IFC Workshop on "Addressing climate change data needs: the global debate and central banks' contribution"

6-7 May 2024

Advancing climate action through enhanced data governance: a case of Indonesia[1]

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[1] This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Central Bank of the Republic of Türkiye, the BIS, the IFC or the other central banks and institutions represented at the event, including Bank Indonesia.

Advancing Climate Action Through Enhanced Data Governance: A Case of Indonesia

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Abstract

This paper explores the critical role of climate-related data in supporting robust policy decisions, driving sustainable investments, and facilitating climate action, with a specific focus on Indonesia. Through an examination of global climate data initiatives and Indonesia's efforts to strengthen its climate data landscape, the paper highlights the importance of data transparency, accountability, and credibility in addressing the climate-related data gap. Key strategies identified include harmonizing sustainability reporting standards, implementing mandatory reporting requirements, and providing assurance for sustainability reports. This paper highlights the importance of mandatory structured data reporting, as well as tools to help banks and firms meet reporting requirements. Through collaborative efforts among main stakeholders, Indonesia is advancing sustainability reporting and climate data collection to support informed decision-making and mitigate climate-related financial risks, ultimately contributing to a financial system stability and sustainable economic development.

Keywords: Climate risks, Climate data initiatives, Indonesia.

1. Introduction

The current global discourse on climate change underscores its multifaceted nature, emphasizing not only its adverse impacts but also the possibilities for sustainable development and innovation. The discussion acknowledges that human activities have caused significant changes in the climate, with far-reaching consequences for ecological systems, socioeconomic structures, and geopolitical dynamics. The Intergovernmental Panel on Climate Change (IPCC) has unequivocally affirmed the escalation of climate-related hazards, including extreme weather events, sea-level rise, biodiversity loss, and disruptions to food and water systems (IPCC, 2021).

At the same time as these urgent challenges, lies a spectrum of opportunities to recalibrate our economic systems toward sustainability and resilience. The transition towards renewable energy sources, sustainable land management practices, and circular economy models embodies a trajectory that not only mitigates greenhouse gas emissions but also fosters inclusive growth and technological innovation (UNEP, 2020). Moreover, investments in climate

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adaptation and mitigation measures can catalyze job creation, enhance energy security, and bolster community resilience in the face of climatic uncertainties.

However, taking advantage of these opportunities requires concerted efforts across the public and private sectors. Policymakers are tasked with formulating robust regulatory frameworks that incentivize sustainable practices while safeguarding vulnerable populations from climate vulnerabilities (UNFCCC, 2015). Businesses are called upon to embrace sustainable business models, integrate climate considerations into their operations, and disclose relevant environmental, social, and governance (ESG) metrics to investors and stakeholders (TCFD, 2017).

Amidst the urgency to address climate change, the availability and accessibility of high-quality climate-related data becomes crucial. Climate-related data includes various types of information, such as weather observations, greenhouse gas emissions inventories, climate models, and economic indicators (WMO, 2020). These data sources serve as critical inputs for assessing the current state of the climate, projecting future climate scenarios, and identifying vulnerabilities and adaptation needs across various sectors and regions (IPCC, 2021).

Climate-related data serves as a fundamental prerequisite for effective policy formulation and informed decision-making. Governments rely on climate data to develop and implement mitigation and adaptation measures, set emissions reduction targets, and track progress towards climate goals, such as those outlined in the Paris Agreement (UNFCCC, 2015). Similarly, businesses and investors use climate-related data to assess climate risks and opportunities, integrate climate considerations into their decision-making processes, and disclose relevant information to stakeholders (TCFD, 2017).

However, the availability and quality of climate-related data remain uneven and fragmented, particularly in developing countries and vulnerable regions. Data gaps and inconsistencies hinder efforts to accurately assess climate risks, allocate resources efficiently, and design targeted interventions to build resilience toward climate change (UNEP, 2019). Moreover, the complex and interdisciplinary nature of climate data poses challenges in terms of data collection, management, and interpretation, further exacerbating existing disparities in data availability and accessibility (WMO, 2020).

Addressing the climate-related data gap requires concerted efforts to enhance data collection, sharing, and interoperability, as well as investments in data infrastructure and capacity building (UNEP, 2019). Moreover, promoting transparency, standardization, and harmonization of climate-related data across sectors and jurisdictions is essential for facilitating cross-sectoral collaboration and enabling evidence-based decision-making (WMO, 2020).

This paper endeavors to propose a comprehensive strategy aimed at addressing the pervasive climate-related data gap, with a specific focus on Indonesia. As a nation highly vulnerable to the impacts of climate change, Indonesia stands to benefit immensely from a robust framework for collecting, analyzing, and disseminating climate-related data. The overarching objective of this paper is to delineate actionable steps and recommendations to bridge existing data gaps, enhance data infrastructure, and foster a culture of data-driven decision-making in the context of climate change mitigation and adaptation efforts in Indonesia.

Central to the proposed strategy is the establishment of a robust institutional framework to coordinate and oversee climate-related data initiatives at the national level. This involves collaboration among governmental bodies, private sector organizations, civil society groups, and other involved parties to create specialized committees or mechanisms responsible for coordinating data collection, standardizing data formats, and promoting data sharing among relevant stakeholders. Moreover, the strategy emphasizes the importance of investing in data infrastructure, including data centers, standards and certifications, and capacity-building initiatives, to enhance the quality, accessibility, and interoperability of climate-related data.

The remainder of the paper is structured as follows. Section II delves into a discussion of global trends and policies aimed at enhancing the data environment. Section III examines climate data initiatives specifically in Indonesia. Finally, Section IV summarizes our study's findings and conclusions.

2. Global climate data environment

2.1. The roles of central banks in climate transition

The issue of welfare and economic sustainability are inseparable from the role of the central bank in discharging its duties to achieve and maintain price stability, such as economic growth, full employment and income equality, as well as environmental/climate change issues. The influence of the central bank is even stronger, especially in emerging markets and developing economies (Juhro, 2023). Central banks, which have traditionally focused on managing monetary policy and ensuring financial stability, are now recognizing the importance of addressing risks associated with climate change and supporting the shift towards a more sustainable economy. The recognition of climate change as a systemic risk to financial stability has prompted central banks worldwide to reassess their mandates and operational frameworks. The Bank for International Settlements (BIS) has emphasized the imperative for central banks to integrate climate considerations into their risk management practices, stress testing frameworks, and asset purchase programs to mitigate the financial repercussions of climate-related shocks (BIS, 2021).

Moreover, central banks are assuming a proactive stance in fostering green finance initiatives and sustainable investment practices. Through their regulatory and supervisory functions, central banks are incentivizing financial institutions to integrate climate risk assessments into their lending decisions, disclose climate-related financial information, and adopt sustainable investment strategies. The Network for Greening the Financial System (NGFS), comprising central banks and supervisory authorities from across the globe, has emerged as a pivotal platform for facilitating knowledge exchange and collaboration on climate-related financial risks and opportunities (NGFS, 2019).

Furthermore, central banks are leveraging their influence as institutional investors to promote sustainable finance practices within capital markets. By incorporating environmental, social, and governance (ESG) criteria into their investment portfolios, central banks are signaling their commitment to supporting the transition towards a low-carbon economy.

The International Monetary Fund (IMF) has underscored the role of central banks in aligning their investment strategies with the objectives of the Paris Agreement and the United Nations Sustainable Development Goals (IMF, 2020).

2.2. Global Climate Data Initiatives

The global landscape of climate data initiatives represents a collaborative endeavor among international organizations, governments, and non-state actors to bolster the availability, accessibility, and quality of climate-related data worldwide. These initiatives encompass a diverse range of frameworks, standards, and platforms geared toward facilitating data collection, analysis, and dissemination, thus supporting informed decision-making and action on climate change mitigation and adaptation.

International Finance Corporation (IFC) (2021) conducted a survey focusing on sustainable finance data for central banks, providing valuable insights into the purpose and challenges associated with gathering data while also identifying relevant metrics for central banks' sustainable finance initiatives. The survey which resulted from 63 country responses has shown that statistics on sustainable finance show growing demand for central banks to pursue their mandate, particularly in addressing the risk of climate change including formulating macroprudential policies and microprudential supervision, asset and reserve management, financial inclusion, and other mandate. The survey also identified a comprehensive list of relevant metrics for central banks' initiatives and cataloged them in 73 subcategories across five broad areas, encompassing environment, forward-looking assessments, governance, social considerations, and broader sustainability indicators.

Environment	Forward-looking	Governance	Social	Broad Sustainability
Emission footprint	Climate target for companies/countries	Adequate management control	Diversity issues	ESG ratings
Exposure to extreme weather	Climate targets related to GHG emissions	Quality and transparency of financial communication and reporting	Labour practices	Green/sustainable bond holdings and issuance
Environmental tax and subsidies	Indicators reflecting transformation and enabling efforts	Diversity of board members	Microcredit indicators	Green/sustainable lending
Energy prices	Companies' scenario analyses	Inclusion of ESG objectives	Banking inclusion indicators	Green/ sustainable stock/ bonds market indices
Loan exposures to carbon-intensive industries	Climate Value-at-Risk	Training of employees and executives integrating ESG criteria	Human capital indicators	Global reporting frameworks used by corporates
Environmental-related labels for real estate	Specific measures over next 15 years and intermediate targets	Stock ownership by board and management	Indicators related to the supply chain	Independent green bonds verifier

*Selected metrices from 73 subcategories in IFC (2021).

Table 1. Climate-Related Metrics for Central Bank, adapted from IFC (2021)

Several noteworthy initiatives have been established on the global stage to address the critical need for consistent climate-related data across different countries. Two leading examples include the IMF's global dashboard on climate change indicators and the NGFS data repository for climate data. The IMF dashboard provides a centralized and user-friendly platform

for key climate metrics, including greenhouse gas emissions, mitigation and adaptation policies, transition pathways, climate finance, and climate and weather data on a global level and across a range of countries. In contrast, the NGFS repository serves as a comprehensive archive of diverse climate-related datasets, providing information regarding climate data sources and fostering informed decision-making among researchers and policymakers. The NGFS extends its value by providing data on transition pathways.

CATEGORY	INDICATOR(S)	SPECIFICATION
Green House Gas Emissions	GHG Emissions	• Annual • Quarterly (for Experimental SEEA Based Air Emissions Accounts) • Global and country-level • Sectoral • firm ownership
Mitigation	• Environmental taxes • Govt. expenditure on environmental protection • Fossil fuel subsidies • Renewable energy • Trade in low carbon technology • Forest and carbon	• Annual • Country-level
Adaptation	• Climate disaster frequency • Climate-driven INFORM risk	• Annual (for climate disaster frequency) • For the year 2022 (for climate-driven INFORM risk) • Global and country-level
Transition to a Low-Carbon Economy	• Forward looking risks (carbon cost, revenues at risk) • Trade in low carbon technology • Renewable energy	• Annual • Country level • Type of emission • Sectoral
Climate Finance	• Green Debt (issuance and outstanding) • Carbon footprint of bank loasn	• Annual • Country level
Climate and Weather	• Annual surface temperature change • World Monthly Atmospheric Carbon Dioxide Concentrations • Change in Mean Sea Levels	• Annual • Country level / Sea region
NGFS Indicators	• Transition Pathways (energy mix, fossil fuel prices, emissions and CCS, shadow carbon price, mean surface temperature) • GDP losses and benefits	• Annual • Country level • 7 (seven) scenario options

Table 2. Country-level Climate Change Indicators, Adapted from IMF Global Dashboard of Climate Change (2023)

The NGFS Working Group on Scenario Analysis is also actively developing methodologies and tools to develop diverse climate scenarios to better understand the potential impact of climate-related risks. This initiative aims to empower financial institutions and regulators to enhance their comprehension and management of climate-related risks (NGFS, 2020). This additional resource empowers researchers and policymakers to conduct forward-looking analyses, enabling a more comprehensive assessment of climate change risks and potential mitigation strategies. These initiatives underscore the mounting acknowledgment of the significance of climate-related data in informing financial decision-making and propelling the transition toward a low-carbon, climate-resilient economy.

A prominent initiative within the disclosure sphere is the Task Force on Climate-related Financial Disclosures (TCFD), established to formulate voluntary, consistent climate-related financial risk disclosures. These disclosures aid companies in providing information to investors, lenders, insurers, and other stakeholders (TCFD, 2017). The TCFD framework

delineates climate-related risks and opportunities across four thematic areas: governance, strategy, risk management, and metrics and targets, thereby enabling investors and financial institutions to assess and manage climate-related risks in their portfolios more effectively.

Furthermore, the International Financial Reporting Standards (IFRS) Foundation has introduced a comprehensive set of sustainability reporting standards, known as the IFRS Sustainability Disclosure Standard, aimed at harmonizing sustainability reporting practices and bolstering the comparability, consistency, and reliability of sustainability-related disclosures (IFRS Foundation, 2023). These standards complement existing financial reporting standards, providing investors and stakeholders with a more holistic understanding of companies' environmental, social, and governance (ESG) performance and risks.

In addition, initiatives such as the G20 Data Gaps Initiative (DGI) and NGFS are pivotal in addressing data gaps and fortifying the resilience of financial systems against climate-related risks (G20, 2020; NGFS, 2019). The DGI targets the identification and rectification of data gaps in crucial areas of economic and financial statistics, including those pertaining to climate change. Meanwhile, the NGFS focuses on advancing sustainable finance and integrating climate-related risks into financial supervision and regulation.

3. Climate data initiatives in Indonesia

Climate-related data is crucial for the Indonesian financial regulators to assess financial institutions' exposure to climate risks and formulate initiatives for sustainable finance. Global initiatives have established benchmarks for sustainable finance metrics pertinent to financial authorities. However, there remains a necessity at the national level to address data deficiencies in a more detailed manner. This granular approach is important to enable the central bank identifying its exposure accurately and to support the central bank and other financial sector authorities devising tailored policies aimed at mitigating and adapting to climate-related financial risks, thereby safeguarding the stability of the financial system.

Indonesia's unique geographical location and diverse ecosystems render it particularly vulnerable to the impacts of climate change, ranging from sea-level rise and extreme weather events to biodiversity loss and ecosystem degradation. In response to these challenges, Indonesia has embarked on a series of initiatives aimed at strengthening its climate data infrastructure, enhancing data governance mechanisms, and promoting data-driven decision-making in the context of climate change mitigation and adaptation efforts. These initiatives reflect a multi-dimensional approach involving governmental agencies, financial institutions, private sector entities, and non-profit as well as civil society organizations to address the complex challenges posed by climate change and to facilitate sustainable development.

3.1. The Central Bank mandate on sustainable finance

In the Indonesian context, the enactment of the Financial Sector Omnibus Law (FSOL) has introduced significant regulatory mandates for Bank Indonesia. The legislative reforms aimed at strengthening and developing Indonesia financial sector and introduced by the law extend to amendments in the Central Bank Law, empowering Bank Indonesia with regulatory

authority to oversee and foster sustainable finance. The mandate on sustainable finance for Bank Indonesia is integrated into the central bank's policy mix strategy[2], including macroprudential policy. By the law, the goal of macroprudential policy is to contribute in maintaining financial system stability that is achieved through promoting balanced and sustainable intermediation, mitigating and managing systemic risk, and enhancing inclusive and sustainable finance. The amendments to the Banking Law also entail collaborative efforts between Bank Indonesia and the Financial Services Authority (OJK) to ensure that financial institutions provide lending to support sustainable initiatives.

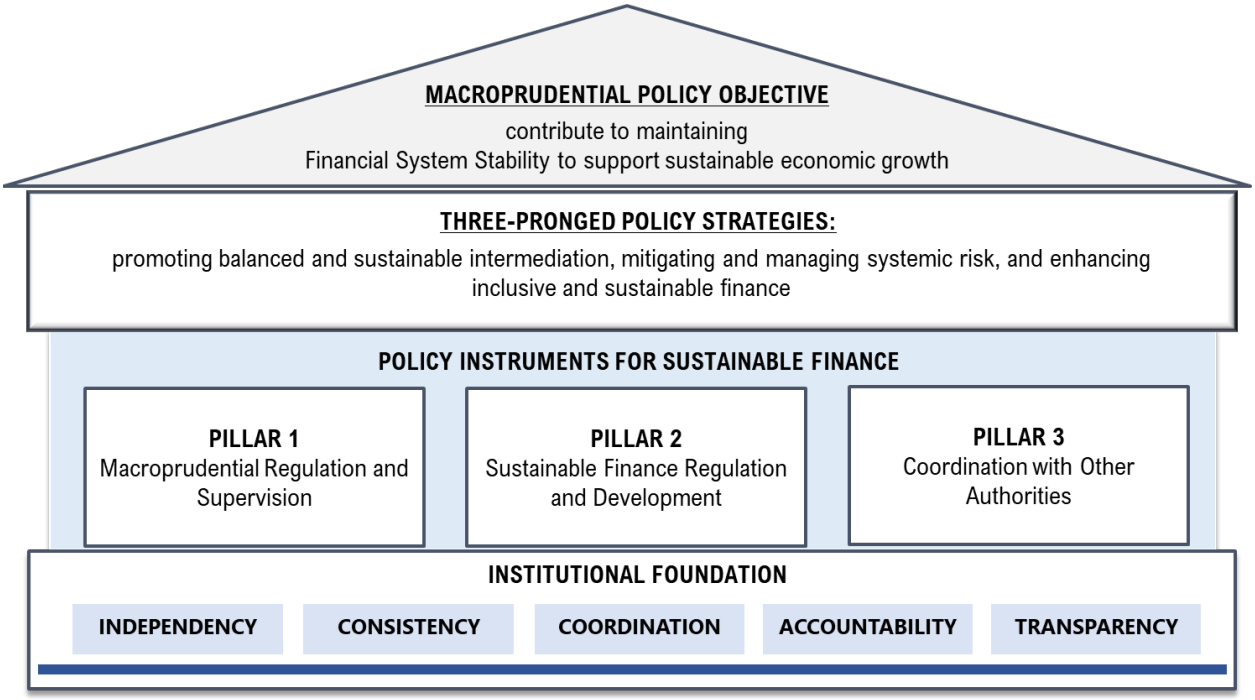


Figure 1. Sustainable Finance under the Macroprudential Policy Framework of the Central Bank

FSOL strengthens the role of financial sector regulators[3], namely the Ministry of Finance (MoF), Bank Indonesia (BI), and OJK, in promoting sustainable finance. Within the legal framework, sustainable finance is conceptualized as an ecosystem characterized by robust

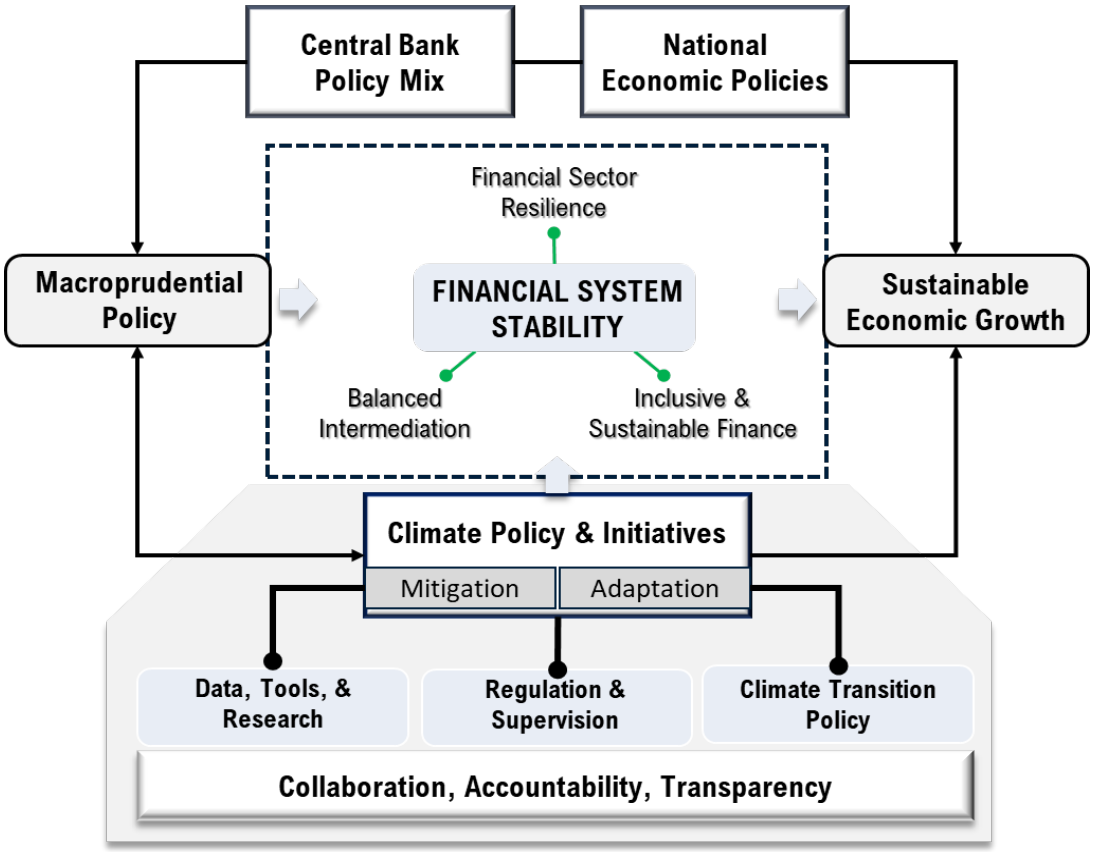
[2] Bank Indonesia employs policy mix strategy in alignment with its mandate to achieving Rupiah stability, maintain payment system stability, and contribute to overall financial system stability to bolster sustainable economic growth as mandated in the FSOL. The policy mix focuses on three pivotal aspects namely growth, stability, and inclusion. The adoption of this approach is necessitated by the interlinkages between the three main mandates, aligned with the evolving strategic environment characterized by increased complexity, globalization, and digitalization of the economy.

[3] Financial regulators in Indonesia have established the Financial System Stability Committee (KSSK) through the enactment of the Law of Republic of Indonesia No. 9 of 2016, which is further fortified by the FSOL. The committee is composed of four ministries/institutions: the MoF, BI, OJK, and the Indonesia Deposit Insurance Corporation (LPS). The primary mission of the Financial System Stability Committee is to oversee the prevention and resolution of Financial System Crises, ultimately safeguarding the economic interests and resilience of the state. Noting the importance of mitigating and adapting climate risk for ensuring financial system stability, the MoF, BI, and OJK are mandated to establish Sustainable Finance Committee.

support across various domains including policy, regulation, norms, standards, products, transactions, and financial services. This comprehensive framework aims to harmoniously integrate economic, environmental, and social imperatives, fostering both sustainable finance practices and the transition towards ecologically sound economic growth. Furthermore, to support sustainable finance, the financial sector regulators are entrusted with the mandate to:

a) Coordinating efforts in the formulation and the establishment of strategies, policies, and programs pertinent to Sustainable Finance.
b) Optimizing the utilization of fiscal, microprudential, monetary, payment system, and macroprudential policies to support sustainable finance.
c) Facilitating the development of sustainable finance databases and requisite infrastructure.
d) Collaborating in the formulation of a sustainable taxonomy framework.

The Ministry of Finance, Bank Indonesia, and OJK are additionally entrusted with the responsibility of establishing a Sustainable Finance Committee, intended to bolster their efforts in advancing sustainable finance initiatives. While the roles of the Sustainable Finance Committee are mainly to coordinate and optimize sustainable finance policies, Bank Indonesia and OJK are specifically given additional power in regulating the financial sector. While Bank Indonesia is authorized to regulate and develop sustainable finance, OJK is authorized to regulate and supervise carbon exchange. In addition, the law also authorizes OJK and Bank Indonesia to promote banks providing lending to sustainable activities.



Source: Juhro et al (2024).

Figure 2. Integrated Climate Policy framework to Support Sustainable Economic Growth

Recognizing the critical role of the financial sector in advancing sustainable finance and supporting sustainable economic growth, it is imperative for central banks to align financial sector policies to facilitate a just transition. This alignment involves harmonizing financial sector policies with national economic strategies aimed at transitioning to a low-carbon economy. Such national strategies establish commitments and targets for achieving sustainability in key sectors, thereby guiding the financial sector to support the financing of mitigation and adaptation initiatives. To ensure financial system stability and contribute to sustainable economic growth, macroprudential policies will be reinforced with climate policies and initiatives. These efforts encompass three main pillars: enhancing data, tools, and research capabilities; strengthening regulation and supervision of the financial sector; and supporting climate transition policies. Transformations in these areas will provide enabling environment for financial institutions to promote green finance by encouraging debtors to adopt low-carbon technologies or business processes, and by allocating more financing toward sustainable activities. These initiatives will be undertaken through collaboration, strong accountability, and reliable transparency principles, ensuring that each policy is prudently based to promote financial system stability and supporting sustainable economic growth.

3.2. Sustainability report

Firm-level sustainability reporting serves as a fundamental component of climate data management, offering stakeholders transparent insights into companies' environmental, social, and governance (ESG) performance. This section delineates key strategies for bolstering firm-level sustainability reporting, with a focus on adopting national sustainability reporting standards, enforcing mandatory reporting requirements, and advocating for robust data assurance mechanisms.

The adoption of national sustainability reporting standards in alignment with global benchmarks constitutes a pivotal stride towards standardizing sustainability reporting practices and enhancing data comparability, consistency, and reliability. By adhering to global best practices, companies can ensure that their sustainability disclosures meet international standards, enabling investors, regulators, and other stakeholders to make well-informed decisions and consistently evaluate companies' ESG performance. For instance, in response to the publication of the new IFRS sustainability disclosure standards (IFRS, 2023), Indonesia has established the Sustainability Standards Board to harmonize sustainability reporting with international benchmarks (IAI, 2023). The Sustainability Standards Board will undertake the task of adapting and instituting national sustainability disclosure standards which will outline firms' disclosure requirements encompassing climate strategy, risk management, governance, and metrics and targets. This endeavor aims to aid both firms and financial institutions in aligning their operational activities and portfolio management with sustainability considerations.

However, the effectiveness of such standards may be limited if not mandated. Implementing mandatory sustainability reporting requirements compels companies to divulge material ESG information in their financial reports, annual statements, or dedicated sustainability reports. Mandatory reporting fosters transparency, accountability, and stakeholder trust by ensuring companies disclose pertinent environmental and social risks and opportunities. Additionally, it

standardizes sustainability disclosure practices across industries and sectors, facilitating benchmarking, peer comparison, and trend analysis. In alignment with this principle, the Financial Services Authority (OJK) in Indonesia, through regulation no. 51/POJK.03/2017, mandates financial institutions, public firms, and issuers to produce mandatory sustainability reports encompassing environmental impacts, social responsibilities, and governance practices (OJK, 2020).

Despite the increasing interest in publishing sustainability reports, challenges persist in ensuring the completeness and reliability of such reports. Assuring sustainability reports involves independent verification and validation of companies' sustainability disclosures by qualified auditors or assurance providers. Assurance bolsters the credibility and reliability of sustainability information, instilling confidence in stakeholders regarding the accuracy and completeness of reported data. Moreover, it assists companies in identifying gaps, inconsistencies, and areas for improvement in their sustainability reporting processes, thereby fostering continuous improvement and transparency.

Furthermore, it's imperative to note that the current sustainability reporting practices may not fully align with the new IFRS sustainability disclosure standards. Therefore, updating the existing reporting requirements to conform to the IFRS-aligned sustainability disclosure standard is essential. This update will enhance the comparability, consistency, and reliability of sustainability-related disclosures, empowering investors and stakeholders to make well-informed decisions and assess companies' environmental and social performance accurately.

3.3. Structured reporting

Sustainability reports serve as crucial components of climate data; however, their unstructured nature poses challenges. To address this issue, there is a growing recognition of the necessity for more structured reporting frameworks. In response, Bank Indonesia has undertaken initiatives to collect structured data concerning various aspects of sustainable finance. This includes data on mortgages for eco-friendly houses, loans for electric vehicle ownership, and ownership of sustainable bonds by banks. Additionally, the Financial Services Authority (OJK) has initiated pilot projects focused on bank loan reporting grounded in the Taxonomy for Sustainable Finance.

These endeavors in climate data collection aim to evaluate the feasibility and efficacy of incorporating sustainability criteria into bank lending decisions. By promoting the integration of environmental and social considerations into lending practices, these initiatives support the transition toward a more sustainable and resilient economy. Bank Indonesia has also mandated banks to report loan data based on project locations, collateral locations, and economic sectors, further enhancing the structured nature of climate finance reporting.

Complementing these efforts, the Ministry of Environment and Forestry (MEF) has compiled greenhouse gas (GHG) inventories based on nationally determined contributions (NDCs) sectors. Additionally, the National Agency for Disaster Countermeasures publishes a list of natural disaster events categorized by location. These datasets provide foundational information for conducting climate risk assessments and formulating effective policies to address climate change impacts.

Looking ahead, there is a forthcoming initiative aimed at enhancing transparency regarding carbon emissions associated with banking operations and financing activities (Scope 3 emissions). To calculate their financed emissions, banks need to require their debtors to disclose their emissions in sustainability reports. Given that firms seeking financing from banks are incentivized to publish comprehensive sustainability reports, this initiative is expected to encourage broader adoption of sustainability disclosure practices across industries.

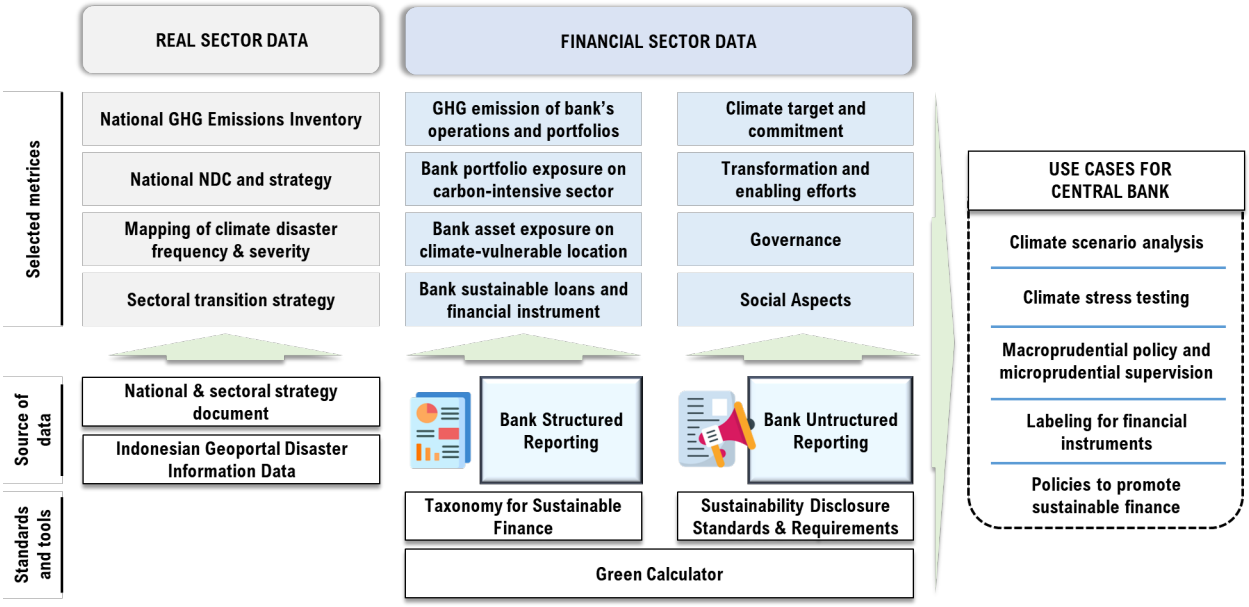


Figure 3. National Sustainability Data Landscape and Required Standards and Tools

3.4. Tools and infrastructure

Indonesia has embarked on a significant initiative to bolster sustainability reporting and climate data collection through the development of a Taxonomy for Sustainable Finance. This framework is designed to classify and standardize investments based on their environmental and social impacts, offering clarity and transparency to investors, financial institutions, and other stakeholders (OJK, 2020). Indonesia's Taxonomy for Sustainable Finance also builds upon the regional taxonomy (ASEAN Taxonomy for Sustainable Finance v2.0) to harmonize and foster interoperability between the national taxonomy and those of neighbouring regions. By providing a standardized classification system, the taxonomy facilitates the integration of sustainability considerations into investment decisions and capital allocation processes, thereby promoting investments that align with sustainability goals.

In addition to the Taxonomy for Sustainable Finance, the OJK has introduced climate risk stress test guidance and climate risk management and analysis tools. These resources serve as powerful instruments to help banks enhance their resilience to climate risks. By conducting stress tests and analyzing climate-related risks, banks can better understand and mitigate potential vulnerabilities in their operations and portfolios, thus safeguarding financial stability in the face of climate-related challenges.

Recognizing the pivotal role of firm-level sustainability in the successful implementation of transition agendas, financial regulators in Indonesia have launched several initiatives aimed at supporting firm-level disclosure. Bank Indonesia and OJK, with other members of the Indonesian Sustainability Standards Board, are preparing the adoption of the IFRS Sustainability Disclosure Standards into Indonesian standards. Multiple focus group discussions involving firms, academics, regulators, NGOs, consultants, financial institutions, and various stakeholders were conducted to examine the challenges and opportunities associated with the implementation of the IFRS sustainability disclosure standard. Key challenges identified include the establishment of infrastructure to ensure comparability of GHG emission calculations, the necessity for capacity building in calculating, reporting, and verifying GHG statements, as well as approach concerning the inclusion of scope 2 and scope 3 emissions.

Furthermore, Bank Indonesia is on progress to develop a carbon calculator aimed at assisting banks and their debtors in calculating and disclosing their carbon emissions in sustainability reports. This carbon calculator represents a standardized approach to quantifying carbon emissions, thereby enabling banks to align their financing portfolios with climate objectives. By providing stakeholders with insights into the carbon intensity of their operations and investments, the carbon calculator facilitates informed decision-making and identifies opportunities for emissions reductions. Ultimately, this initiative supports the transition towards a low-carbon economy by encouraging greater transparency and accountability in carbon emissions reporting and management across the banking sector.

Collectively, these initiatives across the financial authorities underscore Indonesia's commitment to advancing sustainability reporting and climate data collection. By providing stakeholders with the necessary tools and frameworks to assess and address climate-related risks and opportunities, Indonesia is fostering a financial sector that is better equipped to support the transition towards a sustainable and resilient future.

3.5. Regulation and Supervision

Bank Indonesia is taking significant strides toward promoting sustainable banking practices through a comprehensive set of initiatives aimed at incentivizing banks to finance green housing, electric vehicle (EV) ownership, and other sustainable projects. These efforts underscore Indonesia's commitment to fostering a sustainable and resilient financial sector.

One of the key initiatives undertaken by Bank Indonesia is the facilitation of green financing for eco-friendly housing and electric vehicle ownership. Banks are encouraged to provide mortgages for eco-friendly housing and loans for EV ownership with attractive terms, including up to 0% down payment and a 100% loan-to-value ratio. By making it easier for individuals to access financing for environmentally friendly initiatives, Bank Indonesia aims to accelerate the transition towards a greener economy.

To further incentivize banks to finance green projects, Indonesia has introduced macroprudential liquidity incentives. Banks that allocate funds towards green housing and EV ownership are eligible for liquidity incentives of up to around Rp35 trillion per December 2023.

These incentives are provided through the loosening of reserve requirements by up to 50 basis points, thereby freeing up capital for sustainable investments while ensuring financial stability.

In line with the Macroprudential Inclusive Financing Ratio requirements, banks are empowered to invest in green and sustainable bonds aimed at funding environmentally friendly projects. By incorporating green investments into their portfolios, banks not only contribute to sustainability objectives but also fulfill regulatory requirements, promoting a more inclusive and environmentally conscious financial sector. Furthermore, Bank Indonesia further incentivizes banks to align with inclusive financing requirements by participating in a blended finance platform focused on financing green projects. Through this platform, banks can leverage public and private funds to support sustainable initiatives, maximizing the impact of their investments while diversifying risk.

In addition to advocating for policies that accelerate the growth of sustainable finance, Bank Indonesia (BI) is taking initiatives to assess how climate risks may affect the financial sector in order to formulate policies that can safeguard financial system stability with regard to climate risk. Climate change introduces a novel dimension of risk to the financial landscape, primarily through physical and transition risks. Exposure to these risks can deteriorate the economy by destroying capital stock, reducing productivity, and diminishing wealth effects due to declining asset valuations, which may hinder borrowers' repayment capacity and, consequently, impact the financial sector. BI is developing a climate stress test framework that will provide the analytical foundation needed to formulate macroprudential policies addressing climate-related financial risks. Conducting scenario analyses and stress tests is anticipated to offer crucial insights for policy-making and financial sector surveillance. These efforts are expected to not only facilitate the transition towards economic and financial sector sustainability but also to mitigate the systemic risks associated with climate change.

In addition to domestic initiatives, Bank Indonesia is adopting a Sustainable and Responsible Investment framework in managing its international reserves. The country has allocated approximately USD 7 billion to invest in global sustainable bonds, thereby supporting sustainable development efforts beyond its borders.

4. Conclusion

The urgency to address climate change and its associated challenges has never been more pressing. As nations worldwide endeavor to mitigate greenhouse gas emissions, fortify resilience against climate impacts, and transition towards sustainability, the pivotal role of robust climate data infrastructure and governance mechanisms cannot be overstated. This paper has scrutinized the significance of climate-related data in shaping policy decisions, driving sustainable investments, and facilitating climate action, with a focused examination of Indonesia.

Indonesia has embarked on a substantial initiative to bolster sustainability reporting and climate data collection. Initiatives such as the development of a taxonomy for sustainable finance, climate risk stress test guidance, climate risk management, and analysis tools, as well

as the introduction of a carbon calculator to aid banks in preparing sustainable reports, underscore the nation's commitment to advancing sustainability practices.

In terms of regulation and supervision, Bank Indonesia is also taking significant strides toward promoting sustainable banking practices through a comprehensive array of initiatives aimed at incentivizing banks to finance green housing, electric vehicle ownership, and other sustainable projects. These endeavors underscore Indonesia's dedication to fostering a sustainable and resilient financial sector.

Looking ahead, stakeholders spanning from policy authorities, business, academia, and civil society must sustain collaborative efforts and innovative approaches to further fortify Indonesia's climate data infrastructure and governance mechanisms. Essential strategies include harmonizing sustainability reporting standards, mandating reporting requirements, and ensuring assurance for sustainability reports to bolster data transparency, accountability, and credibility.

By harnessing climate-related data effectively, Indonesia can enhance its understanding of climate risks, identify opportunities for sustainable growth, and mobilize resources towards climate-resilient and low-carbon pathways. Moreover, fortified climate data infrastructure and governance will enable Indonesia to fulfill its obligations under international agreements like the Paris Agreement and contribute meaningfully to global endeavors to combat climate change.

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