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RESOURCE MANAGEMENT ACTIVITIES IN THE CONTEXT OF CIRCULAR ECONOMY AND SMES IN SERBIA

Abstract: *The transition towards a circular economy (CE) model presents a formidable challenge that entails a multi-step process, emphasizing the decoupling of economic growth from resource consumption. The pivotal role of micro, small, and medium-sized enterprises (SMEs) in fostering resource efficiency (RE) and advancing towards a circular economy underscores the necessity for dedicated scholarly investigations in this domain. This study aims to conduct a comparative analysis of RE adoption within SMEs, examining both the European Union (EU) as a whole and the specific case of Serbia. By analyzing data derived from the Flash Eurobarometer spanning the years 2012 to 2024, the study tracked the prevalence of micro, small, and medium enterprises in the EU and Serbia. The findings reveal significant advancements made by EU SMEs in embracing resource efficiency practices and transitioning towards a circular economy. Notably, disparities exist among nations, with Western Balkan countries, including Serbia, currently exhibiting lower levels of resource efficiency integration and CE implementation*

Keywords: Circular economy; Resource efficiency; SMEs

JEL classification: Q57; Q56; L26

1. Introduction

The research was motivated by the recognized significance of SMEs as drivers of the transition towards CE, considering their pivotal role in various supply chains. The enhancement of resource efficiency not only serves as a catalyst for transitioning to a circular economy but also underscores the instrumental position of SMEs in this transformative process. This study focuses on the micro-level implications of the circular economy, recognizing that the framework of CE can operate across micro, meso, and macro levels.

The research required an initial review of literature and the systematic organization of theoretical studies concerning the circular economy, as well as micro, small, and medium-sized enterprises, alongside their respective resource management activities.

This research is founded upon data sourced from studies conducted by the European Commission, predominantly within EU member states, while also encompassing EU candidate countries, including Serbia.

Integrating literature analysis with insights from the European Commission's Flash Eurobarometer survey, this study's framework unites resource efficiency, CE, and the involvement of SMEs. Employing a comparative methodology facilitates a detailed examination of resource efficiency practices within the EU and specifically in Serbia. Discrepancies in the implementation of resource efficiency, and consequently the adoption of the circular economy, reveal notable variations across countries, with the Western Balkan countries, including Serbia, currently operating at a relatively lower level of resource efficiency implementation and circular economy integration.

2. Literature review

Upon evaluating the literature encompassing the circular economy, entrepreneurship, and resource efficiency, a deliberate choice was made to focus the analysis on the European Union (EU) as a collective entity, given the prioritization of the circular economy within EU economic policy. Serbia was selected for examination as a candidate



country for EU membership. “The EU stands out as a region actively advancing sustainable development strategies and transitioning from a linear economy model to a circular economy paradigm.” (Gil- Lamata & Latorre-Martinez, 2022, p. 138)

While each country may implement a distinct approach to the concept of the circular economy, the overarching objective of this economic model undeniably revolves around the sustainable utilization of resources and the minimization of waste.

The literature review has been instrumental in advancing this research, focusing on delineating the role of SMEs within the CE domain. It has also shed light on the pivotal contributions of resource efficiency and SMEs towards the effective implementation of CE. While the practical approaches to the circular economy may vary between countries, the primary objective remains consistent - striving for the sustainable utilization of resources and the reduction of waste.

The analysis of the circular economy at the enterprise level involves two interrelated perspectives:

- The internal approach, which centers on processes intrinsic to the company itself.
- The external approach, which delves into the company’s engagements with external stakeholders, the market, and the value chain (Basics towards circular economy, 2022). By integrating both **internal** and **external** perspectives, companies are empowered to:
 - maximize resource utilization,
 - minimize environmental impact,
 - enhance economic efficiency,

and gain a competitive edge by emphasizing sustainability.

2.1. The concept and importance of the circular economy

The implementation of the circular economy (CE) within small and medium-sized enterprises (SMEs) can be characterized by the adoption of a minimum of five distinct CE activities. These activities include: (I) optimizing energy usage to reduce consumption; (II) incorporating renewable energy sources; (III) implementing waste reduction strategies through recycling, waste reuse, or waste sales to other businesses; (IV) product and service redesign initiatives aimed at diminishing material usage or promoting the use of recycled materials; and (V) refining water usage patterns to curtail consumption and enhance reuse practices.

(Garrado-Prada, Lenihan, Doran, Rammer, Perez-Alhaniz, 2021).

The circular economy framework is exemplified in the following manner: “At the micro level (products, companies, consumers), meso level (eco-industrial parks), and macro level (city, region, nation, and beyond), the circular economy aims to achieve sustainable development, fostering environmental quality, economic prosperity, and social justice for both present and future generations. The facilitation of this framework relies on novel business models and responsible consumer behavior” (Kirchherr, Reike & Hekkert, 2017, p. 229).

“The application of circular economy principles unfolds across distinct tiers: the micro level embodies the embodiment of circular practices within companies, birthing innovative circular business models. Here, methodologies like cleaner production, energy efficiency, and industrial ecology harmonize within production procedures. Transitioning to the meso level unveils the synergy amid diverse economic entities, potentially fostering industrial symbiosis. At the macro level, the integration of circular principles extends to broader social spheres, encompassing local communities, cities, regions, states, and the international community (GIZ, 2019, p. 13).

(According to Kirchherr, Reike and Hekkert, 2017, p.229): „CE is an economic system based on business models that replace end-of-life, reduction, alternative reuse, recycling and recovery of materials in production/distribution and consumption processes that operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim of achieving sustainable development, which entails creating quality environment, economic prosperity and social justice for the benefit of current and future generations. This is made possible by new business models and responsible consumers.”

2.2. The concept and significance of micro, small, and medium-sized enterprises in the realm of the circular economy

While the Circular Economy presents solutions to major global challenges such as climate change, biodiversity loss, waste, and pollution (MacArthur, 2024), the increasing significance of micro, small, and medium enterprises (SMEs) in global economies necessitates a heightened focus on this sector in scientific research (Chundu, Pindiriri, & Kaseke, 2020, p. 1888). This attention is crucial

to pinpoint specific obstacles and opportunities for integrating circular economy principles into SME operations, enabling tailored policy support and capacity-building initiatives that empower SMEs to emerge as key players in the transition towards a more sustainable economic paradigm.

Particular emphasis should be placed on the significance of micro, small, and medium-sized enterprises (SMEs) as pivotal agents in the transition process, serving as linchpins within various supply chains while remaining highly susceptible to shifts in policies and regulations. Given their limited scale and resources, SMEs may require additional assistance to align their production methods with the Green Deal framework (European Commission, 2023, p. 1). The exploration of how SMEs integrate circular practices and enhance resource efficiency not only sheds light on existing challenges and prospects but also delineates the trajectory of future economic progress within the sustainability landscape. Clearly defining small and medium-sized enterprises (SMEs) holds paramount importance in shaping the approach of micro, small, and medium-sized enterprises towards embracing the principles of the circular economy.

Micro, small, and medium-sized enterprises (SMEs) are delineated by the European Commission based on criteria encompassing the number of employees, turnover, and the overall value of assets. As per the Commission Recommendation (2003/361/EC, p. 4), “micro-enterprises are establishments with less than 10 employees, small enterprises typically employ between 10 and 49 individuals, and medium-sized enterprises fall within the range of 50 to 249 staff members.”

Resource constraints often compel SMEs to prioritize day-to-day operational responsibilities, thereby facing challenges in executing strategies demanding long-term foresight and investments, such as integrating circular economy principles. Conversely, research by Circular Economy Balkan Beacons, backed by EIT Climate KIC, reveals that the private sector prioritizes profitability over environmental impact mitigation in circular economy initiatives (Popović, Veselinov, 2022).

The urgency of immediate business demands can lead to delays or neglect in adopting circular practices, often giving precedence to short-term objectives. The immediate financial implications of transitioning to circular business models may eclipse the long-term advantages, both environmentally and economically, that such models can bring (Rahmat et al., 2024).

To meet the objectives of the 2030 Agenda, micro, small, and medium-sized enterprises (SMEs) need to transition from linear to circular business models, promoting the imperative of circular economy (CE). However, many companies lack the essential capabilities to integrate innovations into circular business models (Pieroni et al., 2021). Indeed, advocating for policies supporting the linear economy or linear business models should diminish (Brandao, Lazarević, & Finnveden, 2020), thus fostering a shift towards embracing the principles of the circular economy. In a survey conducted among a sample of 105 companies in Serbia, covering seven economic sectors (industry, construction, IT, banking, trade, services and tourism), it was found that 20% of companies were practicing activities to improve the circular economy, such as waste management, recycling and the use of sustainable energy (Babić & Zarić, 2019).

2.3. Micro, small and medium-sized enterprises and legal regulations in the EU and Serbia

The significance of the SME sector is prominently acknowledged at the highest political echelons. In June 2008, the Small Business Act, a pivotal EU document serving as a fundamental guide for small enterprises and entrepreneurs, was universally embraced by all EU member states. Termed as a sort of “constitution” for small businesses, the Small Business Act underscores the principle “Think Small First,” originally introduced in the 2008 Small Business Act for Europe (SBA). This principle advocates for a proactive consideration of how new policies, laws, and regulations impact SMEs before applying them to larger corporations. By doing so, the aim is to alleviate bureaucratic burdens and facilitate enhanced market access and innovation opportunities for these entrepreneurs. Recognizing the overarching importance of SMEs within the economic and social fabric of Europe, with 24 million SMEs comprising 99% of all companies in the EU, underscores their vital role in shaping the region’s business landscape (European Commission, 2023, p. 1).

A study carried out in 2012, involving a cohort of 55 participants comprising small and medium-sized enterprises and entrepreneurs who are members of the MSPP PKS forum, revealed that the tenets of the Small Business Act are deemed essential for effective management practices in Serbia (Gračanac, 2012). The implementation of the Small Business Act at the EU level led to the following legal regulations:



- The revised SME strategy (2020-2025), adopted by the EU Commission, with a focus on the green transition.
- The COSME program (2014-2020) extends the tangible implementation of the Small Business Act (SBA). While COSME concluded in 2020, its initiatives and objectives persisted under the Single Market Program. Unlike being exclusively designated for circular businesses, the COSME program—Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises—supported ventures introducing inventive models, waste reduction efforts, and cross-border collaboration within EU value chains.
- The Single Market Program for the period 2021-2027 serves as a financial mechanism dedicated to bolstering the implementation of the Small Business Act (SBA), specifically emphasizing the enhancement of competitiveness. The Government of the Republic of Serbia has put into effect various essential strategies and programs aligning with the Small Business Act (SBA):
 - The Small and Medium-sized Enterprises Development Strategy (2015-2020) A document that outlines objectives and measures aimed at enhancing the SME sector. This strategy serves as the foundation for SME sector growth in Serbia.
 - The “Recovery and Development” Program (2022) An investment initiative providing assistance to SMEs through subsidies and low-interest loans.
 - The Republic of Serbia’s Industrial Policy Strategy (2021-2030) serves as a crucial element in fostering a circular economy within the country. It strongly promotes circular economy practices, encourages investments

in circular and low-carbon solutions to spur growth, and advocates for more efficient use of resources and energy in industrial operations.

- The Small and Medium-sized Enterprises Development Strategy for 2023-2027 is a pivotal document guiding SME development in Serbia, with key focuses on innovation, digitization and sustainability.

2.4. The structure of SMEs in the EU and Serbia

In the implementation of circular processes, SMEs encounter various obstacles, ranging from obtaining leadership support to aligning circular methodologies with business objectives and legal requirements. Embracing circular economic principles enables companies to streamline their resource management, ultimately reducing both production and operational expenses. The following section presents the organizational layout of SMEs in both the EU (Table1) and Serbia (Table2).

According to the 2023 data, micro and small enterprises in Europe (EU-27) account for almost half of the labor force at 49.7% and generate approximately **36.6%** of added value, equivalent to around **EUR 3.4 billion**. Medium-sized enterprises employ **15.5%** of the workforce and contribute roughly **17%** of net turnover, approximately **EUR 1.5 billion**. Micro and small businesses comprise **99.0%** of all companies, medium-sized businesses make up **0.8%**, while large enterprises constitute only **0.2%** of the total company count. Large enterprises employ about **35%** of the workforce and generate just under half of the total turnover, accounting for **47%** (approximately **EUR 4.3 billion**).

Table 1. Economic structure of companies by size in the EU in 2023

Class size	Number of enterprises		Number of persons employed		Value added	
	Number	Share (%)	Number	Share (%)	(Billion €)	Share (%)
Micro	24,209,297	93,6%	40,803,310	30,0%	1.799	19,8%
Small	1,387,888	5,4%	26,770,763	19,7%	1.527	16,8%
Medium-sized	210,551	0,8%	21,156,339	15,5%	1.512	16,6%
SMEs	25,807,736	99,8%	88,730,412	65,2%	4.839	53,1%
Large	43,420	0,2%	47,355,823	34,8%	4.265	46,9%
Total	25,851,156	100,0%	136,086,235	100,0%	9.104	100,0%

Source: Grow and JRC SME Performance Review 2023/2024, Annual Report on European SMEs 2023/2024, str.2, Luxembourg 2024, downloaded from https://single-market-economy.ec.europa.eu/document/download/2bef0eda-2f75-497d-982e-c0d1cea57c0e_en?filename=Annual%20Report%20on%20European%20SMEs%202024.pdf

Table 2. Economic structure of enterprises by size in Serbia for 2023

Class size	No of enterprises	Number of persons employed	Gross added value
Micro	94 078 (85,3 %)	13,2 %	14,8 %
Small	12613 (11,4%)	19,5 %	20,8%
Total micro and small	96,7 %	32.7%	35,6 %
Medium	2953 (2,7%)	23,1%	24,4%
Total micro, small and medium	109 644(99,4 %)	55,8 %	60,0 %
Large	643(0,6%)	44,2%	40,0%

Source: Radni dokument, Veličina u Republici Srbiji prema veličini, 2023, Republika Srbija, Republički zavod za statistiku, Vol.128, Beograd, 2024

Hence, in 2023, the business landscape of the EU-27 was notably defined by the strong prevalence of micro and small enterprises. This specific scenario underscores the significance of examining how small and medium-sized enterprises integrate circular methodologies to enhance resource efficiency. This analysis not only offers a glimpse into prevailing challenges and prospects but also sets the course for future economic progress within a sustainable framework. To achieve objectives such as climate protection, resource optimization, and digital innovation, active engagement of SMEs is imperative.

SMEs that synchronize their production processes and establish partnerships have the potential to decrease material and energy usage, cut expenses, and acquire added competitive edges, leading to the exploration of new business concepts.

In Serbia, based on statistics from the Republic Institute for Statistics, the economic composition of companies in terms of the number of businesses, employee count, and turnover distribution is as outlined below. In 2023, micro, small, and medium-sized enterprises (SMEs) in Serbia employ over half of the workforce, amounting to 55.8%, and contribute to 60% of the generated added value.

3. Results and discussion

3.1. Resource efficiency in the context of CE

Optimizing resource use aims to maximize the value derived from existing resources, minimize waste, and reduce the consumption of raw materials, leading to environmental and economic benefits. Resource efficiency is a crucial element that

needs to be integrated into the Circular Economy framework. Entrepreneurs embracing the circular model prioritize sustainability and the effective utilization of natural resources, fostering an ecological, social, and economic ethos (Morelli, Pozzi, Gurrieri, et al., 2024, p. 4). Research conducted by the European Commission revealed that SMEs are responsible for around 64% of industrial pollution in Europe (European Commission, 2012), underscoring the vital role of implementing Circular Economy practices within SMEs as a pivotal step towards achieving sustainable development.

Resource efficiency is set to decouple economic growth from resource consumption (Paulo de Sa & Korinek, 2021). Therefore, advancing resource efficiency and promoting the shift towards a circular economy have assumed paramount importance (OECD, 2020, Environment Policy Paper No. 20, p. 1). The concept of a circular economy aims to revolutionize the production, consumption, and disposal of resources. To effectively implement circular strategies, a good grasp of their application is essential. Moreover, for these strategies to be fruitful in contemporary society, they must align with legal requirements, standards, and regulations on both national and international fronts. Achieving a sustainable, lawful, and secure circular approach necessitates a balanced strategy, contributing to the enduring development and resilience of the overall system. Legal frameworks and supportive economic mechanisms are key drivers in propelling SMEs towards circular practices (Karaman and Gavryshkiv, 2020, p. 164).

“The establishment of a competitive economy, such as attaining a competitive advantage, is accomplished through the principles of the circular economy, as highlighted in the Circular Economy Roadmap for Serbia” (Circular Economy

Tabela 3. Resource activity measures taken for the EU as a whole and Serbia

	2012-FL-342		2013-FL-381		2015-FL-426		2017-FL-456		2021-FL-498		2024-FL-549	
	EU (%)	Serbia	EU (%)	Serbia	EU (%)	Serbia	EU (%)	Serbia	EU (%)	Serbia	EU (%)	Serbia
Saving energy	64	62	58	43	59	53	63	38	61	44	66	40
Minimising waste	62	26	58	24	60	33	65	36	64	44	66	35
Saving materials	57	35	49	35	54	41	57	32	57	38	57	39
Saving water	50	45	43	26	44	34	47	24	46	28	49	28
Recycling, by reusing material or waste within the company	61	20	41	28	40	21	42	27	47	26	48	21

Source: Autor prema Flash Eurobarometer

Roadmap for Serbia, 2020, p. 21). This model not only safeguards businesses against resource scarcity and volatile prices but also bolsters the EU's competitiveness, spawns fresh business prospects, and fosters a more innovative and efficient approach to production. According to insights gleaned from the Flash Eurobarometer survey on resource efficiency and green markets in micro, small, and medium-sized enterprises within the EU member states, SMEs have notably embraced resource efficiency practices. The following table (Table 3) offers a comparative analysis of resource activity measures undertaken between the EU as a whole and Serbia during the period spanning from 2012 to 2024, encompassing actions such as energy conservation, waste reduction, material saving, water preservation, and recycling.

Implementing specific resource efficiency measures is essential for advancing the circular economy. Across the EU as a whole, energy conservation emerges as the predominant measure adopted by micro, small, and medium-sized enterprises. The rate of energy-saving practices within the EU remains consistently strong, ranging from 58% to 66%. Conversely, in Serbia, this percentage fluctuates, suggesting a lesser emphasis on this particular resource activity. Potential explanations for this disparity may include:

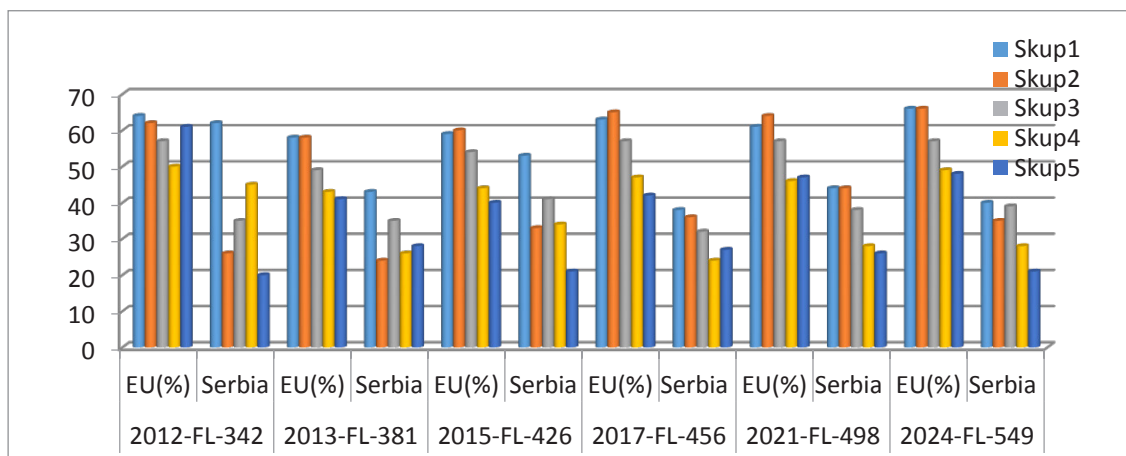
- A lack of financial resources stems from insufficient energy incentives, hindering the adoption of circular practices. The integration of circular strategies often necessitates initial investments in infrastructure, technology, and revamped business processes. All of this poses a challenge, particularly for small and medium-sized enterprises

with limited financial capabilities. Consequently, financial incentives that promote and recognize the adoption of circular practices become crucial (Kitić, Milovančević, 2024). SMEs within the EU leverage diverse funding sources, including national budgets, structural funds, and various EU programs. Regrettably, the Republic of Serbia currently faces constraints in utilizing all available funds essential for designing and executing SME policies in alignment with the EU standard.

- Inadequate regulatory incentives within the realm of energy efficiency contribute to the challenge. The existing incentives are either restricted in scope or lack adequate visibility, leading SMEs to perceive minimal tangible benefits from implementing such measures.
- Lack of awareness among SMEs regarding the advantages and opportunities of energy efficiency, coupled with a scarcity of local specialized advisory institutions, impedes SMEs in identifying energy-inefficient processes.

Regarding waste minimization, this is the most common practice in the EU, showing steady growth from 62% to 66%. In Serbia, although there was a noticeable increase from 26% in 2012 to 44% in 2021, there was a drop to 35% in 2024, indicating that the efforts were not sustained.

Regarding material saving, it is observed that the EU maintains relatively stable values around 54-57%, while Serbia shows a slight increase from 35% to 39%. However, the values in Serbia still remain significantly lower than the EU average.



Source: Autor prema Flash Eurobarometer

Graph 1. Relationship of Resource Activity Measures between the EU and Serbia

- Water conservation is a metric that signifies that the percentage of companies saving water in the EU remains stable around 43-50%. Serbia, on the other hand, experienced a decline from 45% in 2012 to 28% in 2024, suggesting a reduced focus on this type of resource efficiency.

Recycling and reusing within companies: In the EU, the percentage of firms implementing these measures has decreased from 61% in 2012 to 48% in 2024, whereas in Serbia, the percentage has remained low and variable, ranging between 20% and 28%. This indicates a significantly lower level of integration of circular practices in Serbia.

In the following section, a graphical comparison of resource activity measures undertaken in the EU and Serbia is presented (Graph 1).

The chart displays comparative data for the EU and Serbia in different years (2012, 2013, 2015, 2017, 2021, 2024) based on Flash Eurobarometer data (FL-342 to FL-549) for five different resource activity measures. In all years, the EU showcases higher values across all resource activity measures compared to Serbia. The most significant disparities between the EU and Serbia are observed in the recycling measure. The EU consistently maintains high recycling rates within companies, implying that the majority of firms are already utilizing waste materials or recycling them internally.

4. Conclusion

The paper highlights the undisputed connection and significance of SMEs in the realm of resource efficiency toward the transition to a Circular Economy (CE). SMEs in the Republic of Serbia, as in the European Union, are recognized as drivers of eco-

nomical growth and development at the national, regional, and local levels due to their prevalence in terms of the number of companies, employees, and gross value added. Resource efficiency within SMEs represents a critical aspect in achieving CE. Circular economy is closely linked to maximizing resource efficiency, starting from resource conservation (refusing and reducing the use of unnecessary materials) to waste reduction (recycling and recovery).

Analyzing the resource efficiency measures undertaken by SMEs from 2012 to 2024, both for the EU as a whole and for Serbia, based on research from the Flash Eurobarometer, which regularly gathers data from European residents and EU member states, as well as candidate countries, we conclude that significant activities have been undertaken in the field of resource efficiency. However, there is a need to intensify and consistently apply these measures. Among the resource efficiency actions taken, energy saving is the most prevalent. The dedication to this aspect of resource activity is more pronounced in the EU overall compared to Serbia. Underdeveloped policies, infrastructure, as well as a lack of awareness regarding resource efficiency, and insufficient incentive measures are considered key factors contributing to Serbia lagging behind the EU in this regard.

Creating a favorable environment for circular entrepreneurship means establishing conditions where entrepreneurs can easily integrate circular economy principles into their business operations. The future of SMEs is essentially the future of the Circular Economy, stemming from the fact that SMEs are key drivers of economic growth. Therefore, the responsiveness of SMEs to efficient resource utilization and circular economy principles is of paramount importance.



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