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LEGAL ASPECTS OF THE CENTRAL BANK'S GREEN FINANCE INSTRUMENTS IN INDONESIA: AN OVERVIEW

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Abstract

For experts in the field of central banking, the growth of green finance presents a significant opportunity for of research. This rapid emergence of green finance springs from the urgent need to address the threat of climate damage and the important role of central banks in supporting this transition to sustainability. In this study, we utilise the legal instruments framework proposed by Volz to analyse the legal aspects of green finance within the context of the central bank in Indonesia. Our findings indicate that Bank Indonesia, as well as the Financial Service Authority, has a range of regulatory tools at its disposal to influence borrowing and lending policies, as well as investment choices. Several green finance instruments have been created under Indonesian laws and regulations, including loan to value/finance to value, green finance guidelines and frameworks, and affirmative measures to support green finance. The future of the legal framework on green finance in Indonesia looks promising, with the implementation of sustainable finance from businesses and support from the government. However, there is still room for Bank Indonesia to adopt additional regulatory instruments, such as incentives for redirecting resources to low-carbon investments to further promote sustainable finance.

Keywords: *central bank, green finance, green instruments, sustainable banking.*

I. INTRODUCTION

Facing unprecedented environmental issues, awareness has grown as numerous international agreements have placed addressing climate change front and centre. This has developed in the last few decades alongside the increasingly severe impacts of global warming. This impacts not limited to the rise of the global temperatures, but also the inevitable natural disasters such as floods, droughts, hurricanes, etc. which in the future will threaten the survival of

mankind resulting therefrom.[1] If there is no action taken and business as the largest carbon emitter continues as usual, it is predicted that the earth will become unfit for habitation in just the next 70 years. Evidently, from the data collected by NASA, assuming that the temperature increase remains stable, the Arctic will be ice free and sea level rise by 1 - 8 feet by 2100.[2] As a result, during the last Conference of Parties 26 (COP26), 200 countries agreed to limiting global warming to below 2°C above pre-industrial level and lower CO2 emissions by about 45% by 2030 compared to 2010 levels.[3]

The green economy, a concept that first initiated by the United Nations Environment Programme (UNEP) in October 2008 presented to reconcile the contradiction that arises between economic profits and environmental considerations[4] based on low carbon, resource efficient and socially-inclusive economic activity.[5] Based on developments from the Rio+20 Summit, the green economy is also regarded as a tool for achieving sustainable development.[6] This is notable because the green economy does not purport to act as a replacement for sustainable development (as a United Nations agenda) in terms of environmental law. From Principle 4 of the Rio Declaration, sustainable development is the main point as the environment is in integral part of economic development.[7]

UNEP has focused on three areas to smooth the transition to a green economy, policy mainstreaming, economic instruments, and capacity building.[8] Policy mainstreaming aims to support and assess the needs for sustainable environmental policies and capacity building focuses on developing long-term institutional knowledge and skills. Importantly here, economic instruments should be developed to influence multi-sectoral economic agents through

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[1] "Taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time." The effects of climate change see https://climate.nasa.gov/effects/.

[2] *Ibid*.

[3] The outcome of COP26 – the Glasgow Climate Pact – is the fruit of intense negotiations. For more information of COP26 see https://www.un.org/en/climatechange/cop26.

[4] Wang, Yao, and Qiang Zhi. "The Role of Green Finance in Environmental Protection: Two Aspects of Market Mechanism and Policies." Energy Procedia 104 (2016): 311–16. https://doi.org/https://doi.org/10.1016/j.egypro.2016.12.053.

[5] For more elaboration about UNEP Green Economy definition see https://www.unep.org/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-economy.

[6] C. Spence and A. Vavilov, 'Summary of the UNCSD Informal Consultations and Third Intersessional Meeting: 17–19 May 2010', 27:1 Earth Negotiations Bulletin (2010), 8.

[7] International Law Association, Committee on International Law on Sustainable Development, Seventy-fourth Report (2004), at 13.

[8] "The notion of green economy does not replace sustainable development, but creates a new focus on the economy, investment, capital and infrastructure, employment and skills and positive social and environmental outcomes across Asia and the Pacific." For more elaboration about UNEP Green Economy definition see https://www.unep.org/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-economy.

Green Financial Sector Regulations to foster incorporation of the financial sector into transformation towards a green economy.

Regarding environmental and financial issues, the risks that arise from environmental damage and energy transition cannot be ignored. Three kinds of financial risks that we must take into account are transitional risk, physical risk, and environment-related liability risk.[9] Transitional risk arises because whenever a government tries to implement a new policy that is more environmentally friendly, there are companies that are affected. Physical risks mostly entail pinpointing environmental damage such as natural disasters caused by global warming. Finally, environmental-related liability risk is a continuation of the previous point where the party affected by the loss will seeks indemnity from another party. These risks destabilise the financial system, which ought to be Central Bank's concern. This financial risk, however, can be internalised by the instruments that influence investment decisions and create and allocate credits that are mainly under the umbrella of green finance.

As a result, the concept of green finance has evolved, from initially focusing solely on environmental aspects, to now including economic and social aspects of sustainability. According to the UNEP, green finance is defined as increasing the level of financial flows (from banking, micro-credit, insurance, and investment) from the public, private, and non-profit sectors to sustainable development. The Government of Indonesia employs a definition that encompasses all aspects of sustainability. Green Finance in Indonesia is defined as the financial services industry's overall support for sustainable growth, aligning economic, social, and environmental interests. This triple bottom line concept has been observed to have a long-term positive impact on financial development, energy consumption and trade openness on carbon emissions.[10]

Indonesia as the largest emitter of Green House Gasses (GHG) in Southeast Asia and one of the ten largest contributors worldwide, inevitably must be proactive in its efforts to promote green finance.[11] If Indonesia fails to meet its commitment, this country's GDP will be affected by around 2.5%

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[9] UN Environment Inquiry, CIGI Research Convening. "On the Role of Central Banks in Enhancing Green Finance." United Nations Environment Programme, no. February (2017): 1–27.

[10] Nasir, Muhammad Ali, Nguyen Phuc Canh, and Thi Ngoc Lan Le. "Environmental Degradation & Role of Financialisation, Economic Development, Industrialisation and Trade Liberalisation." *Journal of Environmental Management* 277 (2021): 111471. https://doi.org/10.1016/j.jenvman.2020.111471.

[11] Liebman, A., Reynolds, A., Robertson, D., Nolan, S., Argyriou, M., & Sargent, B. (2019). Handbook of Green Finance. In *Handbook of Green Finance* (Issue June); Setyowati, Abidah B. "Governing Sustainable Finance: Insights from Indonesia." Climate Policy 0, no. 0 (2020): 1–14. https://doi.org/10.1080/14693062.2020.1858741; Setiawan, Sigit, Poppy Ismalina, R Nurhidajat, Cornelius Tjahjaprijadi, and Yusuf Munandar. "Green Finance in Indonesia's Low Carbon Sustainable Development." *International Journal of Energy Economics and Policy* 11 (August 20, 2021): 191–203. https://doi.org/10.32479/ijeep.11447.

to 7% by the end of this century. Certainly, as an institution with a mandate to maintain prices and economic stability, Bank Indonesia can take a role in directing resources towards a low-carbon economy. Moreover, recalling Article 9, paragraph 4, of the Paris Agreement, finance in developing country for adaptations from 2019 levels by 2025, mandates that in the context of achieving a balance between mitigation and adaptation in the provision of scaled-up financial resources, has been mandated.[12]

Several key instruments have been discussed regarding the central bank's policy mix adoption for green finance. Warjiyo and Juhro noted that supporting sustainable economic growth through central bank policy includes using monetary and macroprudential policies, managing foreign capital flows, and implementing payment system policies.[13] Volz *et al.'s* research also concludes that sustainable investment and banking, where investment and lending decisions are made on the basis of environmental screening and risk assessment to meet environmental sustainability standards, are vital elements of green finance. [14] These arguments are also supported by extensive research in multiple jurisdictions, including by Wang, Lee and Chen, and Sachs *et al.*.[15] However, we found a lack of research from a more panoramic view about green finance instruments in the legal environment of Indonesia.[16] Some paper focus solely on the legal aspects of specific financial products such as green

[12] "Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention." Further elaboration about Article 9, see https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

[13] Warjiyo, Perry, and Solikin M Juhro. Central Bank Policy: Theory and Practice. 1st ed. (Depok: Rajawali Press, 2016).

[14] Volz, Ulrich, Judith Böhnke, Vanessa Eidt, Laura Knierim, Katharina Richert, and Gretha-Maria Robert. Finance the Green Transformation: How to Make Green Finance Work in Indonesia. 1st ed. (London: Palgrave Macmillan London, 2015).

[15] See: Wang, Kai-Hua, Yan-Xin Zhao, Cui-Feng Jiang, and Zheng-Zheng Li. "Does Green Finance Inspire Sustainable Development? Evidence from a Global Perspective." *Economic Analysis and Policy* 75 (2022): 412–26. https://doi.org/https://doi.org/10.1016/j.eap.2022.06.002.

[16] See: Ratnasari, T., Surwanti, A. and Pribadi, F. 'Implementation of green banking and financial performance on commercial banks in Indonesia', *International Symposia in Economic Theory and Econometrics*, 28 (2020), 323–336. doi: 10.1108/S1571-038620210000028018. Also see: Park, H., Kim, J.D. Transition towards green banking: role of financial regulators and financial institutions. AJSSR 5, 5 (2020). https://doi.org/10.1186/s41180-020-00034-3. Also see: Lee, Chi-Chuan, and Chien-Chiang Lee. "How Does Green Finance Affect Green Total Factor Productivity? Evidence from China." *Energy Economics* 107 (2022): 105863. https://doi.org/https://doi.org/10.1016/j.eneco.2022.105863. And see: Sachs, Jeffrey D., Wing Thye Woo, Naoyuki Yoshino, and Farhad Taghizadeh-Hesary. "Importance of Green Finance for Achieving Sustainable Development Goals and Energy Security." *Handbook of Green Finance*, 2019, 3–12. https://doi.org/10.1007/978-981-13-0227-5_13.

banking[17] and green bonds,[18] but there is no comprehensive discussion of all green monetary instruments available in Indonesia. We will use the framework established by Volz 2017,[19]consisting of instruments that will be elaborated on further.

This study investigates the regulatory instruments that pertain to green finance and macroprudential policies in Indonesia. The first section provides a theoretical overview of green finance and the role of central banking institutions. The second section performs a legal analysis of the extent to which Indonesian law regulates green finance instruments. The final section draws conclusions from our findings and propose key actions for the advancement of green finance regulation in Indonesia. The goal of this research is to enhance the understanding of the legal and regulatory landscape of green finance in Indonesia and to provide insights for policy makers and practitioners.

II. GREEN FINANCE IN INDONESIA: THEORY & PRACTICE

In this section, we discuss the definition of green finance, beginning from when this term first appeared and its transformation to the current definition. Furthermore, we formulate central banks' financial regulatory position to promote green finance, as well as what instruments the central bank can use to promote green finance. The theoretical and literature studies in this section are supplemented by the Indonesian context and serve as a foundation for legal analysis in the subsequent section.

II.A. Green Finance at a Glance

Until now, there has been no global consensus on what green finance is. The concept of green finance is still unclear, and researchers have yet to agree on a definition.[20] There are at least two explanations for this.[21] For starters, many publications on green finance fail to clearly define the term. For example,

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[17] See: Safitri, Ria, Hartiwiningsih, and Hari Purwadi. "The Role of Law on the Implementation of Green Banking in Indonesia." *Jurnal Cita Hukum* 7, no. 1 (March 20, 2019). https://doi.org/10.15408/jch.v7i1.10897.

[18] See: Hadi, Fikri, Budi Endarto, and Farina Gandryani. "Legal Aspect on Green Bond as Finance Source of New Renewable Energy in Indonesia" *Jurnal Rechsvinding* 11, no. 3 (2022): 391-409. And See: Endarto, Budi, Fikri Hadi, and Nur Hidayatul Fithri. "The Politic of Law on Green Bond in Indonesia." *Bina Hukum Lingkungan* 7, no. 1 (October 30, 2022): 1–21. https://doi.org/10.24970/bhl.v7i1.303.

[19] Volz, Ulrich. "On the Role of Central Banks in Enhancing Green Finance." Inquiry Working Paper 17, no. 01 (2017): 27.

[20] Zhang, Dayong, Zhiwei Zhang, and Shunsuke Managi. "A Bibliometric Analysis on Green Finance: Current Status, Development, and Future Directions." *Finance Research Letters* 29 (June 2019): 425–30. https://doi.org/10.1016/j.frl.2019.02.003.

[21] Lindenberg, Dr Nannette. "Definition of Green Finance," April 2014, 4.

leading papers from IFC and Sachs do not include an explicit definition of green finance.[22] Second, the proposed definitions differ from one another and discuss various points of view.

The term "green finance" was first used in a report by members of the International Development Finance Club (IDFC) on the outcomes of collaboration between 19 infrastructure finance institutions and development banks around the world. Green Finance was defined in this report as a broad term which included financial investments in sustainable development projects and initiatives, environmental products, and policies that promote the development of a more sustainable economy.[23] This understanding was later refined by Zadek and Flynn, who stated that green finance includes investments such as project preparation and land acquisition, both of which are not only significant but can also pose unique finance challenges.[24]

The G20 Green Finance Study Group also considers environmental benefits in financial investments in environmental projects/products, such as reductions in air, water, and soil pollution, reductions in GHG emissions, improved energy efficiency while utilising existing natural resources, and mitigation and adaptation to climate change, as well as their co-benefits.[25] Furthermore, green finance has advantages for low-risk finance, the development of green investment and finance instruments, the distribution of funds for environmental preservation, and the flow of funds to sustainable trade and investment activities.[26]

Pricewaterhouse Coopers Consultants (PWC) defined green finance in the banking sector in their findings report on China. According to PWC, green

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[22] International Finance Corporation. *Mobilizing Public and Private Funds for Inclusive Green Growth Investment in Developing Countries: A Stocktaking Report Prepared for the G20 Development Working Group*. World Bank, 2013. https://doi.org/10.1596/26450; Spratt, Stephen. "Mobilising Investment for Inclusive Green Growth in Low-Income Countries," 2013.

[23] Höhne, Khosla, Fekete, and Gilbert. "Mapping of Green Finance Delivered by IDFC Members in 2011, Ecofys," 2012.

[24] Zadek, and Flynn. "South-Originating Green Finance: Exploring the Potential." *The Geneva International Finance Dialogues, UNEP FI, SDC, and Iisd.*, 2013, 22.

[25] Green Finance Study Group. "G20 Green Finance Synthesis Report," September 2016.

[26] Yoshino, Naoyuki, and Farhad Taghizadeh-Hesary. "Optimal Credit Guarantee Ratio for Small and Medium-Sized Enterprises' Finance: Evidence from Asia." *Economic Analysis and Policy* 62 (June 2019): 342–56. https://doi.org/10.1016/j.eap.2018.09.011.; Sachs, Jeffrey D., Wing Thye Woo, Naoyuki Yoshino, and Farhad Taghizadeh-Hesary. "Importance of Green Finance for Achieving Sustainable Development Goals and Energy Security." In *Handbook of Green Finance*, edited by Jeffrey D. Sachs, Wing Thye Woo, Naoyuki Yoshino, and Farhad Taghizadeh-Hesary, 3–12. Singapore: Springer Singapore, 2019. https://doi.org/10.1007/978-981-13-0227-5_13. ; Wang, Yao, and Qiang Zhi. "The Role of Green Finance in Environmental Protection: Two Aspects of Market Mechanism and Policies." *Energy Procedia* 104 (December 2016): 311–16. https://doi.org/10.1016/j.egypro.2016.12.053.; Eyraud, Luc, Benedict Clements, and Abdoul Wane. "Green Investment: Trends and Determinants." *Energy Policy* 60 (September 1, 2013). https://doi.org/10.1016/j.enpol.2013.04.039.

finance is defined in the banking sector as "financial products and services that take environmental factors into account during lending decision making, ex-post monitoring, and risk management processes, and are provided to promote environmentally responsible investments and stimulate low-carbon technologies, projects, industries, and businesses."[27] Green finance was initially perceived as involving traditional capital markets in the creation and distribution of a variety of financial products and services, providing both reasonable rates of return and environmentally positive outcomes.[28] Despite these advantages, it is critical to recognise that green finance is only one aspect of sustainable finance for sustainable development.[29]

II.B. The Role of Central Banks and Financial Services Authorities in Improving Green Finance

Banks, institutional investors, and international financial institutions, as well as central banks and financial services authorities, are among the major players involved in the promotion of green finance. However, central banks and financial services authorities have played the most crucial role in developing and implementing green finance policies in many countries.[30] Some of these actors have implemented policies and regulatory measures for various asset classes to help the green financial system.

By enacting appropriate policies and regulations, central banks and other regulatory authorities can push financial markets toward greater sustainability. These institutions are key to helping the green transformation.[31] Because the current financial system is primarily driven by short-term yields, a chronic investment deficit for long-term and sustainable projects is one of the most pressing issues that financial regulators can address. Banking stress tests and due diligence standards for banks and financial institutions should take climate risks into account in influencing common investor behaviour. Furthermore, green financial guidelines and regulations can help to avoid competitive distortions caused by higher costs associated with green financial activities.[32]

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[27] Pricewaterhouse Coopers Consultants. "Exploring Green Finance Incentives in China," 2013, 71.

[28] Lee, Jung Wan. "Green Finance and Sustainable Development Goals: The Case of China." *The Journal of Asian Finance, Economics and Business* 7, no. 7 (July 30, 2020): 577–86. https://doi.org/10.13106/JAFEB.2020.VOL7.NO7.577.

[29] Ozili, Peterson K. "Green Finance Research around the World: A Review of Literature." *International Journal of Green Economics* 16, no. 1 (2022): 1. https://doi.org/10.1504/IJGE.2022.10048432.

[30] Durrani, Aziz, Masyitah Rosmin, and Ulrich Volz. "The Role of Central Banks in Scaling up Sustainable Finance – What Do Monetary Authorities in the Asia-Pacific Region Think?" *Journal of Sustainable Finance & Investment* 10, no. 2 (April 2, 2020): 92–112. https://doi.org/10.1080/20430795.2020.1715095.

[31] Alexander, Kern. "Stability and Sustainability in Banking Reform: Are Environmental Risks Missing in Basel III?," January 1, 2014. https://doi.org/10.5167/uzh-103844.

[32] Berensmann, Kathrin, and Nannette Lindenberg. "Green Finance: Actors, Challenges and Policy Recommendations." *Deutsches Institut Für Entwicklungspolitik (DIE) Briefing Paper* 23 (2016).

However, disagreement persists about the extent to which central banks can incorporate climate risk into their core policy frameworks and act as catalysts for climate finance promotion.[33] There are several reasons for this, including concerns about central banks' sometimes contradictory goals, central banks becoming institutions with too much authority and too great a mandate, and internal resistance within a central bank as impediments to achieving this goal.[34] However, the arguments surrounding the macroeconomic and financial risks posed by climate change, market failures in providing green loans, and the fact that central banks wield significant power and credibility in developing countries strengthen this discourse.[35]

The Bank Indonesia Law (the "BI Law") states that the main objective of Bank Indonesia is to achieve and maintain stability in the value of the Rupiah.[36] In order to achieve this objective, Bank Indonesia implements monetary policy in a sustainable, consistent, transparent manner, and must take into account the general government policies in the economic sector.[37] This means that monetary policy implemented by Bank Indonesia in a sustainable, consistent and transparent manner can be used as a definite and clear reference for the business world and the wider community, as well as ensuring that the policies adopted by Bank Indonesia take into account their impact on the national economy as a whole, including the state finance sector and development in the real sector.

Bank Indonesia's objectives from a macroprudential perspective complement the FSA's objectives for microeconomic accountability. The Financial Services Authority Law (the "FSA Law") states that the FSA shall conduct oversight of

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[33] Campiglio, Emanuele, Yannis Dafermos, Pierre Monnin, Josh Ryan-Collins, Guido Schotten, and Misa Tanaka. "Climate Change Challenges for Central Banks and Financial Regulators." *Nature Climate Change* 8, no. 6 (June 2018): 462–68. https://doi.org/10.1038/s41558-018-0175-0. ; Dikau, Simon, and Josh Ryan-Collins. "Green Central Banking in Emerging Market a Developing Country Economies." *New Economics Foundation*, 2017. https://www.semanticscholar.org/paper/Green-Central-Banking-in-Emerging-Market-an-Country-Dikau-Ryan%E2%80%90Collins/9605ffed3150c319babed0295842c534e822ccd0. ; Dikau, Simon, and Ulrich Volz. "Central Banking, Climate Change, and Green Finance." *ADBI Working Paper Series*, 2018, 23.

[34] Volz, Ulrich. "On the Role of Central Banks in Enhancing Green Finance." *Inquiry Working Paper* 17, no. 1 (2017): 27.

[35] *Ibid*, 5.

[36] Bank Indonesia Law elaborates further that "the stability of the value of the Rupiah as referred to in this paragraph is the stability of the value of the Rupiah against goods and services, as well as against the currencies of other countries. The stability of the value of the Rupiah against goods and services is measured by or reflected in the development of the inflation rate. The stability of the value of the Rupiah against the currencies of other countries is measured by or is reflected in the development of the Rupiah exchange rate against the currencies of other countries. See: Indonesia, Bank Indonesia Law, Art. 7(1) and Art.7(1) explanation.

[37] Indonesia, Bank Indonesia Law, Art. 7(2).

all activities in the financial services sector by: conducting activities regularly, fairly, transparently, and accountability; realising a financial system that grows in a sustainable and stable manner; and protecting the interests of the general population.[38] This means, the FSA is expected to support the interests of the national financial services sector to increase national competitiveness. In addition, the FSA must be safeguard national interests, including human resources, management, control, and ownership in the financial services sector, while considering the positive aspects of globalisation.[39]

II.C. Instruments for Promoting Green Finance

Banks, institutional investors, international financial institutions, as well as central banks and national banking regulatory agencies, are among the major players involved in the promotion of green finance. However, central banks and national banking regulatory agencies have played the most crucial role in developing and implementing green finance policies in many countries.[40] Some of these institutions have implemented policy and regulatory measures for various asset classes to nurture the green financial system. These measures are discussed below.

1. Carbon Certificates as Part of Commercial Banks' Legal Reserve Requirements

A carbon certificate is a tradable permit or certificate that entitles the holder to emit one ton of CO_2 or equivalent greenhouse gas. Carbon certificates are traded as rights allowing companies to produce carbon emissions above a certain threshold. Some scholars propose increasing transactions in the carbon certificate market by creating carbon certificates that can be accepted as part of commercial banks' legal reserve requirements.[41] Carbon certificates are intended to be accepted as collateral for soft loans to finance low-carbon emitting projects. This would lower the investment costs for such low-carbon emitting projects. Low-carbon emitting projects would thus become more appealing than "conventional" investments.

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[38] Indonesia, Financial Service Authority Regulation, Art. 4.

[39] *Ibid.*, Art. 4 Explanation.

[40] Durrani, Aziz, Masyitah Rosmin, and Ulrich Volz. "The Role of Central Banks in Scaling up Sustainable Finance – What Do Monetary Authorities in the Asia-Pacific Region Think?" *Journal of Sustainable Finance & Investment* 10, no. 2 (April 2, 2020): 92–112. https://doi.org/10.1080/20430795.2020.1715095.

[41] Rozenberg, Julie, Stéphane Hallegatte, Baptiste Perrissin-Fabert, and Jean-Charles Hourcade. "Funding Low-Carbon Investments in the Absence of a Carbon Tax." *Climate Policy* 13, no. 1 (January 1, 2013): 134–41. https://doi.org/10.1080/14693062.2012.691222.

2. Differentiated Reserve Requirements

To increase green finance, a central bank can use differentiated reserve requirements, or a variable minimum amount of cash reserves that commercial banks must hold on deposit, in addition to disclosure requirements. They can be calibrated to create incentives for green asset promotion or to make non-green lending less appealing. Differential reserve requirements linked to bank portfolio processes, allowing lower required reserve rates for portfolios skewed toward greener, less carbon-intensive assets, have the potential to influence credit allocation and promote green investment. Furthermore, reserve requirements can be related to a debtor company's geographic location.[42] Central banks can impose lower required reserve requirements on banks that provide less credit to companies operating in environmentally threatened areas, thereby encouraging industry to relocate to areas that are safer for the environment and do have less significant environmental impacts.

3. Differentiated Capital Requirements

A capital requirement is the amount of capital needed by a bank or other financial institution by its financial regulator. This is often stated as Capital to Risk (Weighted) Assets Ratio. In theory, capital requirements could differentiate asset classes based on sustainability criteria and assign higher risk weights to carbon-intensive assets in anticipation of future negative and unexpected price developments.

Schoenmaker and Tilburg emphasize differentiated capital requirements as a key policy tool for more accurately pricing carbon risks. Furthermore, by incentivising an exit from carbon-intensive assets and dependent sectors, this instrument could have significant allocative consequences for credit.[43] Capital requirements, like reserve requirements, can be classified based on the type of bank and the type of corresponding loan. Campiglio suggests that the Basel III risk-weighted capital ratio calculation should be calibrated so that low-carbon activities exert less pressure than alternative investments.[44]

4. Directed Green Credit Policy Instruments

Even though many policy instruments may have allocative consequences, these consequences can be more accurately directed through dedicated green credit allocation instruments. These are no longer commonly used by central banks

[42] Chandavarkar, Anand. "Promotional Role of Central Banks in Developing Countries," March 27, 1987. https://papers.ssrn.com/abstract=884635.

[43] Schoenmaker, Dirk, and Rens van Tilburg. "What Role for Financial Supervisors in Addressing Environmental Risks?," September 22, 2016. https://doi.org/10.2139/ssrn.2594671.

[44] Campiglio, Emanuele. "Beyond Carbon Pricing: The Role of Banking and Monetary Policy in Finance the Transition to a Low-Carbon Economy." *Ecological Economics* 121, no. C (2016): 220–30.

in advanced economies, but they are still widely used in many developing and emerging economies. Fry (1995) makes a strong case against financial repression and credit allocation policies, citing subsidised loan rates for priority sectors, differential rediscount rates, direct budgetary subsidies, credit floors and ceilings, and the proliferation of development banks as central allocative policy instruments, many of which can also be used to promote green investment and sustainable development. subsidised loan rates for priority sectors are the most-used instruments among these.[45]

Central banks can use differential rediscount rates to incentivise commercial banks to lend to priority green sectors by offering lower lending rates.[46] If banks extend credit for low-carbon activities or projects that support an economy's ecological transformation, a central bank's liquidity could be provided at preferential rates. In addition to interest rate subsidies, a central bank can exert control over credit allocation by imposing quotas requiring commercial banks to lend a minimum percentage of their total loan portfolios to green investments, while credit ceilings could be used to limit lending to non-green industries.

5. Disclosure Requirements

One of the macroprudential instruments that can promote green finance is disclosure requirements, which require banks and financial institutions to disclose all information related to environmental and climate change risks. Disclosure requirements are imposed with the understanding that a lack of information about financial institutions' risk exposure has consequences for financial stability, because asset misallocation or mispricing can lead to abrupt price corrections in financial markets.[47] Effective disclosure requirements for banks and other financial institutions of climate change-related risks can play a critical role in ensuring that financial institutions correctly price the impact of climate change, climate policies, and natural hazards.

Climate change impacts may not be correctly priced by financial markets if climate-related financial risks are not effectively disclosed.[48] As a result, the Financial Stability Board's Task Force on Climate-related Financial Disclosures advises all financial organisation, including banks, insurance companies, asset managers, and asset owners, to disclose their risks more effectively in their

[45] Fry, Maxwell J. "Financial Development in Asia: Some Analytical Issues." *Asian-Pacific Economic Literature* 9, no. 1 (1995): 40–57. https://doi.org/10.1111/j.1467-8411.1995.tb00103.x.

[46] Ibid; Volz, Ulrich. "On the Role of Central Banks in Enhancing Green Finance." *Inquiry Working Paper* 17, no. 01 (2017): 27.

[47] TCFD. "Phase I Report of the Task Force on Climate-Related Financial Disclosures," 2016.

[48] Dikau, Simon, and Ulrich Volz. "Central Banking, Climate Change, and Green Finance." *ADBI Working Paper Series*, 2018, 23.

financial reporting.[49] Improved transparency of climate-related risks promotes more appropriate risk pricing and capital allocation and serves as the foundation for green macroprudential regulation and climate-related stress testing.[50]

6. Green Macroprudential Regulation and Climate-related Stress Testing

The rapid expansion of green credit has the potential for creation of a disproportionate risk assessment, resulting in systemic risk and financial market instability. To prevent excessive green credit growth from increasing systemic risk and to maintain prudent green credit distribution, a macroprudential instrument in the form of additional capital requirements as a buffer called a Green Countercyclical Buffer for banks is required.

Countercyclical capital buffers are used to mitigate the severity of financial cycles and can be calibrated to environmental risks to mitigate the potential effect of the pricing-in of a so-called "carbon bubble," which describes the expected sudden re-pricing of carbon-intensive assets due to stricter emission targets and/or general environmental policies. In practice, higher capital requirements for carbon-intensive credit growth can be imposed.[51]

As a result, climate risk stress testing is required to determine the potential impact of climate scenarios on the health of financial institutions and the financial system as a whole.[52] Climate risk-related stress tests can help to assess the potential impact of natural disasters on the economy, the health of individual financial institutions, and the health of the overall financial system. This stress test simulation can help determine the appropriate calibration for countercyclical buffers set by the central bank to overcome the presence of excessive green credit in the market.

7. Green Quantitative Easing

Quantitative Easing (QE) is a novel central bank policy that entails large-scale asset purchases from banks and other financial institutions through open market operations. These asset purchases have primarily consisted of government bonds, though some central banks have also purchased corporate bonds and equities. While opinions differ on the effectiveness of QE in general, it has been suggested that asset purchases under QE could be effectively directed toward the purchase of green financial assets such as green bonds.

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[49] TCFD. "Recommendations of the Task Force on Climate-Related Financial Disclosures," 2016.

[50] Volz, Ulrich. "On the Role of Central Banks in Enhancing Green Finance." *Inquiry Working Paper* 17, no. 01 (2017): 27.

[51] Schoenmaker, Dirk, and Rens van Tilburg. "What Role for Financial Supervisors in Addressing Environmental Risks?," September 22, 2016. https://doi.org/10.2139/ssrn.2594671.

[52] Batten, Rhiannon Sowerbutts, and Misa Tanaka. "Let's Talk about the Weather: The Impact of Climate Change on Central Banks." *Bank of England Working Papers*. Bank of England Working Papers. Bank of England, May 20, 2016. https://ideas.repec.org/p/boe/boeewp/0603.html.

Monasterolo and Raberto discovered, using a stock-flow-consistent flow-of-funds behavioural model, that large-scale purchases of green sovereign bonds provide a key impetus for developing the green bond market, with positive spill over into green investment and employment.[53] Green QE has the potential to hasten the transition to a low-carbon economy. At the same time, a financial system's risk of stranded assets is reduced. Another finding is that wealth inequality rises as capital gains from rising asset prices during green QE benefit only higher-income households and financial firms. This instrument is considered more effective than direct government subsidies.[54]

8. Green Finance Guidelines and Frameworks

Another tool that central banks can use is the creation of guidelines or frameworks for the financial and non-financial industries regarding green finance mechanisms. Central banks are well-positioned to develop or support industry-led, non-mandatory green finance guidelines, such as those for the issuance of green bonds, E&S risk-management practices, or general criteria for green lending. Green credit guidelines can be designed to steer banks toward more environmentally friendly lending policies. These guidelines could include a framework for assessing environmental risks as well as incentivising green finance.

In many emerging and developing economies where green credit guidelines exist, they are either voluntary industry-led green finance guidelines or, in most cases, central bank-led green finance guidelines, both of which often serve as foundations for the creation of mandatory green credit regulation later.[55] A central bank can also help to develop guidelines for financial service providers for benchmarking corporate environmental and social indicators.[56]

9. Soft Power

Through their institutional roles and exertion of "soft power," central banks can influence the reception, knowledge, and practice of green finance by

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[53] Monasterolo, Irene, and Marco Raberto. "Is There a Role for Central Banks in the Low-Carbon Transition? A Stock-Flow Consistent Modelling Approach," November 21, 2017. https://doi.org/10.2139/ssrn.3075247.

[54] Harvey, Fiona, and environment correspondent. "Sir David King: Quantitative Easing Should Be Aimed at Green Economy." *The Guardian*, June 26, 2012, sec. Environment. https://www.theguardian.com/environment/2012/jun/26/david-king-quantitative-easing-green.

[55] Dikau, Simon, and Josh Ryan-Collins. "Green Central Banking in Emerging Market a Developing Country Economies." *New Economics Foundation*, 2017. https://www.semanticscholar.org/paper/Green-Central-Banking-in-Emerging-Market-an-Country-Dikau-Ryan%E2%80%90Collins/9605ffed3150c319babed0295842c534e822ccd0.

[56] Breitenfellner, Andreas, Wolfgang Pointner, and Helene Schuberth. "The Potential Contribution of Central Banks to Green Finance." *Vierteljahrshefte Zur Wirtschaftsforschung* 88, no. 2 (April 1, 2019): 55–71. https://doi.org/10.3790/vjh.88.2.55.

including environmental issues and climate change on their larger agendas and signalling the importance of these issues to market participants. According to Chandavkar, the role of the central banks' exertion of soft power can be very meaningful in promoting the development of new green market segments or products as well as maintaining sustainable financial market practices.[57] Central banks can also focus research on green finance and the impact of climate risks on financial systems. More research topics on green finance and its implementation in financial markets raises financial market players' awareness and encourages more in-depth research on the topic.

Capacity-building workshops and seminars for bankers and investors other areas where central banks can contribute to the knowledge base of green finance and the threat of environmental risks, thereby addressing a potential lack of expertise in green financial issues, which has been identified as a barrier to the prevalence of E&S risk-management practices. Central banks can also use their international networks and joint international actions as a medium for such education, including The Network of Central Banks and Supervisors for Greening the Financial System (NGFS), Central Bank Deputies Meeting (FCBD) in the G20 Presidency, Financial Stability Board, and Task Force on Climate-Related Financial Disclosures (TCFD). The involvement of central banks in international bodies and networks is critical in developing internationally consistent approaches to 'greening' the financial system.

III. LEGAL ASPECTS OF GREEN FINANCE IN INDONESIA

The financial sector in Indonesia, including banking, is arguably one of the most highly regulated sectors.[58] The impact from a systemic risk[59] may cause a domino effect across various sectors, even countries.[60] Therefore,

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[57] Chandavarkar, Anand. "Promotional Role of Central Banks in Developing Countries," March 27, 1987. https://papers.ssrn.com/abstract=884635.

[58] See: Gabriel Rauterberg; Joshua Younger, "What Is the Law's Role in a Recession?," *Harvard Law Review* 135, no. 5 (March 2022) Pg. 1372-1374.

[59] In Indonesian context, Systemic Risk (*Risiko Sistemik*) means "the potential for instability as a result of contagion in part or all of the Financial System due to the interaction of size factors (size), business complexity (complexity), and interrelationships between institutions and/or financial markets (interconnection), as well as the tendency excessive behavior of financial actors or institutions to follow the economic cycle (procyclicality)." See: Indonesia, Bank Indonesia, Bank Indonesia Regulation No.16/11/PBI/2014 concerning Macroprudential Regulation and Supervision, Art. 1 num. 4.

[60] Domino effect is "the situation in which something, usually something bad, happens, causing other similar events to happen". See: Cambridge Dictionary, "The Domino Effect" https://dictionary.cambridge.org/dictionary/english/ domino-effect . In banking for example, when an insolvency happened in one bank or group of banks, it possibly caused a market failure in the market. See: Jean Dermine, "The Specialization of Financial Institutions: The EC Model," *Journal of Common Market Studies* 28, no. 3 (March 1990), Pg. 228-229.

international cooperation in maintaining financial sector stability is crucial, especially in implementing preventive regulatory instruments. Bank Indonesia and the Financial Services Authority are Indonesia's representatives on the Basel Committee on Banking Supervision (BCBS),[61] one of the forums for international financial supervisory institutional cooperation. However, the BCBS does not possess any formal supranational authority, meaning its decisions do not have legal force.[62] Achievement of the BCBS regulations relies on its members' commitments to its mandate,[63] including actively contributing to the development of BCBS standards, guidelines, and best practices, and continuously enhancing their quality of banking regulation and supervision.[64] BCBS's Basel I, Basel II, and Basel III,[65] are considered the gold standard in financial and banking regulation. Some suggest that Basel III is not being at full capacity in addressing systemic environmental risks.[66] However, in Basel IV, which targeted to be implemented on January 1st 2023,[67] includes climate risk as one of key risks to consider in banking sectors.

Indonesia's new Law No. 4/2023 on the Development and Strengthening of the Financial Sector, mandates the Ministry of Finance, the Financial Services Authority, and Bank Indonesia coordinate in preparing and stipulating strategies, policies, and programs for sustainable finance, (b) optimising

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[61] BCBS or The Basel Committee is "the primary global standard setter for the prudential regulation of banks and provides a forum for regular cooperation on banking supervisory matters", See: Bank for International Settlement, "The Basel Committee - overview", https://www.bis.org/bcbs/. Currently, Indonesia's membership of the BCBS is represented by Bank Indonesia as the macroprudential authority and the Indonesian Financial Services Authority (OJK) as the macroprudential authority of the financial sector in Indonesia. See: Bank Indonesia, Coordination between Bank Indonesia and other Authorities/Institutions", https://www.bi.go.id/en/fungsi-utama/stabilitas-sistem-keuangan / koordinasi-bi-lainnya/Default.aspx .

[62] Basel Committee on Banking Supervision, *Basel Committee Charter*, Art. 3.

[63] The commitment refers to ratification of the regulatory instruments like Basel III.by the members in their respective jurisdiction. For example, in Basel III the members are required to have a Countercyclical Capital Buffer (CCB) and adjust their Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio. See: Bank for International Settlement, "Basel III: international regulatory framework for banks" https://www.bis.org/bcbs/basel3.htm .

[64] Basel Committee on Banking Supervision, *Basel Committee Charter,* Art. 5.

[65] Basel I, Basel II, and Basel III area series of international standards for bank regulation issued by BCBS. Basel I introduced a capital measurement system commonly referred to as the Basel Capital Accord. Basel II refined the minimum capital requirements, added supervisory review of an institution's capital adequacy and internal assessment process, and several strengthened market discipline instruments. While Basel III, as a response to 2007-09 world's financial crisis, introduced several new instruments such as CCB, LCR, and NSFR. See: Bank for International Settlement, "History of the Basel Committee", https://www.bis.org/bcbs/history.htm .

[66] See: Kern Alexander, "Are environmental risks missing in Basel III?", Butterworths Journal of International Banking and Financial Law (February 2015, Pg. 67-68.

[67] See: Bank for International Settlement, "The Basel Framework", https://www.bis.org/basel_framework/ .

fiscal, macroprudential, monetary, payment system, and macroprudential policy support, (c) developing databases and supporting infrastructure for the implementation of sustainable finance, and (d) coordinating in preparing a sustainable taxonomy.[68] Under this newly-enacted law, to support the development of sustainable finance, the Financial Services Authority and Bank Indonesia shall establish a committee on sustainable finance and the Ministry of Finance will act as the coordinator of the committee.[69]

Under the new law, financial sector businesses (PUSK), issuers (*emiten*), and public companies must implement sustainable finance as part their business activities, specifically they must carry out (a) business practices and investment strategies that integrate environmental, social, and governance aspects, and (b) develop products, transactions, and services finance of sustainable activities and transition finance.[70] In addition, PUSK, issuers, and public companies must build capacity to implement sustainable finance and prepare sustainability reports as part of performance accountability implementation of sustainable finance.[71]

The implementation of sustainable finance for PUSK, issuers, and public companies and the policy, support, and coordination mechanisms of the above sustainable finance development are still subject to implementing regulations.[72] The current existing laws and regulations relevant to green finance in Indonesia in relation to green finance are as follows.

III.A. Disclosure Requirements

Article 19 of Financial Service Authority Regulation No. 37/POJK.03/2019 requires banks to "compile and publish risk and capital exposure publication reports,"[73] which at minimum include "credit risk, market risk, operational risk, liquidity risk, legal risk, reputation risk, strategic risk, compliance risk,[74] …." Under Article 20, these reports must then be prepared and presented in the form of "quarterly risk and capital exposure publication reports" and "annual risk and capital exposure publication reports."[75]

A Circular Letter issued by the Financial Service Authority Regulation, No. 9/SEOJK.03/2020, concerns guidelines for preparation of conventional commercial bank publications.[76] It provides the minimum standards for

[68] Indonesia, Law No. 4/2023, Art. 223(1).
[69] *Ibid*., Art. 224(1) and Art. 224(2).
[70] *Ibid*., Art. 222(1) and Art. 222(2).
[71] *Ibid*., Art. 222(3) and Art. 222(4).
[72] *Ibid*., Art. 222(5), Art. 223(2), and Art. 224(3).
[73] Financial Services Authority, Financial Service Authority Regulation No. 37/POJK.03/2019, Art. 19(1).
[74] *Ibid*., Art. 19(2).
[75] *Ibid*., Art. 20(1).
[76] Financial Services Authority, Circular Letter of the FSA No. 9/SEOJK.03/2020, p. 1.

the publication format which has to be fulfilled by banks.[77] Part II of the document provides guidelines for formatting and explanations on completing the forms.[78] Instructions for the formatting is specific.[79] In accordance with Financial Service Authority Regulation No. 37/POJK.03/2019,[80] the document must provide specific guidelines on formatting and form filling for publication reports on disclosure of various risks, which are credit risks, market risks, liquidity risks, operational risks, legal risks, reputation risks, strategic risks, and compliance risks.[81]

Therefore, under the current regulation, the scope of risk exposure that banks must disclose is still limited. The current regulations have not yet required banks to also include climate-related risks on their financial reports. Accordingly, Indonesia has not yet implemented the disclosure requirements policy mentioned by Volz to bolster climate change mitigation efforts.

III.B. Green Macroprudential Regulation and Climate-related Stress Testing

Currently, macroprudential regulation in Indonesia is still based on BCBS's Basel protocols. This includes the Countercyclical Capital Buffer (PBI No.17/22/PBI/2015), Loan to Value/Finance to Value (PBI No. 23/2/PBI/2021), Macroprudential Intermediation Ratio (PBI). No. 21/12/PBI/2019 and PADG No. 23/7/PADG/2021), Macroprudential Liquidity Buffers (PBI No. 22/17/PBI/2020 and PADG No. 21/22/PADG/2019), and Short-Term Liquidity Loans (PBI No. 22/15/PBI/2020 and PADG No. 22/31/PADG/2020). However, of all these regulations, only the rules regarding the Loan to Value/Finance to Value Ratio have qualified for finance that adopts the principles of green finance. PBI No. 23/2/PBI/2021 provides attractive incentives for environmentally friendly properties and vehicles. However, due to the COVID-19 pandemic, the exact stimulus to balance the credit 'appetite' in the consumer market has also been applied to conventional credit sectors.

Indonesia has not announced a climate base stress test (*Uji Ketahanan*) for the financial and banking sectors. Stress tests are mandated to obtain additional data for government decision-making.[82] In fact, Indonesia most recently conducted a stress test in late 2021.[83] One of the early institutions to conduct

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[77] *Ibid*., Circular Letter of the FSA No. 9/SEOJK.03/2020, p. 2.

[78] Financial Services Authority, *Guidelines for Preparation of Conventional Commercial Bank Publications*, p. 2-7.

[79] *Ibid*., p. 110-111.

[80] Financial Services Authority, Circular Letter of the FSA No. 9/SEOJK.03/2020, p. 1.

[81] Financial Services Authority, *Guidelines for Preparation of Conventional Commercial Bank Publications*, p. 3-7.

[82] See: Indonesia, Bank Indonesia, Bank Indonesia Regulation No.16/11/PBI/2014 concerning Macroprudential Regulation and Supervision, Art. 7 (1) explanation and Indonesia, Financial Services Authority, FSA Regulation No. 18 /POJK.03/2016 concerning Application of Risk Management for Commercial Banks, Art. 18.

[83] Bank Indonesia, *Financial Stability Study* , No.38, March 2022, Pg. 23.

climate stress tests, the Climate Biennial Exploratory Scenario (CBES), since 2017. CBES also studied participants' responses to climate risks to a greater extent.[84] The European Central Bank, which also assesses banks' climate-risk preparedness, which aggregate results to be published in July 2022.[85] The Monetary Authority of Singapore also reported that it will include climate-related scenarios in its annual stress test for the financial industry within 2022.[86]

III.C. Directed Green Credit Policy Instruments

BI Regulation No. 20/8/PBI/2018 regulates Loan to Value Ratio (LTV) for Property Loans and finance to value (FTV) for Property Finance, and down payment limits for Motor Vehicle Loans or Finance. The regulation was amended three times under BI Regulation No. 21/13/PBI/2019, BI Regulation No. 22/13/PBI/2020, and BI Regulation No. 23/2/PBI/2021. Initially, BI Regulation No. 20/8/PBI/2018 did not give any special treatment to green finance and loans. The regulation only categorised LTV and FTV ratio based on the building area.[87] The first amendment of the regulation introduced a new category, which applies a different LTV and FTV ratio for "Environmentally Friendly Property."[88] Under this regulation, if the LTV and FTV ratio is applied to such property, the ceiling of the ratio is increased by 5% which allows banks to loan and finance more money on green properties.[89]

Similarly, the regulation also introduced a down payment limit for "Environmentally Friendly motorised Vehicles," which is at least 10% for two-wheeled vehicles, 10% for three-wheeled or more vehicles, and 5% for three-wheeled or more vehicles used for productive activity.[90] In comparison, the down payment limit sequentially was 20%,[91] 25%,[92]and 20%,[93] which is 10-15% more than the new regulation.[94] Under BI Regulation No. 22/13/PBI/2020, the down payment limit for green vehicles is then further reduced

[84] Bank of England, "Results of the 2021 Climate Biennial Exploratory Scenario (CBES)", https://www.bankofenglan d.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario .

[85] European Central Bank, "ECB Banking Supervision launches 2022 climate risk stress test", https://www.bankingsu pervision.europa.eu/press/pr/date/2022/html/ssm.pr220127~bd20df4d3a.en.html.

[86] Monetary Authority of Singapore, "Response to Feedback Received on Proposed Guidelines on Environmental Risk Management" Pg. 14.

[87] Bank Indonesia, BI Regulation No. 20/8/PBI/2018, Article 7(1).

[88] Bank Indonesia, BI Regulation No. 21/13/PBI/2019, Article 11(1)a.

[89] *Ibid*.

[90] *Ibid*., Article 2A(1).

[91] Bank Indonesia, BI Regulation No. 20/8/PBI/2018, Article 20.

[92] *Ibid*.

[93] Bank Indonesia, BI Regulation No. 20/8/PBI/2018, Article 23.

[94] Bank Indonesia, BI Regulation No. 21/13/PBI/2019, Article 23A(1).

to 0% for all categories, allowing banks to give green vehicle loans without any down payment.[95] However, under the newest regulation, the LTV and FTV ratio and down payment limits were readjusted.[96]

Under BI Regulation No. 23/2/PBI/2021, Article 11B(1) now specifies the LTV and FTV ratio for each kind of building based on its area.[97] The regulation is very specific as to the category of the buildings in which the adjusted LTV and FTV ratio is applied.[98] However, the regulation still maintains its 0% down payment policy for green vehicles finance as long as the bank meets certain requirements under Article 21(1).[99] Therefore, Indonesia has implemented at least one of the directed green credit policy instruments mentioned by Volz through BI Regulation No. 23/2/PBI/2021 *junctis* BI Regulation No. 20/8/PBI/2018, BI Regulation No. 21/13/PBI/2019, and BI Regulation No. 22/13/PBI/2020.

III.D. Differentiated Capital Requirements

The most recent regulation on capital requirements is FSA Regulation No. 11/POJK.03/2016 *jo.* FSA Regulation No. 34/POJK.03/2016. The regulation requires banks to provide minimum capital according to their risk profiles.[100] The profile with the highest risk (Rank 1) must provide a minimum capital of 8% of Risk Weighted Assets (RWA), while the lowest risk profile (Rank 5) is 11% of RWA.[101] Under Article 27, the RWA used in the calculation of minimum capital consists of RWA for Credit Risk, RWA for Operational Risk, and RWA for Market Risk.[102] The regulation defines "Credit Risk" as "the risk due to the failure of the debtor and/or other parties to fulfil their obligations to the Bank,"[103] "Market Risk" as "the risk in balance sheet and off-balance sheet positions including derivative transactions, due to changes in overall market conditions, including the risk of changes in option prices,"[104] and "Operational Risk" as "the risk due to inadequate and/or malfunctioning internal processes, human error, system failure, and/or external events that affect the Bank's operations."[105]

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[95] *Ibid.*
[96] Bank Indonesia, BI Regulation No. 23/2/PBI/2021, Par. 2 of elucidation.
[97] *Ibid.*, Article 11B(1).
[98] *Ibid.*, Article 11B(1).
[99] *Ibid.*, Article 23A(2).
[100] Financial Services Regulation No. 11/POJK.03/2016, Article 2(2).
[101] *Ibid.*, Article 2(3).
[102] *Ibid.*, Article 27.
[103] *Ibid.*, Article 1.12.
[104] *Ibid.*, Article 1.13.
[105] *Ibid.*, Article 1.14.

However, sustainability risks add a new dimension that needs to be considered when calculating RWA. In 2020, ECB Banking Supervision released a guide for climate-related and environmental risks containing supervisory expectations relating to risk management and disclosure. In the document, ECB provided examples of Credit Risk, Market Risk, and Operational Risk affected by climate-related and environmental risk drivers. For example, lower collateral valuations in real estate portfolios because of increased flood risk, may influence the probability of default and loss given default of exposures within sectors or geographic areas susceptible to physical risk. The definitions and methods provided by Financial Service Authority Regulation No. 11/POJK.03/2016 have not yet considered sustainability risks for the calculation of RWA.[106] Therefore, the current regulation has not differentiated RWA based on sustainability criteria, leaving commercial banks vulnerable to sustainability risks.

III.E Differentiated Reserve Requirements

BI Regulation No. 20/3/PBI/2018 provides regulation on Statutory Reserve Requirements (SRR) of Conventional Commercial Banks (CCB), Sharia Commercial Banks (SCB), and Sharia Business Unit (SBU). The regulation obliges CCB,[107] SCB,[108] and SBU to fulfil the SRR.[109] The regulation was amended four times through BI Regulation No. 20/3/PBI/2018, BI Regulation No. 22/3/PBI/2020, BI Regulation No. 22/10/PBI/2020, BI Regulation No. 23/16/PBI/2021, and BI Regulation No. 24/4/PBI/2022. The regulation set statutory reserve requirements at an average of 6.5% of third-party funds for CCB and 5% for SCB and SBU the value of which has not been amended until now. The amendments mostly cover the specifics, and this general requirement has not been touched.

Accordingly, this regulation only differentiates the value of SRR based on the type of financial institutions. If the institution is CCB, then the SRR is 6.5% of CCB third party funds, whereas if the institution is SCB and SBU, the SRR is 5%. However, to address the environmental risks, the regulation should not only differentiate the SRR value based on the type of institution; a SRR value based on environmental considerations should be added. For example, the regulation could allow a lower reserve requirement for portfolios skewed toward greener, less carbon-intensive assets, have the potential to influence credit allocation, and promote green investments. Moreover, lower required reserves may also be imposed by the regulation on banks which provide less

[106] European Central Bank, *Guide on climate-related and environmental risks: Supervisory expectations relating to risk management and disclosure*, 2020, hlm. 11-12.

[107] Bank Indonesia, BI Regulation No. 20/3/PBI/2018, Article 2(1).

[108] Article 11(1), BI Regulation No. 20/3/PBI/2018.

[109] *Ibid.*

credit to businesses located in places that pose risks to the environment, in doing so, encouraging businesses to move to locations with less of an environmental effect and greater environmental safety.[110]

III.F. Accepting Carbon Certificates as Part of a Commercial Bank's Legal Reserves

Although Indonesia has recognised the economic value of carbon certificates, the regulatory framework has not yet made carbon certificates a part of the statutory reserve requirement (*Giro Wajib Minimum*).[111] One rationale for this is the ongoing pilot phase of carbon trading in Indonesia. Presidential Regulation No. 98 of 2021. (Perpres 98/2021) provides a broad legal framework for the carbon market. Perpres 98/2021 defines carbon trading as a market-based mechanism to reduce greenhouse gas emissions through the purchase and sale of Carbon Units.[112] The Carbon Unit is proof of carbon emission ownership in the form of a certificate or technical approval stated in 1 (one) ton of carbon dioxide recorded in the National Registry System for Climate Change Control.[113] The system that regulates the recording of carbon stocks, Carbon Trading, and the ownership status of Carbon Units is available on the Carbon Exchange.[114] Until now, there is no Carbon Exchange in Indonesia, rendering the carbon trade market less attractive as an investment choice as a cap and trademechanism. [115] Law No. 3 of 2022 has mandated the cooperation of Carbon Exchange coordination, by appointing the Financial Services Authority

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[110] Chandavarkar, Anand. "Promotional Role of Central Banks in Developing Countries," March 27, 1987. https://papers.ssrn.com/abstract=884635.

[111] Giro Wajib Minimum defined as the minimum amount of funds that must be maintained by Conventional Commercial Banks or Sharia Commercial Banks or Sharia Business Units, the amount of which is determined by Bank Indonesia at a certain percentage of the obligations of Conventional Commercial Banks or Sharia Commercial Banks or Sharia Business Units to the population and non-resident in Rupiah and/or foreign currency. See: Art. 1 BI Regulation No. 20/3/PBI/2018.

[112] Indonesia, Presidential Decree No. 98 of 2021 concerning Implementation of Carbon Economic Value for Achieving Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development, Art. 1(17).

[113] Indonesia, Presidential Decree No. 98 of 2021, Art. 1(15).

[114] *Ibid*., Art. 1(23).

[115] Constantine Samaras, et. al, stated that "Under a cap-and-trade proposal, the number of annual permits to emit carbon dioxide (carbon allowances) are limited or "capped". The allowances are allocated to people wanting to burn fossil fuels or otherwise release carbon to the atmosphere through grants or an auction. In theory, the number of allowances can be stringently capped (or an appropriate carbon tax could be enacted) so as to produce an allowance price that is high enough to achieve the necessary emissions reductions. The number of allowances can be reduced over time (carbon price increased) to yield higher emissions controls in the future. If this is done in a predictable way, it should help to induce appropriate capital investment in anticipation of higher future carbon prices." See: Constantine Samaras, "Cap and Trade is Not Enough: Improving U.S. Climate Policy" Department of Engineering and Public Policy, Carnegie Mellon University, (March 2009), 4.

as the main regulatory agency in coordination with the relevant ministries and/or other competent authorities.[116] The provision further states that coordination at least covers the development of carbon trading infrastructure, regulation of utilisation of state revenues from carbon trading, and administration of carbon transactions.[117] After the Kyoto Protocol, carbon exchanges have been around since the opening of China Beijing Environmental Exchange (CBEEX) in Beijing and Shanghai Environment and Energy Exchange (SEEX), back in early 2000s.[118] In Singapore, DBS Bank, Singapore Exchange, Standard Chartered and Temasek, jointly established Climate Impact X (CIX), an international exchange for carbon in 2021.[119]

III.G. Green Quantitative Easing and Reserve Management

According to the Quarter IV 2021 Bank Indonesia Monetary Policy Report, throughout 2021, Bank Indonesia made purchases on State Securities in the primary market of Rp. 143.32 trillion in accordance with the Joint Decree of the Minister of Finance and the Governor of Bank Indonesia, which was valid until December 31, 2022. In 2022 (until January 18, 2022), Bank Indonesia purchased State Securities in the primary market of Rp 2.20 trillion.[120] The report does not specify the type of State Securities purchased by Bank Indonesia. Bank Indonesia should consider monitoring its purchase specifically on State Securities issued to finance green projects. When future data is available, Bank Indonesia should give preference to purchasing government bonds issued to finance green projects to promote and accelerate the growth of the green economy.

Bank Indonesia has also yet to apply the UN Principles on Responsible Investing (UNPRI) for reserves (*Cadangan Devisa*) management. SRR in Indonesia are not mandated to be managed under an environmentally-sound perspective. Reserves are being managed through various types of foreign exchange transactions, namely selling, buying, and/or setting foreign exchange, gold, and securities in cash or lending. The law also mandates that management and maintenance of foreign exchange reserves is based on the principle of security and readiness to fulfil obligations immediately without neglecting the principle of obtaining optimal income, as an inseparable part of efforts to maintain exchange rates.[121]

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[116] Law No. 4/2023 Art. 25 jo. 26.

[117] *Ibid*., Art. 26 explanation.

[118] Jie Li, and Jintao Xu. "Climate Change in China: Policy Evolution, Actions Taken and Options Ahead." Journa*l of Natural Resources Policy Research* 3, no. 1 (2011): Pg. 24-27, https://doi.org/10.1080/19390459.2011.534629 .

[119] Climate Impact X, "About", https://www.climateimpactx.com/about .

[120] Bank Indonesia, Quarter IV 2021 Monetary Policy Report, 7-8.

[121] Indonesia, Bank Indonesia Law, Art. 13 Explanation.

III.H. Green Finance Guidelines and Framework

OJK, alongside the relevant ministries and institutions, released the Indonesia Green Taxonomy Edition 1.0, which is an economic activity classification that supports environmental protection and management efforts, as well as mitigation and adaptation to climate change.[122] These guidelines are based on four principles: responsible investment; sustainable business strategy and practices; social and environmental risk management; and governance.[123] One of the targeted sectors is Indonesian financial services such as banking, capital markets, and non-banking financial industries, finance, and investment. In early 2022, Bank Indonesia released the BI Green Financial and Institutional Framework, which stands on two pillars, the green aspects of policy coherence and green institutional support.[124] Several countries already have their own green guidelines, including Guidelines for Establishing the Green Financial System in China, Green Bonds Guidelines in Japan, and Guidelines on Environmental Risk Management in Singapore.

III.I. Soft Power

Soft power refers to several affirmative actions to steer investment preferences towards green finance. [125] The G20 Summit in Bali aimed to facilitate Sustainable Finance Working Group" (G20 SFWG)[126] on developing Sustainable Finance Instruments (SFI) Discussions about climate hazards, risks associated with the shift to a low-carbon economy, and sustainable finance (sustainable finance) from the perspective of macroeconomic and financial stability highlight Indonesia's alignment to promote green finance.

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[122] Financial Services Authority, Indonesia Green Taxonomy Edition 1.0 - 2022, Pg. 18.

[123] Financial Services Authority, Indonesia Green Taxonomy Edition 1.0 - 2022, Pg. 19.

[124] Bank Indonesia, "Ministry of Finance and Central Bank Governor on G20 Countries Work Together For Solutions to The Recent Global Challenges" https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_2411022. aspx .

[125] The meaning of "soft power" is closely related to "diplomacy". Joseph S. NYE Jr. further elaborates: "Soft power rests on the ability to shape the preferences of others. At the personal level, we all know the power of attraction and seduction. Political leaders have long understood the power that comes from setting the agenda and determining the framework of a debate. Soft power is a staple of daily democratic politics. The ability to establish preferences tends to be associated with intangible assets such as an attractive personality, culture, political values and institutions, and policies that are seen as legitimate or having moral authority. If I can get you to want to do what I want, then I do not have to force you to do what you do not want." See: Joseph S. Nye Jr., "Public Diplomacy and Soft Power," Annals of the American Academy of Political and Social Science 616 (2008): Pg. 96.

[126] "Sustainable Finance Working Group", formerly called "Green Finance Study Group" was mandated to "identify institutional and market barriers to green finance and options to enhance the mobilization of private capital for green investment. During 2016 to 2018, the Group facilitated the formation of a global consensus on the need to scale up green finance and focused global attention on a range of key topics for the development of sustainable finance worldwide." G20 Sustainable Finance Working Group, "About Us", https://g20sfwg.org/#about_us .

The building of a green, resilient, and inclusive global economy as well as the accomplishment of the 2030 Agenda for Sustainable Development depend heavily on sustainable finance. Members of the G20 agreed in February to ensure the G20 Sustainable Finance Roadmap's implementation. This entails creating a framework for financial transformation that is voluntary and non-obligatory, boosting the legitimacy of financial institution pledges, and creating legislative tools to improve sustainable financial instruments with an emphasis on increasing accessibility and affordability.

The 2022 G20 Summit in Bali also propounded three key agenda items, namely: (i) the development of a framework for transitional finance, that recognises climate transition activities, including energy transition, and improving the credibility of financial institutions' commitments; (ii) scaling-up sustainable finance with a focus on improving accessibility and affordability; and (iii) discussing policy levers that incentivise finance and investment that supports this transition. Indonesia's stance was also set forth in the Fourth Finance Ministers and Central Bank Governor Meeting in October 2022, which reiterates Indonesia's commitment to implementing a policy mix leaning towards carbon neutrality and net zero emissions, which included a full range of fiscal, market, and regulatory mechanisms.[127]

IV. CONCLUDING REMARKS

Indonesia is still in the transition phase towards green finance. As the country's central bank, Bank Indonesia has a vast arsenal of weapons at its disposal to influence borrowing and lending policies, as well as investment choices. Our analysis has shown that several green finance instruments have been formulated under Indonesian laws and regulations, e.g., loan to value/finance to value (PBI No. 23/2/PBI/2021), green finance guidelines and frameworks, the Indonesian Green Taxonomy Edition 1.0 and BI Green Financial and Institutional Framework, and an affirmative action influencing preferences towards green finance, i.e., the 2022 G20 Summit in Bali. As Law No. 4/2023 mandates, the implementation of sustainable finance from business actors, and the policy, support, and coordination mechanism of sustainable finance development from the government, the future of laws and regulations on green finance in Indonesia is bright. However, there are a number of regulatory instruments that can still be adopted by Bank Indonesia, including providing incentives or directing resources from carbon-intensive sectors towards low-

[127] Bank Indonesia, At Their Last Meeting In 2022, G20 Finance Ministers And Central Bank Governors Demonstrates Concrete Actions To Tackle Global Economic Challenges, https://www.bi.go.id/en/publikasi/ruang-media/news- release/Pages/sp_2427922.aspx, accessed January 21, 2023.

carbon investments and integrating ESG factors into the frameworks for implementing core policies.

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