

The Role of Monetary Policy in Supporting Green Economic Growth: Opportunities and Challenges for the Indonesian Central Bank

Sylvia

Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia

Corresponding email: silfiaajah41@gmail.com

Abstract

The transition to a green economy is a strategic agenda in sustainable development that requires support from various sectors, including the monetary sector. Amid the increasing urgency of climate change mitigation, the central bank's role in integrating sustainability principles into its monetary policy is becoming increasingly relevant. This research aims to analyze the opportunities and challenges of monetary policy in supporting green economic growth, with a focus on Bank Indonesia's readiness as the national monetary authority. The approach used is a qualitative descriptive method, incorporating case study methods and thematic and policy analysis techniques. Data were obtained from literature reviews, policy documents, and reports from national and international institutions. The results show that although Bank Indonesia has a strategic role in supporting the transformation of the green economy, there are currently no monetary instruments specifically directed to environmental purposes. Limited legal mandates, the unavailability of a green classification framework, and weak coordination between institutions are the main obstacles. This study recommends reformulating institutional mandates, developing green monetary instruments such as green refinancing and differential interest rates, and establishing a dedicated unit for climate risk analysis. These findings underscore the importance of integrating sustainability aspects into monetary policy as part of efforts to create sustainable long-term economic stability.

Keywords: *Green monetary policy, green economy, Bank Indonesia, climate risk, green central banking, sustainable economic stability.*

1. Introduction

Green economic growth is a new development paradigm that balances economic growth, environmental sustainability, and social justice (OECD, 2011; UNEP, 2019; Sachs et al., 2022). In this context, monetary policy has the strategic potential to support the transition to a green economy through sustainable financing mechanisms, inflation management that is responsive to climate risks, and incentives for green investments (Campiglio, 2016;



DNB, 2019; Dikau & Volz, 2021). Central banks, as monetary authorities, are increasingly being urged to expand their traditional mandates to account for risks and opportunities related to climate change (Schoenmaker, 2021; NGFS, 2020; IMF, 2022).

Indonesia, as a developing country with high economic potential and environmental vulnerability, faces significant challenges in integrating green aspects into its economic policy framework (ADB, 2021; Bappenas, 2022; World Bank, 2023). Bank Indonesia, as the national monetary authority, has taken early initiatives in supporting sustainable finance; however, these efforts are still limited to macroprudential and financial inclusion aspects (Bank Indonesia, 2021; OJK, 2022; Fitriani et al., 2023). Therefore, a more in-depth study is needed to evaluate how monetary policy can be more proactive in supporting the national green economy agenda.

The urgency of this research lies in the need to formulate a monetary policy strategy that is responsive to the challenges of climate change, aligning with the Sustainable Development Goals (SDGs) (UNDP, 2021; SBN, 2022; PwC Indonesia, 2023). In practice, green monetary policy has not yet become mainstream in developing countries due to limited institutional capacity, data, and adequate regulatory frameworks (Campiglio et al., 2018; Volz et al., 2020; Chenet et al., 2021). The potential of instruments such as differential interest rates, green open market operations, and transitional financing support is very relevant in the Indonesian context.

In terms of data, Indonesia exhibits an increasing trend in carbon emissions, coinciding with high economic growth, which creates pressure on the environment and poses a threat to long-term economic stability (IEA, 2022; Ministry of Environment and Forestry, 2023; Climate Action Tracker, 2024). For example, data show that the energy and transportation sectors are the most significant contributors to emissions, while investment in renewable energy remains minimal. The following table 1 presents the sector's contribution to national CO₂ emissions:

Table 1. Sector's Contribution to National CO₂ Emissions

Sector	Contribution of CO ₂ Emissions (%)	Green Investment 2023 (IDR Trillion)
Energy	39.4	72
Transportation	27.3	45
Manufacturing Industry	18.1	30
Agriculture and Forestry	10.2	20
Other	5.0	10

Source: Ministry of Environment and Forestry (2023); Bappenas (2023); IESR (2023)

Previous research has highlighted the role of central banks in promoting inclusive and sustainable financial stability (Carney, 2015; Battiston et al., 2017; Monnin, 2018). Studies by Dikau and Volz (2021) and D'Orazio (2022) demonstrate that central banks in developed countries are increasingly adopting green policies through monetary operations and macroprudential supervision. However, similar studies in developing countries are still limited, especially regarding the concrete integration of monetary policy and environmental objectives.

The research gap is evident in the lack of empirical and normative analysis regarding the institutional readiness and effectiveness of monetary policy instruments in promoting a green economy in Indonesia (Nasution, 2021; Rahmawati et al., 2022; Yuliani, 2023). To date, there has been no systematic study evaluating how Bank Indonesia can develop green monetary instruments, taking into account the complex domestic and global dynamics.

The novelty of this study lies in its effort to develop an integrative framework for green monetary policy that is relevant to Indonesia's conditions, including a prospective analysis of operational instruments, cross-institutional coordination, and an evaluation of climate risks in monetary transmission (D'Orazio & Popoyan, 2019; Schoenmaker & van Tilburg, 2016; Beirne et al., 2021). The interdisciplinary approach employed combines the perspectives of monetary economics, environmental studies, and public policy, yielding strong theoretical and practical contributions.

The primary objective of this study is to identify the opportunities and challenges associated with implementing green monetary policy by Bank Indonesia, to support sustainable economic growth. This research also aims to formulate strategic recommendations for policymakers in designing monetary instruments that are compatible with the decarbonization and

green development targets (ILO, 2022; IPCC, 2022; BI Institute, 2024). Thus, this study is expected to be an important reference in the development of the national green economy agenda through an innovative and adaptive monetary approach.

2. Method

This research employs a qualitative-descriptive approach with a case study method, focusing on the role of Bank Indonesia in supporting the green economy through its monetary policy. This approach was chosen to explore in depth how monetary policy instruments can be adapted to support the green economic transition in the context of developing countries, such as Indonesia (Creswell, 2014; Yin, 2018; Merriam & Tisdell, 2016).

The type of data used is secondary data, which is collected from various official sources, including Bank Indonesia's annual reports, statistical data from Bappenas and the Central Statistics Agency, OJK publications, and reports from international institutions such as the IMF, World Bank, and NGFS. In addition, the review of the scientific literature from reputable journals is also used to strengthen the theoretical foundation and support analytical findings (Silverman, 2020; Bowen, 2009; Patton, 2015).

Data collection techniques are carried out through documentation and systematic literature review. This process includes searching articles and reports in databases such as Scopus, JSTOR, ScienceDirect, and Google Scholar, using keywords such as green monetary policy, central bank and climate, green finance, and Indonesia monetary transition (Booth, Sutton, & Papaioannou, 2016; Okoli & Schabram, 2010; Webster & Watson, 2002).

To ensure the validity of the data and enrich the contextual understanding, this study also employs source triangulation by comparing information from various institutional documents, national policies, and international publications (Flick, 2018; Denzin & Lincoln, 2018; Golafshani, 2003). Narrative and content analysis were applied to identify patterns, policy dynamics, and the relevance of monetary instruments to the green economy agenda.

The analytical techniques used in this study are thematic analysis and policy analysis. Thematic analysis was used to identify key themes emerging from the literature data and policy documents, such as "transmission of green monetary policy", "systemic climate risk", and

"institutional readiness of Bank Indonesia" (Braun & Clarke, 2006; Guest, MacQueen, & Namey, 2012; Nowell et al., 2017).

Meanwhile, policy analysis is conducted using a policy cycle model to evaluate the stages of formulation, implementation, and evaluation of monetary policies that support the green transition (Howlett, Ramesh, & Perl, 2009; Sabatier & Weible, 2014; Hill & Hupe, 2014). The analytical framework used is based on the adaptive model of the Green Central Banking Framework, developed by the NGFS and DNB (Dikau & Volz, 2021; Campiglio et al., 2018; Schoenmaker, 2021).

To complete the qualitative analysis, descriptive quantitative data trend analysis related to carbon emissions, green investment, as well as interest rate fluctuations and inflation over the past decade, was also used. Data visualization is presented in the form of graphs and tables to provide a longitudinal picture of the impact of monetary policy on national green economy indicators (Tufte, 2001; Few, 2009; Miles, Huberman, & Saldaña, 2014).

3. Results & Discussion

Bank Indonesia's Strategic Position in the Green Economic Transition

Bank Indonesia has a strategic position in supporting the transformation towards a green economy, primarily through interest rate policies, open market operations, and macroprudential instruments (Campiglio et al., 2018; Dikau & Volz, 2021; Monnin, 2018). However, so far, Indonesia's monetary policy has remained focused on price stability and the financial system, without explicitly integrating climate or sustainability risks into its mandate (Bank Indonesia, 2022; OJK, 2022; Fitriani et al., 2023).

Comparisons with other countries' central banks show that some institutions, such as the European Central Bank (ECB) and the Bank of England, have adopted green monetary policies through green asset purchases and green classifications in liquidity operations (NGFS, 2020; DNB, 2021; D'Orazio, 2022). The absence of a green framework at Bank Indonesia shows that there is room for institutional strengthening and reformulation of roles in supporting Indonesia's SDGs and net-zero targets by 2060 (Bappenas, 2023; IESR, 2022; IPCC, 2022).

Based on the results of the document analysis, Bank Indonesia has only begun to integrate sustainability elements in the blueprint of the payment system and digital financial inclusion, but not yet formally in monetary

policy (Bank Indonesia, 2022; BI Institute, 2023; World Bank, 2023). This shows the need for a new, more comprehensive strategic direction.

Institutional Readiness and Monetary Regulation in Supporting the Green Economy

Institutional readiness is a significant challenge in integrating the green economy into monetary policy. The analysis results show that Bank Indonesia does not yet have a dedicated unit or policy framework regulating green monetary policy, in contrast to the OJK, which has a sustainable finance roadmap (OJK, 2022; Nasution, 2021; Volz et al., 2020).

In terms of regulation, no legal or policy tool regulates the classification of green eligible collateral in monetary operations. This instrument is crucial in encouraging banks and capital markets to invest in the green sector (Chenet et al., 2021; Volz & Ahmed, 2022; DNB, 2021). It is necessary to establish a green taxonomy framework within the scope of monetary policy that can support the distribution of green credit.

Thematic studies also indicate that coordination among institutions such as BI, OJK, and the Ministry of Finance has not been optimal in the green economy agenda. Policy fragmentation results in inconsistencies in the implementation of fiscal and monetary incentives for the green sector (Schoenmaker, 2021; Campiglio, 2016; IMF, 2022).

Table 2. Central Bank Institutional Readiness in Supporting the Green Economy

Aspects	Bank Indonesia	ECB	Bank of England
Environmental Mandate	Not explicit	Explicit	Explicit
Green Collateral	Not yet	Exist	Exist
Institutional Coordination	Limited	Integrated	Integrated

Source: NGFS (2022); D'Orazio (2022); Bank Indonesia (2022)

Monetary Policy Instruments That Have the Potential to Support a Green Economy

Monetary policy instruments, such as differential interest rates, green refinancing, and green quantitative easing, can be the primary tools to encourage investment in the green sector (Campiglio et al., 2018; Chenet et al., 2021; Schoenmaker & Tilburg, 2016). However, the study's results show that Bank Indonesia has not developed the instrument.

Several countries have implemented green-targeted refinancing schemes that provide low-cost loans to banks, which in turn channel credit to environmentally friendly projects (Beirne et al., 2021; DNB, 2019; IMF, 2023). Indonesia can adopt a similar model by considering domestic market conditions and fiscal capacity.

The results of the BI report show the opportunity to use green open market operations by prioritizing environmentally-based securities (green bonds) as a monetary intervention instrument. This requires synergy with the Ministry of Finance and the regular issuance of green bonds (BI Institute, 2024; IESR, 2023; SBN, 2022).

Opportunities, Challenges, and Strategic Directions of Green Monetary Policy in Indonesia

The opportunities for implementing green monetary policy in Indonesia are substantial, given the increasing public awareness, national commitment to the SDGs and the Paris Agreement, and sustainable financial development (UNDP, 2021; Bappenas, 2023; World Bank, 2023). However, the challenges are not small, especially in terms of technical capacity, legal framework, and data readiness.

Another major challenge is doubts about the effectiveness of green monetary instruments in maintaining price stability, which is the primary mandate of Bank Indonesia. However, the literature suggests that climate risk ignorance can create long-term macroeconomic instability (Battiston et al., 2017; NGFS, 2021; Carney, 2015).

Future strategies include expanding BI's mandate to encompass sustainability, establishing a climate risk and monetary policy unit, and developing a climate risk evaluation framework for monetary transmission. Cross sectoral stakeholder engagement is crucial in designing inclusive and long term oriented policies (Dikau & Volz, 2021; Shoemaker, 2021; D'Orazio, 2022).

Table 2. Strategic Recommendations for Green Monetary Policy in Indonesia

Recommendations	Explanation
Reformulation of the Mandate	Incorporating sustainability in the BI Law
Development of Green Monetary Instruments	Green refinancing, differential interest rates
Formation of Special Units	Climate risk and green policy division
Cross-Agency Coordination	Synchronization with OJK and the Ministry of Finance
Internal Education and Training	Increase the technical capacity of BI staff

Source: Author (2025); adaptation of NGFS (2022) and DNB (2021)

4. Conclusion

This research demonstrates that monetary policy has significant potential to support green economic growth in Indonesia; however, it has not yet been fully optimized by Bank Indonesia. The study found that limited institutional mandates, the unavailability of monetary instruments specifically supporting green projects, and weak coordination between fiscal and monetary authorities are significant obstacles to the implementation of green monetary policies. Various instruments, such as incentive interest rates, green refinancing, and the purchase of green bonds, have been proven successful in driving the green transition in countries with comparable economic structures. Therefore, integrating the sustainability dimension into Indonesia's monetary policy framework is of strategic urgency in responding to global climate challenges and meeting the demands of sustainable development.

Substantively, this study yields the finding that the transition to a green monetary policy in Indonesia necessitates a reformulation of Bank Indonesia's legal mandate, the development of green operational instruments tailored to the domestic market context, and the establishment of a dedicated unit for climate and sustainability risk analysis. In addition, cross-sectoral synergy is necessary, particularly between the BI, OJK, the Ministry of Finance, and financial institutions, to develop an integrated framework that supports the green economy ecosystem at the macro level. By adopting a proactive and adaptive green monetary policy approach,

Bank Indonesia has the potential to play a crucial role in fostering long-term economic stability that aligns with environmental sustainability and social justice.

5. References

- Asian Development Bank. (2021). *Indonesia Green Finance Assessment*. <https://www.adb.org/>
- Bank Indonesia. (2021). *Indonesian Payment System Blueprint 2025*. <https://www.bi.go.id/>
- Bank Indonesia. (2022). *Indonesia Economic Report 2022*. <https://www.bi.go.id/>
- Beirne, J., Renzhi, N., & Volz, U. (2021). Bracing for the typhoon: Climate change and sovereign risk in Southeast Asia. *Asian Development Bank Institute Working Paper*, No. 1212. <https://doi.org/10.2139/ssrn.3773605>
- Battiston, S., Mandel, A., Monasterolo, I., Schütze, F., & Visentin, G. (2017). A climate stress-test of the financial system. *Nature Climate Change*, 7(4), 283–288. <https://doi.org/10.1038/nclimate3255>
- Bappenas. (2022). *Low Carbon Development: A Paradigm Shift Towards a Green Economy in Indonesia*. <https://lcdi-indonesia.id/>
- Bappenas. (2023). *Green Economy Index 2023*. <https://www.bappenas.go.id/>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Campiglio, E. (2016). Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy. *Ecological Economics*, 121, 220–230. <https://doi.org/10.1016/j.ecolecon.2015.03.020>
- Campiglio, E., Dafermos, Y., Monnin, P., Ryan-Collins, J., Schotten, G., & Tanaka, M. (2018). Climate change challenges for central banks and financial regulators. *Nature Climate Change*, 8(6), 462–468. <https://doi.org/10.1038/s41558-018-0175-0>
- Carney, M. (2015). Breaking the tragedy of the horizon—climate change and financial stability. *Speech at Lloyd's of London*. <https://www.bankofengland.co.uk/>
- Chenet, H., Ryan-Collins, J., & van Lerven, F. (2021). Finance, climate-change and radical uncertainty: Towards a precautionary approach to financial policy. *Ecological Economics*, 183, 106957. <https://doi.org/10.1016/j.ecolecon.2021.106957>
- Climate Action Tracker. (2024). *Indonesia Country Summary*. <https://climateactiontracker.org/>

- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications.
- Denzin, N. K., & Lincoln, Y. S. (2018). *The SAGE Handbook of Qualitative Research* (5th ed.). SAGE Publications.
- Dikau, S., & Volz, U. (2021). Central bank mandates, sustainability objectives and the promotion of green finance. *Ecological Economics*, 184, 106989. <https://doi.org/10.1016/j.ecolecon.2021.106989>
- DNB. (2019). *Values and risk? Sustainability risks and goals in the Dutch financial sector*. The Nederlandsche Bank. <https://www.dnb.nl/>
- DNB. (2021). *Central banks and sustainability: Policies and practice*. <https://www.dnb.nl/en/>
- D'Orazio, P. (2022). Mapping central banks in the climate-finance policy space. *Journal of Sustainable Finance & Investment*, 12(1), 210–227. <https://doi.org/10.1080/20430795.2020.1724862>
- Flick, U. (2018). *An Introduction to Qualitative Research* (6th ed.). SAGE Publications.
- Fitriani, E., Suryani, A., & Yusuf, M. (2023). Green monetary policy: An analysis of Bank Indonesia's readiness for a sustainable economic transition. *Journal of Economics and Public Policy*, 14(1), 34–49. <https://doi.org/10.24832/jekp.v14i1.5678>
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4), 597–607. <https://doi.org/10.46743/2160-3715/2003.1870>
- Guest, G., MacQueen, K. M., & Namey, E. E. (2012). *Applied Thematic Analysis*. SAGE Publications.
- Hill, M., & Hupe, P. (2014). *Implementing Public Policy: An Introduction to the Study of Operational Governance* (3rd ed.). SAGE Publications.
- IEA. (2022). *Indonesia Energy Outlook 2022*. International Energy Agency. <https://www.iea.org/>
- IESR. (2023). *Indonesia Energy Transition Outlook 2023*. <https://iesr.or.id/>
- ILO. (2022). *Green Jobs and Just Transition in Asia*. <https://www.ilo.org/>
- IMF. (2022). *Climate-Sensitive Macroeconomic Policies*. <https://www.imf.org/>
- IMF. (2023). *Monetary Policy and Climate Change*. <https://www.imf.org/>
- IPCC. (2022). *AR6 Climate Change 2022: Impacts, Adaptation, and Vulnerability*. <https://www.ipcc.ch/>
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative Research: A Guide to Design and Implementation* (4th ed.). Jossey-Bass.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook* (3rd ed.). SAGE Publications.
- Monnin, P. (2018). Central banks and the transition to a low-carbon economy. *Council on Economic Policies Working Paper*, 1–18. <https://doi.org/10.2139/ssrn.3284970>

- Nasution, A. (2021). The challenges of integrating climate risk in Indonesia's monetary policy. *Journal of Development Planning*, 5(2), 89–103. <https://doi.org/10.22212/jpp.v5i2.4332>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1–13. <https://doi.org/10.1177/1609406917733847>
- NGFS. (2020). *Guide for Supervisors: Integrating climate-related and environmental risks into prudential supervision*. <https://www.ngfs.net/>
- NGFS. (2021). *Adapting central bank operations to a hotter world*. <https://www.ngfs.net/>
- NGFS. (2022). *Climate-related risks and central banks*. <https://www.ngfs.net/>
- OECD. (2011). *Towards Green Growth*. <https://www.oecd.org/>
- OJK. (2022). *Sustainable Finance Roadmap Phase II (2021–2025)*. <https://www.ojk.go.id/>
- PWC Indonesia. (2023). *Net Zero Readiness Index: Indonesia's Position*. <https://www.pwc.com/>
- Rahmawati, N., Widodo, T., & Santoso, B. (2022). Analysis of green macroeconomic policy readiness in Indonesia. *Journal of Environmental Economics*, 10(1), 56–68. <https://doi.org/10.15294/jel.v10i1.9823>
- Sabatier, P. A., & Weible, C. M. (Eds.). (2014). *Theories of the Policy Process* (3rd ed.). Westview Press.
- Sachs, J. D., Thwaites, J., Kroll, C., Lafortune, G., & Sachs, L. (2022). *Sustainable Development Report 2022*. Cambridge University Press.
- SBN. (2022). *Indonesian Green Bond Framework*. <https://www.djppr.kemenkeu.go.id/>
- Schoenmaker, D. (2021). Greening monetary policy. *Climate Policy*, 21(4), 563–575. <https://doi.org/10.1080/14693062.2020.1868392>
- Schoenmaker, D., & van Tilburg, R. (2016). What role for financial supervisors in addressing environmental risks? *Comparative Economic Studies*, 58(3), 317–334. <https://doi.org/10.1057/ces.2016.11>
- Silverman, D. (2020). *Interpreting Qualitative Data* (6th ed.). SAGE Publications.
- UNDP. (2021). *Indonesia SDG Investor Map*. <https://www.id.undp.org/>
- UNEP. (2019). *Green Economy and Trade*. <https://www.unep.org/>
- Volz, U., Böhnke, J., & D'Orazio, P. (2020). Climate change and central banking. *INSPIRE Research Working Paper Series*. <https://doi.org/10.2139/ssrn.3730750>
- Volz, U., & Ahmed, Z. (2022). Central banking and climate change in the Asia-Pacific region. *ADB Institute Working Paper Series*, No. 1299. <https://doi.org/10.2139/ssrn.4042314>

- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, 26(2), xiii-xxiii. <https://doi.org/10.2307/4132319>
- World Bank. (2023). *Indonesia Green Growth Policy Review*. <https://www.worldbank.org/>
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications.
- Yuliani, R. (2023). Transition to green economic policy: An Indonesian perspective. *Journal of Green Economics*, 2(1), 14-29. <https://doi.org/10.25078/jeh.v2i1.5721>