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Impact of the Circular Economy on Quality of Life – A Systematic Literature Review

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Abstract

The circular economy (CE) is a multidisciplinary approach focused on achieving the sustainability of the whole society. This review aims to reveal the potential impact of the circular economy on quality of life. This systematic review analyzes studies dealing with the concept of circular economy and quality of life. The methodology process included a keyword search and three selection steps. A total of 39 studies were included in the analysis. We define four topics that emerged from the literature review i) urban sustainable development; ii) waste management; iii) material production and iv) human well-being. All these topics emerged in the literature dealing with issues of circular economy and its impact on the quality of life. We assume that it is implied that every step towards circular economy contributes to the life quality, but there is an evident lack of studies that measure that impact. In Serbia, a small number of researchers were involved in this topic, although it represents one step towards the objective of improving the state of the environment. This review of the literature should serve as a starting point for future research.

Keywords: circular economy; quality of life; the Republic of Serbia; sustainable development

Introduction

The concept of circular economy (CE) has been developed in the second half of the 20th Century (Winans et al. 2017). The knowledge of scientists from many fields of science contributes to the development of this concept (Dunjić, 2020). The concept of circular economy is one of the many concepts focused on achieving the sustainability of the whole society. However, no concept has been so widely accepted by the public, nor has it been given its place in the legislation. In December 2015, the European Union adopted the Action Plan for the Circular Economy (CE), and thus, for the first time, such a concept was regulatory adopted (Vujić, 2017; Dunjić, 2020; European Commission, 2015). The circular economy consists of the principles of 3Rs (reduction, reusing, and recycling) (Wu et al., 2014) and the extended model 6R (reusing, recycling, redesign, remanufacturing, reduction, recovering) (Jawahir & Bradley, 2016). Prieto-Sandoval et al. (2018) propose four key components that form the essence of defining the circular economy: 1. minimal demand for resources, 2. a multidisciplinary approach, 3. sustainable development, and 4. innovation. The transition to a circular economy directly affects production, employment, education, finance, and makes a change in the orientation of public policies (Webster, 2017). The concept of CE is designed as a customized model with economic, environmental, and social benefits (Clube & Tennat, 2020). Circular Economy is a required concept for society at present. If managed well, a Circular Economy can provide environmental welfare and economic advantages (Remøy et al., 2019). In the past, reuse and service-life extension were exclusively a strategy in case of scarcity or poverty, and as a result, they yielded products of poorer quality. To-

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day, they are signs of good resource management and intelligent governance (Ellen Mac Arthur Foundation, 2013). Many business leaders, politicians, and economists in Europe are embracing the circular economy to increase growth and profit, and create new jobs (Ellen Mac Arthur Foundation, 2015).

United Nations adopted the 2030 Agenda for Sustainable Development with its 17 goals that lead to the sustainable development of crucial elements that enable the cohesion of the quality of life of the population and the protection of the environment (United Nations, 2015). The European Green Deal is a new growth strategy that leads to the transformation of the EU into an equitable and thriving society, with an innovative, energy-efficient, and competitive economy where there are zero emissions of greenhouse gases in 2050 and where economic growth is divided from resource use (European Commission, 2019). The European Green Deal is supposed to improve the quality of life of citizens and future generations by providing fresh air, clean water, preserving and restoring ecosystems and biodiversity, renovated, energy-efficient buildings, healthy and affordable food, more public transport, renewable energy, and up-to-date clean technological innovation, longer-lasting products that can be repaired, recycled, and re-used, new jobs, globally competitive and adaptable industry (European Commission, 2019). The circular economy contains ideas about sustainable and long-term disposal of energy and resources (Svenfelt et al., 2019), focusing on positive society-wide benefits (Clube & Tenant, 2020). In the 20th century, modern industry was built on energy obtained from fossil fuels and uncontrolled unsustainable exploitation of natural resources. This has led to the pollution of all spheres of our planet (Scheel, 2016), which led to a significant impact on the quality of life of the world's population. The focus of the CE should be goals such as improving the quality of life, health, and well-being (Ribeiro et al., 2017).

Quality of life (QOL) has multiple characteristics, which is why there is no universal understanding of the quality of life that can be applied in all scientific fields (Čanković et al., 2011; Mirkov, 2016). The World Health Organization (1997) defines the quality of life as the perspective of each individual about life and the value system in which he lives concerning his expectations and possibilities. It is a broad concept that encompasses physical and mental health, social relationships, and personal beliefs. Satisfaction with the quality of life conditioned is the breadth of the gap between personal aspirations and the real possibilities for their realization in each social context (Mirkov, 2016).

Is it possible to achieve a sustainable society and quality of life without economic progress? It is necessary to adopt and implement adequate strategies to answer this question (Svenfelt et al., 2019). In 2008, the Government adopted the Strategy of Sustainable Development of the Republic of Serbia. To achieve sustainable implementation of the strategic goals it is necessary to implement the strategy first at the level of local self-government (Gómez-Álvarez Díaz et al., 2017) to improve the quality of life of the local population. In the Republic of Serbia, municipalities have adopted strategies or action plans for local sustainable development (eg. Subotica, Prijepolje, Kuršumlija, Loznica, Pećinci, Požarevac, Bogatić, Malo Crniće, Pirot, Stara Pazova, Apatin, Niš, Tutin), hence implementation is ongoing very slow. Serbia is currently following a linear economy model. An insufficient proportion of awareness about sustainable development and the circular economy is identified by the lack of an educational body that would deal with the circular economy and legislation. This structure does not support the development of new systems that would encourage the transition to a circular economy (Mitrović et al., 2017). The main goal is to establish a balance between the economy, society, and the environment (Službeni glasnik Republike Srbije br. 57/2008).

The United Nations and the European Union are helping Serbia embark on the path of adopting and implementing the concept of a circular economy. The Ministry of Environmental Protection of the Republic of Serbia adopted the document "Roadmap for the Circular Economy in Serbia" in April 2020. They connected four economic sectors: the processing industry, agriculture and food surpluses and food waste, plastics, and packaging construction. Recommendations are indexed for decision-makers, companies, and citizens (Ministry of Environmental Protection of the Republic of Serbia & United Nation Development Program, 2020).

This review aims to reveal the potential impact of the circular economy on quality of life. The review is focused on scientific papers published between 2003 and 2021 that studied the impact of the circular economy on the quality of life of the population. We aim to summarize the results of the previous work in the field, identify the gaps that emerge, and provide insight into how many studies consider the quality of life when discussing the circular. We also want to investigate the situation in Serbia regarding the circular economy and its impact on the quality of life. If we move from a linear to a circular economy, will the quality of life of the population of Serbia change for the better?

Methodology

This section describes the process of identification and analysis of literature on the topic of circular economy and quality of life. The process involved the identification, collection, and analysis of scientific articles.

The academic research database WoS (Web of Science) is used to search and segregate relevant scientific articles. As for the article type, we considered only original articles, review articles, and early access. The search keywords were developed as recommended by Pullin and Stewart (2006) to be sensitive enough to cover relevant articles, and specific enough to limit the number of irrelevant search results. „Circular economy" was selected as the main keyword phrase, along with the term „quality of life", emerging in the form of the title, abstract, or keywords of the articles. The two terms were used together, in order to provide specific results that are relevant to the main aim of this review. The number of articles returned from each step of the process was recorded and included in the PRISMA flowchart (Figure 1). Articles were then filtered twice to exclude irrelevant articles for the topic. The search was limited to the period between 1 January 2003 and 30 September 2021, because the first paper which contains the phrase „circular economy" found in the WoS database is from 2003.

The literature selection process consisted of three steps:

In the first step of the review process, we used the term "circular economy" as the main keyword phrase in the Web of Science database, emerging in the form of the title, abstract, or keywords of the article (filter I). It resulted in 10,185 articles. Then, we included the term „quality of life" together with the term "circular economy". This combination of keyword terms significantly reduced the number of articles to 50 records.

Afterward, we applied the filter regarding the document type, limiting the search to only research articles and review articles (early access included), while conference papers and editorial materials were excluded. Applying the article type filter (filter 2) excluded 14 records and resulted in 36 relevant articles.

In the third step, we screened the titles and abstracts of all 36 articles to identify the articles that rather mention the quality of life, but do not essen-

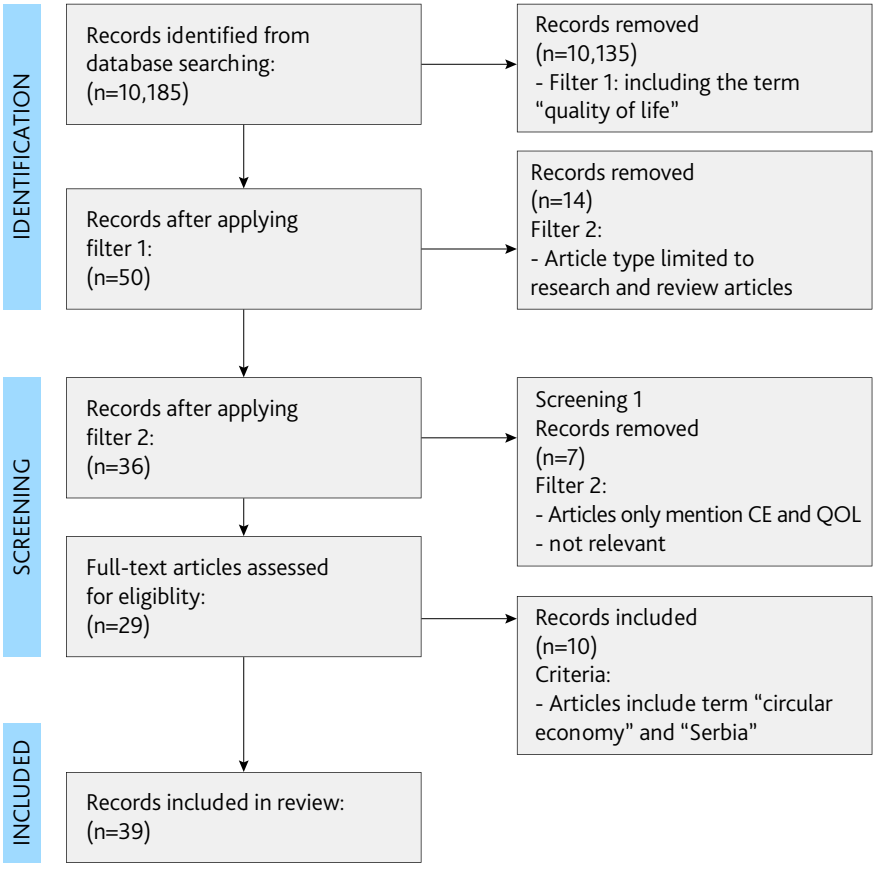

Figure 1. PRISMA flow diagram of the literature identification and review process using initial keywords and WoS database
Source: Moher et al. 2009

tially deal with this topic. This led to the further exclusion of seven articles, so the 29 remaining articles were considered relevant.

The number of 10,185 papers indicates the prevalence of the term circular economy (CE) and its extensive use. Scientists from many fields implement the concept of CE in various branches of science that reflect the importance and popularity of the CE concept in the 21st century. The significant reduction of records after including the term "quality of life" together with "circular economy", indicates that not many articles access the specific impact of the circular economy on quality of life, but rather consider it as implied. The Web of Science database contains studies related to the integration of the circular economy in Serbia. However, during the initial search, the WoS database did not recognize them as primary. We wanted to investigate the situation in Serbia as well, so we performed another round of searches. After another round of search of the Web of Science database, ten studies that include the term "circular economy" and "Serbia" were identified and analyzed. The final stage of the review process includes 39 articles.

Results and discussion

The analysis of the results included screening and review of full articles. After a detailed review of all articles, we have singled out four different areas that consider the concept of the circular economy in terms of its impact on the quality of life. These areas are:

- urban sustainable development,
- waste management,
- material production, and
- human well-being.

By analyzing the keywords, we conclude that the term "circular economy", is the most often combined with the term "sustainability". This term is the most often used in several examples as "sustainable development", "sustainable consumption" and "sustainable city". The following terms are "quality of life", "fundamental human needs" and "well-being".

The number of studies that are focused on circular economy and its impact on the quality of life is constantly increasing (figure 2). However, the focus areas are changing over time. The first studies were mostly focused on urban sustainable development as a result of the implementation of the circular economy concept. Sustainable development, especially in urban areas, continued to be one of the main areas of interest when discussing the circular economy and quality of life to date. However, a second most significant area of interest is waste management, which is to date often considered to be important in the concept of circular economy and quality of life. The third emerging area

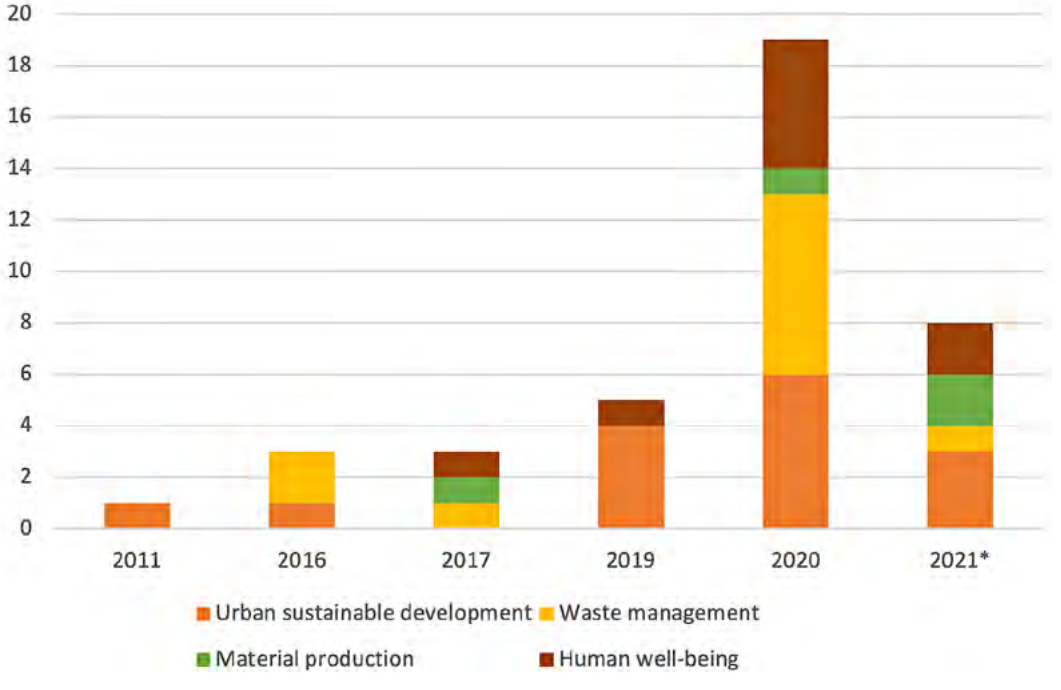

Figure 2. Distribution of research papers and studies included in review
** Included studies published until 30 September, 2021*

of interest is production and materials which appears in the recent articles. The fourth area of interest regarding the circular economy and quality of life is human well-being, which tends to raise the major concern among research articles in recent years.

Urban sustainable development

Sustainable development is often tackled by the articles dealing with circular economy and quality of life, mostly in urban areas. They access different aspects of sustainable development, such as education, built environment, water supply, transportation, economy, etc. Cities occupy approximately 2% of the world's surface, and approximately 60% of the world's population lives in them. Improving the quality of life of citizens is the main idea that should be realized in urban areas (Khudyakova et al., 2020). Cities need to be sustainable because the significant consumption of resources is in cities and will be in the future. Sodiq et al. (2019) highlight the principles that cities should adopt to become or remain sustainable, education in line with sustainable development, use of renewable energy sources, sustainable management of natural resources, sustainable buildings, transport, food waste, population growth, and water safety. Kosanović et al. (2021) implement the principles of circular economy in architecture and construction, to access its potential to increase thermal insulation in residential houses in Serbia, and that way improves the quality of life of residents. Säumel et al. (2019) provide a literature review about the "Edible City" solution. "Edible City" solution represents urban agriculture and food production. This concept contributes to economic, sociocultural, and environmental benefits for citizens comprehending green jobs, reduced pollution (air, water, land), better public health, and quality of life. Drábik et al. (2020) investigate attitudes and behavior of environmentally friendly consumers in Slovakia. They analyze individual ways of consumption and waste policy through the regions in the Slovak Republic concerning environmental preservation. They concluded that purchasers scarcely buy eco-products, because of the high price and deficient distribution of these products. According to Yerznkyan and Fontana (2020), another essential factor in the sustainable development of a city and meeting the quality of life is adequate water supply. Yerznkyan and Fontana (2020) assume that achieving sustainable urban development is impossible without introducing the principles of the circular economy through the latest technologies for innovative water supply. Ecologically sustainable development of the urban economy must have the capacity to reuse treated wastewater and automatic irrigation systems.

Certain cities in Europe seek to implement different programs to achieve sustainable development. For example, Cerreta et al. (2020a) suggest the adoption of strategies and innovative solutions that are in line with the principles of urban development of the European Union is necessary to re-establish the sustainable relationship between the port and the city of Naples (Cerreta et al., 2020a). Cerreta and associates (2020b) propose a methodological approach to landscape design for strategic planning of unresolved territories using the concept of the circular economy. Cuomo et al. (2021) propose living laboratories to be pointer tools for connecting cities and implementing local policies to improve the world's circular economy, which would lead to reduced consumption and improved quality of life. A common goal shared by cities, which can be achieved through dialogue on living labs, was conceived as a new tool of innovative policies to address the challenges of the environment and the health of citizens (Cuomo et al., 2021). Cibulka and Giljum (2020) examined the effects of sustainable development on economic growth and concluded a link between resource use and quality of life. They are convinced that it is necessary to increase efficiency in industrial production to achieve sufficient consumption because the planetary limits have already overreached.

The transport sector emits about a quarter of total greenhouse gas emissions and contributes to climate change. According to Leal Filho et al. (2021), the global focus is on electric cars and public transport, but sustainability cannot be achieved without using clean energy obtained through the circular economy. Mathews (2011) notifies that capitalism has reached extremes and is necessary to move to the concept of a circular economy, which would lead to an improvement in the quality of life without destroying resources and the biosphere. He believes that the green economy will dominate in the middle of the century unless it is blocked by political interests. Swedish scientists (Svenfelt et al., 2019) investigate four sustainability scenarios – i) collaborative economy; ii) local self-sufficiency; iii) automation for quality of life, and iv) circular economy in the welfare state. Scenarios show that there is an approach to thinking about the future beyond what is contemplated. According to them, it is essential to observe the consequences of adopting a correct perspective and thinking about alternatives. They also emphasize the necessity to prepare for a future without economic growth if economic expansion continues or stops. Consumption needs to be decreased to approach sustainable production and consumption. Alternatives should be considered according to current events and policies and analyzed with the potential consequences.

Scheel (2016) proposes the SWIT model (Creating Sustainable Wealth Based on Innovation and Tech-

Table 1. Studies of urban sustainable development identified in this literature review

Study	Geographical area	Research field
Mathews 2011	world	Economy
Cibulka and Giljum 2020	world	Economy
Scheel 2016	world	Economy
Sodiq et al. 2019	world	human capital development, economy management and environmental protection
Yerznkyan and Fontana 2020	world	water management
Leal Filho et al. 2021	Europe	transportation
Bucea-Manea-Ţoniş et al. 2021	Serbia, Romania	Business
Kosanović et al. 2021	Serbia	Architecture
Fauré et al. 2019	Sweden	climate changes
Drábik et al. 2020	Slovakia	consumption and waste policy
Svenfelt et al. 2019	Sweden	Economy
Säumel et al. 2019	Rotterdam, Oslo, Heilderbeg, Andernach and Havana	urban agriculture
Cuomo et al. 2021	Turin	environment and citizens health
Cerreta et al. 2020a	Naples	spatial planning
Cerreta et al. 2020b	Naples	spatial planning

nology). This model is framed on the design of sustainable capital, but with the preservation of natural resources, economic competitiveness, and quality of life in the community.

Sweden has committed itself to becoming fossil fuel neutral by 2050. The combustion of fossil fuels contributes significantly to the release of greenhouse gases. However, emissions also come from imports and are generated during production processes - such as food production, cement production, land cultivation, and air transport. Fauré et al. (2019) proposed less consummation of meat in the diet and switch to veganism and vegetarianism; and switch to cycling or use public transport such as rail, to preserve the environment. Bucea-Manea-Ţoniş et al. (2021) believe that the application of the principles of circular economy, in the Serbian economy would lead to a transition - to modern industrial production. It is necessary to introduce innovations that would bring Serbia closer to developed European countries.

Waste management

When we talk about the development of cities in the modern world and the concept of the circular economy, it is inevitable to discuss waste management, as one of the key drivers of the circularity of materials. This is achieved by employing different treatment strategies, that would bring materials back into the cycle (reuse, recycle), or gain some other benefit from waste, simultaneously diverting it from landfills (material/energy recovery, waste-to-energy systems). Therefore, a number of studies deal with circular economy and waste management strategies. Robeiro et al. (2017) present the projects that have been developed in the city of Guimarães (Portugal) to convert waste into energy. These projects also involve dealing with social issues (repairing medical equipment for families and gathering food for social institutions) that affect the quality of life in the city (Robeiro et al. 2017).

Zorpas (2020) points out how important it is for citizens to be involved in the implementation of waste management strategies. They argue that children of school age should learn about the importance of proper waste disposal, the generation of a smaller quantity of waste, and reuseing waste as a resource. They also state that civic authorities need to initiate regulatory relief measures such as fewer waste taxes, free parking in public spaces, free tickets for cultural events, etc. to assure their citizens to adopt any proposed solution. Construction waste accounts for a large share of waste in the European Union (EU) and across the globe. Colangelo et al. (2020) assume that proper management of construction waste and recycled materials — including established handling of hazardous waste — can have crucial benefits in terms of sustainability and quality of life. They argue that the recycling of concrete to produce secondary raw materials should be accelerated, and that way contributes to a circular economy. Maschmeyer et al.(2020) focused on fish waste and its processing to reuse and obtain biomaterials. The process of processing fish bio-waste affects the reduction of ocean pollution. Fishmeal and oil obtained from fish bio-waste are used to feed livestock, so the use of waste as a resource will increasing-

ly affect the global improvement of the environment and quality of life.

Zając and Avdiushchenko (2020) apply the Dynamic Stochastic General Equilibrium Models (DSGE) outline to reproduce the contemplate impact of escalated resource efficiency on the regional economy. The model undertakes that part of current consumption is restored to producers in the form of repositories that are reused. They measure the parameters of the proposed model for Lesser Poland, a region in southern Poland. There is a positive effect on the economy by improving resources which will contribute to the quality of life of the region's population. This study shows that one component of recycled material is of different types of waste in Serbia was investigated in the context of the circular economy. As the main problem in Serbia, it is stated that a very low share of waste is recycled – e.g. PET bottles (11%) (Schmidt et al. 2020) or lubrication oil (less than 20%) (Dudjak et al. 2021).

Material production

Even though raw materials represent the basis for any kind of economy, not many records emerged within the concepts of circular economy and its impact on the quality of life. However, the studies that did emerge are dealing with various types of raw material production and the importance of their efficiency

Table 2. Studies of waste management identified in this review

Study	Geographical area	Research field
Zorpas 2020	world	waste management strategies
Colangelo et al.2020	European union countries	construction waste
Maschmeyer et al. 2020	Europe	marine bio-waste
Schmidt et al. 2020	Austria, Germany and Serbia	pet bottle recycling
Khudyakova et al. 2020	Russia	waste recycling
Ilić and Nikolić 2016	Serbia	waste treatment
Stevanovic-Carapina et al. 2016	Serbia	solid waste management
Denčić-Mihajlov et al. 2020	Serbia	waste recycling
Dudjak et al. 2021	Serbia	waste lubrication oil
Zając and Avdiushchenko 2020	Lesser Poland (region)	renewable consumption
Robeiro et al. 2017	Guimarães (Portugal)	waste valorisation

merit four components of unprocessed material. The model also estimated the monetary value of renewable consumption at 48.1% of the value of original materials. Russia is trying to solve one of the biggest environmental problems - car tire waste, by introducing a recycling program (Khudyakova et al. 2020). Serbia faces a lack of adequate waste management, insufficient recycling of large amounts of waste, lack of modern technologies, and lack of finances (Ilić and Nikolić, 2016), which affects the possibilities for introducing the circular economy concept. According to Stevanovic-Carapina et al. (2016) hazardous waste disposal is one of the significant problems in Serbia. There are still no facilities for treatment, which leads to inadequate hazardous waste management. It is necessary to create conditions for the treatment of hazardous waste, to preserve the environment and human health, and consequently provide the conditions for circular economy implementation (Stevanovic-Carapina et al. 2016).

Denčić-Mihajlov et al. (2020) conclude that state subsidies have an imminent impact on the recycling of cars and refrigerators in the Republic of Serbia, especially in electronic waste recycling. Management in terms of the quality of life. For example, the excavation and processing of copper and zinc significantly contribute to environmental pollution and global climate change. However, the entire world industry needs these metals. Nilsson et al. (2017) researched the carbon footprint of zinc and copper production. The conclusion is that metals produced from secondary sources emit a minor carbon footprint, but variations can be large scaled. They also state that more investigation is needed to furnish sustainable solutions in a circular economy. Silk produced in Brazil is one of the most competitive in the world. Barcelos et al. (2021) investigate the influence of circularity on silk production from silk cocoons. Circular measures have been proposed to increase production and switch to sustainable energy sources. These measures contribute to the preservation of the environment and have a positive impact on the quality of life of all producers (Barcelos et al., 2021). Research conducted in South Banat (Serbia) indicates that the cultivation of certain crops (sorghum) can lead to sustainable biogas production, using energy obtained from renewable sources, using circular economy measures (Rakascan et al. 2021; Milanović et al. 2020).

Table 3. Studies of material production identified in this review

Study	Geographical area	Research field
Nilsson et al. 2017	world	Metal production
Barcelos et al. 2021	Brasil	Silk production
Rakascan et al. 2021	Serbia	Biofuel production
Milanović et al. 2020	Serbia	Biofuel production

Human well-being

Human well-being is the focus of many studies, given that global trends are often affecting the health or environment of humans. In this review, several studies tackle some aspects of human well-being within the concept of the circular economy. Clube & Tenat (2020) investigate how much the CE concept has an impact on human needs. They assume that it is necessary to switch to a less wasteful way of production and consumption and argue that the role of the economy is to improve the quality of life of people by meeting their needs.

Food quality and quantity have a substantial impact on the quality of life. Mazzocci and Marinno (2020) proposed an advanced agricultural policy for Rome, which improves the quality of food, social relations, and the quality of life of citizens. The proposal includes actions for the reorganization of the purpose of the territory of the city, by relocating the plant for more sustainable food production in the context of the circular economy (Mazzocci & Marinno, 2020).

Díaz et al. (2017) indicate the importance of implementing the Economy for the Common Good model, using strategies. That leads financial interests towards the common good at the municipal level and improves the quality of life for all citizens rather than maximizing profit for companies. Understanding science can be a problem for ordinary citizens, so Eckelman and Laboy (2020) tried to bring science closer to the entire population through art. Their goal was to reveal the main problems we face, such as the impact of excessive consumption on the environment. Industrial ecology handles these influences and could provide changes in the environment and the quality of life of all citizens. They argue that the quality of the environment is closely related to the quality of life of citizens, but both depend on sustainable development. Huttmanová et al. (2019) conclude that there is an impact (of the mentioned factors) on the quality of life and health of the population (based on a detailed analysis of economic, social, and environmental factors). The study is based on data from 2000 to 2017 for the countries of the European Union (EU-28). The results showed that the quality of life of citizens should be in the first place - during the implementation of reconstruction projects in cities. The circular economy has a role in preserving the quality of life of EU citizens. Jaszczak et al. (2021) were involved in projects of cities revitalization in northeastern Poland. In the conversation with local experts and on the analyzed statistical data, they conclude that environmental, cultural, and historical aspects have minimal importance and social and economic aspects of life in the city are more important. During the implementation of these projects, attention was drawn to the importance of renovating public spaces in cities. The potential of these cities is reflected in the favorable geographical position and rich cultural and historical heritage, but that potential is still untapped. They concluded that long-term sustainability can be accomplished through the work and influence of community-based organizations. Based on research in India, Papageorgiou and associates (2020) conclude that good governance within community-based organiza-

Table 4. Studies of human well-being identified in this review

Study	Geographical area	Research field
Eckelman and Laboy 2020	world	industrial ecology, art
Pencarelli 2020	world	tourism
Clube and Tenat 2020	world	human needs
Huttmanová et al. 2019	European union countries	quality of life
Papageorgiou et al. 2020	India	social issue
Díaz et al. 2017	Spain	economy
Demirović Bajrami et al. 2020	Serbia	tourism
Jaszczak et al. 2021	Warmia and Mazuri region (Poland)	town revitalisation
Mazzocci and Marinno 2020	Rome	urban agriculture

tions and financial assistance (in the form of loans) are crucial factors in mitigating socio-economic poverty and positively affecting the quality of life of the local population. If the concept of the circular economy is implemented, poverty could be reduced to a minimum and thus improve the quality of life of citizens. Tourism is considered a less intensive industry concerning environmental pollution, but mass visits certainly affect pollution. However, the preservation of resources and restrictions on the issue of visits contributes to the maintenance of attractiveness for a long duration and contributes to sustainable development and the circular economy. The current era of digital technologies and the transformed economy affect the lives of citizens. The development of tourism has significantly contributed to the quality of life and influenced the field of the circular economy. Smart tourism in a sustainable way emphasizes the quality of tourist destinations. And upgrade the quality of life of all actors in tourism (Pencarelli, 2020). Based on the analysis of the attitudes of the rural population in Serbia, Demirović Bajrami et al. (2020) conclude that the rural population is interested in the sustainable development of tourism, which will also improve their quality of life. Touristic destinations must preserve their natural and cultural values from overcrowding.

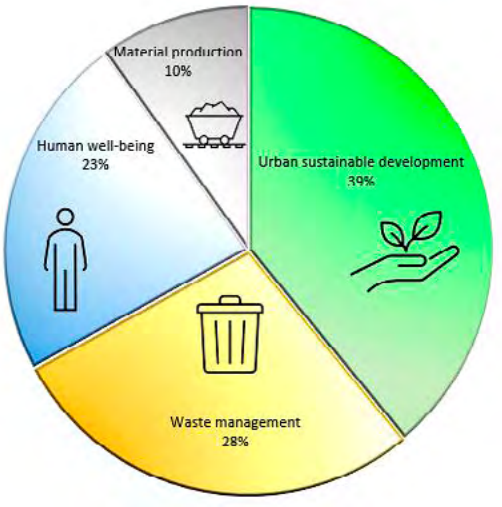

Figure 3. Percentage distribution of the studies reviewed by research field

The state of circular economy in Serbia

The concept of circular economy leads to resource savings, raw material and energy efficiency, environmental protection, and improvement in the quality of life. Fundamental elements that support circular economy development are recycling, green public purchase, encouraging small and medium enterprises. The Serbian economy has the potential to develop a circular economy if the situation improves in the field of recycling and energy (Ministry of European Integration of The Republic of Serbia 2019). The Sustainable Development Goals are derived from the Millennium Development Goals and recognize that the fight against poverty is associated with economic growth and industrialization, targeting several societal needs including health, education, social protection, and a healthy environment and climate-resilient communities (Government of the Republic of Serbia, 2017).

In the period up to 2020, Serbia has made insignificant progress in achieving the sustainable development goals of the Agenda 2030. The notable improvement includes the goals SDG3 (Ensure healthy lives and promote well-being for all at all ages), SDG9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), and SDG15 (Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss). No progress has been made towards the SDG11 - Make cities and human settlements inclusive, safe, resilient, and sustainable (Babović, 2020). Based on the analysis of monitoring the indicators of all 17 Sustainable Development Goals, Serbia has a long way to go before the complete transition from a linear to a circular economy.

Members of the project Legal Support to Negotiations (PLAC III) and the Ministry of Environmental Protection of the Republic of Serbia in November 2019 organized a conference entitled "How to achieve a circular economy?" An ex-ante analysis of the conclusion of the circular economy should provide a foundation for drafting public policy documents that will enable the development of the circular economy in Serbia (Ministry of European Integration of The Republic of Serbia 2019). Vasiljević and Petrović (2020) provide a detailed overview of the state of the circular economy in Serbia. They concluded that the state of the circular economy in Serbia is in an unenviable position. The circular economy in Serbia has not been implemented in practice yet, but experts from several fields are dealing with this topic(Ilić &Nikolić, 2016; Stevanovic-Crapina et al. 2016; Milanović et al. 2020; Denčić-Mihajlov et al. 2020; Demirović Bajrami et al. 2020; Schmit et al. 2020; Dudjak et al. 2021; Rakascan et al. 2021; Kosanović et al. 2021; Bucea-Manea-Ţoniş et al. 2021).

Proposals for improving the current state of the circular economy in Serbia:

1. Develop a stimulating environment for establishing a model of the circular economy.
2. Establishment of a stable and sustainable system of financing circular economy programs.
3. Strengthening public awareness through support to scientific, educational, and professional institutions and professional organizations in creating and implementing programs of regular and additional education for the circular economy; Cooperation with independent associations and citizens' associations to help and support to the implementation of measures to establish a model of the circular economy.
4. Institution structure and legislation - Establish an independent institution that could effectively coordinate and oversee the implementation of policy implementation plans in cooperation with other stakeholders (Vasiljević & Petrović, 2020).

Implementation of a circular economy is a challenging process for developing countries because it requires significant financial, legislative, and human capacity. Therefore, this concept is criticized as too idealistic and unachievable in developing countries. It is impossible to create a society that does not fabricate waste and recycles it indefinitely. There are still no reliable data on the contribution of the circular economy to collective social well-being and quality of life (Corvelec et al. 2021). The linear economy still has its place in developing countries. The introduction of the circular economy requires citizens who can pay for its establishment. The circular economy needs to be established gradually (Vujić, 2017).

Conclusion

Transition to a circular economy requires ecological transformations and innovations to extend the product lifecycle, get other quality products from waste and address the needs of environmental resilience despite the tendency towards economic growth (Scheel, 2016; Prieto-Sandoval et al., 2018; Maťová et al., 2020; Zając and Avdiushchenko, 2020). The European Green Deal instigated a combined strategy for „a climate-neutral, resource-efficient and competitive economy" (European Commission, 2020, 2). Beneficial impact of a circular economy leads to a better quality of life (Szczygieł, 2020). However, we must be aware that this is a long-term process that will require a lot of investment and effort, both in economic terms and in transforming the habits and consciousness of the population. The question is, will it be profitable for producers? Boyer and associates (2020) claim that individual consumers rather decide to buy electrical products that are made entirely from recycled materials - instead of new products. According to Remøy et al. (2019) of learning from each other - to improve the level of development of the circular economy in cities is very important to avoid mistakes and achieve a higher level of the quality of life.

In this review, we assessed the articles regarding the circular economy and its potential to impact the quality of life of the population. Even though it is quite a popular topic lately, a relatively small number of studies are considering circular economy in the context of its possibility to impact the quality of life. We assume that it is implied that every step towards circular economy contributes to the life quality, but there is an evident lack of studies that measure that impact. However, we define four topics that emerged from the literature review i) urban sustainable development; ii) waste management; iii) row material production and iv) human well-being. All these topics emerged in the literature dealing with issues of circular economy and its impact on the quality of life. In Serbia, a small number of researchers were involved in this topic, although it represents one step towards the objective of improving the state of the environment. On the condition that we orientate our economy towards a circularity, the quality of life of the population in Serbia would improve. However, for the present, we still cannot speak with certainty about such a performance, because the transition process is very long, and Serbia is at the very beginning of that path. The authors considered it necessary to contribute to research on this topic. This review of the literature should serve as a starting point for future research.

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