Metallurgical and Materials Data 1, no. 4 (2023): 125-128

Publisher: Association of Metallurgical Engineers of Serbia

Metallurgical and Materials Data

www.metall-mater-data.com

The green economy as a new approach to development and business

Gordana Kokeza*

University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia

ARTICLE INFORMATION:

https://doi.org/10.56801/MMD26

Received: 15 December 2023
Accepted: 25 March 2024

Type of paper: Review paper

ABSTRACT

The traditional linear approach to business, once prevalent among commercial entities, has led to various adverse outcomes, notably increased environmental pollution and a decline in quality of life. Consequently, there's a growing consensus that this model is unsustainable over the long term, necessitating a shift towards new business practices that fulfill economic, social, and environmental criteria. This paper begins by defining the green economy, then delves into its core components, highlighting the developmental potential of its adoption. It concludes that humanity and the economy have reached an intersection where embracing the green economy concept is essential for sustainable future development. This necessitates a fundamental shift not only in our current mindset but also in the prevailing system of values.

Keywords: sustainable development, green economy, circular economy, bioeconomy, development philosophy.

1. Introduction

This study explores the concept of the green economy and its influence on economic development and operations. It is founded on the understanding that traditional linear business models are no longer sustainable due to their environmental impact, the exhaustion of natural resources, and the decline in living standards. Considering this context, the concept of the green economy, which is closely associated with the circular and bioeconomy, is emphasized as a pivotal instrument and basis for forthcoming sustainable development. The primary objective is to achieve a state of equilibrium among the enduring social, environmental, and economic goals of humanity. This paper explores the fundamental elements of the green economy as an innovative framework for development and investigates the potential integration of the green, circular, and bioeconomies to promote future economic and social progress.

2. Green economy as a new development philosophy

Contemporary economic conditions are characterized by numerous challenges, many arising from the excessive depletion of natural resources and significant environmental pollution. These conditions in business and life necessitate radical changes in humanity's awareness of priorities and long-term interests. The green economy, as a new development philosophy, is one of the ways to achieve these changes. Its application aims to enhance human well-being, promote social equality, and significantly reduce environmental pollution. The United Nations Environment Programme (UNEP) views the green economy as a tool for achieving the established goals of future sustainable development (UNEP 2011).

The term green economy, as a new development philosophy, was defined and introduced in a report titled "Draft Plan for a Green Economy," submitted by a group of economists from Great Britain in 1989. Moreover, the significant global economic and financial crisis that began in 2008 was one of the factors that highlighted the need to intensify public and private investments in so-called "green" activities. The goal was to reduce the pollution of the natural environment and enhance the efficiency of using energy sources and other natural resources, particularly aiming to halt the loss of biodiversity.

Regarding the concept of green economy, it is important to say that it represents one of the key instruments and an important supporting pillar of the modern sustainable development of the world economy. The importance of the green economy concept was particularly emphasized at the UN conference held in Rio de Janeiro in 2012, where it was also pointed out that the green economy is one of the most important instruments for the sustainable development of the world economy, but also that it is a completely new development philosophy

* Corresponding author.
E-mail address: gkokeza@tmf.bg.ac.rs (Gordana Kokeza).

that should be applied by all countries of the world, in accordance with their capabilities and development plans (European Commission 2012).

The concept of the green economy is marked by its remarkable complexity and comprehensiveness, as it encompasses virtually all aspects of social and economic life. Due to its scope, its practical application is highly complex, necessitating a systemic approach, sufficient time for implementation and the realization of outcomes, as well as the availability of appropriate resources. Consequently, adopting the green economy concept demands not only a radical shift in mindset but also a thorough reassessment of the entire system of values and priorities. Moreover, it requires that current activities be evaluated concerning their long-term effects on the natural, business, and social environments.

The core of the green economy concept lies in conducting business with specific characteristics: it maximizes resource efficiency, operates with minimal carbon emissions, reduces environmental risks, and contributes significantly to achieving social objectives. Therefore, it is apparent that the green economy concept is built upon three fundamental pillars: economy, ecology, and society.

The characteristics that distinguish the green economy as a new development philosophy include its main directions of action, which are:

- Ensuring social welfare for everyone,
- Achieving equity in social and human rights,
- Acknowledging and valuing the finite nature of natural resources,
- Aiming to enhance the efficiency of natural resource use,
- Properly managing socio-economic activities.

The analysis of the application of the green economy concept thus far highlights a significant discrepancy: it has been adopted much more extensively, effectively, and for a longer duration in developed countries than in the less developed parts of the world. Countries with less development, including RS Serbia, find themselves significantly behind in embracing the green economy concept. This delay is attributed to a scarcity of essential resources, a deficiency in information, an inadequate management system, and a lack of recognition of its developmental potential. Hurdles such as a lower economic development level, the absence of needed financial, human, and material resources, and insufficient support and aid from relevant governmental bodies are among the challenges faced by these countries in applying this concept. The international community and developed nations suggest that less developed countries focus on implementing green economy principles in critical areas for their advancement, particularly in renewable energy usage, proper waste management, water, and land management.

Motivating and encouraging economic entities with suitable instruments to persist in adopting the green economy concept is crucial, aiming for success in fulfilling social responsibility criteria. Socially responsible corporations, particularly those from major polluting sectors, ought to set an example by showing it's feasible to be both profitable and contribute to broader, long-term social goals.

3. Circularity and bioeconomy as elements of the green economy

The term "green economy" is outlined by the United Nations Environment Programme (UNEP), defining it as an economy where social well-being and the reduction of inequalities are improved alongside significant reductions in environmental risks and ecological scarcities (UNEP 2011). The core elements of green economies encompass the circular economy, bioeconomy, clean technologies, waste management hierarchy, industrial ecology, and strategies focused on environmental conservation and restoration (Saikku et al. 2015). Supporting this concept, numerous international organizations, such as the UN, IMF, World Bank, and World Trade Organization, are committed to aiding the effective application of green economy practices.

The European Union's "European Strategy for the Bioeconomy," adopted in 2012, describes the bioeconomy as the production process involving renewable biological resources, which are used to produce food, biomaterial-based products, and bioenergy.

This strategy highlights the tangible opportunity for the production and utilization of renewable biological resources, underscoring the need for sustainable product manufacturing and bioenergy generation. Yet, transitioning to these new production methods necessitates the adoption of novel and often markedly different technologies. Thus, the effective implementation of these emerging development paradigms requires innovative solutions across various sectors, including product development, materials, technological and organizational processes, among others. Innovations in technology and metallurgy play a crucial role in this context, facilitating the creation of products and services as well as the adoption of technological and metallurgical processes that are not only economically viable but also minimize environmental degradation (Fussler and James 1996).

Particularly, the metallurgy sector, fundamental to the progression of civilization, is compelled to embrace the principles of the green economy. The sector's significant growth has introduced substantial energy and environmental challenges. Transitioning from conventional to green metallurgical processes offers substantial benefits. Traditional metallurgical practices heavily rely on fossil fuels for energy, leading to considerable CO_2 emissions. There's a pressing need for innovative approaches to replace fossil fuels with renewable energy sources, alongside efforts to diminish energy consumption and CO_2 emissions. Consequently, topics such as renewable energy substitution for fossil fuels, utilization of metallurgical slag as a resource, low-carbon smelting technologies in the steel industry, and the smelting mechanism and control processes for producing non-quenched and tempered high-strength steel for automotive applications have garnered significant attention for their potential in energy recovery and technological advancement within the metallurgy sector (European Commission 2020).

The metric employed by European Union countries to estimate the progress of ecological innovations is the ecological innovation index. This index is constructed from sixteen indicators, organized into five thematic categories: resources essential for the development of ecological innovations, activities conducted in the ecological innovation process, outcomes of ecological innovations, attained resource use efficiency, and socio-economic impacts.

The trend of the environmental innovation index among European Union countries in 2022 is depicted in Figure 1 (European Commission 2022).

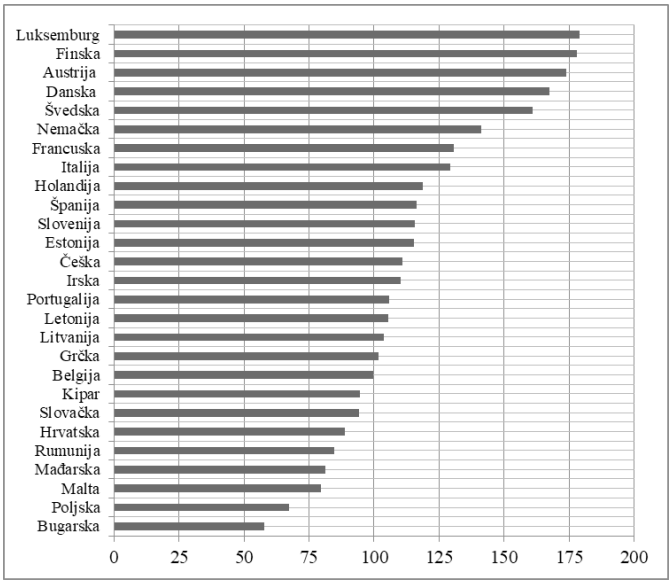

Fig. 1. Movement of the ecological innovation index in the EU in 2022 Source: European Commission (2022)

Based on the environmental innovation index, countries are categorized into three groups: leaders, moderately developed countries, and those with a low level of environmental innovation. An analysis of the data depicted in Figure 1 reveals that Luxembourg achieved the highest environmental innovation index, followed by Finland, Austria, Denmark, Sweden, Germany, France, Italy, and the Netherlands. The average environmental innovation index scores were recorded by Spain, Slovenia, Estonia, the Czech Republic, Ireland, Portugal, Latvia, Lithuania, and Greece. The lowest scores in the environmental innovation index were observed in Belgium, Cyprus, Slovakia, Croatia, Romania, Hungary, Malta, Poland, and Bulgaria.

One of the fundamental principles of the green economy is the bioeconomy, which places significant emphasis on the utilization of renewable biological resources to produce materials, chemicals, and energy (McCormick and Kautto 2013). This methodology converts sustainable biological resources into products that possess added value (European Commission 2017).

The bioeconomy exhibits variability depending upon its central focus, encompassing resources such as biomaterials and energy derived from agriculture, the ocean, and forests, biotechnology with a particular emphasis on the commercialization of biotech innovations, and ecological processes in conjunction with territorial adaptation (D'amato and Korhonen 2021, Rikalovic et al. 2021).

EU documents highlight the importance of integrating bioeconomy with the circular economy, focusing on concepts such as value chain oversight, sustainability, biorefining, efficient resource use, cascading biomass utilization, and more. They underscore the crucial role of research, innovation, and societal shifts towards sustainability (Kokeza et al 2021).

The concept of the circular economy promotes a business model that facilitates the cyclical movement of materials and energy. The primary objective of this initiative is to enhance the durability of materials and energy by implementing inventive design strategies and promoting recycling practices (Josipovic 2020). The objective of this approach is to reduce waste, promote the adoption of renewable energy sources, and ensure that pricing accurately represents actual costs.

Implementing the principles of the circular economy requires a holistic approach across macro, meso, and micro levels (Kirchherr et al. 2016, Kirchherr et al 2017). At the macro level, it necessitates reconfiguring the entire industrial framework of an economy. The meso level focuses on regional economies, particularly eco-industrial parks, whereas the micro level deals with individual businesses, consumers, and products. Essentially, the circular economy aims to create a closed loop that encompasses the procurement of raw materials, their conversion into products, and the recycling of resources for use in subsequent production cycles (Molnar and Josipović 2023).

The mission of the circular economy is to maximize the conservation and enhancement of natural capital by keeping materials and components in use for as long as possible and extending product lifespan (MacArthur 2015). This approach aims not only to boost business efficiency but also to reduce and eliminate external economic impacts harmful to human health, natural environments, and ecological systems.

The analysis of the principal characteristics of the green, bioeconomy, and circular economy reveals that although distinct, these concepts complement each other. For long-term sustainable development, it's essential to apply all three concepts simultaneously. Systemically, the bioeconomy and circular economy act as subsystems within the green economy framework. The circular economy utilizes both renewable and non-renewable resources, while the circular bioeconomy exclusively employs renewable resources to transform waste into value-added products.

4. Development potentials of the green economy

Implementing the green economy concept is vital not only for meeting economic objectives but also for addressing environmental and social goals. This approach can lead to numerous positive outcomes, including:

- Enhanced well-being for individuals
- Reduction of poverty
- Achievement of social equality
- Minimization and elimination of environmental damage
- Decrease in carbon emissions
- Complete elimination of pollution
- Primarily utilizing renewable energy sources
- Creation of new green employment opportunities
- Mitigation of biodiversity loss
- Proper waste management (Kokeza et al. 2023).

Thanks to their advanced economic and technological progress and available resources, developed nations were the pioneers in adopting the green economy principlesOn the other hand, countries like ours and other Western Balkan nations are just starting to undertake this endeavor, embracing it at a significantly slower rate. The primary challenges hindering a smooth transition to these new "green" development models include a low level of economic development, an inadequate economic structure, and a scarcity of necessary resources (Kokeza et al. 2023).

The adoption of the "Action Plan for the Common Regional Market of the Six Western Balkan Countries for the Period 2021-2024" at the Berlin Process summit in Sofia, and the document "Common Regional Market - A Catalyst for Deeper Regional Integration, Economic Integration, and a Step Towards the EU Single Market," addresses the development challenges of underdeveloped countries that impede the progress of developed nations. These documents underline the necessity for Western Balkan countries to enhance their economic competitiveness and expedite their integration into the single European market. Establishing a digital, investment, and industrial innovation zone in the region, aligned with EU regulations, is highlighted as a significant factor in achieving this objective more swiftly (Rikalovic et al 2021).

The "Green Agenda for the Western Balkans for the Period 2021-2030" outlines the commencement of the transition towards "green" economic practices within the Western Balkan countries. This agenda identifies the primary pillars for these countries' long-term green economic transition as follows: climate, energy, and mobility (1); circular economy (2); reduction of environmental pollution (3); sustainable agriculture and food production (4); and biodiversity conservation (5).

The analysis of outcomes from the conducted research, aimed at uncovering issues and limitations in implementing the circular economy within Western Balkan countries, shows that none of the countries under examination possesses entirely suitable regulations for these activities. The most unfavorable results were observed in Bosnia and Herzegovina (BiH) and Serbia. Therefore, it is crucial for these countries to direct their limited resources towards addressing the most pressing challenges, especially those related to land and water management, renewable energy sources development, waste management, etc. By doing so, they could tap into the positive impacts stemming from the green economy's development potential (Korance et al 2023).

5. Conclusion

The adoption of the green economy concept emerged as a response to the challenges arising from the implementation of the linear model of overcrowding in contemporary business environments. The concept of green economy embodies a novel development philosophy that necessitates a fundamental shift in mindset, as well as the correction of the current system of values and priorities. Additionally, it requires a perspective that considers the long-term effects of current activities on nature, business, and society, particularly the environment. This paper asserts that the green economy concept is based on three fundamental principles: the economy, ecology, and society. It emphasizes the importance of maximizing resource efficiency, minimizing carbon emissions, mitigating environmental risks, and achieving social goals optimally. This work focuses specifically on examining the distinct connection between the green, circular, and bioeconomy. The simultaneous application of all three concepts is deemed necessary to attain long-term sustainable development. Due to the inherent complexity of the green economy concept, its implementation is likewise intricate and accompanied by a multitude of challenges. In contrast to developed nations, underdeveloped countries, such as RS Serbia, face challenges in implementing the green economy. These challenges stem from limited resources, insufficient information, inadequate management systems, and a lack of understanding regarding its potential for development. The analysis reveals that none of the countries in the Western Balkans possess a fully suitable regulatory framework for these activities. The resolution lies within the endeavors of the consortium of nations to allocate their finite resources towards addressing the most pressing issues pertaining to land and water management, the advancement of renewable energy sources, and waste management.

References

D'amato, Dalia, and Jouni Korhonen. "Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework." Ecological Economics 188 (2021): 107143.

European Commission (2012), Communication from the Commission of the European Prliament, the Council, the European economic and social Committee and the Committee of the Regions. *Innovating for Sustainable Growth: A Bioeconomy for Europe*. Brussels. 13 February, 2012.

European Commission, Bioeconomy policy: policy background, strategy and contribution to the Commission's political agenda, 2017.

European Commission, Eco-Innovation Index, 2022 (https://green-business.ec.europa.eu/eco-innovation_en)

European Commission. Europe 2020 - a strategy for smart, sustainable and inclusive growth; 2010. Available from: http://ec.europa.eu. , Accessed 15.12.2023.

Fussler, C. and James, P., *Driving eco-innovation: a breakthrough discipline for innovation and sustainability*, 1996.

Josipović, S., "Bioeconomy in higher education curricula" *Ekonomski vidici*, Društvo Ekonomista Beograda, 25 (3-4), (2020) 223 – 242.

Kirchherr, J., Reike, D. and Hekkert, M., "Conceptualizing the circular economy: An analysis of 114 definitions" Resources, conservation and recycling, Vol. 127, 2017, Pp. 221 – 232.

Kirchherr, Julian, Huw Pohlner, and Katrina J. Charles. "Cleaning up the big muddy: A meta-synthesis of the research on the social impact of dams." Environmental Impact Assessment Review 60 (2016): 115-125.

Kokeza, G., Josipović, S. and Urošević S. "Application of the concept of circular economy – a chance for the textile industry" *Proceedings of the IV international scientific conference Contemporary trends and innovations in the textile industry*, 2021, (2021) 175 – 185.

Kokeza, G., Josipović, S. and Urošević S., "Possibilities of application of the green economy concept in the business of the textile industry" *Proceedings of the VI international scientific conference Contemporary trends and innovations in the textile industry* (2023) 205 – 215.

Korance F., Mahmutović Š., Midžić Kurtagić S. "Underpinning Circular Economy Progress in the Western Balkan Countries: A Comprehensive Policy Implementation Analysis", 2023.

MacArthur, Ellen. "Towards a circular economy: business rationale for an accelerated transition." Greener Manag International 20 (2015).

McCormick, Kes, and Niina Kautto. "The bioeconomy in Europe: An overview." Sustainability 5, no. 6 (2013): 2589-2608.

Molnar, D., Josipović, S. "Institutional framework and the role of cities in the process of the broader term circular (bio)economy", in the collection of papers Regional development and demographic trends of the countries of Southeast Europe 2023, (2023) 381–392.

Rikalović, G., Josipović, S. and Molnar, D. "Education of bioeconomy professionals and the role of the universities and research and development networks" in: *Proceedings of the X scientific conference with international participation Jahorina Business Forum 2021*, (2021), 73 – 84.

Rikalović, G., Molnar, D., Josipović, S., "Mini Schengen and the challenges of European interactions", in the proceedings of the International Scientific Conference EKOM 2021 The importance of Mini Schengen for the European integration of the Western Balkans (editor: S. Vujović), Faculty of Economics University of Prishtina with temporary headquarters in K. Mitrovica, (2021) 12 – 39.

Saikku, L., Antikainen, R., Droste, N., Pitkanen, K., Loiseau, E., Hansjurgens, B., Kuikman, P., Leskinen, P. and Thomsen, M., "Implementing the Green Economy in a European Context Lessons Learned from Theories" *Concepts and Case Studies*, 2015, Pp. 1 – 36.

United Nations Environment Programme. Towards a green economy: Pathways to sustainable development and poverty eradication. Geneva, 2011.