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THE ROLE OF DIGITALIZATION FOR GREEN GROWTH AND PERSPECTIVES IN THE CIRCULAR ECONOMY

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Abstract:

Digitalization has significantly increased the amount, accuracy and cost of information. From this aspect, digitalization is of particular importance for the development of the circular economy. Taking into account what economic activities encompass the circular economy, it simply represents a necessity for every society and its well-being.
Digital solutions should help in developing business models based on a circular economy, making the processes in companies more efficient in terms of waste minimization, longer product life and reduction of transaction costs. The need for virtualization of processes and product movement, as well as the increase of efficiency in the reuse of products and resources, will enable growth of business models based on CE. Authors of this paper analyze the importance of the circular economy, its potentials and challenges, underlining the benefits of green agenda, green finance, analysis of the business behavior, thus analyzing the challenges of overcoming the current situation and greater movement towards the CE.

Key words: circular economy, digitalization, green agenda, green finance.
JEL Classification: O00, O10, J69, O44.

INTRODUCTION

The initial and significant meaning of the circular economy is received as an innovative concept, which standardizes efficient use and reuse of resources and a strong business case. Somewhere it is labeled as a strategy for sustainable development, which is proposed to address the problems of environmental degradation and to weaken the concern of the economy from natural resources and the environment. The circular economy creates economic value with more labor and fewer resources, so growth in a circular economy can potentially bring economic benefits, such as job creation and lower structural unemployment, offering a good geographical spread of employment opportunities. This includes employment in the retail sector of second-hand goods, employment in repair activities in the machinery and equipment sectors and repair of electronic and household products. Employment in circular economy activities creates opportunities for economic growth and a visible increase in employment levels. Of course, this also depends on the policy and strategy of each government.

It is interesting to mention that at the heart of the circular economy is life cycle thinking, which involves recognizing the different impacts that occur at all points along the life cycle of a product or material. It also involves recognizing how certain impacts – the impact of materials, the production process, energy sources, distribution channels, disposal options – influence certain choices.[1] The development of

[1] Melece L. (2016) Challenges and Opportunities of Circular Economy and Green Economy. Engineering for Rural Development, pp. 1162-1169.

CE requires exploring the theory of the circular economy and possible practical implementation, but to drive broader change it is critical to collect and share data, disseminate best practices, invest in innovation and empower consumers with appropriate information about green products.[2]

The goal of each country is to examine the basic principles and nature of the circular economy, the problems of the transition to a circular economy and to propose relevant policies, possible solutions and a constructive mechanism for promoting a circular economy.[3] The countries of the Western Balkans and their citizens have the task of adopting and implementing strategic documents and plans aligned with the concept of a circular economy in order to solve not only the problem of waste management, but also to raise the awareness of the population about the rational use of resources and care for the future of the region and the planet.

CIRCULAR ECONOMY: POTENTIAL AND CHALLENGES

Based on our interest and contribution in the field of CE and the Green Agenda through projects, research, publications, our goal is clear - to foster the green transformation of the Western Balkans by effectively facilitating the implementation of the Green Agenda for the Western Balkans (GAWB) Action Plan 2021-2030 at the regional level. With the endorsement of this action plan by the GAWB in 2020, the region committed to aligning with the ambition of the European Green Deal to achieve carbon neutrality by 2050. The ambition of the Western Balkans Green Agenda Action Plan, coupled with its complexity, requires a holistic approach. Key efforts are needed to build institutional capacity across the Western Balkan economies to implement this Action Plan, provide technical assistance, conduct analytical work and raise awareness of the green transition.

The expected results include functional mechanisms guiding the implementation of the Action Plan, robust platforms for stakeholder consultations and improved analytical foundations.

The objectives targeted for achievement are aligning the Western Balkans region with the EU's ambition to make Europe a carbon-free continent by 2050, unlocking the potential of the circular economy, combating air, water and soil pollution, promoting sustainable methods of food production and supply, and harnessing the region's enormous tourism potential, focusing on protecting biodiversity and restoring ecosystems.

Although it is becoming a hotspot for climate change, our region, which is too often under pressure from various socio-economic or political crises, is often a reason to distance ourselves from the urgency and ubiquity of climate change, as well as from the worryingly low recycling rates and high municipal waste generated per capita.[4] As these are not simple goals, it is necessary to renew the high-level links undertaken under the Western Balkans Action Plan, to foster a regional hub for learning and knowledge exchange on the Circular Economy, and to align financing pathways and unlock green investments.[5]

Research on the Western Balkans reveals that only 30% of business owners see climate change as a problem for their businesses, while 43% believe that the green transition will have no impact on their business, and 37% have not taken any steps to reduce the environmental impact of their businesses. Unfortunately, more than a third of businesses (39%) do not carry out any circular economy activities/initiatives. Most

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[2] Drakulevski, Lj., Boshkov, T., (2019) *Circular Economy: Potential and Challenges.* IJIBM International Journal of Information, Business and Management, 11 (2). pp. 45-52. ISSN 2076-9202 (Print)/2218-046X (Online)

[3] Beasley J., Georgeson R., Arditi S., Barczak P. Advancing Resource Efficiency in Europe: Indicators and waste policy scenarios to deliver a resource efficient and sustainable Europe. Brussels: European Environmental Bureau (EEB), 2014. 50 p.

[4] Best H., Kneip T. The impact of attitudes and behavioral costs on environmental behavior: A natural experiment on household waste recycling. Social Science Research, vol. 40(3), 2011, pp. 917-930.

[5] Drakulevski, Lj., Boshkov, T., (2019) *New Framework For Job Creation: Circular Economy Activities.* IJIBM International Journal of Information, Business and Management, 11 (2). pp. 53-61. ISSN 2076-9202 (Print)/2218-046X (Online)

businesses consider it cheaper to produce a new product than a recycled one. These percentages seem to be in stark contrast to encouraging percentages such as: circular economy strategies can reduce global greenhouse gas emissions by 40%; create 700,000 new jobs in the EU alone by 2030; or unlock a $4.5 trillion economic opportunity. That is why we need more action-oriented and more opportunity-oriented lenses among all key stakeholders in the field.

Collective efforts are needed, in which we all have an important role to play. They are essential for irreversible sustainable growth. The commitment of governments to the transition to a circular economy, the Action Plan for the Western Balkans, the European Green Deal presuppose the adoption of strong and enabling policy and regulatory frameworks, along with models to incentivize businesses. It is our businesses that bear the brunt of the transition and require systemic support, so that the increase in CE is observed everywhere and in all major economic players.[6] They also advocate for a leading role in accelerating CE, with instrumental financial support extended by the financial sector and the donor community. The key constraints to moving towards a circular economy model are additional costs for 49% of businesses, lack of skills and expertise (30%), lack of regulatory framework (28%), lack of government subsidies (29%), lack of consumer demand (20%), according to the Balkan Business Barometer 2023. Therefore, the Western Balkans Action Plan should be seen as an opportunity for development, growth and opportunities and should be recognized through the positive perspective it has and should not be seen only from a cost perspective. Recent examples of massive expansion of renewable energy capacity and construction of interconnectors in parts of the region are a step in the right direction. Important decisions for green growth lie in greening our transport and mobility, investing in energy efficiency, building on the EU's wave of green jobs and investments.

GREEN AGENDA IN THE EU: A VISION FOR SUSTAINABLE ECONOMIES

The Western Balkans are becoming greener through EU-aligned policies and the Western Balkans Green Agenda supports this. But how do we compare to the EU? Environmental policies in the region have improved by 15% and renewable energy consumption is at 30.5%. However, CO2 emissions per GDP are twice the EU level, energy productivity is at 1/3 of EU levels and fertilizer use has increased by 116% since 2008. However, citizens are demanding green changes as 61% are ready to improve the environment which means that the Western Balkans must continue with a greener future.

In terms of green finance as the path to greater competitiveness, it can be seen through several segments – competitiveness, investments, financial markets and improvement of regional financial services.

Investment policy reforms relate to enhanced alignment with EU investment standards; a modernized investment policy framework in line with EU standards; increased investor confidence measured by various international reports as well as increased capacities of investment experts in the region. In this regard, investment promotion is of great importance, which includes a developed regional investment promotion work program, new investors leading in targeted priority sectors, new FDI attracted in targeted priority sectors.

In terms of financial markets, the focus is on developing a modern payment system that facilitates cost-effective payments within the Western Balkans and with the EU through SEPA, as well as supporting the

[6] EC. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Closing the loop – An EU action plan for the Circular Economy COM(2015) 614 final, Brussels, 2.12.2015. [online] [17.12.2017]. Available at: https://eur-lex.europa.eu/

implementation of instant payment interoperability models. Strengthening regional cooperation is also one of the priority topics for financial market development. This refers to exchanges for the development of products or solutions focusing on areas of market failure and market creation opportunities; using available EU funds and IFI financing to provide support to local institutions that are actively being explored/strengthened. Particular priority is also given to industrial development, building industrial alliances, supporting micro, small and medium-sized enterprises (MSMEs), regional development of creative industries, sustainable development of tourism.

GREEN AGENDA & GREEN FINANCE

Regarding the situation in Macedonia in terms of green loans, the National Bank of Macedonia has recorded an increase in green loans by 2.8 times since 2019, while the growth in 2023 is 29.1%. NBRM has published a report on green loans for the fourth quarter of 2023. They grew by 5% in the period and 29.1% on an annual scale. According to the report, banks' claims for green loans amounted to 19.9 million denars (323,000 euros) at the end of 2023, compared to 7.2 million denars (117,000 euros) four years earlier. Most of the growth in green loans is from financing the corporate sector and the majority of loans are provided by large banks. Despite the significant growth, the share of green loans is at a very low level. In the period 2019-2023, it increased from 2.2% to 4.5%.

The bank defines the category as loans for projects supporting sustainability, the environment or goals that contribute to the green transition including the development of environmental protection technologies. According to World Bank standards, such financing allows the borrower to invest exclusively in projects with a significant contribution to the environment and in projects that reduce the negative effects of climate change. In this segment, it is particularly important to emphasize the importance of digitalization, which encourages the transformation towards a more sustainable circular economy. Namely, in addition to helping close material loops by providing accurate information on the availability, location and condition of products, Digitalization also enables more efficient processes in companies, helps minimize waste, promotes a longer product life and minimizes transaction costs. Thus, digitalization strengthens business models by helping to close the cycle, slow down the material and narrow the cycle with increased resource efficiency.

We conclude that green loans aim to improve the energy efficiency of households and the corporate sector, to support investments in green technologies, materials and solutions, renewable energy sources, pollution control and prevention, environmental protection and climate change risk reduction. Our vibrant entrepreneurial ecosystem must innovate new business models, which are based on the principles of reuse and sharing. And citizens have a distinct contribution to make by embracing sustainable practices for “more with less”. [7]The long list of challenges on this path that entail finance and skills gaps, inherent limitations to recycling, missing key economic assets and many others – it is a call for joint efforts. Neglecting to embrace the principles of the circular economy is not feasible, as it risks anchoring the region in outdated carbon-intensive technologies.

[7] EC. Progress Report on the Roadmap to a Resource Efficient Europe. SWD/2014/0206 final/2. [online] [27.09.2017]. Available at: https://eur-lex.europa.eu/

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DIGITALIZATION AND BUSINESS MODELS SUPPORT IN CIRCULAR ECONOMY

Fostering green growth and harnessing the potential of the circular economy requires collective efforts, in which we all have an important role to play. They are essential for irreversible sustainable growth. It is our businesses that bear the brunt of the transition and require systemic support, so that the increase in CE follows everywhere and in all major economic players.[8] Financial support is needed, extended by the financial sector and the donor community. At the heart of the circular economy is life-cycle thinking, which involves recognizing the different impacts that occur at all points along the life cycle of a product or material. Research on the Western Balkans reveals that only 30% of business owners see climate change as a problem for their businesses, while 43% believe that the green transition will have no impact on their business, and 37% have not taken any steps to reduce the environmental impact of their businesses. Unfortunately, more than a third of businesses (39%) do not carry out any circular economy activities/initiatives. Most businesses believe that it is cheaper to produce a new product than a recycled one.

Although becoming a hotspot for climate change, our region, which is too often under pressure from various socio-economic or political crises, is often a reason to distance ourselves from the urgency and ubiquity of climate change, as well as from the worryingly low recycling rates and high municipal waste generated per capita. But the fact is that businesses must always follow market signals and act quickly, as well as adapt quickly to changes in order to overcome the challenges that seem to be dynamic every day. Aligning the Western Balkans to become a carbon-neutral region or Europe by 2050 will not be simple at all. Namely, in the direction of implementing all necessary activities, additional costs have been detected for about 49% that businesses need to make, there is a lack of skills and expertise for 30%, a lack of regulatory framework for about 28%, in addition to the necessary financial support because the green transition implies technologies that should ensure sustainability, environmental protection, energy efficiency. In this direction, as confirmation of the impact of digitalization, it is that in 2023, the area of digital transformation shows a huge adoption rate, with over 90% of organizations engaging in various digital initiatives, emphasizing the widespread nature of digitalization across industries, which does not bypass us as a country. [9]The business sector needs to implement numerous projects on the topic of green energy, green smart technologies aimed at encouraging green growth, but also at raising awareness about the green transition through training for professional excellence for the green transformation. This means that while we emphasize the significant benefits of transitioning to a green economy, it is essential for businesses to acknowledge and manage the associated risks. Namely, there are certain risks to a company's transition to a green economy, such as the high costs of adopting sustainable technologies, retraining employees, or upgrading existing infrastructure. This requires careful planning, strategic decision-making, and financial investment to overcome these initial barriers. Transitioning to a green economy is a long-term solution, and it is therefore important to recognize that sustainable policies and investments often take time to yield profitable returns.[10]

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[8] EMF (2015) "Growth Within: A Circular Economy Vision for a Competitive Europe", EMF, SUN, McKinsey Center for Business and Environment

[9] Nikolić D, Whyte J (2021) Visualizing a new sustainable world: Toward the next generation of virtual reality in the built environment. Buildings 11(11):Article 11

[10] Hobson K. Closing the loop or squaring the circle? Locating generative spaces for the circular economy. Progress in Human Geography, vol. 40(1), 2016, pp. 88-104.

The best example is the development of renewable energy infrastructure. The construction of wind farms, solar farms, and hydroelectric facilities requires significant initial investment and planning. However, over time, as these projects become operational and begin to generate clean energy, they gradually become financially viable and provide a significant return on investment. Additionally, businesses must manage potential regulatory risks. As governments implement policies and regulations to drive the green transition, companies must stay abreast of changing compliance requirements. Failure to comply can lead to fines, penalties, and reputational damage.[11] By proactively complying with environmental regulations and actively participating in sustainability initiatives, companies can mitigate regulatory risks and demonstrate their commitment to responsible business practices.

Digitalization is driving the transformation towards a more sustainable circular economy. Namely, in addition to helping close material loops by providing accurate information about the availability, location, and condition of products, Digitalization also enables more efficient processes in companies, helps minimize waste, promotes a longer product lifespan, and minimizes transaction costs.To create a fully circular business model, digital business ecosystems must be designed to make significant decisions and take action. While companies ratchet up their digital processes, they must simultaneously implement circular business models and use digitalization to create durable, interoperable ecosystems that support circular ambitions and create new opportunities for innovation, differentiation, synergies and jobs.[12] Developing this inherent virtuous circle of economics will produce efficiencies, savings and additional profits.

Thus, digitalization strengthens business models by helping to close the loop, slow down material and narrow the loop with increased resource efficiency. Digitalization is simply no longer an option. In 2023, the field of digital transformation shows a huge adoption rate, with over 90% of organizations engaging in various digital initiatives, highlighting the pervasive nature of digitalization across industries. Digital transformation is no longer just a strategic choice, but a business imperative.An efficient business ecosystem can only operate if it is fully digitalized. Digitalization's ability to facilitate business ecosystem collaboration across geographies and organizations is central to the realisation of a global circular economy. While it is attractive for an incumbent to pursue an ecosystem's key intermediator role in a centralized digital platform for the circular economy, it is difficult for established industry players to do so. To benefit from a digitalized ecosystem while protecting against a centralized digital platform owned by a dominant player, incumbents must realize a shared digital backbone for the circular economy that accelerates the transition and reduces time, cost and risk in implementing circular business models. Recent history shows how the emergence of shared cross-industry backbones has enabled innovation and differentiation in a business ecosystem without monopolizing the foundational infrastructure.[13] A digital backbone for the circular economy will have a similar impact on accelerating competitive circular business models and putting global climate goals within reach. The migration to a digital core provides the base layer for the transition to a circular economy's ecosystem-centric business model. Executives must address new ways of working and new principles that allow value creation, capture and delivery. While some organizations may elect to be keystone players; gaining experience through participation is vital. The shared global digital

[11] Trischler MFG, Li-Ying J (2022) Digital business model innovation: toward construct clarity and future research directions. Rev Manag Sci:1–30

[12]Jackson, T (2009) Prosperity Without Growth? The transition to a sustainable economy, Sustainable Development Commission, UK

[13] Tunn VS, Bocken NM, van den Hende EA et al (2019) Business models for sustainable consumption in the circular economy: an expert study. J Clean Prod 212:324–333

backbone for the circular economy offers benefits besides co-creation with business-ecosystem partners and customers.

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