



ROLE OF FINANCIAL INSTITUTIONS IN PROMOTING LOW-CARBON, CIRCULAR ECONOMY

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Abstract

The transition to a circular economy presents a transformative opportunity for sustainable development, yet it requires substantial financial support to realize its full potential. Financial institutions play a pivotal role in fostering this shift by providing the necessary capital and innovative financial solutions that drive the circular economy's growth. These institutions can support the circular economy in several key ways. This paper focusses on the role of financial institutions to promote resource efficiency, waste reduction, and sustainable practices. It discusses the innovative products offered by the financial institutions and circular economy initiatives, to help bridge the funding gap for companies transitioning to circular models. Furthermore, banks and investors can facilitate the scaling of circular economy solutions through strategic partnerships and joint ventures, providing both capital and expertise to innovative projects. Additionally, government regulatory bodies play crucial role, to help businesses navigate the transition. They can also support research and development in circular technologies and business models by funding relevant innovations and pilot programs. Thus the paper uses discourse analysis to study how the financial institutions are crucial enablers of the circular economy. Their ability to provide tailored financing, integrate ESG criteria, and support innovation and education is essential for advancing sustainable practices and achieving long-term economic and environmental benefits. Through these efforts, they not only contribute to the transition towards a circular economy but also enhance their own sustainability credentials and market opportunities.

Introduction

Financial institutions play a crucial role in promoting a low-carbon, circular economy by providing the necessary funding, risk management, and strategic guidance needed to support sustainable practices. Banks play a vital role in promoting circular economy and are leading in promoting circular economy among the financial institutions. However, it is important that all the stakeholders along with the banks come together to promote businesses supporting the sustainable goals. The banks should have a different approach to circular economy finance and

assess business value, treat risk, approach compliance, and channel funds in a unique way to promote circular economy (Ozili, Peterson & Opene, Francis 2022). Creation of Green banks focused on providing credit and selling green financial products could organise the working of circular economy and ensure better return on investments (Tian, 2018). Banks along with government bodies should design widely acceptable legislations for smooth conduct of lending going forward.

The role of financial institutions in promoting low carbon circular economy can be listed as below

- Short term and long-term financing through green bonds and loans of projects with environmental benefits, such as renewable energy installations, energy efficiency upgrades, and waste management systems.
- Funding by Venture Capital and Private Equity companies in startups and companies that are developing innovative technologies or business models that contribute to a circular economy, such as those focusing on recycling technologies, sustainable materials, or product-as-a-service models.
- Conduct environmental risk assessment as they evaluate their green investments and loans thereby ensuring projects align with sustainability goals.
- Insurance companies offer specialized insurance products that cover risks related to environmental and climate impacts, helping businesses manage potential financial losses associated with sustainability-related issues.
- Play role of strategic advisors to businesses on how to transition to more sustainable practices. This includes guidance on implementing circular economy principles, reducing carbon footprints, and enhancing overall environmental performance.
- Engage in dialogue with policymakers to support regulations and incentives that promote low-carbon and circular economy practices. Their influence can help shape a regulatory environment that fosters sustainability.
- Require and encourage companies to disclose their environmental impact and sustainability practices through reporting frameworks like the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB). This transparency helps investors make informed decisions.
- Integrate Environmental, Social, and Governance (ESG) metrics into their investment and lending criteria, ensuring that the companies they support adhere to sustainability standards.
- Offer training programs and resources to help businesses understand and implement circular economy principles and low-carbon strategies. This capacity building helps businesses innovate and adopt sustainable practices more effectively.
- Develop and promote financial products that cater to the growing demand for sustainable investments, such as impact funds and ESG-focused investment portfolios.
- Form partnerships with other stakeholders, including governments, NGOs, and industry groups, to advance sustainability initiatives and create a supportive ecosystem for circular economy practices.

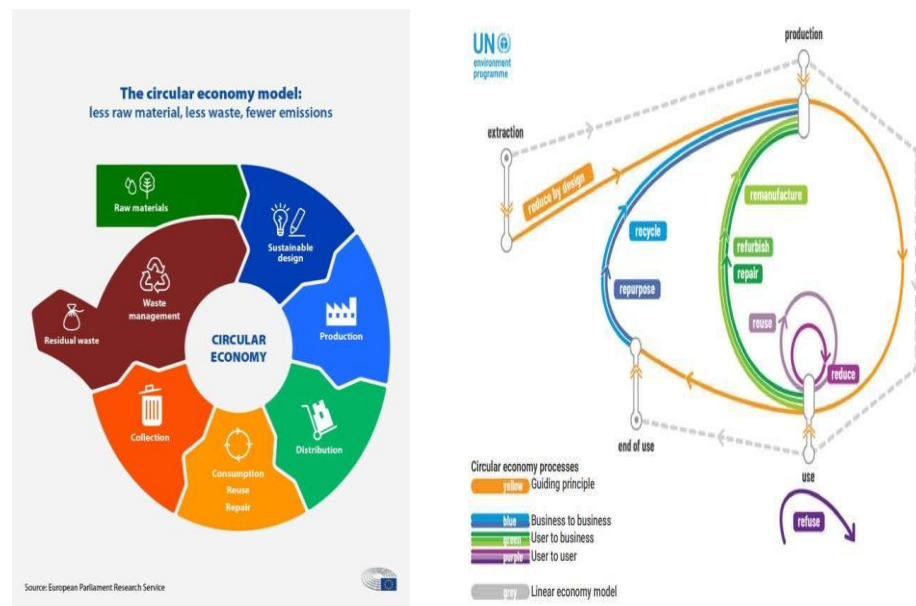
Thus, this paper uses discourse analysis to understand the role of the financial institutions to drive the transition to a low-carbon and circular economy for the long-term economic stability and growth associated with sustainable development.

Conceptual Literature

Circular economy meaning

United Nations trade & development defines circular economy as “The goods of today are the

resources of tomorrow at yesterday's resource prices.” The European Parliament defines circular economy as “model of production and consumption which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible” thereby extending life of the product. They have also given a circular economy model as shown in the picture below -



United Nations Environment Protection Agency defines circular economy as “A circular economy keeps materials and products in circulation for as long as possible.” The UNEP Finance Initiative defined Circular economy as a 9-R concept as a proxy for a CE definition (see figure above). Circularity is defined as “R-behaviours” that were originally coined as the 3-R concept (reduce, reuse, recycle), then elaborated to constitute the 6-R concept (addition of recover, redesign and remanufacture) and later evolved into the 9-R concept (with the further addition of refurbish, repair and refuse).

There are more than 200 definitions for circular economy and the term has evolved in its meaning (Kirchherr J., Yang N.-H.N., Schulze-Spuntrup F., Heerink M.J., Hartley K., 2023). One of the authors defines circular economy as “an economic system that represents a change of paradigm in the way that human society is interrelated with nature and aims to prevent the depletion of resources, close energy and materials loops, and facilitate sustainable development through its implementation at the micro (enterprises and consumers), meso (economic agents integrated in symbiosis) and macro (city, regions and governments) levels. Attaining this circular model requires cyclical and regenerative environmental innovations in the way society legislates, produces and consumes” (Prieto-Sandoval et al., 2018, p. 610).

Literature Review

This literature review synthesizes insights from several papers addressing the role of financial institutions in promoting a circular economy. The review highlights how financial institutions can support and drive the transition towards circular practices through various strategies and innovations. Connect Earth’s 2023 report, explores how financial institutions can integrate circular economy principles into their operations. It emphasizes the role of banks in providing financial products

and services that support circular initiatives, such as green bonds and loans for sustainable projects. The report argues for a reorientation of banking practices to align with circular economy goals, highlighting the potential for banks to not only foster sustainability but also gain competitive advantages by innovating their financial offerings (Connect Earth, 2023). The ERIA report, examines how Industry 4.0 technologies can advance the circular economy. It discusses the synergy between digital technologies—such as the Internet of Things (IoT), artificial intelligence (AI), and big data—and circular economy practices. Financial institutions are identified as crucial enablers of this transition, providing necessary investments for technological innovations that support circular processes. The report highlights the importance of aligning financial investments with technological advancements to enhance resource efficiency and lifecycle management (ERIA, 2018).

The ScienceDirect article, provides a comprehensive analysis of how sustainable finance can drive the circular economy. It outlines various financial instruments and strategies, including green finance, impact investing, and ESG (Environmental, Social, and Governance) criteria, that financial institutions can use to support circular economy initiatives. The paper identifies both opportunities and barriers faced by financial institutions and emphasizes the need for improved frameworks and policies to guide investments toward circular practices (ScienceDirect, 2023).

The SpringerLink article explores the evolving relationship between finance and the circular economy. It discusses the shift from traditional financial models to those that incorporate circular economy principles, including the development of new financial products and metrics. Case studies illustrate successful integrations of circular principles into financial operations. The paper argues for a paradigm shift in financial practices, where circular economy considerations become central to financial decision-making, fostering more sustainable investment behaviors (SpringerLink, 2022).

Stahel, W (2016) provides a broad overview of the circular economy concept and its impact on resource efficiency. Although not focused exclusively on financial institutions, it underscores the critical role of finance in supporting resource-efficient projects and innovations. The article highlights the benefits of circular economy practices, such as reduced waste and improved resource utilization, and points out the necessity of effective financial support for scaling these practices and achieving long-term sustainability.

Ozili, Peterson & Opene, Francis. (2022) examines how banks can contribute to the circular economy. It discusses various roles that banks can play, including financing circular projects, developing new financial products that support circular practices, and incorporating circular economy criteria into their lending and investment decisions. The paper provides a detailed analysis of how banks can align their operations with circular economy goals and the challenges they face in this transition.

Suchek, N., Fernandes, C. I., Kraus, S., Filser, M., & Sjögrän, H. (2021) presents a systematic review of the intersection between finance and the circular economy. It synthesizes existing research on how financial mechanisms can support circular practices and identifies gaps in the literature. The article emphasizes the need for more research into innovative financial models and frameworks that can facilitate the transition to a circular economy. It also discusses the role of financial institutions in overcoming barriers and leveraging opportunities for sustainable development.

The reviewed literature collectively underscores the significant role of financial institutions in advancing the circular economy. Key themes include the integration of circular economy principles into financial practices, the development of innovative financial products, and the alignment of financial investments with sustainability goals. Financial institutions are seen as crucial enablers of the circular economy through various strategies, such as offering green

finance, investing in technology, and incorporating circular metrics into decision-making processes.

The literature also highlights challenges faced by financial institutions, including the need for improved frameworks, policies, and metrics. Addressing these challenges requires ongoing innovation and collaboration among stakeholders. Overall, the role of financial institutions is pivotal in driving the transition towards a circular economy, creating opportunities for both sustainable development and economic growth.

Methodology

This paper used Discourse analysis to study the role of financial institutions in creating a circular economy. The study would concentrate on the definition of circular economy, the contribution of financial institutions in boosting circular economy, the government support for circular economy and the future of their contribution.

Role of Financial Institutions

United Nations formulated 17 Sustainability Development Goals (SDGs) and wanted the implementation of the same by 2030. Every country and companies across the world started setting up strategic goals to adopt and include SDG's. The role of financial institutions became crucial as finance is the key to implementing and achieving the sustainable goals set up by any company.

Finance operates at multiple levels in this context. Within the financial sector, banks determine their lending policies to decide which sectors and projects qualify for loans. Likewise, investment funds establish their investment strategies, outlining which assets they will invest in and which they will avoid. Consequently, the financial sector has the potential to drive the shift towards a low-carbon, circular economy. By opting to fund sustainable businesses and projects, it can significantly speed up this transition.

In India, various loan options are available to support businesses focused on sustainability and green initiatives. The 'Landscape of Green Finance in India 2022' report, in India, highlights that the public sector's contribution has been instrumental in increasing green finance flow, while the private sector flows have also been increased by 139%. The distinct types of lending options provided by banks and NBFC's in India are -

- Green Business Loans - These loans are tailored to support initiatives that benefit the environment. They can be applied to projects such as renewable energy installations, waste management systems, and the development of sustainable products, among others. They offer attractive interest rates, adjustable repayment options and are focused on ecofriendly projects.
- Renewable Energy Loans – This loan assist businesses in funding investments in sustainable energy sources such as solar, wind, and biomass. These loans facilitate the installation of renewable energy systems, helping to decrease dependence on nonrenewable energy sources. These loans have reduced interest rates for energy-efficient projects, longer repayment terms and benefits for achieving energy efficiency goals.
- Sustainable Agriculture Loans - These are aimed at supporting agribusinesses that embrace sustainable farming practices. They provide funding for initiatives such as organic farming, water conservation, and environmentally friendly pest management. They have personalized loan options, assistance for eco-friendly farming practices and availability of technical support and training.
- Environmental Protection Loans are designed for businesses engaged in pollution control, waste management, and other environmental safeguard activities.

These loans can finance the development and deployment of technologies that minimize environmental impact. The key features of this loan are financing for pollution control technologies, support for waste management initiatives and assistance with meeting environmental regulations.

- Rooftop Solar Loans - Banks and NBFC's in India, also provide solar loans for the installation of rooftop solar panels. These panels not only generate electricity for households but also provide heating for water and air, helping customers reduce their electricity expenses, thus supporting the green financing options.
- Electric Vehicle Loans - Electric vehicles (EVs) have emerged as a transformative solution, featuring near-zero tailpipe emissions supporting SDG goal of decreasing carbon emission. The banks and non-bank financial companies (NBFCs) provide loans for EV cars, two-wheelers, and three-wheelers.

Role of Government Institutions

The Government of India is promoting circular economy through government backed loans and incentives. They provide a variety of schemes and incentives to promote sustainability and green initiatives. These include subsidies, tax benefits, and low-interest loans. Here are some key government-backed programs:

Scheme Name	Description
MSE Scheme for Promotion and Investment in Circular Economy (MSE SPICE)	Provide credit linked capital subsidy and information, education, and communication component for 4 years (FY 2023-24 to 2026-27).
MSE Green Investment and Financing for Transformation Scheme (MSE GIFT)	Support adoption of green technology with interest subvention and credit guarantee support.
Department of Scientific & Industrial Research (DSIR)	Granting recognition & registration to in-house R&D units and fiscal incentives for research and development by industry
Pradhan Mantri Mudra Yojana (PMMY)	Provides loans for micro green businesses.
Credit Linked Capital Subsidy Scheme (CLCSS)	Provides capital subsidy for technology upgradation to MSME.
Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects	Aims to set up at least 25 Solar Parks and Ultra Mega Solar Power Projects up to 40,000 MW capacity.
Central Public Sector Undertaking (CPSU) Scheme Phase-II	Setting up grid-connected Solar Photovoltaic (PV) Power Projects by Central and State PSUs and Government Organisations.
Production Linked Incentive Scheme for Solar PV Modules	Aid for manufacturing of high efficiency solar PV module.
PM-KUSUM Scheme	Promotes setting up of renewable energy power plants for agriculture.

Rooftop Solar Programme Phase II	Subsidy is provided to the residential electricity consumers for installation of Grid Connected Roof Top Solar.
Green Energy Corridors	To integrate renewable energy into the power grid, and to synchronize renewable energy with conventional power stations
National Bioenergy Programme	Central Financial Assistance (CFA) to project developers and service charges to implementing/inspection agencies in respect of successful commissioning of Waste to Energy plants for generation of Biogas, Bio-CNG/enriched Biogas/Compressed Biogas, Power/ generation of producer or syngas.
National Green Hydrogen Mission	Setting up of at least 5 MMT (Million Metric Tonne) per annum of green hydrogen capacity with an associated renewable energy capacity of about 125 GW by 2030.

In addition to the schemes listed above Regulatory bodies in India have also formulated standards to control air and water pollution through Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs). The policies are reworked to conserve and sustain biological diversity and manage groundwater resources, while the Ministry of Environment, Forest and Climate Change (MoEFCC) encourages sustainable practices and reducing greenhouse gas emissions. To ensure quicker dispute resolution and effective enhancement of environmental laws, the National Green Tribunal (NGT) was established.

Conclusion

Thus, we can see a growing awareness and traction towards using sustainable solutions for a healthier and greener future. The change is slow as it requires taking up new initiatives by businesses which comes with huge investment. This need for investment is now taken care of by the financial institutions providing loans and subsidies for companies adopting sustainable solutions.

Various NBFCs offer tailored loans for green initiatives, often featuring more flexible terms and faster processing than traditional banks. These institutions provide a range of financial products, such as collateral-free business loans, purchase finance, invoice discounting, and machinery loans for SMEs. Their innovative methods guarantee swift and straightforward loan processing, competitive interest rates, and adaptable repayment options.

While there are numerous opportunities for financing green projects in India, several challenges remain:

- i. Lack of Awareness: Many businesses are unaware of the available green financing options and the benefits they offer.
- ii. High Initial Costs: The initial investment required for green projects, such as renewable energy installations, can be substantial.
- iii. Regulatory Hurdles: Navigating the regulatory landscape for green projects can be complex and time-consuming.
- iv. Limited Access to Credit: Small and medium enterprises (SMEs) often struggle to access affordable credit for green projects due to stringent lending criteria.
- v. Technological Barriers: Adopting new and unproven green technologies can be risky and may deter investment.

Addressing these challenges requires concerted efforts from the government, financial institutions, and businesses to create a more supportive environment for green finance. Investing in sustainability is a necessity for the future. With the right financial support, businesses can play a pivotal role in building a greener and more sustainable India.

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