

The Role of Fintech and Green Investment in Driving Sustainable Transactions

¹Cindi Safitri, ²Muhammad Iqbal Fasa

^{1,2}Faculty of Islamic Economics and Business, UIN Raden Intan Lampung, Indonesia

* Corresponding author: cindisafitri28@gmail.com

Keywords:	ABSTRACT
<i>Fintech; Green Investment; Sustainable Finance</i>	The role of fintech in driving sustainable transactions and green investments around the world is increasingly important as the need for environmentally friendly financial solutions increases. Fintech does this by making products and services more accessible and encouraging wider participation in the green economy. Financial technology, or fintech, through inclusive and effective digital platforms helps more people access green financing. Fintech technologies help reduce carbon footprints by replacing resource-intensive conventional financial processes with digital-based technologies. In addition, fintech encourages green investments by offering services such as crowdlending for renewable energy projects, tokenization of environmentally friendly assets, and desire-based portfolio monitoring applications. Partnerships between fintech, regulators, and the conventional financial sector are essential to building an ecosystem that supports the transition to a low-carbon economy. This article discusses the strategic role of fintech in driving global green investments and sustainable transactions, the issues faced, and opportunities to achieve the sustainable development goals (SDGs) in the future.

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INTRODUCTION

Financial technology (fintech) has changed the way we transact and is now instrumental in driving more sustainable investment and business practices in the green sector. Amid growing global awareness of the importance of sustainable development, fintech is emerging as one of the key catalysts in driving economic transformation towards sustainability. Fintech, which includes technological advances in financial services such as digital payments, crowdfunding, blockchain, and Big data Analytics, has a great opportunity to accelerate the transition to an environmentally sound economy. Using this advanced technology, fintech not only improves the efficiency and inclusion of financial transactions, but also paves the way for financing that supports environmentally sound projects. With its innovation and broad scope, Fintech is now a driving force in realizing sustainable investments and transactions around the world. The evolution of FinTech represents an important point where technological progress and economic growth meet. According to the Financial Stability Board (FSB), FinTech includes technological innovations that combine business methods, operational procedures and new products; this has a major impact on financial institutions, markets and financial services as a whole (Aziz et al., 2024).

Many things related to the concept of the environment are gaining popularity in society. Green Label, green product, packaging, Green Consumer, Green Business, Banking, and etc. included in this category. All of these things are closely related to environmental management, which is now a market demand to ensure the preservation and safety of nature (Salsabila et al., 2022). In an increasingly digitally connected contemporary era, the financial technology (fintech) industry has played an important role in changing the way people view and manage their finances. Fintech is now a driver of innovation in various aspects, including encouraging green investment. Green Investment, which focuses on environmentally friendly and sustainable projects, is one of the main solutions to deal with environmental damage and global climate change. Green economy is an economic concept aimed at improving welfare and social justice, while significantly reducing the negative impact on the environment (Rusdianto et al., 2024). Fintech provides access to green investment products through an inclusive and technology-based platform. They also raise public awareness of the importance of choosing investments that support sustainability.

Fintech helps drive broader engagement by offering things like interactive education, transparency in fund management, and ease of tracking investment impact. In this way, fintech is helping to create a generation of investors who care about financial gain but also have social and environmental responsibility. The philosophy of green economy says that economic actions aimed at improving people's well-being in addition to helping to achieve

justice for society, the environment and natural resources by minimizing environmental damage and resource exploitation. Due to its focus on sustainable development principles, the green economy is becoming an important component of economic development (Rusdianto et al., 2024). Fintech has the ability to enable more transparent, efficient and environmentally friendly payments and investments, which demonstrates its important role in driving sustainable transactions. In addition, as it grows, fintech also has an important role to play in driving sustainable transactions. Sensitive Data in decision-making, ethical use of data, and protection against cyber threats are all key concerns (Xu et al., 2024).

For example, digital payment systems can reduce our dependence on paper and other physical resources, thereby lowering carbon dioxide levels. In addition, fintech makes it easy to invest for people around the world. in green programs that support sustainable Development Goals (SDGs), such as renewable energy, environmental conservation, and social projects. Fintech is present as one of the innovative solutions in the midst of increasingly urgent climate change challenges. With the ability to connect different parties, fintech opens up great opportunities to drive green investments and sustainable transactions around the world. Through data analysis and technological innovation, different parties can find innovative solutions to drive green finance and tackle environmental problems in an increasingly complex world (Fu et al., 2023). Financial technology (fintech), has changed the way people manage money and make transactions. One of the ways they help drive financial transformation towards more environmentally and socially responsible practices is by facilitating more transparent, efficient and environmentally friendly transactions. Fintech enables people and businesses to adopt financial habits that support sustainability through the adoption of advanced technologies such as impact-based investment management, Paperless digital Payments, and tracking the carbon footprint of transactions. Fintech is also raising awareness about the importance of transitioning to a more sustainable economy.

Fintech enables people and companies to adopt financial habits that support sustainability by implementing new technologies, such as impact-based investment management, tracking the carbon footprint of transactions, and paperless digital payments. Fintech is also raising awareness about the importance of transitioning to a green economy. With innovation constantly evolving, fintech is not only a tool but also an important factor in building a financial system that supports the Sustainable Development Goals. FinTech encompasses any form of innovation that uses technology to make financial services more efficient, accessible, and secure. Digital payments, loans between individuals, digital Asset Management, and technology-based insurance are examples of the FinTech industry (Jange et al., 2024).

Fintech also helps raise awareness of green investments through education and transparency. For example, investors can monitor how their funds are allocated to sustainability projects through blockchain technology. This results in a sense of collective responsibility, which encourages economic behavior towards a more sustainable and environmentally friendly direction. The rise of financial technology (fintech) has significantly changed the world economic landscape. One of the positive outcomes of the

emergence of fintech is their role in encouraging sustainable business practices and driving investment into environmentally friendly sectors.

In this article, we will further explore how fintech can serve as a key driver in supporting green investments and sustainable transactions around the world. We will concentrate on the latest technological innovations, the economic and environmental impact of fintech, and the challenges that need to be addressed to ensure that fintech can truly become an important part of Sustainable Development Solutions.

LITERATURE REVIEW

Fintech

Fintech is "a technology that enables financial innovation that can generate new business models, applications, processes or products with an associated material impact on financial markets and institutions" (Pawłowska et al., 2022).

Fintech (financial technology) refers to the use of technology in financial services. This technology has transformed the financial industry by offering inexpensive products to customers and businesses. It has evolved into a dynamic ecosystem driven by innovation and disruption. To maximize the benefits of technological transformation in the financial sector, they have integrated technologies such as the Internet of Things (IoT), artificial intelligence(AI), machine learning (ML), Big data, data Analytics, and blockchain (Saeedi & Ashraf, 2024).

Here are the benefits, advantages, disadvantages, and how it works (Zulfa Qur'anisa et al., 2024):

The benefits of Fintech can facilitate access to financial services for the community, especially the underserved user segment, significantly increase financial inclusion through digital and mobile access, reduce costs for financial service providers with more efficient digital processes, create new products such as crowdfunding, robo advisors, and super apps, increase innovation in the financial services sector through collaboration between banks and fintech startups build public, support the achievement of national financial inclusion goals in accordance with the Sharia economic Masterplan.

There are several advantages of fintech described, among others: 1) facilitate access to financial services for the community, especially the segment of users who have not been served, 2) lower transaction costs compared to conventional services, 3) Mobility and availability of online services make it more flexible and convenient, 4) faster and more efficient transaction processes, 5) product and service innovation and competition that encourage continuous improvement, 6) great potential to support inclusive finance in Indonesia, 7) increasing public literacy and awareness of digital financial services, 8) Building a proportionate and sustainable digital financial ecosystem.

There are several fintech weaknesses described, among others: 1) greater data and transaction security risks due to the use of Technology, 2) there are no specific regulations that regulate fintech in detail in Indonesia, 3) low public literacy of fintech products and services, 4) dependence on technology infrastructure that has not been evenly distributed

throughout the Region, 5) greater potential for fraud and theft of, 7) there is no integration of fintech services with conventional systems.

Green Investment

Green investments are investments aimed at supporting environmentally friendly and sustainable projects. Green financial instruments, such as Green Equity, green bonds, and Green Credit, play an important role in driving sustainability by reducing pollution and inspiring green investment.

Green investment is a term that refers to the allocation of capital to initiatives and projects that support environmental sustainability. In the fintech industry, green investments are driven by the use of technology to analyze sustainability opportunities and risks, as well as the development of investment platforms focused on environmental, social and governance (ESG) criteria. Fintech helps investors make better choices and fund socially and environmentally responsible projects (Saeedi & Ashraf, 2024).

Ongoing Transactions

Transactions are all activities carried out through online banking making it more paperless in the context of green banking. Transactions in the context of fintech and sustainability can be carried out using blockchain technology, which is a distributed ledger technology that enables secure and transparent transactions without the need for intermediaries. Blockchain offers unique advantages in terms of transparency, footprint, and accountability, making it an ideal tool for promoting sustainability and combating greenwashing. By recording transactions on an immutable blockchain ledger, banks can track the origin, production process, and environmental footprint of goods and services, giving consumers and investors greater visibility into product sustainability credentials (Salsabila et al., 2022).

METHOD

This study uses qualitative methods with secondary data sources. Data analysis in this study used a descriptive approach, which is a method of approach by describing the results of the study. The descriptive research aims to provide an overview, explanation, and also validation of the role of fintech in driving sustainable transactions and global green investments. This type of research is a literature study. Furthermore, data collection techniques are used, namely searching for literature that is relevant or related to the role of fintech and green investment in encouraging sustainable transactions such as books, scientific journals and e-books. Furthermore, data analysis is done through the description and analysis of data.

RESULT AND DISCUSSION

According to the information collected and evaluated by the authors, fintech plays an important role in driving the transition to sustainable energy and green finance around the world. Fintech facilitates access to financing for projects that generate renewable and environmentally friendly energy through advances in financial technology such as

crowdfunding, lending, and blockchain. In addition, this technology helps improve financial inclusion by providing wider access to financial institutions, especially for small and medium enterprises (MSMEs) that were previously inaccessible to conventional financial institutions.

However, issues such as insufficient financing, data privacy risks and rudimentary regulation must be addressed. To maximize fintech impact, governments, the private sector, and fintech platforms must work together, and regulations that support sustainability must be developed. Overall, fintech serves as a key driver for achieving the Sustainable Development Goals (SDGs), especially in terms of clean energy, carbon emissions reduction, and sustainable development. In addition, fintech also serves as a transaction tool.

Fintech and sustainable financial innovation

Fintech has brought significant innovations in the modern financial system. These innovations drive financial inclusion and accelerate access to Green Finance through technologies such as big data and artificial intelligence. Fintech plays a role in facilitating access to new sources of financing and reducing financial barriers, especially for small and medium enterprises (MSMEs) who want to transition to sustainable business practices. With the utilization of technologies such as peer-to-peer lending and crowdfunding, fintech helps mobilize the capital needed to fund green projects (Rusdianto et al., 2024).

Fintech and The New Renewable Energy Transition

The role of fintech in supporting the transition to new and renewable energy (EBT) is further strengthened by Indonesia's green economy policy. However, some obstacles, such as low investment returns and high interest rates, are still a major problem. The government has increased green financing opportunities by providing tax incentives to companies investing in EBT. Fintech can lower transaction costs for EBT projects, encouraging investors from around the world to invest in sustainable energy (Ningsih, 2024).

Fintech drives energy transition from fossil fuels to renewable energy sources through (Liu et al., 2022):

- a) Blockchain and Peer-to-Peer energy: peer-to-peer energy trading, as is the case in China, can be done through blockchain technology. It encourages decentralization of energy markets and accelerates the adoption of renewable energy through community microgrids.
- b) Green credit provision: Fintech helps reduce barriers to clean energy investment by providing microcredit services for the purchase of environmentally friendly technologies such as solar panels or energy storage technologies.

The influence of Fintech on Green Innovation and Environmental Performance

Fintech innovation improves the environmental performance of companies. Companies can increase green innovation, that is, the creation of environmentally friendly

goods and processes, through the adoption of fintech. Fintech enables more efficient collection and analysis of environmental data, supports green investment decisions, and reduces resource consumption and carbon emissions. In addition, the study found that transformational leadership that supports green innovation improves the environmental performance of businesses (Tian et al., 2023).

Fintech, Green Finance, and Sustainable Development

It is evident that fintech in emerging countries such as Indonesia has a significant correlation with sustainable development and green economy. The research, conducted through the VAR approach, found that there is a causal correlation between financial technology, green finance, and gross domestic product (GDP). Not only does fintech improve transaction efficiency, but it also accelerates the financing of environmentally sustainable projects (Rusiadi, 2024).

Fintech As A Green Investment Driver

Fintech plays a strategic role in driving green investment through financial technology innovations (Ashta, 2023):

- a) Crowdfunding for green projects: platforms such as Raise Green leverage digital technology to enable crowdfunding for renewable energy projects, both in the form of equity and debt. This creates more inclusive investment opportunities for communities and accelerates the adoption of clean energy.
- b) Green Bonds and financial innovation: the journal *Environmental Science and Pollution Research* mentions fintech can facilitate the issuance and distribution of green bonds. Technologies such as blockchain increase transparency and reduce risk, thus attracting more investors to fund green projects.

The impact of Fintech on sustainability

Globally Fintech has a significant impact on sustainable development, especially in the context of climate and social goals. Based on the findings of previous research it was found that Fintech can increase access to financing for green initiatives and promote green finance, such as green bonds and crowdfunding platforms (Pawłowska et al., 2022).

Fintech not only supports environmental sustainability, but also touches on social and economic aspects (Jange et al., 2024):

- a) Green financial inclusion: in Indonesia, fintech is successfully expanding access to financial services, including green financing, to remote areas that were previously difficult for traditional banking institutions to reach. With the increasing penetration of the internet and mobile applications, people can easily access these services
- b) Reduction of carbon waste: by reducing dependence on paper and plastic through digital payments, fintech directly lowers environmental impact. Studies in China have also shown that the use of this technology contributes to the reduction of carbon emissions through higher energy efficiency

- c) Increased financial literacy: fintechs use data-driven apps and platforms to provide users with insights into the impact of their financial decisions on the environment. This promotes more responsible consumption patterns.

The role of Sharia Fintech in improving welfare and sustainability in Indonesia

Sharia Fintech is considered important in supporting MSMEs and increasing financial inclusion by offering services such as loans and digital payments. The growth of Islamic fintech is relatively fast compared to conventional fintech. The article also highlights the importance of innovation in Islamic finance to achieve the Sustainable Development Goals, including poverty reduction and increased employment. In addition, the author found various services in Sharia fintech such as crowdfunding, Peer-to-Peer (P2P) lending, and personal financial management. While there are growth opportunities due to the majority Muslim population and government support, challenges such as low financial literacy and regulatory gaps are also recognised. Sharia Fintech has the potential to contribute to the SDGs by promoting financial inclusion, quality education, gender equality, infrastructure innovation, and Climate Action (Imam Mawardi, Nihroh Afandi, 2023).

The Fintech Challenge

Despite its great potential, fintech has some challenges:

- a) Regulation and Data Security: immature regulation in developing countries, including Indonesia, is one of the main obstacles. In addition, the security of user data in the digital age is also a major concern (Aziz et al., 2024).
- b) Technology gap: in rural areas, limited access to digital technology may limit the benefits of fintech for global sustainability (Fu et al., 2023).

Risk management of green projects: the risks and rewards of green investments must be carefully evaluated to ensure environmental sustainability and financial viability (Saeedi & Ashraf, 2024).

Strategies To Maximize Fintech

To maximize the role of fintech in global sustainability, the following measures are recommended:

- a) Government and private collaboration: governments should create policies that support green fintech, while the private sector can invest in more inclusive technology infrastructure (Xu et al., 2024).
- b) Education and public awareness: fintech platforms should be used to improve people's green financial literacy

Increased transparency and security: the use of blockchain can help increase transparency in green transactions and increase user trust (Salsabila et al., 2022).

CONCLUSION AND RECOMMENDATION

Fintech plays an important role in driving green investments and sustainable transactions around the world, especially in supporting the renewable energy transition, green finance innovation, and sustainable development. Fintech helps MSMEs and eco-friendly projects earn money using technologies such as big data, artificial intelligence, and blockchain, as well as lending and crowdfunding services among others. The technology also encourages green financial inclusion, improves transaction efficiency, and reduces investment barriers for sustainable projects.

Fintech also helps companies take care of the environment by doing greener things and managing data better. By offering solutions that comply with Sharia principles, Sharia fintech has great potential to support financial inclusion and public welfare, especially in Indonesia. However, to make fintech's impact greater, issues such as lack of regulation, data security, and technological limitations need to be resolved.

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