

THE ROLE OF FINANCE IN ADVANCING THE CIRCULAR ECONOMY: A FRAMEWORK FOR SUSTAINABLE INVESTMENT

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Abstract: This paper explores the role of finance in advancing the circular economy (CE), focusing on how financial strategies can support the transition to more sustainable and resource-efficient business models. The study explores the financial mechanisms such as green bonds, impact investing, and public-private partnerships that facilitate circular economy projects, highlighting their potential to reduce environmental impact and promote long-term economic growth. It also discusses key challenges in financing circular initiatives, including long investment horizons, regulatory uncertainties and the lack of standardized financial models. The paper concludes that the integration of environmental, social and governance criteria (ESG) in investment decisions and the development of innovative investment models, such as product as a service, will be key in scaling circular economy practices. Ultimately, a joint effort between financial institutions, policy makers and businesses is essential to create a sustainable circular economy.

Key words: Circular Economy, Sustainable Finance, Green Bonds, Impact Investing, Public-Private Partnerships

1. INTRODUCTION AND LITERATURE REVIEW

In recent decades, the circular economy (CE) has become a central topic in discussions on sustainable development and environmental protection. Traditional linear economic models, characterized by a "take, make, dispose" approach, have led to significant environmental damage and inefficient use of resources. The circular economy represents a business model based on reducing waste, reusing resources and optimizing value throughout the product's life cycle (Ellen MacArthur Foundation, 2013). Emphasis is placed on saving resources, reducing harmful gas emissions and improving the efficiency of business processes within a circular flow in which products, components and materials pass from one form to another, which enables the extension of the product life cycle and the reduction of negative impacts on the environment. In addition to the environmental aspect, the circular economy has the potential to create significant economic benefits, including new business opportunities and the opening of new markets (Geissdoerfer et al., 2017).

Finance plays a key role in enabling the transition to a circular economy by providing the necessary capital to finance sustainable projects, use sustainable technologies and business models. However, investors are reluctant to support these types of business models because they do not see a clear return arising from this type of business. In the early stage of the transition to a business model provided by the circular economy, finance plays a key role, in terms of providing support through grants or subsidies. However, in order for financing to become sustainable, a transition to innovative financial models is necessary, such as impact investments, green bonds and sustainable financing strategies (Bocken et al., 2016). In the context of financial mechanisms, green bonds are often cited as an instrument supporting environmental projects, including circular economy initiatives (Flammer, 2021). These bonds allow the private and public sectors to finance projects that have clear environmental goals, reducing the environmental footprint and supporting the transition to sustainable business practices. In their work, Novak and Šojat (2018) analyze the application of the circular economy in the energy efficiency sector, as well as strategies for attracting investment in projects that use renewable energy sources and recycling, and emphasize the importance of developing innovative financial models and investing in green technologies, with a special emphasis on the role of the state in support through favorable loans and tax breaks.

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Also, public-private partnerships (PPPs) represent a model that can facilitate the implementation of circular economy infrastructure projects, enabling the mobilization of necessary capital and risk sharing (OECD, 2018). Such investments have the potential to create long-term economic growth, through innovation in manufacturing, recycling and reducing resource consumption.

In order for economic systems, which are based on resource efficiency and environmental management, to come to life, it is necessary to exchange the intersection of the practices of finance and the circular economy. It is necessary to further investigate how specific financial models can be harmonized with the specifics of the sector and market, and how to stimulate the wider application of circular principles in the industry. The implementation of circular principles in many cases is conditioned by high initial investments and lack of education about sustainable practices in entrepreneurship (Janković and Pavlović, 2020). In research on the impact of financial instruments on sustainability in Southeast Europe, Lukić and Petrović, 2021 point out that in this part of Europe, green bonds and public-private partnerships are still in the development phase and that their weak development is affected by regulatory uncertainty and weak institutional support.

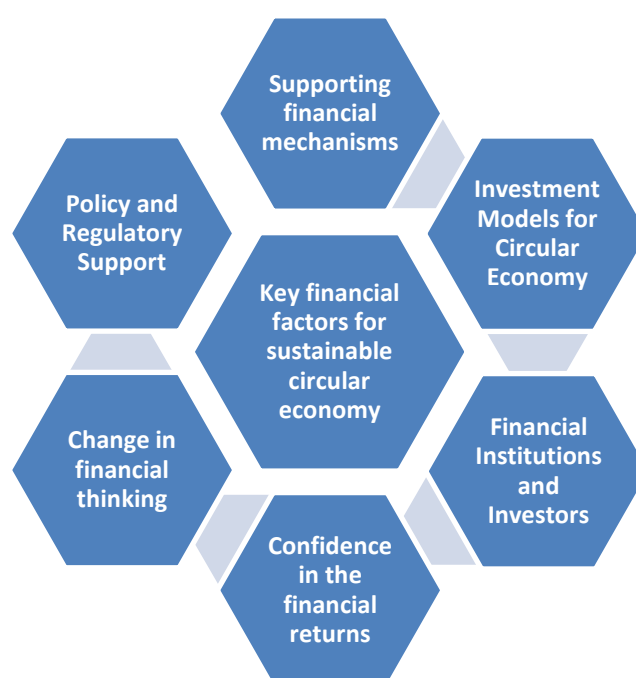
2. METHODOLOGY

This paper employs a systematic literature review methodology to explore the role of finance in advancing the circular economy and to develop a framework for sustainable investment. The review process involved a comprehensive search of peer-reviewed journal articles, books, reports, and conference papers published within the last seven years, focusing on circular economy principles, financial models, and investment strategies. Databases such as Google Scholar, Scopus, and JSTOR were used to identify relevant studies. Keywords such as "circular economy," "sustainable finance," "investment models," and "financial mechanisms for circular economy" were used in the search

3. FINDINGS

The findings of this review reveal a growing recognition of the importance of finance in enabling the transition to a circular economy (CE). Several key themes emerged from the literature regarding financial mechanisms, challenges, and opportunities for circular economy investments. These include innovative financial instruments, the need for new investment models, and the role of financial institutions, investors, and policymakers in fostering a sustainable circular economy (Picture 1.)

Picture 1 – Key financial factors for creating sustainable circular economy



Source: Author's conclusions

Financial Mechanisms Supporting Circular Economy - The literature identifies various financial models that are essential for facilitating the transition to a circular economy. It is clear that traditional financing mechanisms, such as public funding, grants and subsidies, were crucial in the very beginning of the development of circular economy projects (Preston, 2019). However, as the circular economy has developed and matured, increasing emphasis has been placed on private investment and market-led financial solutions. A sustainable option for financing the circular economy is to invest in efficient assets that, in addition to financial benefits, will also deliver positive environmental or social outcomes (Goyal et al., 2021). Green bonds, which raise capital for environmentally sustainable projects, are becoming an essential tool in financing circular economy ventures. These financial instruments allow investors to support initiatives that contribute to sustainability while providing a market return (Kolk et al., 2020). Sustainable investment funds also play an important role in the circular economy, with several studies highlighting the importance of setting criteria for investment decisions that are based on and encompass environmental, social, and governance (ESG) (Sullivan et al., 2020). Lewandowski (2016) suggests that the integration of business models based on product-as-a-service or sharing economy platforms should be implemented, in order to create opportunities for innovation while reducing resource consumption and waste. This would provide both financial and non-financial benefits, promoting the transition to a circular economy. Impact investing is another significant mechanism explored in the literature. Impact investing focuses on generating both social or environmental benefits alongside financial returns. According to Goyal et al. (2021), impact investing has been particularly effective in financing circular economy initiatives because it aligns the financial sector with broader sustainability goals. Investors in circular economy projects can expect returns not only in terms of profit but also in terms of resource conservation, waste reduction, and job creation in the green sector. In their study, Goyal et al. (2021) found that impact investing in sectors such as waste management, sustainable agriculture, and circular manufacturing can lead to a win-win scenario where both the environment and investors benefit.

Another promising financial model is public-private partnerships (PPPs). The transition to a circular economy often requires cooperation between governments, private sector companies, and civil society organizations. As Preston (2019) emphasizes, PPPs have proven to be effective in overcoming the financial barriers to circular economy adoption, especially in regions where public funding alone is insufficient to cover the costs of large-scale circular infrastructure projects. These partnerships can also help address the high initial capital costs often associated with circular economy transitions, particularly in industries such as recycling, renewable energy, and circular manufacturing.

Investment Models for Circular Economy - New investment models have emerged that are tailored to the unique needs of circular economy initiatives. The most prominent models discussed in the literature include product-as-a-service (PaaS) and shared economy platforms.

The product-as-a-service model shifts the traditional ownership structure, where consumers buy products, to a model where they lease or rent products instead. This model encourages manufacturers to design products for longevity, repairability, and recyclability, as they retain ownership of the products throughout their lifecycle. According to Bocken et al. (2020), PaaS models, such as those in the electronics and automotive industries, are gaining traction as consumers and businesses alike seek more sustainable consumption practices. PaaS can significantly reduce resource consumption by increasing the product's lifespan and reducing waste, aligning well with circular economy principles.

Similarly, the rise of shared economy platforms, such as those used in ride-sharing (e.g., Uber) and tool-sharing (e.g., ShareGrid), exemplifies another investment model aligned with circular economy goals. These platforms reduce the need for individual ownership, which results in less resource extraction and waste. According to Lewandowski (2016), shared economy platforms can play a pivotal role in the circular economy by encouraging collaborative consumption, reducing overproduction, and promoting more efficient use of resources.

Role of Financial Institutions and Investors - While new financial mechanisms and models are critical, the role of financial institutions and investors in driving the circular economy cannot be overstated. Financial institutions and investors are increasingly recognizing the strategic importance of the circular economy. Banks, insurance companies, and pension funds are beginning to introduce

circular economy principles into their investment portfolios. The challenge, however, is that many traditional financial institutions are not yet fully equipped to evaluate and support circular economy projects due to their unfamiliarity with the circular model's long-term value proposition. Research by Reike et al. (2018) indicates that there is a significant gap in knowledge and understanding between circular economy businesses and the financial institutions that would traditionally fund them. Many circular economy projects, particularly those in their nascent stages, face difficulties in securing funding because they do not fit neatly into existing financial models.

Research by Veetman and Linder (2021) suggests that financial institutions need to invest in capacity building to better understand the risks and rewards associated with circular business models. The role of private equity and venture capital is also critical, as these types of investors are more willing to take on the risks associated with early-stage innovative circular economy projects. Venture capitalists are particularly focused on startups that offer disruptive solutions in areas such as material recycling, energy efficiency, and product lifecycle extension (Bocken et al., 2020). By providing targeted funding and mentoring, these investors can play a significant role in scaling up circular economy solutions.

As Lacy and Rutqvist (2015) note, venture capitalists are particularly interested in disruptive innovations in areas such as waste management, material science, and energy efficiency, where circular business models can generate significant financial returns. Investors are particularly interested in technologies that offer cost-saving opportunities through material reuse, energy efficiency, and waste reduction.

Financial institutions are recognizing the importance of aligning investment portfolios with sustainability and circular economy goals. According to Sullivan et al. (2020), large institutional investors, such as pension funds and asset managers, are increasingly incorporating environmental, social, and governance (ESG) factors into their investment strategies. This alignment with ESG criteria not only supports environmental sustainability but also enhances long-term financial returns by focusing on the resilience and long-term value of circular economy investments.

Challenges in Financing Circular Economy Projects - Despite the growing interest in the circular economy, significant challenges remain in securing financing for circular initiatives. One of the main obstacles is the lack of confidence in the financial returns in the early stages of circular economy projects, which can lead to investors being hesitant to invest capital (Murray et al., 2017), as many circular economy initiatives, especially in the early stages of development, require significant capital investments without immediate returns, i.e. with deferred returns, later, making them unattractive and risky for investors with a traditional mindset (Reike et al., 2018). Circular business models often require long-term investments, which contradicts the typical short-term investment horizon preferred by many investors. According to Lacy and Rutqvist (2015), the circular economy requires a change in financial thinking, as investors need to focus on long-term returns resulting from resource efficiency, brand loyalty and reduced waste management costs. Financial models that can bridge the gap between short-term profitability and long-term sustainability are essential to ensure the growth and scaling of circular economy ventures.

Additionally, the fragmentation of circular economy initiatives presents another challenge. Circular economy projects often require cross-sector collaboration, which can make the investment process more complex. As Reike et al. (2018) highlight, a lack of standardized financial models and metrics for circular economy initiatives makes it difficult to compare and evaluate investment opportunities across industries. This lack of standardization adds uncertainty and risk for investors, limiting the flow of capital to circular economy projects.

Finally, regulatory uncertainty remains a significant barrier. Governments and policymakers play a crucial role in shaping the investment landscape for the circular economy. Without clear and consistent regulatory frameworks, it is difficult for investors to predict the long-term viability of circular economy projects. Stahel (2016) points out that strong policy support, including subsidies, tax incentives, and extended producer responsibility (EPR) legislation, is essential for unlocking private investment in circular economy ventures.

Policy and Regulatory Support for Circular Economy Investments - Finally, the regulatory environment and policy support are crucial in shaping the financial environment to create a sound foundation for the formation and maintenance of a circular economy. The literature underscores the importance of policy support in unlocking financial investments in the circular economy. Governments can play a crucial role in incentivizing private sector investment through favorable policies, such as tax breaks, grants, and subsidies for businesses that adopt circular practices. Governments can encourage private investment by introducing tax incentives, subsidies, or legislative measures that support circular business practices. Policies that encourage extended producer responsibility (EPR) and eco-design principles can further improve the financial attractiveness of circular economy ventures (Stahel, 2016).

As Kolk et al. (2020) argue, governments must work alongside the private sector to create a policy framework that encourages long-term investment in the circular economy. In some countries, governments have introduced extended producer responsibility (EPR) schemes, which require manufacturers to take responsibility for the entire lifecycle of their products. These policies can incentivize businesses to redesign products for durability and recyclability, thus promoting circular business models.

4. CONCLUSION

The transition to a circular economy represents a fundamental shift in how businesses and societies approach resource management, sustainability, and economic growth. Finance plays a crucial role in enabling this transition, providing the necessary capital to support innovative circular business models, sustainable infrastructure, and technologies. The literature reveals that financial mechanisms such as green bonds, impact investing, and public-private partnerships are vital tools for scaling circular economy initiatives. However, challenges persist, including long-term investment horizons, the need for standardized metrics, and regulatory uncertainty.

Despite these challenges, there is growing recognition of the potential for circular economy investments to deliver long-term financial and environmental benefits. Financial institutions, including venture capitalists, banks, and pension funds, are increasingly aligning their portfolios with environmental, social, and governance (ESG) criteria, indicating a shift towards more sustainable investment strategies. Moreover, new investment models, such as product-as-a-service and shared economy platforms, are gaining traction as they offer alternative approaches to ownership and consumption that reduce resource use and waste.

The future of financing the circular economy depends on continued collaboration between the public and private sectors, the development of innovative financial instruments, and a supportive regulatory environment. For the circular economy to reach its full potential, it will require an ecosystem where financial strategies are aligned with sustainability goals, and investments are made with long-term environmental and economic viability in mind. As the financial sector adapts to these new challenges and opportunities, it will play a key role in shaping a more sustainable and resource-efficient global economy.

5. REFERENCES

Only sources used in the paper preparation can be mentioned in the reference list. Arrange the references in the order of appearance in the document. When referring to literature, use the reference number in square brackets in the appropriate place in the text. In case of citing multiple sources at a time, each reference number is in its own brackets separated by a comma [2], [3], or a dash [1]-[3]. To format the bibliography, use the References icon, which automatically performs numbering. The following are examples of correctly cited literature.

1. Bocken, N. M. P., Bakker, E., & Pauw, I. (2020). Circular business models: A review. *Journal of Cleaner Production*, 249, 119-134.
2. Ellen MacArthur Foundation. (2013). *Towards the Circular Economy: Economic and business rationale for an accelerated transition*
3. Flammer, C. (2021). "Green Bonds: Effectiveness and Implications for Public Policy." *Journal of Economics & Management Strategy*, 30(1), 29-50.

4. Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The circular economy – A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757-768.
5. Goyal, P., Gupta, R., & Shukla, R. (2021). Role of impact investing in financing the circular economy. *Sustainable Development*, 29(2), 117-126.
6. Janković, M., Pavlović, P. (2020). "Implementacija cirkularne ekonomije u industriji Srbije: prepreke i mogućnosti." *Ekonomski horizonti*, 22(2), 123-134.
7. Kolk, A., Rivera-Santos, M., & Rufin, C. (2020). Impact investing: A critical review and future directions. *Business & Society*, 59(4), 547-576.
8. Lacy, P., & Rutqvist, J. (2015). *Waste to wealth: The circular economy advantage*. Palgrave Macmillan.
9. Lewandowski, M. (2016). Business model innovation in the circular economy. *Business Strategy and the Environment*, 25(3), 169-177.
10. Lukić, J., Petrović, S. (2021). "Finansijski instrumenti za podršku održivim praksama u jugoistočnoj Evropi." *Privredna kretanja i ekonomska politika*, 39(4), 45-58.
11. Murray, A., Skene, K., & Haynes, K. (2017). The circular economy: An interdisciplinary exploration of the concept and application in a global context. *Journal of Business Ethics*, 140(3), 279-295.
12. Novak, A., Šojat, D. (2018). "Uloga cirkularne ekonomije u energetskej efikasnosti Hrvatske." *Ekonomika istraživanja*, 31(6), 1498-1512.
13. OECD. (2018). *Financing a sustainable circular economy*. OECD Environment Policy Paper No. 14.
14. Preston, F. (2019). A global perspective on circular economy financing. *Economics of Sustainability*, 45(2), 31-45.
15. Reike, D., Vermeulen, W. J., & Witjes, S. (2018). The circular economy: New or refurbished as a solution to the plastic waste problem? *Business Strategy and the Environment*, 27(6), 819-830.
16. Stahel, W. R. (2016). *The circular economy: A user's guide*. Routledge.
17. Sullivan, R., Alvarado, V., & Jacobs, S. (2020). Integrating ESG criteria in investment analysis. *Journal of Sustainable Finance & Investment*, 10(1), 33-56.
18. Weetman, A., & Linder, C. (2021). Financial institutions and the circular economy: New strategies for sustainable investments. *Sustainable Finance Review*, 15(4), 89-112.