold substantial potential for secondary use (Cheremisinoff, 2003; Williams, 2005).

The traditional linear economic model, based on the "take, make, dispose" principle, increasingly demonstrates its economic and environmental limitations under contemporary conditions. On the one hand, it contributes to inefficient resource utilization, while on the other, it intensifies negative environmental externalities. In contrast, the circular economy paradigm offers an alternative framework that links economic growth with sustainable resource use. Circular economy principles foster innovation by encouraging companies to develop sustainable products, adopt alternative materials, and implement closed-loop systems. As a result, environmental pressures are reduced, while new opportunities for economic development emerge, including business models such as product-as-a-service, leasing, and remanufacturing (Bertassini, 2023).

Environmentally sound management of municipal and household waste constitutes a key prerequisite for the efficient use of resources, the decoupling of waste generation from economic growth, and the transition towards a circular economy (Overall Guidance Document on the Environmentally Sound Management of Household Waste, November 2019). In this context, waste prevention, source separation, and recycling are regarded as critical mechanisms for resource conservation and the reduction of environmental impacts.

In Georgia, waste management remains one of the most significant environmental challenges, affecting both hazardous and municipal/household waste streams. At the same time, the country faces a strategic imperative to align its waste management system with European Union standards. The Association Agreement between Georgia and the European Union establishes a legal and policy framework obliging the country to progressively harmonize its national legislation and practices with EU environmental requirements, including those related to waste prevention, separation, and recycling. These obligations are particularly important for the effective implementation of circular economy principles and the improvement of resource efficiency.

Sustainable management of municipal as well as construction and demolition (C&D) waste, including prevention, reuse, and recycling, plays a crucial role in both resource conservation and the broader transformation of national environmental and economic policy towards circular economy principles.

The objective of the present study is to conduct a comprehensive analysis of the existing waste management system in Georgia, assess its alignment with EU legal and policy frameworks, identify key gaps and challenges, and determine potential opportunities and policy directions that could support the effective implementation of circular economy principles and the further development of the national waste management system.

Methodology

To assess Georgia's progress in the field of waste management and identify systemic gaps in management and implementation, a comprehensive analysis was conducted of existing policies, legal, regulatory, and institutional frameworks, as well as waste management practices and available capacities.

The methodological framework of the study was based on an analysis of numerous sources, including both academic and practical ones, namely: scientific monographs, articles published in peer-reviewed journals, unpublished scientific works, government reports, as well as official digital resources from international and local organizations and the private sector.

The study's findings revealed systemic gaps and functional limitations, as well as significant discrepancies between requirements and practices under EU legislation and the standards of multilateral environmental agreements (MEAs). It is evident that, in consideration of the aforementioned points, a series of recommendations was formulated on the basis of empirical evidence. The objective of these recommendations is twofold: firstly, to encourage the development of additional policy measures, and

secondly, to reinforce legal, institutional, and technical mechanisms. It is imperative to emphasize the active involvement of pertinent national agencies and other relevant stakeholders in this process.

Literature Review

The issue of waste management has become a central topic in contemporary discussions on environmental and economic issues. This is due to the growing volume of waste, the complexity of its composition, and its increasing impact on the environment. The existing literature emphasizes the need for waste management systems to transition from a linear economic model to a circular economy model, in which resource efficiency, waste prevention, and reuse form the basis of the system's operation. In this context, both global trends and political and institutional reforms at the national level are of particular importance.

Practical and policy-oriented approaches to waste minimization are discussed in detail in Cheremisinoff, N. P. (2003). Handbook of solid waste management and waste minimization technologies. Butterworth-Heineman, which is one of the key sources in the field of waste management. The author focuses particularly on practical tools for reducing waste and optimizing production processes, which yield not only environmental but also economic benefits. This work is particularly valuable because it combines regulatory requirements with economic considerations, making it an important resource for both policymakers and practitioners.

The study by Vergara, S. E., & Tchobanoglous, G. (2012). Municipal solid waste and the environment: A global perspective - the authors note that waste management is becoming increasingly regionalized and formalized. This is particularly true in developed countries, where high levels of waste generation are accompanied by more organized and systematic approaches to waste management. In such countries, the management of waste is typically the responsibility of the municipal or regional authorities. This approach is said to ensure more effective mobilisation of resources and compliance with management standards.

In the context of Georgia, the prospects and strategic framework for the development of the circular economy are outlined in the document "Georgia's Roadmap for the Transition to a Circular Economy: "A Regional Leader's Path to Transition'" (2023). The document under consideration delineates an ambitious vision for the nation, according to which the principles of the circular economy are to be fully integrated into everyday economic and social practices by the year 2050.

The guide places particular emphasis on the role of innovation, the development of circular economy models, eco-design, and clean technologies. The document also sets out long-term goals, such as reducing waste, increasing recycling rates, and improving resource management, which are based on four key principles: circular innovation, circular culture, circular regulation, and circular regions. An assessment of the state of the waste and chemical management system in Georgia is presented in the report by M. Shotadze et al. (2023), "Report on the Research Mission on Waste and Chemical Management in Georgia." The present study underscores the institutional, technical, and operational challenges that impede the effective functioning of the waste management system. Moreover, the report emphasises the necessity of capitalising on existing opportunities and proffers recommendations for the enhancement of environmental management systems.

Waste Management Performance and Circular Economy Transition in Georgia: Empirical Evidence and Systemic Challenges

Despite recent policy efforts aimed at improving waste management systems and aligning national legislation with European standards, Georgia continues to face substantial structural and operational challenges in the effective implementation of circular economy principles. The country's waste management sector is characterized by limited recycling capacity, insufficient infrastructure, and a strong dependence on landfill disposal. Against this background, an analysis of key performance indicators,

waste generation trends, and material composition is essential for understanding the current state of the system and identifying the main barriers to its transition towards circularity.

According to the existing reports, Georgia's circularity rate is currently 1.3%, markedly lower than the global average of 7.2% and the European average of 11.5%, underscoring the country's prevailing dependence on virgin raw materials rather than on recycling and material reuse [Circularity Gap Report, 2023].

In the country over the past decade, plastic production and imports have risen by 71%, contributing to the proliferation of illegal dumpsites, particularly in rural regions [World Bank, 2023]. Plastic debris constitutes over 95% of the litter identified along Georgia's Black Sea coastline, and in 2020 alone, approximately 93% of the plastic produced or imported in the country became waste, exacerbating pollution pressures on terrestrial and marine ecosystems [EU/UNDP EU4EMBLAS Project].

Currently, most of the generated municipal waste is disposed of in existing landfills. Using the nationwide assessment of the World Bank(WB) and the Tbilisi- and Adjara-wide assessments of the European Bank for Reconstruction and Development (EBRD), the Municipal Solid Waste (MSW) generation for 2022 can be estimated at around 1.2 million tons.

Waste separation at source is conducted only fragmentarily in limited capacity; existing waste composition figures are only rough estimates, since waste composition studies were not carried out in all regions of the country. It is estimated that by 2030, total MSW generation may reach 1.35 million tons a year, and 1.58 million tons a year by 2040 (M. Shotadze et al., Fact Finding Mission Report on Waste and Chemicals Management in Georgia, 2023).

Average MSW composition across the country by shares of various MSW streams can be estimated at following rates: biodegradable waste (paper, wood inclusive) - over 69%, with 46.03% attributed to organic (mostly kitchen) waste, plastic -14.89%, paper/cardboard - 12.32%, glass - 3.54%, ferrous metal - 1.2%, non-ferrous metal - 0.43%, C&DW - 3.69%, wood - 1.07%, WEEE - 0.98% other (e.g. nappies, sanitary towels and other wastes) - around 11%.

Beginning in 2018, with the incorporation of the Extended Producer Responsibility (EPR) principle into its national Waste Management Code, Georgia set a strategic course to transition from the traditional linear, "end-of-life" waste management paradigm to a circularity system. This approach emphasizes closed-loop material flows, aiming to advance sustainable economic growth and improve long-term resource efficiency.

It should be mentioned that civil society engagement has strengthened in recent years, with environmental sustainability and environmental rights gaining prominence in public discourse and advocacy. Media coverage, grassroots activism, and local community initiatives have amplified attention to waste reduction and resource efficiency, contributing to a more enabling environment for circularity reforms [UNDP, Fostering Environmental Justice in Georgia, 2024].

Key findings and gaps

The Georgian Government initiated a comprehensive mapping of the Georgian economy in terms of circularity. Conducted analysis (Georgia's Roadmap to Circular Economy: A Regional Leader's Transition Journey 2024) revealed that Georgia is currently only 1.3% circular, indicating a significant gap of 98.7% in material circularity. Annually, more than 315 million tons of resources enter the Georgian economy, equating to nearly 78 tons per person. Above mentioned highlight Georgia's reliance on virgin materials and the need for more effective circular strategies.

The waste sector in Georgia faces critical challenges, including increasing volumes and complexity of waste streams, threats to human health and ecosystems, limited economic viability of the 3Rs (reduce,

reuse, recycle), and notable contributions to climate change. Key policy and regulatory gaps were identified in the country's approximation to the EU acquis, including alignment with recent EU initiatives such as the Circular Economy Action Plan and Single-Use Plastics directive, as well as amendments to existing directives emphasizing recycling, reuse, and waste prevention. Regulatory, economic, informational, monitoring, and enforcement instruments are either absent or inadequately applied, and compliance monitoring and law enforcement mechanisms are largely ineffective.

Institutional and capacity gaps exacerbate these deficiencies. EU-standard-based policy instruments are underutilized, and enforcement is weak due to insufficient legal authority, limited local capacities, and political reluctance among municipalities to implement administrative measures. Specific gaps include the absence of mandatory quantitative targets for key waste streams (e.g., biowaste, construction and demolition waste, landfill diversion), delays in implementing Extended Producer Responsibility for packaging, lack of integrated permitting and product standards, and inadequate harmonization of emission limits with EU directives. Economic instruments, such as landfill taxes, gate fees, recycling fees, and financial incentives, are largely absent, and data management systems for waste are insufficiently developed.

Financing challenges are significant, with low -cost recovery, heavy reliance on state subsidies, limited private investment, and operational inefficiencies across municipalities. Infrastructure deficits are widespread, including underdeveloped transport, treatment, processing, storage, and disposal facilities. Recycling capacities are minimal, and waste-to-energy practices are virtually nonexistent. Furthermore, the management of historical and industrial waste, including arsenic-contaminated sites and mining residues, lacks responsible institutional oversight. These gaps collectively undermine the effectiveness and sustainability of waste management in Georgia and highlight urgent priorities for policy, institutional, and financial reforms.

Conclusion

Based on key findings and identified gaps, several recommendations are proposed to enhance the waste management system. Mandatory quantitative targets, including reductions in biodegradable waste and landfill diversion, should be established and aligned with EU benchmarks, supported by robust monitoring, compliance verification, and strengthened institutional capacities. Stringent regulations and comprehensive environmental policies promoting recycling and minimizing landfill disposal are essential, alongside implementation of the "polluter pays" principle and gradual cost-recovery mechanisms with reduced government subsidies. Operational efficiency within waste management organizations should be improved, and funding sources diversified through recycling market development, green and climate finance, and public-private partnerships. EU-harmonized policies, legislation, and technical standards should be adopted for general waste management and specific streams, including extended producer responsibility (EPR) packaging, end-of-life vehicles (ELVs), and construction and demolition waste (C&DW). The National Waste Management Strategy and Action Plan should be updated to reflect amendments to the AA, ensuring strategic alignment. Finally, law enforcement mechanisms and institutional capacities should be reinforced to ensure effective compliance and policy implementation.

Evidence demonstrates that circular economy practices have the potential to reduce environmental pollution, decrease waste generation, conserve natural resources, and yield significant socio-economic benefits, including job creation, enhanced cost efficiency, and improved public health outcomes. Furthermore, the successful implementation of circular initiatives relies heavily on supportive policy frameworks, innovative business models, and active community engagement.

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