

Tracking the Banking Sector's Progress

in Financing Indonesia's Energy Transition to Achieve the 'Net Zero Emission' Target



2022

Tracking the Banking Sector's Progress in Financing Indonesia's Energy Transition to Achieve the 'Net Zero Emission' Target

Authors:

Irvan Tengku Harja
Eka Afrina Djamhari
Ricko Nurmansyah
Dwi Rahayu Ningrum
Hendrik Siregar
Mouna Wasef
Dwi Sawung



P R A K A R S A
Welfare Initiative for Better Societies

2022

Tracking the Banking Sector's Progress in Financing Indonesia's Energy Transition to Achieve the 'Net Zero Emission' Target

Perkumpulan PRAKARSA. (2022). Tracking the Banking Sector's Progress in Financing Indonesia's Energy Transition to Achieve the 'Net Zero Emission' Target. Perkumpulan PRAKARSA: Jakarta.

Authors:

Irvan Tengku Harja, Eka Afrina Djamhari, Ricko Nurmansyah, Dwi Rahayu Ningrum, Hendrik Siregar, Mouna Wasef, Dwi Sawung.

Reviewer:

Victoria Fanggidae

Responsible Person:

Ah Maftuchan

Layout dan Design:

Bambang Nurjaman, Suhendra

Publisher:

Perkumpulan PRAKARSA
Komplek Rawa Bambu 1
Jl. A No. 8E Kel. Pasar Minggu, Kec. Pasar Minggu
Jakarta Selatan, Daerah Khusus Ibu Kota Jakarta 12520, Indonesia

Keywords:

Sustainable finance, banking, energy transition, renewable energy, net zero emission.

Disclaimer:

This report was prepared as part of efforts to encourage sustainable development, one of which is by providing an evidence base that can be used as a basis for advocating sustainable finance policies. This study is the result of a collaboration with the ResponsiBank Indonesia Coalition. The contents of this book are entirely the responsibility of the author. This research received funding support from FFA – SIDA, Swedish Embassy in Bangkok.



Table of Contents

| | |
|--|-----|
| Table of Contents | iii |
| List of Figures | v |
| List of Tables | vi |
| List of Abbreviations | vii |
| Forewords | ix |
| Executive Summary | xi |
| | |
| Chapter 1 Introduction: Indonesia's Energy Transition | 1 |
| 1.1. Background | 2 |
| 1.2. Research Gap | 4 |
| 1.3. Research Questions | 5 |
| 1.4. Research Objectives | 5 |
| | |
| Chapter 2 Theoretical Framework | 7 |
| 2.1. Climate Change, Energy Transition, and Net Zero Emission | 8 |
| 2.2. Banks and Climate Change | 10 |
| | |
| Chapter 3 Research Methods | 13 |
| 3.1. Research Methods | 14 |
| 3.2. Energy Sector Financing Flows | 16 |
| 3.3. Assessment of Bank Policy using the Fair Finance Guide Method | 21 |
| | |
| Chapter 4 Energy Transition Policy | 29 |
| 4.1. International Climate Change Political Dynamics | 30 |
| 4.2. Climate Change Mitigation Policies in Indonesia | 31 |
| 4.3. Energy Transition Target and Plan in Indonesia | 34 |
| 4.4. Nationally Determined Contribution | 40 |
| 4.5. Energy transition funding | 46 |

| | | |
|--------------------|---|-----|
| Chapter 5 | Banking Portfolio For Renewable Energy Financing | 49 |
| | 5.1. Loan Portfolio Composition and Bonds and Shares Issuance | 50 |
| | 5.2. Bonds and Shares Ownership | 54 |
| | 5.3. The biggest energy projects in Indonesia | 57 |
| Chapter 6 | Banks' Commitments And Obstacles Related To Energy Transition Financing | 61 |
| | 6.1. Banks' Climate Change Commitments | 62 |
| | 6.3. Barriers and Challenges to Financing the Energy Transition on the Banking Side | 73 |
| | 6.4. Policies and Support Required to Support the Energy Transition | 86 |
| Chapter 7 | Conclusion and Recommendation | 95 |
| | 7.1. Conclusion | 96 |
| | 7.2. Recommendations | 98 |
| References | | 101 |
| List of Appendices | | 108 |



List of Figures

| | |
|--|----|
| Figure 1. The eight largest GHG emitter countries in 2021 (percent) | 2 |
| Figure 2. Coal-Fired Power Plants (PLTU) Early Retirement Roadmap | 3 |
| Figure 3. Climate change opportunities and challenges for the banking industry | 12 |
| Figure 4. Total emissions from Consolidated NZE scenario | 35 |
| Figure 5. Total projected energy demand | 36 |
| Figure 6. Energy Sector NZE Scenario Generation Supply 2060 | 38 |
| Figure 7. Retirement of Coal Power Plant Retirement Scenario (GW) | 38 |
| Figure 8. Investment Needs for Generation and Transmission | 39 |
| Figure 9. ETM Country Platform by PT SMI | 47 |
| Figure 10. Total loans and issuance of shares and bonds to fossil and renewable energy companies (2016-2022) | 50 |
| Figure 11. Composition of the financing portfolio: loans and issuance of shares & bonds (underwriting) | 51 |
| Figure 12. Financing portfolio by the energy sector | 52 |
| Figure 13. Percentage of financing portfolio by the energy sector | 52 |
| Figure 14. Ranking of 12 banks in Indonesia related to fossil energy and renewable energy financing | 53 |
| Figure 15. The largest companies receiving loans and underwriting (2016-2022) | 54 |
| Figure 16. Groups of companies receiving investments, by types of investments (December 2022) | 56 |
| Figure 17. The five largest fossil energy financing projects in Indonesia (2016-2022) | 57 |
| Figure 18. The five largest renewable energy financing projects in Indonesia (2016-2022) | 58 |
| Figure 19. The flow of financing for the Central Java Coal-Fired (2,000MW) PPP project | 59 |

| | |
|--|----|
| Figure 20. The financing flow for the Pertamina Geothermal Energy Refinancing 2021 project | 60 |
| Figure 21. IKBI bank assessment results based on natural elements | 63 |
| Figure 22. IKBI bank assessment results based on natural elements | 67 |
| Figure 23. IKBI bank assessment results based on power plant elements | 69 |

List of Tables

| | |
|---|----|
| Table 1. List of in-depth interview informants | 14 |
| Table 2. List of Banks Researched | 16 |
| Table 3. Life-cycle emissions from power generation technology (gCO ₂ eq/kWh) | 17 |
| Table 4. Classification of power generation technology | 18 |
| Table 5. Activities related to Renewable Energy and Fossil Fuels | 18 |
| Table 6. Energy emission sector (million tonnes CO ₂ e) – LTS LCCR & Consolidation | 34 |
| Table 7. GHG emission projections in 5 sectors | 42 |
| Table 8. Energy sector mitigation action scenarios | 43 |
| Table 9. Adaptation action scenarios | 45 |
| Table 10. Ownership of bonds and shares of Bank Mandiri and MayBank in energy companies (in US\$ million)(December 2022) | 55 |
| Table 11. Non-bank financial services institutions bonds and shareholdings in energy companies (in US\$ million)(December 2022) | 55 |



List of Abbreviations

| | |
|----------------------|---|
| ADB | Asian Development Bank |
| AFOLU | Agricultural, Forestry and Other Land Use |
| BAU | Business as Usual |
| CBDR & RC | Common but differentiated responsibilities and respective capabilities |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CNG | Compressed Natural Gas |
| COP | the Conference of the Parties |
| CSP | Concentrated Solar Power |
| CTU | Clarity, Transparency, and Understandable |
| EBT | New and Renewable Energy |
| ENDC | Enhanced Nationally Determined Contribution |
| ETM | Energy Transition Mechanism |
| FAME | Fatty Acid Methyl Ester |
| FPIC | Free, prior, and informed consent |
| G20 | Government 20 |
| GCEL | Global Coal Exit List |
| GFANZ | The Glasgow Financial Alliance for Net Zero |
| GHG | Greenhouse Gas |
| GOCEL | Global Oil and Gas Exit List |
| GRI | Global Reporting Initiative |
| GRK | Greenhouse Gas |
| IEA | International Energy Agency |
| IKBI | Indonesia Sustainable Finance Initiative |
| IPCC | Intergovernmental Panel on Climate Change |
| IRENA | International Renewable Energy Agency |
| ISPO | Indonesian Sustainable Palm Oil |
| IUCN | International Union for Conservation of Nature |

| | |
|----------------|--|
| JETP | Just Energy Transition Partnership |
| KESDM | Ministry of Energy and Mineral Resources |
| KLHK | Ministry of Environment and Forestry |
| KTT | High Level Conference Summit |
| LCOE | Levelized Cost of Electricity |
| LJK | Financial Services Institutions |
| LST | Environment, Social, and Governance |
| LULUCF | land-use, land use change and forestry |
| METI | Indonesian Renewable Energy Society |
| MMSCFD | Million Standard Cubic Feet per Day |
| MTCO2e | Metric Ton Carbondioxide equivalent |
| MTOE | Million Ton Of Oil Equivalent |
| NDC | Nationally Determined Contributions |
| NRDC | Natural Resources Defense Council |
| NZE | Net Zero Emissions |
| OECD | The Organization for Economic Co-operation and Development |
| OJK | Financial Services Authority |
| PA | Paris Agreement |
| PLTU | Coal-fired/Steam Power Plant |
| PMN | State Investment |
| PT SMI | PT Sarana Multi Infrastruktur |
| RAN-GRK | Regional Action Plan for GHG Emission Reduction |
| RSPO | Roundtable on Sustainable Palm Oil |
| RUPTL | Electricity Supply Business Plan |
| SDGs | Sustainable Development Goals |
| SMI | Sustainable Market Initiative |
| TCFD | Task Force on Climate Related Financial Disclosure |
| TWNC | Tambling Wildlife Nature Conservation |
| UNCCD | United Nation Convention to Combat Desertification |
| UNFCCC | United Nations Framework Convention on Climate Change |

Forewords



Over the past few years, discussions regarding the energy transition have continued to surface. This issue is a priority agenda discussed in Indonesia's G20 presidency. The discussion on the energy transition shows Indonesia's commitment to immediately reducing dependence on fossil-based energy. The transition process, of course, requires a lot of money. The November 2022 G20 leaders meeting resulted in several commitments to financing the energy transition.

Through the Just Energy Transition Partnership (JETP) scheme, Indonesia will receive potential funding of USD 20 billion, equivalent to IDR 310 trillion. Furthermore, the process of decarbonization and early retirement of coal-fired power plants (PLTU) is also supported by the Asian Development Bank (ADB) with the Energy Transition Mechanism (ETM) scheme. This mechanism will be financed with a blended finance scheme that allows the private sector, government agencies, to philanthropic institutions to invest in energy transition projects with a certain risk threshold according to the investors' capabilities. PT Sarana Multi Infrastruktur organizes this financing scheme as the country platform manager. Accordingly, the percentage of financing and state ownership becomes essential for ETM scheme planning.

Even though the G20 countries have received a commitment to support, the financing aspect of sustainable development, particularly renewable energy financing in Indonesia, still needs to be accelerated. Banks in Indonesia still have a much more extensive portfolio in fossil energy financing than renewable energy. Several policies to encourage financing in the renewable energy sector are still limited. OJK as a banking supervisor, has created

regulations to enable the sustainable financing ecosystem environment, such as the Sustainable Finance Roadmap Phase 1 and 2, POJK 51 of 2017 concerning Sustainable Finance, to the latest Green Taxonomy 1.0 document. Obviously, this regulation must be supported by regulations at the sectoral level, especially for the energy sector.

This is a research report is a research report prepared on our encouragement and commitment to continue contributing to sustainable development, especially in a just energy transition process. This report not only wants to invite readers to understand the progress of the financial services sector in financing the energy transition in Indonesia but also provides a critical note on the policies and challenges of banking in disbursing renewable energy financing. It is hoped that this report will become one of the pieces of evidence that can be read directly by policymakers, practitioners, CSOs, and academics. For all things that matter, this report is hoped to be the latest source of information on aspects of bank financing for the energy transition and efforts to achieve net zero emissions in Indonesia.

Furthermore, this report seeks to advance a collective understanding of the challenges of the energy transition, which are not limited to regulation and financing, but also include investments made in renewable energy projects. Another challenge that needs to be paid attention to by policymakers is regarding policies that can support market demand for using renewable energy. This report also offers recommendations on investment issues in the context of climate change, often associated with financial losses for investors and companies having to switch to renewable energy. Accordingly, the government must implement policies and regulations supporting the transition to renewable energy sources and reducing carbon emissions.

Finally, thank you to the entire PRAKARSA research team, Auriga Nusantara, PWYP Indonesia, Walhi, and various parties involved in preparing this report. I hope this report will enrich existing sources of knowledge and provide reinforcement so that each stakeholder can contribute more to supporting Indonesia's energy transition.

Jakarta, December 2022

Ah Maftuchan

Executive Director, The PRAKARSA

Executive Summary



Several banks have started implementing practices to address climate change through internal policies and encouraging customers to participate in reducing emissions or using environmentally friendly products.



This report presents an analysis of the roles of the financial services sector in financing Indonesia's energy transition to achieve the Net Zero Emission (NZE) target. The analysis focuses on the banking sector's financing for the energy transition to achieve the NZE target. It presents the obstacles and challenges banks face in financing the energy transition and the energy financing portfolio that banks channeled throughout 2016-2022 to describe the progress of the financial sector in financing renewable energy.

Indonesia has renewed its emission reduction target commitment to 31.89% and – with an international support– to 43.20% in 2030 in the latest Nationally Determined Contributions (NDC) document. According to the NDC, fulfilling the Green House Gas (GHG) emission targets in 2030 will cost around USD 250 billion. The banking sector is a strategic actor. Banks can play a strategic role in accelerating the energy transition by contributing to financing green projects, sustainable development, facilitating carbon trading, issuing green bonds, or other financing schemes such as green sukuk or green climate funds.



Previously, PRAKARSA (2021) researched the role of international financial institutions in accelerating the financing of renewable energy projects. The research found that financial institutions such as the World Bank and the Asian Development Bank (ADB) play a role in accelerating renewable energy financing. Meanwhile, previous studies illustrate that the banking sector is vital in accelerating the NZE target through renewable energy financing.

This study assesses the policies held by banks in terms of three themes, namely climate change, nature, and power generation. In this study, the banking sector referred to is the 13 banks members of the Indonesian Sustainable Finance Initiative (IKBI). On the climate change theme, 10 out of 13 banks in Indonesia scored. The three banks that received the highest score were HSBC Indonesia (score 2.6 out of a maximum of 10), Bank BJB with a score of 0.8, and Bank Muamalat with a score of 0.7.

Based on the in-depth interviews conducted, several banks have started implementing practices to address climate change through internal policies and encouraging customers to participate in reducing emissions or using environmentally friendly products. Outside banks' internal processes, BRI and CIMB Niaga, the informants in this study stated that they had tried to encourage customers to reduce emissions and use environmentally friendly products.

On the nature theme, 9 out of 13 banks scored. The three banks that received the highest score were HSBC Indonesia, with a score of 3.4 (out of a maximum of 10), BRI, with a score of 1.4, and Bank Arta Graha, with a score of 1.1. This scoring was done through an assessment referring to the banks' annual and sustainability reports. Then, 10 out of 13 banks scored on the theme of power generation. The three banks that received the highest score included HSBC Indonesia, with a score of 2.3 (out of a maximum of 10), BRI, with a score of 2, and CIMB Niaga, with a score of 1.8. Analysis using these scores showed the banks' positions in financing policies and practices.

This report found several obstacles and challenges for banks from a regulatory perspective. The first obstacle is that policies and regulations are considered not to provide the same benefits as policies for fossil energy. The existing regulatory ecosystem is not in harmony between the sectoral policies and policies governing banking. Second, there are minimal incentives for banks, both fiscal and non-fiscal, such as tax allowances, import duty-free, and tax holidays specifically for renewable energy projects and environmentally friendly products. Third, there is a lack of information regarding definite renewable energy development projects, including generating capacity and risks of renewable energy projects, making it difficult to analyze.

Another obstacle is corporate financing, including regulatory uncertainty and investors' lack of interest, carbon taxes not yet attractive to banks, and renewable energy financing not yet profitable for businesses. Meanwhile, the challenges from the individual customer side are that many Indonesian people are not yet fully aware of climate change, and

renewable energy consumer products are still expensive, so they are not in demand or not affordable by Indonesian consumers, who are generally still price sensitive.

Some various policies and supports can encourage the financing of the energy transition. For the consumer scale, the government can encourage consumers to switch to electric vehicles or provide subsidies or incentives for installing home-scale solar panels to accelerate the achievement of the NZE target. As for business actors, the government needs to create a business ecosystem that supports sustainable industries through regulations in the form of incentives and disincentives. Support for Independent Power Producers (IPPs) and PLN needs to be provided in the form of accelerating the licensing process for supplying electricity that meets environmental standards. Meanwhile, support for the banking sector can be done by improving sustainable finance regulations in Indonesia to sustain the renewable energy sector financing. This is because banks still have a much more extensive portfolio of fossil energy than renewable energy.

Based on the findings above, this study recommends several things from the aspects of policy and practice. For regulations and legislation, DPR RI needs to immediately issue the New and Renewable energy (RE) Law to encourage financing for renewable energy projects. To build investor confidence, the Ministry of Finance also needs to increase transparency and accountability in financing the energy transition. Other institutions, such as OJK, need to immediately develop financing guidelines for the energy sector as a basis for financial service institutions to develop policies and manage environmental risks. Other things that need to be encouraged by OJK are the development of green bonds, green loans, and risk mitigation facilities to provide incentives to banks financing energy transition projects. Then, banks, as financial service institutions with large amounts of financing power, need to formulate specific sectoral policies governing lending and investment to the energy sector and setting specific targets for energy financing. Not exclusive to the financial sector and government, the public can encourage banks to carry out sustainable financing. On the other hand, the private sector, which receives credit and investment from banks, can carry out more responsible business practices according to Environment, Social, and Governance (ESG) principles and switch to using renewable energy.

This page has been intentionally left blank.



Chapter 1

INTRODUCTION: INDONESIA'S ENERGY TRANSITION

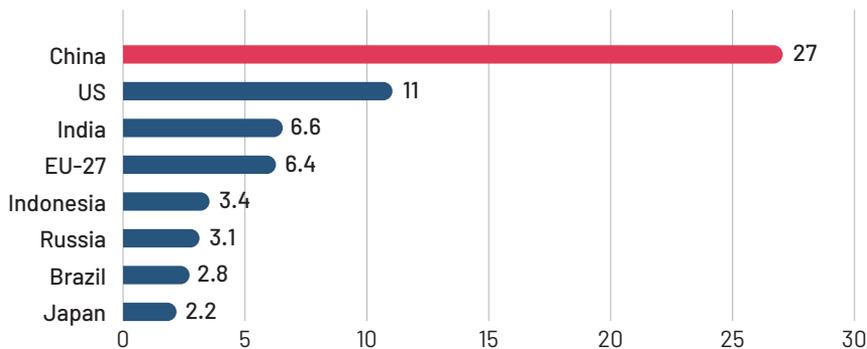
At the 26th World Leaders Summit on Climate Change or COP26, President Joko Widodo stated that Indonesia would make an energy transition from fossil energy to new and renewable energy (RE) (Setneg, 2021).

1.1. Background

The 2015 Paris Agreement (PA), as a commitment from countries worldwide, aims to mitigate climate change through an energy transition from fossil energy to renewable energy. Indonesia ratified the PA by submitting the 2021 nationally determined contributions (NDCs) to reduce emissions by 29 percent on its own and 41 percent with international support in 2030 (KLHK, 2021). The Enhanced National Determined Contributions document states that this emission reduction target has also increased. As of October 2022, Indonesia has increased its emission reduction targets to 31.89% on its own, to 43.20% with international support in 2030 (Kemenko Ekonomi, 2022).

Indonesia has set a net zero emission (NZE) target in 2060 (KESDM, 2022). Indonesia's NZE target is more prolonged than other carbon-emitting countries, such as the United States, Japan, Britain, Canada, and the European Union, targeting NZE by 2050. According to United Nations (UN) data, more than 70 countries have committed to achieving NZE by 2050 out of 193 countries that signed the PA (UN Climate Action, no year). In fact, based on research by the Rhodium Group (in the BBC, 07/05/21), Indonesia is ranked fifth as the largest emitter of greenhouse gases (GHG) globally

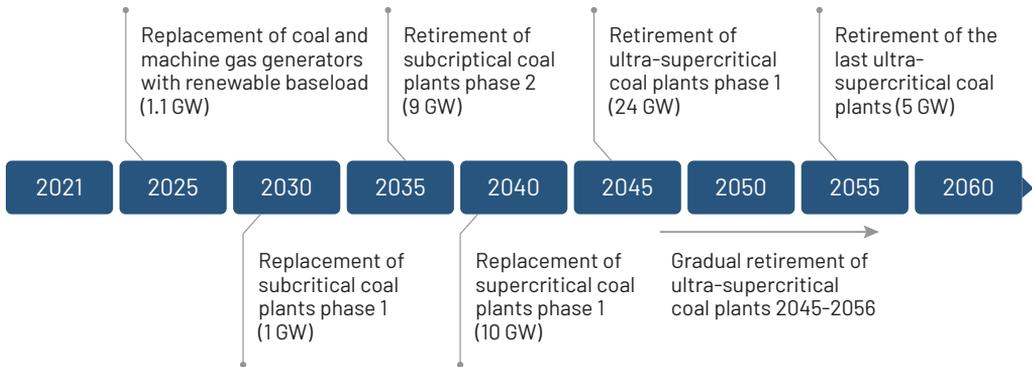
Figure 1. The eight largest GHG emitter countries in 2021 (percent)



Source: Rhodium Group (taken from BBC, 07/05/21)

At the 26th World Leaders Summit on Climate Change or COP26, President Joko Widodo stated that Indonesia would make an energy transition from fossil energy to new and renewable energy (RE) (Setneg, 2021). In achieving the zero-emission target, the government is implementing five main principles, namely increasing the use of RE, reducing fossil energy, using electric vehicles in the transportation sector, increasing electricity use in households and industries, and utilizing Carbon Capture and Storage (CCS) (KESDM, 2021). One of the efforts to reduce fossil energy is by retiring coal-fired power plants (PLTU) gradually.

Figure 2. Coal-Fired Power Plants (CFPP) Early Retirement Roadmap



Sumber: PLN presentation during a Parliament hearing on 27th May 2022

Regarding financing to reach the PA target, developed countries have committed to disbursing US\$ 100 billion annually to developing countries to achieve PA. However, the funding commitments from developed countries are voluntary and non-binding, meaning there is no guarantee that the commitment will be carried out and realized one hundred percent. Therefore, countries supporting PA, especially developing countries, must prepare their energy transition funding schemes. For Indonesia, it is estimated that the Ministry of Finance will need at least IDR 28,223 trillion to reach NZE in 2060. The amount of funds necessary to meet Indonesia’s NZE target requires the government to involve the private sector, especially banks, as the largest managers of public funds (80 percent of public financial assets, BI 2020) to finance the energy transition to accelerate the NZE 2060 target

In 2021, global banking parties formed the Glasgow Financial Alliance for Net Zero (GFANZ) as a coalition that agreed to contribute to achieving the Paris Agreement goals. GFANZ has called on all members to adapt business models and develop credible plans to support the energy transition. Similar initiatives have emerged from banking groups in Indonesia to integrate Environmental, Social, and Governance (ESG) aspects, one of which is through the Indonesian Sustainable Finance Initiative (IKBI). Formed in 2018, IKBI currently consists of 13 banks working to support the implementation of the Financial Services Authority Regulation (POJK) No. 51 of 2017 concerning Sustainable Finance. IKBI encourages the active contribution of financial services institutions to the government’s achievement targets in terms of Sustainable Development Goals (SDGs) and climate change control.

Most banks in Indonesia already have the commitment to funneling renewable energy financing. However, in practice, the portion of renewable energy financing is still small compared to fossil-based energy financing. Throughout 2016-2022, the allocation of bank financing for fossil energy reached an average of 95 percent, while for renewable energy,

it was only 5 percent (Fair Finance Asia & SEI, 2022). The largest banks in Indonesia, such as BCA, BRI, and Mandiri, still have a minimal portfolio of renewable energy financing. BCA and Mandiri's average allocation for fossil energy financing during 2016-2022 reached 96 percent, while the share for renewable energy financing was only 4 percent. Meanwhile, Bank BRI was noted to have allocated 94 percent for fossil financing, while the renewable energy financing was only 6 percent in its financing portfolio (Fair Finance Asia & SEI, 2022).

1.2. Research Gap

Many studies have examined the extent of banking commitments aligning their business with climate change norms. The Climate Policy Initiative study (2022) found that NZE commitments were mostly found in financial institutions in OECD countries and only a few in non-OECD countries. In the Southeast Asia Region, only financial institutions in Singapore and Malaysia are the most advanced regarding NZE commitments. Financial institutions' NZE commitments are generally measured by the extent to which these institutions have divested fossil energy to finance renewable energy. This study targets banking institutions that have issued public statements regarding NZE commitments by 2050. It has succeeded in identifying country financial institutions with NZE commitments that have yet to determine the extent to which these commitments have been conducted.

OJK and Clean Energy Finance and Investment Mobilization (2022) research regarding the readiness and progress of financial institutions towards energy transition in Indonesia shows that banks are still experiencing barriers in financing renewable energy, such as the low quality of feasibility studies to the lack of bank internal staff capacity. From 2018 to Q1 2021, although banks' renewable energy project financing showed an increasing trend, coal power plant financing still dominated (84.54%). This study describes the development of the financing portfolio of financial institutions in Indonesia during the 2018-Q1 2021 period. To see financing before 2018 to 2022, it is necessary to carry out further research to observe the dynamics of post-PA banking financing to date.



Previously, PRAKARSA (2021) examined the role of international financial institutions in accelerating the financing of renewable energy projects. The research found that financial institutions such as the World Bank and Asia Development Bank (ADB) play a role in accelerating renewable energy financing, including: 1) providing loans to support policy development in Indonesia to ensure access to reliable and efficient energy; 2) improving the investment climate in the energy sector to spur domestic primary energy supply and address energy security issues; 3) encouraging the transition towards

a sustainable energy sector by boosting the utilization of gas and renewable energy at the household level; 4) improving the efficiency and competitiveness of the energy sector; and 5) achieving universal access to electricity. This research focuses on studying the role of

international financial institutions but has yet to examine the role of commercial, financial institutions in Indonesia.

Previous studies also show that the banking sector is vital in accelerating the NZE target through renewable energy financing. To enrich the discourse on sustainable finance, particularly on the issue of financing the energy transition by banks in Indonesia, further research is needed to track progress and uncover obstacles, challenges, and strategies for the banking sector in financing renewable energy. This study at hand seeks to update such information on renewable energy financing portfolios by banks in Indonesia.

1.3. Research Questions

1. How extensive was the portfolio of renewable energy financing rationed by the banking sector during 2016-2022?
2. What are the roles and strategies of the banking sector in financing the energy transition to achieve the NZE target?
3. What are the obstacles and challenges banks face in financing Indonesia's energy transition to achieve the NZE target?

1.4. Research Objectives

1. To understand the portfolio of renewable energy financing by the banking sector during 2016-2022.
2. To understand the banking sector's roles and strategies in financing the energy transition to achieve NZE.
3. To understand the barriers and challenges banks face in financing Indonesia's energy transition.

This page has been intentionally left blank.

A futuristic landscape under a teal sky. On the left, a tall, slender wind turbine stands prominently. In the background, several industrial smokestacks emit thick, white plumes of smoke. To the right, another wind turbine is visible. The foreground is a lush, green field with a body of water in the distance.

Chapter 2

THEORITICAL FRAMEWORK

The energy transition is an effort to reduce the risk of global warming, which can potentially threaten life in the future. The energy transition is a path towards transforming the global energy sector to zero-carbon.



The world is currently at a 'tipping point' of climate change. Untreated climate change will result in environmental damage that threatens human survival. To tackle climate change, countries have agreed to form an international consensus to keep global temperatures below 2°C and continue efforts to reduce temperature rise below 1.5°C (IPCC, 2018). This means the world must halve emissions by 2030 and achieve net zero emissions by 2050. The energy sector transition is an integral part of achieving this target. Therefore, joint efforts are needed to mitigate climate change through the energy transition from fossil to renewable energy.

2.1. Climate Change, Energy Transition, and Net Zero Emission

Climate change is a critical issue that people around the world must realize. Human activities, mainly burning fossil fuels, increase the concentration of greenhouse gases in the atmosphere. Greenhouse gases, including carbon dioxide, methane, and nitrous oxide, have increased since about two hundred years ago (Australian Academy of Science, 2022).

Carbon greenhouse gases are gases that absorb and emit heat. This gas traps heat and increases the average temperature of the Earth, so it is called the greenhouse effect. According to the European Commission, the main factor driving climate change is the greenhouse effect from human activities. There are several definitions of climate change that can be understood as follows:

1. Based on Law No. 31 of 2009 concerning Meteorology, Climatology, and Geophysics, climate change is a change in climate that is caused, directly or indirectly, by human activities that cause changes in the composition of the global atmosphere as well as changes in natural climate variability observed in comparable periods.
2. The Directorate General of Climate Change Control explains that climate change is a significant change in climate, air temperature, and rainfall from decades to millions of years. Climate change occurs due to the increasing concentration of carbon dioxide and other gases in the atmosphere, which causes the greenhouse gas effect.
3. According to the United Nations, climate change refers to long-term changes in temperature and weather patterns. These shifts may be natural, such as through variations in the solar cycle. However, since the 1800s, human activities have been the main driver of climate change, mainly due to burning fossil fuels such as coal, oil, and gas.
4. The Intergovernmental Panel on Climate Change (IPCC) defines climate change as a change in the state of the climate that can be identified (e.g., using statistical tests)

with changes in the average and/or variability of its properties and persists for a long time, usually several decades or more.

Multiple climate change solutions can provide economic benefits while improving lives and protecting the environment. Three actions can be taken: reducing emissions, adapting to climate impacts, and funding the necessary adjustments. The energy transition is one of the efforts that continue to be encouraged to achieve zero carbon emissions.

Indonesia has committed to reducing GHG emissions by 29% on its own and by 41% through international cooperation by 2030. The energy sector, with a target of 11%, is the primary sector that plays a vital role in achieving Indonesia's NDC after the forestry sector, which is 17%. This is contained in the contribution document, which is determined nationally and inseparable from the Paris Agreement's ratification in Law No. 16 of 2016.

The energy transition is an effort to reduce the risk of global warming, which can potentially threaten life in the future. The energy transition is a path towards transforming the global energy sector to zero-carbon. This refers to the shift in the global energy sector from a system of production and consumption of fossil-based energy (natural gas, oil, and coal) towards renewable energy sources such as wind, solar and lithium-ion batteries. Referring to International Renewable Energy, the energy transition is transforming energy previously based on fossil fuels into green energy that is more environmentally friendly (IRENA, 2022)..

Several factors drive the importance of the energy transition. Among these factors are the high penetration of renewable energy into the global energy mix, technological advancement, energy diversion, and the commencement of electrification. In addition, this issue is growing because some investors are starting to prioritize environmental, social, and governance factors. So, the urgency of the energy transition is due to three things: climate change, greenhouse gases, and energy decentralization. This energy decentralization is an effort to achieve a solution to electricity access to various regions in Indonesia so that each region can produce and consume resources independently according to their individual needs. Furthermore, it is necessary to accelerate the energy transition in Indonesia because:

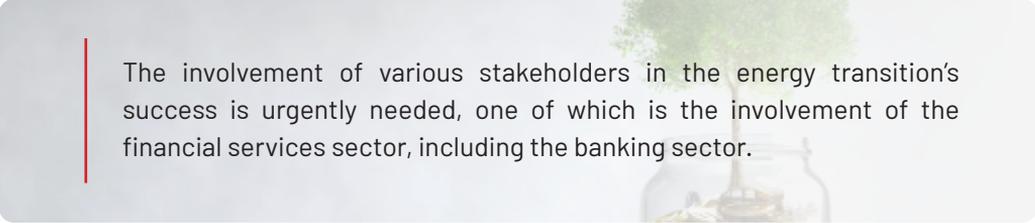
1. Of climate change, since the energy sector is the most dominant contributor to climate change, accounting for nearly 90% of global GHG emissions.
2. The Paris Agreement international climate negotiations (the agreement of the COP-21 participants in Paris in 2015 to restrain the increase in the earth's temperature) oblige each member country to take a role in climate change commitments realized by establishing their respective NDCs.
3. Of new energy technologies and uses. With the growth in the use of renewable energy at the global level, research and development on available technologies are increasing so that renewable energy technologies are more diverse, of high quality, and efficient

Geopolitical and economic conditions are also reasons for the importance of energy transitions, such as the decentralization of power plants, renewable investment trends, procurement for renewable energy generation installations, freedom from fossil dependency, and changes in electricity consumer behavior.

Energy transition in the long term can impact achieving zero carbon emissions. Zero carbon emissions are conditions in which the amount of energy released into the atmosphere does not exceed the extent of emissions the earth can absorb. An energy transition is needed to achieve a balanced condition between human activities and natural balance.

One of the things that need to be done in reducing emissions is to reduce the amount of carbon or gas emissions produced from various human activities over a certain period, more commonly known as the carbon footprint. Energy is one of the sectors focused on achieving a zero-carbon emission program.

2.2. Banks and Climate Change



The involvement of various stakeholders in the energy transition's success is urgently needed, one of which is the involvement of the financial services sector, including the banking sector.

In Indonesia, banks are vital actors considering that 77.96 percent of financial sector assets are owned by banks (Bank Indonesia, 2022). Concerning climate change mitigation, banks can focus on financing companies transitioning to green and low-carbon businesses.

By utilizing various green and/or sustainable financial instruments, banks can contribute to the energy transition by increasing loan allocations and investment in the renewable energy sector. In general, banks channel financing through two instruments, namely equity, and debt. Through equity instruments, banks acquire share ownership in companies and/or projects. Meanwhile, financing through debt instruments includes project financing, corporate loans, and bonds issuance (UNEP FI, 2014). Thus, banks can navigate customers and debtors toward sustainable finance.

According to the Sustainable Market Initiative (SMI) (2021), it is not enough for banks to relocate their capital from carbon-intensive companies. Nevertheless, it takes an orderly and fair transition planning. In simple terms, banks can reallocate their funds from highly listed companies to low-carbon business activities. Relocating financing from the fossil sector, for instance, will significantly impact climate improvement (SMI, 2021, p. 14).

As a holistic effort to promote the energy transition, bank financing for the renewable energy sector must be supported in parallel by divestment efforts to finance the fossil fuel energy sector. This includes stopping loans and investments in new or existing fossil projects or companies (CPI, 2022).

Banks must also support more significant global economic growth in achieving their decarbonization targets, especially for emission-intensive sectors. This can be made possible through transition financing. Transition financing is a new approach to supporting companies' greenhouse gas emission reduction initiatives in achieving long-term decarbonization goals (METI, 2022).

Furthermore, the role of banks is not only limited to financing. As shareholders, banks can influence the business decisions of companies and/or projects they finance through shareholder activism, in which banks exercise their rights by intervening in the management decisions of a business (Sendur, 2020). 'Activists,' in this case, have particular interests, such as wanting to change the company's capital placement allocation strategy, acquisition decisions, and dividend receipts. In other words, banks have a significant influence in changing the business practices they finance, increasing ambitions, commitments, policies, and implementation that can affect the progress of the energy transition.

Banks need to realize that an unaddressed climate crisis will impact the sustainability of the banking business in the future. An unaddressed climate crisis will worsen the quality of life of actors in the market, which will undoubtedly affect the quality of the banking business. For example, if the intensity of natural disasters increases due to the climate crisis and then affects debtors' economic activities, then the debtors' financial ability to repay loans will decrease, undoubtedly increasing the risk of non-performing loans (NPLs). In addition, the climate crisis, which has increased the intensity of natural disasters, can also threaten banks' physical assets, reducing asset values. If so, the financial capital banks own, no matter how much, will be eroded in the future unless there are efforts to transition to renewable energy financing. Banks must act as soon as possible to mitigate climate change through risk management based on challenges and opportunities.

Figure 3. Climate change opportunities and challenges for the banking industry

| Opportunity | Challenge |
|---|--|
| Financing a green agenda | Protecting balance sheets from uncertainty |
| Transformation of energy production toward renewables  |  Real-estate market collapse in low-lying areas |
| Plant refurbishments to avoid or capture and store carbon emissions  |  Increased risk of major crop failures with implications for meat and dairy producers |
| Electrification of transport and automation of mobility  |  Closures of coal-powered power plants before end of useful life |

Source: McKinsey & Company (June 2020)

In the Greenhouse Gas Protocol (GHG), there are three emission scopes:

1. **Scope 1:** Direct emissions, for example, from company production facilities and vehicles;
2. **Scope 2:** Indirect emissions, for example, from purchasing or using fossil-based energy or electricity;
3. **Scope 3:** Indirect emissions in the company's value chain, such as waste product sales and investment in high-carbon energy).

Currently, many companies measure emissions and set emission reduction targets referring to Scope 1 and Scope 2 because these two Scopes are relatively easier to measure than Scope 3. However, Scope 3 represents 50 percent or more of the emissions released. Banking institutions need to disclose the three scopes of GHG. Generally, banks only disclose Scope 1 and Scope 2. The most significant emissions produced will likely come from Scope 3. The emissions from bank financing are generally known as 'financed emissions' (GHG Category 15).



Chapter 3

RESEARCH METHODS

The policy assessment was carried out with the scope of 12 banks included in the Indonesian Sustainable Finance Initiative (IKBI) using the 2021 version of the Fair Finance Guide methodology. The bank policy assessment was conducted by searching for information that can be accessed openly by the public, such as the 2021 annual report, 2021 sustainability report, bank websites, and other relevant supporting information.

3.1. Research Methods

This study used a qualitative-descriptive method. Through qualitative research, the researcher used an interpretive paradigm that was not specific to one question but contemplated a philosophical-theoretical paradigm in completion and was open to adopting perspectives (Neuman, 2006). The type of research used was descriptive to present a more specific description of the situation, social setting, or relationship (Neuman, 2006). To obtain the necessary data and information according to research needs, the data collection techniques used included:

1. *Literature study.* Carried out by studying various literature related to the research discussions, namely on bank financing policies and portfolios and energy transition policies in Indonesia. Some documents used as reading sources include government policy documents, journals, news, books, annual reports, banking sustainability for the 2016-2021 period for all banks in IKBI, and various other sources.
2. *In-depth interviews.* Conducted face-to-face with competent informants to obtain in-depth data and information following the research discussion. In-depth interviews with various informants were conducted by asking questions designed in a semi-structured manner.

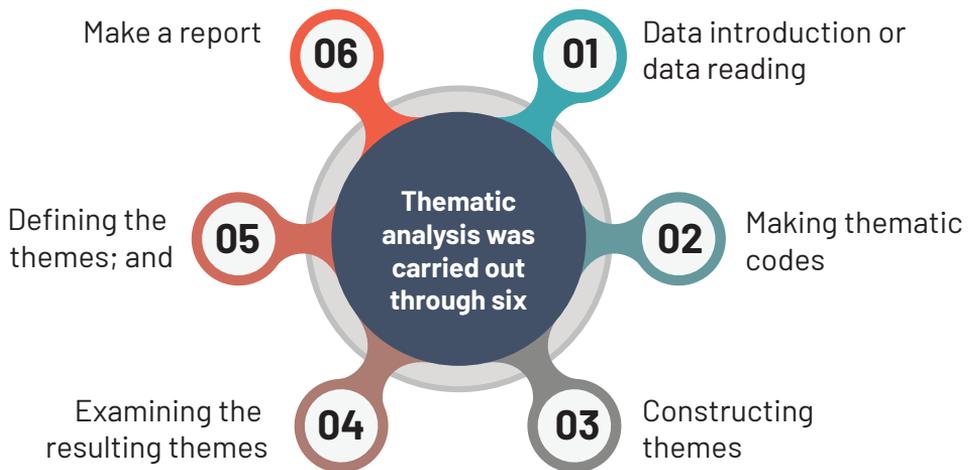
Sources who became informants in this study were determined purposively. The purposive technique is not concerned with the number of representative informants (population) to be interviewed because qualitative research cannot be generalized. Selecting informants purposively means looking for informants who can provide as much information as possible on the research problems and objectives. The informants who were met through in-depth interviews in this study were as follows:

Table 1. List of in-depth interview informants

| No | Institutions | Information to be obtained | Number |
|----|--|---|--------|
| 1 | Banks | <ul style="list-style-type: none"> • Regarding the obstacles and challenges banks face in the transition to renewable energy financing • Understanding of the roles and strategies of banks in encouraging the energy transition in Indonesia | 2 |
| 2 | Renewable energy development companies/ Independent Power Producers (IPPs) | On barriers and challenges in accessing banking capital | 2 |

| | | | |
|--------------|--|--|-----------|
| 3 | Ministry of Energy and Mineral Resources | Understanding of the roles and strategies of banks in encouraging the energy transition in Indonesia | 2 |
| 4 | Ministry of Finance | About energy transition financing needs and the roles of banks | 1 |
| 5 | University academics/sustainable finance experts | On the obstacles and challenges of energy transition financing | 4 |
| 6 | Observers from Civil Society Organizations on energy transition issues | Opinions on the obstacles and challenges of energy transition financing | 1 |
| Total | | | 12 |

The data collected through the data collection techniques above were then analyzed through a structured coding and classification system or, in other words using thematic analysis. Thematic analysis is a flexible technique because it does not depend on theory and epistemology, so it can be applied to various theoretical and epistemological approaches. Using thematic analysis is to construct themes from a set of collected data. Thematic analysis was carried out through six stages, namely.



(Braun, V. & Clarke, V, 2006)

3.2. Energy Sector Financing Flows

To identify the financing flows, a secondary data analysis approach was used, sourced from the Bloomberg, Refinitiv, IJ Global, and Trade Finance Analytics databases, annual reports, company stock exchange filings, and media sources and portfolio submissions from 2016 to June 2022. Identification of financing flows focused on loans, underwriting, shares, and bonds by the following financial institutions:

Table 2. List of Banks Researched

| | |
|------------------------|-----------------------|
| Bank Syariah Indonesia | Bank Rakyat Indonesia |
| CIMB Niaga | Bank Negara Indonesia |
| OCBC NISP | Bank Central Asia |
| Maybank | Bank BJB |
| HSBC Indonesia | Artha Graha |
| Bank Mandiri | Bank Muamalat |

The banks above were selected based on their membership at the Indonesian Sustainable Finance Initiative (IKBI). IKBI banks have committed to integrating Environmental, Social and Governance (ESG) aspects. Formed in 2018, IKBI currently consists of 12 banks working to support the implementation of Financial Services Authority Regulation (POJK) No. 51 of 2017 concerning Sustainable Finance and encourages the active contribution of financial services institutions (LJK) to the government's achievement targets in terms of Sustainable Development Goals (SDGs) and climate change control.

3.2.1. Energy Sector Classification

According to the UNFCC (no year), in 2016, as much as 81 percent of all GHG emissions (except LULUCF (land use, land use change, and forestry) were attributable to energy use. In the energy sector, 36 percent of GHG emissions were generated from power plants, 26 percent from the transportation sector, 14 percent from the manufacturing and construction industries, 12 percent from other sectors, 10 percent from fugitive emissions from fuel production, and 2 percent from other unspecified sources.

Power generation is the core sector discussed in this research. This study further focuses on sectors that can be considered as inputs for power generation and/or energy used in transportation, manufacturing, and construction industries, as well as fugitive emissions from fuel production. These sectors contribute more than 60% of GHG emissions caused by energy use and 49% of total global GHG emissions (UNFCC, GHG Profiles, Annex I), so they are relevant to be the object of study.

Electrical energy can be generated through various sources. Not all sources of power

generation emit GHG. Sources of electricity generation include, but are not limited to, the following:

| | |
|-------------------|--------------|
| Biomass | Nuclear |
| Coal | Ocean Energy |
| Gases | Oil |
| Geothermal Energy | Sun |
| Hydro | Bayu Power |

More and more power generation companies are diversifying the composition of their generating capacity across various energy sources. This is driven by various factors, such as increasing awareness of climate change issues, the rapid decline in the cost of renewable energy and other market dynamics, consumer and shareholder pressure, and government incentives and regulations.

From material or fuel sourcing to construction to operation and waste management, each power generation technology emits different levels of GHGs. When all these processes are combined, they are known as the life-cycle emissions of a particular power generation technology. The Intergovernmental Panel on Climate Change (IPCC) Working Group III assesses that each generation of technology produces life cycle emissions, as shown in Table 3.

Table 3. Life-cycle emissions from power generation technology (gCO₂eq/kWh)

| Commercially Available Technologies, the moment | Minimum | Median | Maximum |
|---|---------|--------|---------|
| Coal - pulverized coal | 740 | 820 | 910 |
| Gas - combined cycle | 410 | 490 | 650 |
| Biomass - co-firing | 620 | 740 | 890 |
| Biomass - dedicated | 130 | 230 | 420 |
| Geothermal | 6 | 38 | 79 |
| Hydropower | 1 | 24 | 2,200 |
| Nuclear | 3.7 | 12 | 110 |
| Concentrated Solar Power (CSP) | 8.8 | 27 | 63 |
| Solar PV - rooftop | 26 | 41 | 60 |
| Solar PV - large-scale projects | 18 | 48 | 180 |
| Wind onshore | 7 | 11 | 56 |
| Wind offshore | 8 | 12 | 35 |

Source: IPCC (2015)

Table 4 provides an overview of the power generation technologies that this study considers renewable energy due to their average life cycle emissions below 50 gCO₂eq/kWh and the technologies considered Fossil Fuels.

Table 4. Classification of power generation technology

| Renewable Energy | Fossil Energy | Others |
|--------------------------------|------------------------|---------------------|
| Geothermal | Coal - pulverized coal | Biomass - co-firing |
| Concentrated solar power (CSP) | Gas - combined cycle | Biomass - dedicated |
| Solar PV - rooftop | Oil | Hydropower |
| Solar PV - power generation | | Nuclear power |
| Wind onshore | | |
| Wind offshore | | |
| Ocean and tidal energy | | |

Sources: processed research data

Table 5 presents the categories of Renewable Energy and Fossil Fuels selected for research purposes. Based on the discussion above, this study does not consider other energy sources.

Table 5. Activities related to Renewable Energy and Fossil Fuels

| Activities related to Renewable Energy | Activities related to Fossil Energy |
|--|-------------------------------------|
| Geothermal energy equipment manufacturing | Coal-fired power generation |
| Geothermal energy generation | Coal mining |
| Green hydrogen | Gas-fired power generation |
| Mini hydro (under 10 MW, run-of-the-river) | Gas production and refining |
| Ocean energy generation | Oil-fired power generation |
| Solar energy generation | Oil production and refining |
| Solar panel manufacturing (PV and CSP) | Oilfield services |
| Wind power generation | Pipelines |
| Wind turbine manufacturing | |

Sources: processed research data

3.2.2. Selected Energy Companies

Selected companies included power generation, fossil fuel, and renewable energy companies. The selection of fossil fuel companies is based on the list of the largest companies on the Global Coal Exit List (GCEL) and Global Oil & Gas Exit List (GOGEL), which operate in activities related to fossil fuels, as shown in Table 3. The selection of renewable energy companies was based on companies actively producing equipment used for renewable energy (e.g., wind turbines or solar panels) or generating renewable energy. Finally, 25 of the world's largest electric utility companies were included in the scope of the study.

The selection of companies was based on market studies, data from industry aggregates, and other trusted sources. The companies identified in this study represented around 75 percent of global production volume in the last three years for all renewable energy and fossil fuels-related activities. These included Indonesia's largest power companies, coal mining companies, coal-fired power plants, and Indonesia's largest oil and gas companies.

3.2.3. Energy Company Activities Analysis

The selected companies were then analyzed for the proportion of their activities related to fossil fuels, renewable energy, and other activities within and outside the energy sector. Using a segment adjuster, a percentage of each loan, guarantee, and investment service could be attributed to selected energy companies in the fossil fuel energy sector, renewable energy, and other activities.

Due to data limitations, segment adjustments were not calculated similarly for every company. The data used in this study was capital expenditure (capex) data for each sector or energy segment in which the company is actively operating.

For some companies, capex per segment data was unavailable, or the segment classification used by the company was too broad to distinguish between the activities listed in Table 5. To overcome this, the following proxies were used:

- For electricity companies: installed power plant capacity divided by energy source;
- Asset segment distribution;
- Segment revenue distribution;
- Cost segment distribution;
- Segment profit distribution;
- Estimates based on descriptions of company activities.

The distribution of capital expenditure, assets, costs, and/or income segments were identified through annual reports, corporate prospectuses, and reports for investors. Segment adjustments were calculated separately for each year of transaction data.

It should be noted that the credit or investment figures for individual financial institutions may differ from those published by the financial institutions for their credits and investments in the fossil fuel sector, as these figures may include many more companies and include a full accounting of investments in every company. We only calculated the proportion of investment directly related to fossil fuels and renewable energy. The proportion of investment in these companies used for "other energy sources," electricity transportation, and non-energy activities was not considered.

3.2.4. Analysis of Energy Companies Financing Flow

This step collected data regarding financing and investment in selected companies by selected banks (see Table 2). Sources used for compilation were the Bloomberg, Refinitiv, IJ Global, and Trade Finance Analytics databases, annual reports and company stock exchange filings, media sources, and portfolio filings. All nominal figures found were converted to US dollars at the exchange rate in effect when the financing was provided or the investment was reported. From these data sources, the following data were taken to identify forms of financing and investment:

- All loans (trade financing, project financing, corporate loans, revolving credit) granted in the last seven years (since 1 January 2016);
- All stock and bond guarantees in the last seven years (since 1 January 2016);
- Untuk investasi saham, nilai *outstanding* pada tanggal pelaporan terakhir diteliti pada Juli 2022.

The financing flow analysis provided an overview of the financing relationships between the 12 selected banks and the classified companies and how much financing they channeled to specific companies from 2016 to June 2022.

3.2.5. Combination of Financing and Investment with Segment Adjustment

Financing and investment data identified for each financial institution (see Table 1) were combined with relevant segment adjustments. For example, assume that in 2019 Bank A provided a loan of EUR 100 million to Oil Company A, which was used for oil drilling as much as 95%, 3% for wind power, and 2% for activities irrelevant to this analysis. From these assumptions, we concluded that EUR 95 million can be attributed to fossil fuels (oil drilling), EUR 3 million to renewables (wind power), and EUR 2 million was excluded from the analysis. This calculation model applied to types of investment financing.

After calculating all found financing and investments, the total amount financed and invested by each bank, then the insurance or pension fund was totaled for renewable energy

and fossil fuel activities. Since all financing related to other energy activities and the non-energy sector was ignored, the total financing analyzed for each financial institution would usually be lower than the financing provided to the selected companies.

Using total financing and investment amounts, we also calculated the percentage of the combined energy and investment financing of banks, insurance, and pension funds used for renewable energy in the past seven years and the percentage for Fossil fuels. This percentage was calculated per financial institution and for banks, insurance, and pension funds.

3.3. Assessment of Bank Policy using the Fair Finance Guide Method



The policy assessment was carried out with the scope of 12 banks included in the Indonesian Sustainable Finance Initiative (IKBI) using the 2021 version of the Fair Finance Guide methodology. The bank policy assessment was conducted by searching for information that can be accessed openly by the public, such as the 2021 annual report, 2021 sustainability report, bank websites, and other relevant supporting information. The policy assessment focused on climate change, nature, and power generation, while other themes and sectors are ignored.

3.3.1. Bank Assessment Elements on Policies Related to Climate Change, Nature, and Power Plants

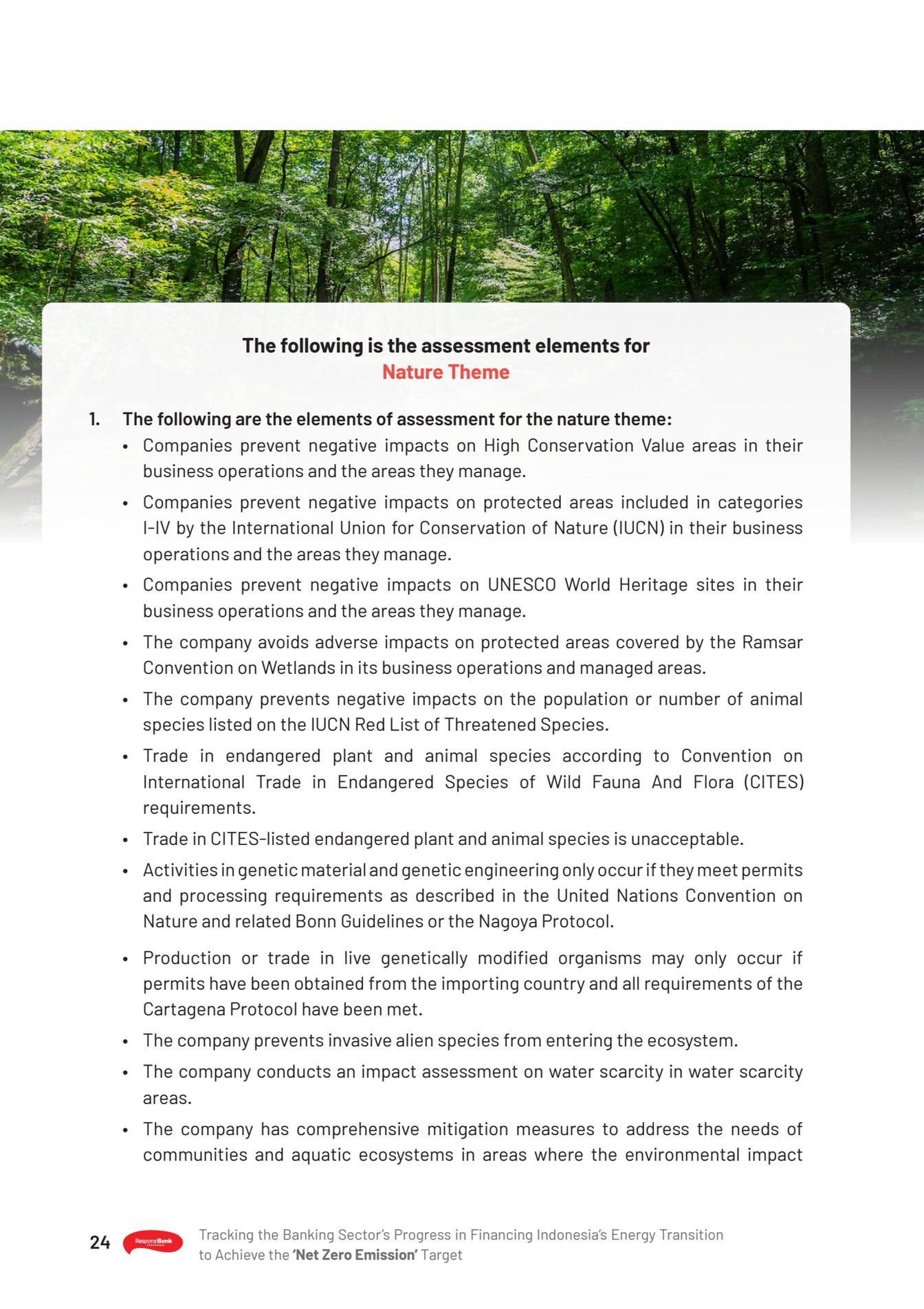
The following is the assessment elements for Climate Change Theme

- 1. Elements of policy assessment for the internal operations of financial institutions:**
 - Regarding direct and indirect greenhouse gas emissions, financial institutions set measurable reduction goals to limit a maximum global temperature increase to 1.5°C.
 - Regarding its internal operations, financial institutions commit to using only renewable energy sources.
- 2. Elements of assessment for policies regarding the management of financial institutions for their corporate loan and investment portfolios:**
 - Financial institutions disclose greenhouse gas emissions related to the choice of companies and/or specific financed or invested sectors.
 - Financial institutions disclose greenhouse gas emissions associated with all companies and projects they finance.
 - For large-scale financing projects, financial institutions produce environmental impact assessments that include data on greenhouse gas emissions and climate risk.
 - For financed and invested greenhouse gas emissions, financial institutions set measurable reduction goals to limit the maximum global temperature rise to 1.5°C.
 - Financial institutions measure and disclose climate-related impacts following the recommendations of TFCFD (Task Force on Climate-Related Financial Disclosure).
 - Financial institutions do not finance or invest in companies engaged in coal-fired power generation and/or thermal coal mining for more than 20% of their activities.
 - Financial institutions do not finance or invest in companies active in fossil fuel power generation and/or oil and gas extraction for more than 30% of their activities.

- Financial institutions do not finance or invest in companies active in coal-fired power plants and/or thermal coal mining for more than 0% of their activities.
- Financial institutions do not finance or invest in companies active in fossil fuel power generation and/or oil and gas extraction of more than 0% of their activities.

3. Elements for policy assessment regarding companies invested or financed by financial institutions:

- Companies disclose direct and indirect greenhouse gas emissions.
- Companies reduce direct and indirect greenhouse gas emissions.
- Companies switch from using fossil fuels to using renewable energy sources.
- Unsustainable coal-fired power plants (i.e., without operational carbon capture and storage) are unacceptable.
- Coal-fired power plants are unacceptable
- Fossil fuel power generation is unacceptable.
- Thermal coal mining is unacceptable.
- Extracting oil from tar sands is unacceptable.
- Extracting oil and gas is unacceptable.
- Conversion of peatlands and high carbon stocks for agricultural development is unacceptable.
- Production of biomaterials aligns with the 12 principles of the Roundtable on Sustainable Biomaterials (RSB)..
- The CO2 offset is certified according to the criteria of the relevant certification scheme for CO2 compensation (mentioned in section 2.2.2).
- The company does not participate in direct or indirect lobbying (trying to influence decisions made by regulators) aimed at undermining climate policy.
- Companies integrate climate change criteria into their procurement and operational policies.
- Companies include clauses on meeting climate change criteria in their contracts with subcontractors and suppliers.



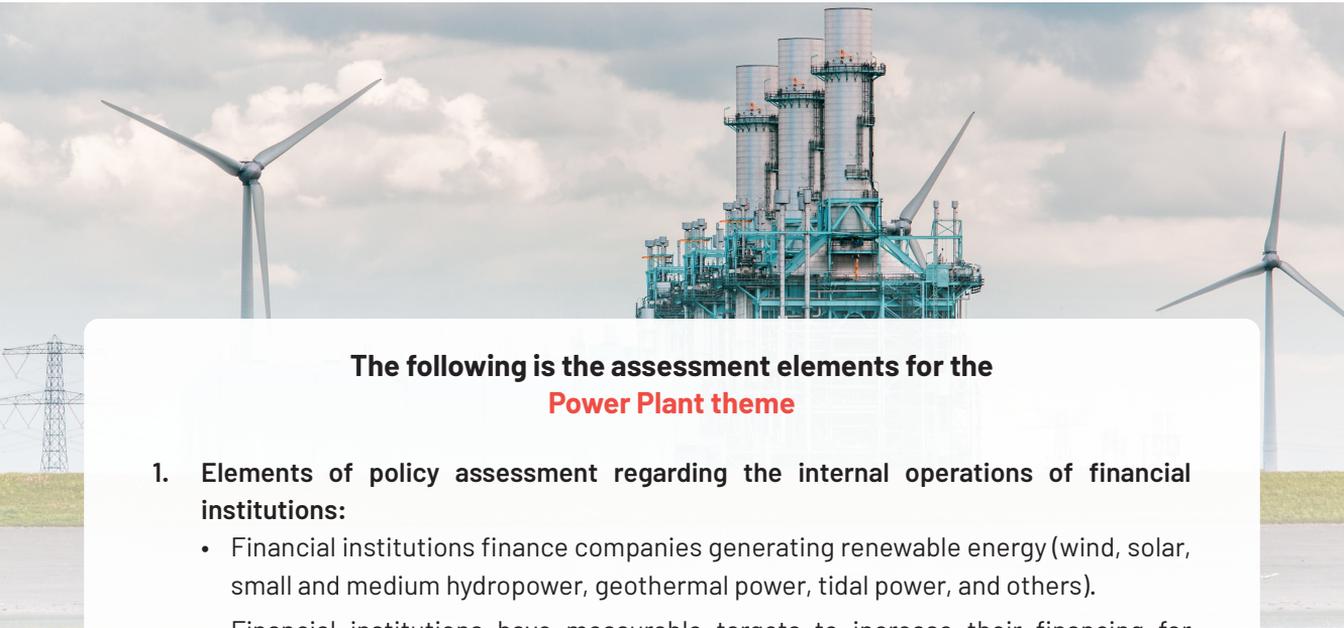
**The following is the assessment elements for
Nature Theme**

1. The following are the elements of assessment for the nature theme:

- Companies prevent negative impacts on High Conservation Value areas in their business operations and the areas they manage.
- Companies prevent negative impacts on protected areas included in categories I-IV by the International Union for Conservation of Nature (IUCN) in their business operations and the areas they manage.
- Companies prevent negative impacts on UNESCO World Heritage sites in their business operations and the areas they manage.
- The company avoids adverse impacts on protected areas covered by the Ramsar Convention on Wetlands in its business operations and managed areas.
- The company prevents negative impacts on the population or number of animal species listed on the IUCN Red List of Threatened Species.
- Trade in endangered plant and animal species according to Convention on International Trade in Endangered Species of Wild Fauna And Flora (CITES) requirements.
- Trade in CITES-listed endangered plant and animal species is unacceptable.
- Activities in genetic material and genetic engineering only occur if they meet permits and processing requirements as described in the United Nations Convention on Nature and related Bonn Guidelines or the Nagoya Protocol.
- Production or trade in live genetically modified organisms may only occur if permits have been obtained from the importing country and all requirements of the Cartagena Protocol have been met.
- The company prevents invasive alien species from entering the ecosystem.
- The company conducts an impact assessment on water scarcity in water scarcity areas.
- The company has comprehensive mitigation measures to address the needs of communities and aquatic ecosystems in areas where the environmental impact

assessment identifies potentially significant impacts on water resources.

- The company makes an environmental impact assessment of the natural consequences of a large-scale project on biodiversity following at least GRI 304: Biodiversity 2016 or other relevant standards (mentioned in section 2.8.2).
- Companies integrate nature criteria into their procurement and operational policies.
- Companies include clauses regarding compliance with natural criteria in their contracts with subcontractors and suppliers.



**The following is the assessment elements for the
Power Plant theme**

- 1. Elements of policy assessment regarding the internal operations of financial institutions:**
 - Financial institutions finance companies generating renewable energy (wind, solar, small and medium hydropower, geothermal power, tidal power, and others).
 - Financial institutions have measurable targets to increase their financing for renewable energy generators.
 - Financial institutions have measurable targets to reduce the total amount financed for fossil fuel power generation, or to reduce financing for fossil fuel power generation, relative to their financing for renewable energy generation.
- 2. Elements of policy assessment regarding companies invested or financed by financial institutions:**
 - Unsustainable coal-fired power plants (i.e., without operational carbon capture and storage) are unacceptable. Pembangkit listrik tenaga batu bara tidak dapat diterima.
 - Coal-fired power plants are unacceptable.
 - Fossil fuel power generation is unacceptable.

- Nuclear energy is unacceptable.
- Large-scale hydroelectric power plants are unacceptable.
- Companies prevent negative impacts on protected areas included in categories I-IV by the International Union for Conservation of Nature (IUCN) in their business operations and the areas they manage.
- Companies prevent negative impacts on UNESCO World Heritage sites in their business operations and the areas they manage.
- Companies prevent negative impacts on the protected areas covered by the Ramsar Convention on Wetlands in their business operations and the areas they manage.
- Companies prevent conflicts over land rights and acquire natural resources only by conducting serious consultations with local communities and obtaining free, prior, and informed consent (FPIC) for indigenous peoples.
- Companies prevent conflicts over land rights and acquire natural resources only with free, prior, and informed consent (FPIC) from communities with customary tenure rights.
- Companies have processes to enable the remediation of any adverse human rights impacts they cause or contribute.
- Dam construction according to the seven principles of the World Commission on Dams.
- Production of biomaterials following the 12 principles of the Roundtable on Sustainable Biomaterials.
- Produksi biomaterial sesuai dengan 12 prinsip Roundtable on Sustainable Biomaterials.
- The company publishes a sustainability report which may contain (several) disclosures from the GRI Standards.
- Large and multinational companies publish sustainability reports prepared following (Core or Comprehensive options of) GRI Standards.
- Companies integrate environmental, social, and governance criteria in their procurement and operational policies.
- Companies include clauses regarding compliance with environmental, social, and governance criteria in their contracts with subcontractors and suppliers

3.3.2 Banks' Policy Assessment

The banks assessment was carried out at the element level in each theme. The scope of the assessment consisted of bank policies on the types of financing/investment as follows:

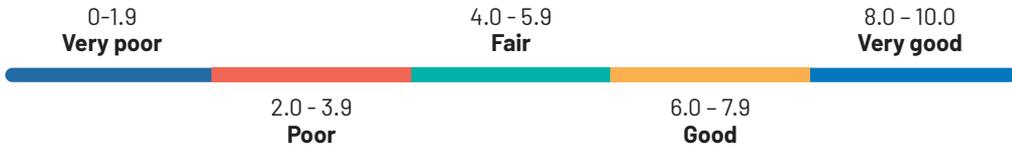
1. Corporate credit, namely financing that includes all company financing (loans and guarantees including general corporate loans, trade finance, mortgages to companies, and underwriting), including loans to SMEs.
2. Project financing/project finance, namely a special type of financing, is mostly used to finance large infrastructure and industrial projects. Unlike ordinary corporate loans, these loans are secured by the projected cash flows of the project, not by the balance sheets of the companies involved in the project.
3. Proprietary assets refer to investments made by financial service institutions with money on their own balance sheets, especially investments in securities such as stocks and corporate bonds.
4. Asset management, refers to money managed by financial service institutions on behalf of their clients. These assets are not listed on the LJK's balance sheet. Clients can be institutional investors such as pension fund managers or insurance companies or individual investors.

For each theme, each financial institution's score was based on the proportion of elements included in the policy. Scores were given to financing or investment categories relevant to the policy's implementation. Scoring also considered the content and scope of financing or investment policy in the sense of whether the policy applies in general or is explicitly stated to regulate each category of financing/investment.

The content of the policy was analyzed by assessing whether it followed the scoring criteria for each assessment element listed in the assessment guidelines. For each assessment element that was fully/explicitly written in the policy, a base score of 1 was given. If an adequate policy was not found, a score of 0 was given. Suppose a financial institution's policy met all the criteria for an assessment element. In that case, the base score could be multiplied by the coverage score, expressed as a percentage based on the coverage of four financing/investment categories.

If the financial institution did not clarify the scope of its policy, it was assumed that 50% of the financial institution's activities had been covered. For this reason, the coverage score by default was 50%. This percentage increased for each investment category for which the policy was applied explicitly and clearly, in proportion to the number of relevant investment categories for that financial institution. If all relevant investment categories were covered, the coverage score was 100%, resulting in an end element score of 1.

The scores for all the elements included in the theme were added up and then divided by the number of elements in the theme, resulting in a final score for a theme. The final score at the theme or banking level was presented in decimal or percentage form. The description of the assessment range was as follows:





Chapter 4

ENERGY TRANSITION POLICY IN INDONESIA

Indonesia's commitment and contribution to climate mitigation has been demonstrated by ratifying the Paris Agreement in New York on April 22, 2016. As a ratifying country, Indonesia is committed to making efforts to reduce greenhouse gas emissions and is active in preventing climate change.

4.1. International Climate Change Political Dynamics

The world is experiencing an increase in temperature due to greenhouse gas emissions resulting from the burning of fossil energy and extractive use of extractive natural resources such as through burning forests, dredging fossil energy, and massive use of energy. In dealing with this, the world has made an agreement in the Paris Agreement, which was then updated at the Glasgow and Egypt COPs and is being updated with more ambitious targets in the 2022 G20 declaration.

According to the IRENA report (2022), there are four geopolitical consequences due to the shift toward renewable energy. First, the renewable energy transition will make energy sources more evenly distributed than fossil energy at specific geographic points. Second, related long-term availability can only be met by renewable energy. Third, renewable energy operations can be carried out at the smallest scale, triggering energy decentralization. Fourth, renewable energy costs after installation are nearly zero (such as solar panels and wind energy). The costs will also decrease by about 20% for every doubling of capacity.

The Paris Agreement is crucial to prevent a temperature increase of 1.50 C, followed by the Glasgow COP 26 Agreement (UNFCCC, 2021). In the Glasgow agreement, the coal-consuming and producing countries succeeded in changing a significant phrase, namely, changing the phrase 'phase-out' to 'phase-down.' India and China proposed this phrase in the closing seconds of the COP 26 negotiations. This one-phrase change allowed coal to be continuously utilized despite contributing high carbon emissions.

COP 26 Glasgow then continued with COP 27 Egypt. The critical thing agreed upon at the COP 27 meeting in Egypt (UNFCCC, 2022) was the establishment of lost and damaged funds. These funds are urgently needed by countries or the public affected by climate change. COP27 also agreed on investing US\$4 to 6 trillion in renewable energy by 2030 to achieve net-zero emissions by 2050.

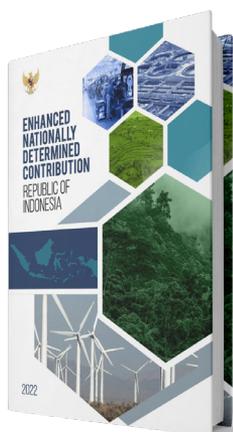
The war between Russia and Ukraine slightly changed the dynamics of energy politics and geopolitics of countries that depend on energy sources from the two countries. Several countries voted for a bloc with Russia, others supported Ukraine, and a few took a neutral position. The taking of political positions in the Russia-Ukrainian war has influenced the course of negotiations and other international agreements. In the energy sector, this war is making energy prices rise, and countries dependent on Russia's energy - but opposed to the war - change their energy plans to include the use of fossil energy. The world is experiencing an increase in temperature due to greenhouse gas emissions resulting from the burning of fossil energy and extractive use of extractive natural resources such as through burning forests, dredging fossil energy, and massive use of energy. In dealing with this, the world has made an agreement in the PA which was then updated at the Glasgow and Egypt COPs, and being updated with more ambitious targets in the 2022 G20 declaration

4.2. Climate Change Mitigation Policies in Indonesia

Indonesia has been actively involved internationally as a ratifying country to the Climate Change Framework Convention (UNFCCC) and the Kyoto Protocol. The Indonesian government has ratified the Climate Change Convention through Law Number 6 of 1994 concerning the United Nations Framework Convention on Climate Change Ratification. Thus, Indonesia is officially bound by obligations and has the right to take advantage of various support opportunities offered by the UNFCCC or the UN Framework to achieve the convention's goals.

Indonesia's commitment and contribution to climate mitigation has been demonstrated again by ratifying the Paris Agreement in New York on April 22, 2016. As a ratifying country, Indonesia is committed to making efforts to reduce greenhouse gas emissions and is active in preventing climate change. The Paris Agreement also positions forests as the key to efforts to reduce greenhouse gases. This position is implied by the provisions of Article 5 of the Paris Agreement, which encourages state parties to implement and support the framework based on an agreement for activities related to reducing emissions from deforestation and forest degradation and conservation and management of forests on the principle of sustainability.

In the national context, controlling climate change is a constitutional mandate. International forums also emphasize that efforts to control climate change are carried out by considering national circumstances (including state conditions and capacities) and state sovereignty. The state provides direction and is obligated to ensure that the development needed to meet the welfare of the people still pays attention to the protection of environmental and social aspects. With awareness of the threat from the negative impacts of climate change, control and management of climate change are not seen as a burden to the country but have become necessary.



The Paris Agreement provides space for countries to set targets to restrain temperature increases with consideration of different situations contained in the Nationally Determined Contributions (NDC). Indonesia's Enhanced NDC targets emission reductions to 31.89% on its own, and 43.20% with international support in 2030. NDC preparation is based on the principle of Common but differentiated responsibilities and respective capabilities (CBDR & RC). In addition to these principles, NDC is also guided by Decision: 1/CP. 19, Article 2b, which states, "...And to communicate them well in advance of the twenty-first session of the Conference of the Parties in a manner that facilitates the clarity, transparency, and understanding of the intended contribution," and also by the Decision 1/CP20,

Article 14, which agrees on the implications of the scope of information that needs to be presented to meet the Clarity, Transparency, and Understandable (CTU) criteria.

The government has also stipulated documents related to climate change, among others, Presidential Decree (Perpres) No. 61 of 2011 concerning the National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK); Presidential Decree no. 71 of 2011 concerning inventory of National Greenhouse Gases; Regulation of the Minister of Environment of the Republic of Indonesia No 15 of 2013 concerning Measurement, Reporting, and Verification of Climate Change Mitigation Actions; and Regulation of the Minister of Environment and Forestry No. P.33/Menlhk/Setjen/ Kum.1/3/2016 concerning Guidelines for Developing a Climate Change Adaptation Action Plan.

RAN-GRK is a long-term planning document that regulates GHG emission reduction efforts related to the substance of the Long-Term Development Plan (RPJP) and the Medium-Term Development Plan (RPJM). The document is the primary reference for national, provincial, and city/regency development actors in planning, implementing, monitoring, and evaluating GHG emission reductions. It mandates the provincial government to develop an action plan for reducing emissions at the provincial level, hereinafter referred to as the Regional Action Plan for Reducing GHG Emissions (RAD-GRK). The substance of the RAN-GRK serves as the basis for each province in developing RAD-GRK, following their capabilities and linkages to each province's development policies. Thus, RAD-GRK is stipulated through a Governor's Regulation. RAD-GRK preparation is expected to be a bottom-up process that describes the steps to be taken by each province in reducing GHG emissions according to their respective capacities. Furthermore, each provincial government needs to calculate the amount of GHG emissions, reduction targets, and the sectors that will reduce emissions (NRDC, 2013, p. 26).

In the energy sector, the government has also implemented a policy on using the energy mix and developing clean energy sources as a national policy directive. This is regulated in PP No. 79/2014 concerning the National Energy Policy, which stipulates that new and renewable energy will be at least 23% in 2025 and at least 31% in 2050. The use of energy sourced from petroleum must be less than 25% in 2025 and less than 20% in 2050, coal at least 30% in 2025 and a minimum of 25% in 2050, and gas at least 22% in 2025 and a minimum of 24% in 2050 (KLHK, 2016, p. 3).

The problem that arises related to the Indonesian Government's commitment is that the latest data does not show that there has been a reduction in deforestation; in fact, there is a trend of losing 25% of forest area, in addition to the double standard of energy use. On the one hand, renewable energy is encouraged to play a more dominant role in the energy mix. Still, on the other hand, coal continues to play a significant role as the primary energy source. Related to forest and land issues, a 2010 World Bank document stated that forest

damage due to logging and fires occurred in 10 provinces in Indonesia, which resulted in 78% of dry forests and 96% of swamp forests disappearing (WB, 2010).

Related to the energy sector, an important policy implemented by the Indonesian government and listed in the 2016 NDC is the ambition to increase renewable energy to 23% of the primary energy supply, including the use of biomass in 2025, from a 6% share. This target was stated in the National Energy Policy in 2014 and supported by feed-in tariffs (CDKN, 2014). However, the government has continued to build new coal-fired power plants to meet electricity demand.

Observing this national energy policy, especially the use of coal-fired power plants, it is sure that this energy source will continue contributing to national GHG emissions. The target for using renewable energy, as contained in Indonesia's NDC, has yet to show the government's seriousness in reducing emissions from this sector.

From 2016 to 2022, Indonesia's NDC changed government language to "improvement" or "adjustment." For example, in the 2016 NDC, there was no long-term strategy, as found in the 2021 NDC. In addition, the projected GHG emission figures also changed. In NDC 2022, the Indonesian government included an early retirement plan for coal power plants to achieve net zero emissions by 2060.

In September 2022, the Indonesian government submitted the latest NDC document. The government increased the target of reducing greenhouse gas emissions by 31.89 percent by its efforts in 2030, which was previously 29 percent, and with international support to 43.20 percent (ENDC, 2022, p.12). Other optimistic targets have also been added to the NDC 2022, one of which is in the forestry and land sector. The government is targeting efforts to achieve net sinks by reducing deforestation by 359 thousand hectares with its efforts, then with international support of 175 thousand hectares (ENDC, 2022, p.27).

In the agriculture, energy, waste, and industrial sectors, there have also been changes in the target of reducing greenhouse gas emissions. In the energy sector, the emission reduction target has increased to 358 MTCO_{2e} from the previous 314 MTCO_{2e} (ENDC, 2022, p.14). This increase is due to the government wanting to extend the portion of renewable energy utilization from 7.4 Gigawatts (GW) to 20.9 GW in 2030 (RUPTL, 2021, p. V-54). However, the NDC 2022 has yet to state the government's plan to carry out early retirement for coal-fired power plants as a step toward an energy transition.

Even though they are not listed in the NDC 2022, plans for early retirement for coal-fired power plants are mentioned in Presidential Decree (Perpres) Number 112 of 2022 concerning the Acceleration of Development of Renewable Energy for the Supply of Electricity. The Decree Number 112/2022 answers the need for a roadmap for Indonesia's energy transition and retirement of coal-fired power plants (PLTU), where Article 3 Paragraph (1) and (2) of Presidential Decree 112/2022 mandates the preparation of a roadmap for early retirement for PLTU.

Entrepreneurs have welcomed the issuance of Presidential Decree 112/2022 for renewable energy investment growth in Indonesia. The Perpres contains tariff improvements. However, Perpres 112/2022 cannot be isolated from negative notes. Coal-fired power plants, a fossil energy source, are still given space for construction which has been included in the 2021-2030 RUPTL. In other words, there will still be an additional PLTU of around 13 GW until 2030, even though there has been a commitment to reduce greenhouse gas emissions by at least 35 percent within ten years. The emissions seemingly disappear and arise because some emissions are turned off, but some are still actively operating. Although accompanied by irony, Presidential Decree 112/2022 marks the end of the coal-fired power plant era. No more PLTU construction has been included in the 2021-2030 RUPTL.

4.3. Energy Transition Target and Plan in Indonesia

Indonesia already has a road map to achieve NZE 2060, one of which is the Energy Sector NZE 2060 road map. The NZE scenario for the energy sector is based on the Ministry of Environment and Forestry's Long-Term Strategy for Low Carbon and Climate Resilient (LTS-LCCR) consolidation model. The Ministry of Energy and Mineral Resources proposed that the energy sector's emission figures for 2060 will reach 129 million tons of CO₂. The scenario of 129 million tons of CO₂ is obtained based on improving GDP assumptions, increasing demand-side activities, and using technology according to international catalogs and the application of CCUS in the industrial sector (KESDM, 2022).

Table 6. Energy emission sector (million tonnes CO₂e) - LTS LCCR & Consolidation

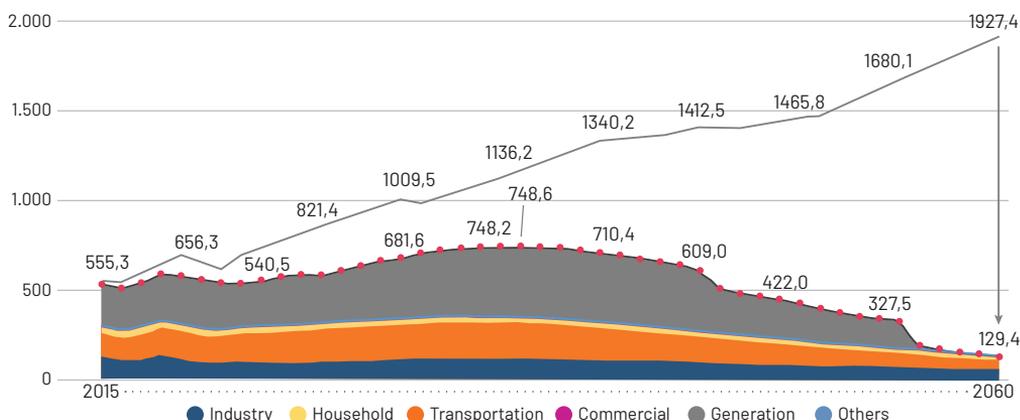
| Energy Subsector | MoEF | NZE Energy Sector | |
|--------------------------------|-----------|-------------------|---------------|
| | | Initial | Consolidation |
| Power plants | -66 | 0 | 0 |
| Industry | 51 | 231 | 60 (CCS) |
| Transportation | 62 | 149 | 52 |
| Households and other buildings | 41 | 21 | 17 |
| Total | 87 | 401 | 129 |

Source: KESDM (2022)

The basic assumptions of the NZE 2060 modeling of the energy sector refer to projected demographic and macroeconomic growth. Indonesia's population in 2060 is projected to be 331.33 million with a GDP per capita of Rp. 337,740 million (KESDM, 2022). In 2060, the Consolidated Scenario produces business as usual (BAU) emissions reaching 1.927 million tonnes of CO₂. It will still emit 129.4 million tonnes of CO₂ consisting of 60 million tonnes of CO₂ from industry (with CCS technology), 52 million tonnes of CO₂ from Transportation and

9.6 million tonnes of CO₂ from Households, 4.4 million tonnes of CO₂ from Commercial, and 3.3 million tonnes of CO₂ from Others. Mitigation actions are expected to reduce emissions of 1,797 million tons of CO₂ to those of BAU (KESDM, 2022).

Figure 4. Total emissions from Consolidated NZE scenario

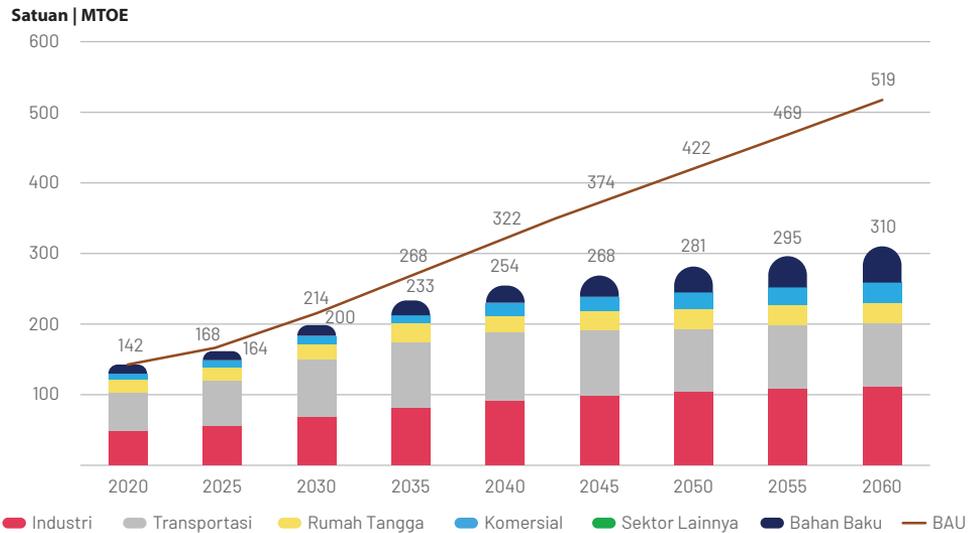


Source: KESDM (2022)

To achieve the NZE 2060 target, the government plans to take strategic steps up to 2060. The government targets the use of hydrogen in the transportation sector to be 5-10%. In addition, it targets implementing carbon capture storage (CCS) in the industry sector of 13 million tons of CO₂. For the industry and transportation sectors, the use of biofuels will increase to 40% starting in 2030. The government is also targeting 229 million units of electric motorcycles and 61 million units of electric cars in 2060. The final strategic step is the electricity supply in 2060, with a whole consolidation scenario of 708GW from EBT-based generators (KESDM, 2022).

In the NZE 2060 Roadmap for the Energy Sector, it is projected that energy demand per sector will experience an annual growth rate of 1.8%. Energy demand in the industry sector is the largest, reaching 36% of total energy demand, followed by the transportation sector (29%), commercial (9%), then household (9%). Energy demand is expected to increase from 142 MTOE in 2020 to 310 MTOE with mitigation actions in 2060 (KESDM, 2022).

Figure 5. Total projected energy demand



Source: KESDM, 2022

To achieve the NZE 2060 target, three sectoral scenarios have been planned, which include the scenarios for the industry sector, the transportation sector, the household sector, and the commercial sector. In the industry sector, six strategic steps are used:

1. Fuel switching: increasing electricity share from 24% in 2020 to 51% in 2060, reducing coal share from 33% in 2020 to 7% in 2060, and reducing gas share from 27% in 2020 to 15% in 2060;
2. Energy efficiency: reducing energy consumption by around 50–60% by 2060;
3. Reducing energy consumption by around 50–60% by 2060: Achieving 55% electrification in 2060;
4. Gas substitution with hydrogen;
5. Biomass substitution to replace fossil fuels; and
6. Carbon capture & storage (CCS) for the cement and steel sector starting in 2036.

- Meanwhile, nine strategic steps for the transportation sector include:
- Stop importing BBM (other than Avtur) by 2030;
 - Utilization of biodiesel up to 40%;
 - Penetration of 100% electric vehicle sales for motorcycles in 2035 and cars in 2040;
 - Penetration of 100% electric vehicle sales for motorcycles in 2035 and cars in 2040;
 - Eco-fuels for aviation start in 2040 and will reach 45% in 2060;

- Eco-fuels for shipping start in 2036 with a mixture of e-ammonia, hydrogen, and biofuels;
- E-fuel (derived from syngas and green hydrogen) for vehicles;
- Electrification at ports or electric vessels and/or hybrid vessels;
- Efficiency in technology in the transportation sector will be 20-25% in 2060.

In the household and commercial sectors, strategic steps to be taken include:

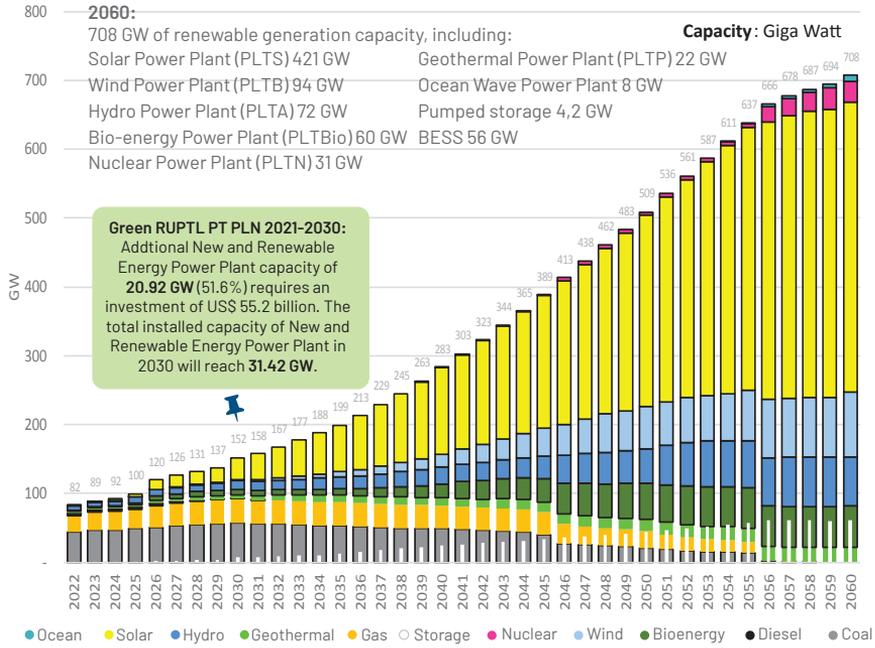
1. Termination of LPG imports;
2. Penetration of the use of electric/induction cookers;
3. Gas network;
4. Energy efficiency programs include optimizing energy management and using highly energy-efficient equipment/appliances.

In 2060, generation capacity sourced from new renewable energy is targeted at 708 GW. PLTS is predicted to be the largest supplier of power plants with a capacity of 421 GW, followed by PLTB 94 GW.

In 2060, renewable energy is targeted to contribute most to the supply of energy needs. In 2030, renewable energy contribution to energy supply will be 35%, 11% higher than in 2021. Meanwhile, in 2060, the contribution to energy supply will be 74%, with more than 80% for power plants, 2% for industrial needs, and 4% for transportation needs (IEA, 2022, pp. 71-72).

For the supply of power plants in 2060, the new and renewable energy generating capacity is set at 708 GW. Among the types of renewable energy power plants, the contribution to solar power plants (PLTS) will be the largest, with a portion of 421 GW. Meanwhile, the contribution to sidrap wind power plants (PLTB) is 94 GW, water power plants (PLTA) 72 GW, bioenergy power plants (PLTBio) 60 GW, nuclear power plants (PLTN) 31 GW, geothermal power plants (PLTP) 22 GW, and ocean wave power plants (PLTGL) 8 GW (KESDM, 2022).

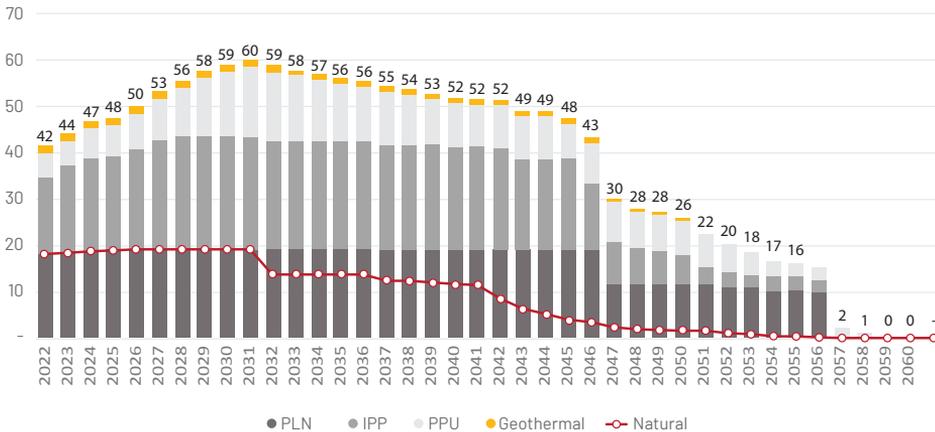
Figure 6. Energy Sector NZE Scenario Generation Supply 2060



Source: KESDM (2022)

The figure above also illustrates the declining portion of fossil generators, starting in 2031. This illustrates that the fossil generator retirement plan will be realized. The fossil generators that will be retired are owned by PLN & Independent Power Producers (IPPs), non-PLN such as Private Power Utility (PPU/Business Area), and captive power (UPTLS), considering asset revaluation and according to the age of the generators (PLTU: 25-30 years, PLTG/ GU/MG: 25 years)(KESDM, 2022).

Figure 7. Retirement of Coal Power Plant Retirement Scenario (GW)



Source: KESDM (2022)

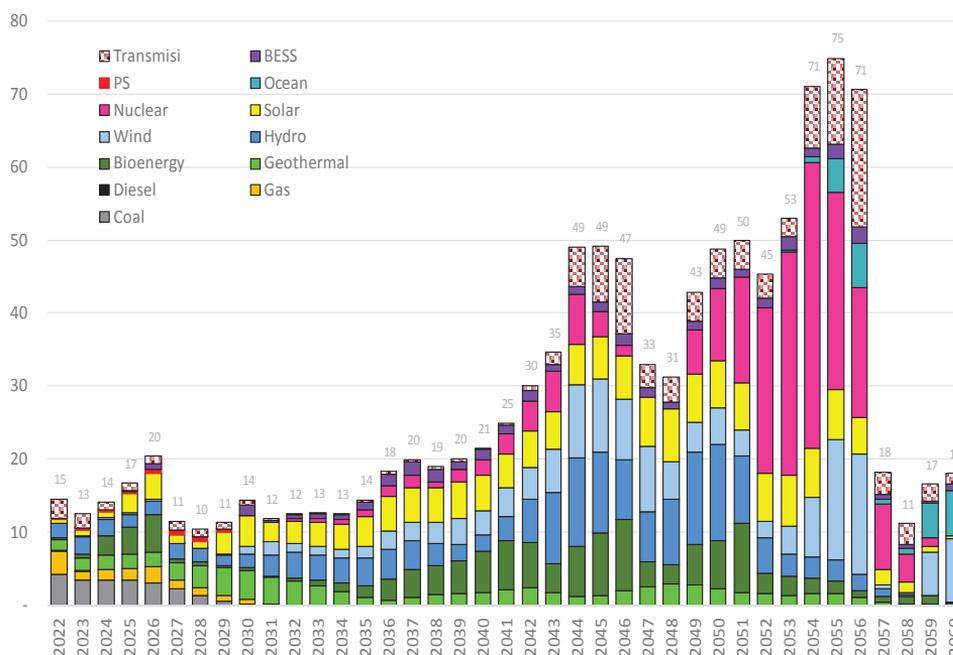
The supply of electricity sources from renewable energy generators announced in NZE 2060 requires a significant investment to construct generating capacity and networks. International Energy Agency (IEA) calculations (2022) show that total investment in the energy sector will increase by more than four and a half times by 2030, relative to the average investment over the 2016–2020 period.

The IEA (2022) predicts that the total investment needed for the energy sector in 2030 Indonesia will be around USD 90 billion. Along with the realization of the NZE, the most significant increase in investment will occur in the electricity sector, which accounts for two-thirds of the total energy sector investment needs in 2030.

In the long term, the level of investment to achieve NZE is expected to decrease to USD 10 billion in 2050, lower than in 2030. Investment to achieve NZE will decrease to around 2% of GDP in 2050, devoted to low-emission power plants and grids, industrial, and transport (IEA, 2022, p. 152).

Especially in the power generation and transmission sector, the Ministry of Energy and Mineral Resources estimates that the total investment required is USD 1,108 billion or USD 28.5 billion per year. The total investment required to construct power plants is worth USD 994.6 billion, and transmission is worth USD 113.4 billion.

Figure 8. Investment Needs for Generation and Transmission



Source: KESDM (2022)

4.4. Nationally Determined Contribution

In the 2016 Nationally Determined Contribution (NDC) document, Indonesia committed to increasing actions and enabling conditions during 2015–2019 as the basis for more ambitious goals after 2020. In 2010, the Government of Indonesia set a GHG emission reduction target of 26% in 2020 and up to 41% if there was international support, compared to the business-as-usual scenario in 2020. This plan was supported by legal and policy instruments, including the National Action Plan for Reducing GHG Emissions outlined in Presidential Decree No. 61/2011 and GHG inventory through Presidential Decree No. 71/2011.

The NDC document was updated in 2022 with a higher target than the 2016 NDC, namely reducing emissions to 31.89% in the Updated NDC (unconditionally) from 29% in First NDC to 43.20% in the Updated NDC conditionally, from 41% in First NDC. The Enhanced NDC is transitioning towards Indonesia's Second NDC, aligning with the 2050 Long-Term Low Carbon and Climate Resilience Strategy (LTS-LCCR) to achieve net-zero emissions by 2060 or sooner.

Since 2020, Indonesia has defined medium-term targets in the 2020–2024 RPJMN text, which aim to transform Indonesia into a just and sustainable high-middle-income country through seven agendas as follows:

- a. Increasing economic resilience for quality growth,
- b. Strengthening regional development to overcome inequalities between regions
- c. Increasing the quality of human resources and competitiveness,
- d. Building the nation's values and character of citizens,
- e. Advancing infrastructure to support economic development and provision of essential services
- f. Increasing environment and resilience to the impacts of natural disasters and climate change, and
- g. Strengthening political, legal, security and national defense stability as well as transforming public services.

In addition, the government has issued regulations in Presidential Decree No. 98 of 2021 concerning the Implementation of Carbon Pricing to achieve NDC targets and Control Greenhouse Gas Emissions in National Development. This regulation is the legal framework for implementing NDC towards low carbon, climate resilience, and carbon pricing, including arrangements for carbon trading, carbon levies, and results-based payments. Indonesia has developed nine implementation strategies to achieve the NDC 2030 target and accelerate the transformation towards low-carbon development and climate resilience, including:

1. Building ownership and commitment between ministries and other government agencies/institutions, the private sector, civil society, and financial institutions.

2. Capacity building to increase institutional capacity and human resources at each level covering all aspects of climate change, particularly on mitigation and adaptation, implementation of the transparency framework, and climate financing.
3. Creating an environment that involves stakeholders in mitigation and adaptation and mobilizing resources through appropriate regulatory frameworks, policies, and measurable targets.
4. Developing a framework and network for coordination and building synergies between sectors, regions, and actors/stakeholders.
5. One GHG data policy to support the implementation of the transparency framework at the national level.
6. Developing policies, plans, and intervention programs for NDC implementation, including integrating mitigation in five sector categories (forestry, energy, IPPU, waste, agriculture) and adaptation (sectoral and regional) into development planning to secure financial support (public funds) and facilitate resource mobilization (domestic sources and international support).
7. Developing NDC implementation guidelines to facilitate ministries and other government agencies, regional governments, and other stakeholders in implementing Program No. 6.
8. Implementasi NDC adalah implementasi kebijakan, perencanaan dan intervensi program (Program No.6), dengan mempertimbangkan panduan yang dikembangkan di bawah Program Nomor 7.
9. NDC monitoring and review to track NDC implementation progress, review related to NDC, and adjustment of NDC if necessary. Then, an inter-ministerial team has been formed to monitor the progress and achievements of NDC implementation.

In the energy sector, Indonesia implements an energy mix policy and establishes the development of clean energy sources as a national policy direction. Collectively, these policies will eventually put Indonesia on a decarbonization path. Government Regulation No. 79 of 2014 concerning the National Energy Policy sets out the energy mix ambitions in 2025 and 2050 as follows:

| | |
|---|---|
|  | New and renewable energy at least 23% in 2025 and at least 31% in 2050; |
|  | Oil must be less than 25% in 2025 and less than 20% in 2050; |

| | |
|---|--|
|  | Coal for energy reduction will be at minimum 30% in 2025 and 25% in 2050; And |
|  | Gas for energy reduction will be at minimum 22% in 2025 and 24% in 2050 |

As an effort to increase the energy mix, the government also issued Presidential Decree Number 22 of 2017 concerning the National Energy General Plan, which mandates a target of 23% New, Renewable Energy (EBT) in the national energy mix by 2025 and a reduction of energy intensity by 1% per year. In addition, efforts to achieve the emission reduction target have also been supported by the implementation of regulations on Electricity Supply Business Plans (RUPTL), which prioritize renewable development (Green RUPTL), implementation of minimum energy performance standards (MEPS) for equipment, and development of EBT in Indonesia.

As part of the transformation towards a sustainable energy transition, Indonesia has enacted Presidential Decree No. 55 of 2019 concerning the Acceleration of Electric Battery Development. The Decree mandates the Ministry of Industry to issue Regulation of the Minister of Industry Number 27 of 2020 concerning Specifications, Preparation of Roadmaps, and Provisions for Calculation of Domestic Component Standards for Domestic Battery Electric Vehicles (BEV, which states that based on the roadmap, 4-wheel BEV in 2030 will be 750,000 units, while the 2-wheel BEV will be 2,450,000 units). The government projects greenhouse gas emissions in 3 scenarios, Business as Usual, Counter Measure 1, and Counter Measure 2, in 5 sectors.

Table 7. GHG emission projections in 5 sectors

| Sector | GHG Emission Level 2010* (MTon CO ₂ -eq) | GHG Emission Level 2030 | | | GHG Emission Reduction | | | | Annual Average Growth BAU (2010-2030) | Average Growth 2000-2012 |
|----------------|---|--------------------------|-------|-------|-------------------------|------|----------------|-------|---------------------------------------|--------------------------|
| | | MTon CO ₂ -eq | | | MTonCO ₂ -eq | | % of Total BaU | | | |
| | | BaU | CM1 | CM2 | CM1 | CM2 | CM1 | CM2 | | |
| 1. Energy* | 453,2 | 1.669 | 1.311 | 1.223 | 358 | 446 | 12,5% | 15,5% | 6,7% | 4,50% |
| 2. Waste | 88 | 296 | 256 | 253 | 40 | 43,5 | 1,4% | 1,5% | 6,3% | 4,00% |
| 3. IPPU | 36 | 69,6 | 63 | 61 | 7 | 9 | 0,2% | 0,3% | 3,4% | 0,10% |
| 4. Agriculture | 110,5 | 119,66 | 110 | 108 | 10 | 12 | 0,3% | 0,4% | 0,4% | 1,30% |

| | | | | | | | | | | |
|--|--------------|--------------|--------------|--------------|------------|--------------|---------------|---------------|-------------|--------------|
| 5. Forestry and Other Land Uses (FOLU)** | 647 | 714 | 214 | -15 | 500 | 729 | 17,4% | 25,4% | 0,5% | 2,70% |
| TOTAL | 1.334 | 2.869 | 1.953 | 1.632 | 915 | 1.240 | 31,89% | 43,20% | 3,9% | 3,20% |

Notes:

CM1= Counter Measure 1(unconditional mitigation scenario);

CM2= Counter Measure 2(conditional mitigation scenario)

Greenhouse gas projections become a reference for mitigation and adaptation efforts in achieving the NDC 2030 targets. In the Enhanced Nationally Determined Contribution text, Indonesia compiles scenarios in the energy sector along with adaptations to the Economic, Social, and Ecosystem.

Table 8. Energy sector mitigation action scenarios

| No | Mitigation Action | 2030 | | |
|----|--|--|--|--|
| | | BaU | CM1 | CM2 |
| 1. | Renewable Energy | | | |
| | Increase renewable energy in the energy mix according to RUPTL | No additional renew-able energy in power plants since 2010 | Renewable energy installed capacity of 20,923 MW | Similar measure to CM1, but with a further increase/ expansion of ET utilization |
| | Roof PLTS, PV, Hydro, off-grid ET | No rooftop PLTS pro-gram | ET installed capaci-ty of 15,483 MW | |
| | Biofuel | 400,000 kilo Liter FAME on the B-10 | 18 million KL FAME on the B-40 | |
| | Cofiring | No cofiring | Utilization of Bio-mass 9 Metric tons | |
| | Direct use of Biomass and Biogas for off-grid power generation | No direct utilization program | 333.776 Barrel of Equivalent (BOE) | |

| | | | | |
|---|---|--|-----------------------------------|--|
| 2 | Energy Efficiency | | | |
| | Energy Management Improvement (mandatory) | Fuel savings in 2010 will remain constant until 2030 | Fuel saving of 71 million BOE | Similar measure to CM1 but with further enhanced/expanded mitigation in energy efficiency measures |
| | Energy Efficiency Improvement (Equipment) | No energy efficiency program | Saving electricity of 15,187 GWh | |
| | Electric Vehicles | No program | 15.197.000 unit | |
| | Efficient street lights | No energy efficiency program | Saving energy of 1.31 million BOE | |
| | Efficient street lights | No energy efficiency program | Saving energy of 1.31 million BOE | |
| 3 | Low-Carbon Emission Fuel | | | |
| | Fuel Change (from RON 88 to Higher RON) | No Diversion of Fuel Oil | 4.050.000 KL | Similar actions to CM1, with further enhanced/expanded mitigation using low carbon emission fuels |
| | Conversion of Kerosene to LPG | Program since 2010 | 8.247.000 ton | |
| | Compressed natural gas (CNG) for public transport | Use of Kerosene in 2010 | 1.029 MMSCFD | |
| | Gas Pipeline Network Expansion | There is no CNG program for public transport | 10 million gas pipelines | |
| 4 | Clean Coal Technology and Gas Power Generation | No Additional Expansion Program Since 2010 | 27.487 MW | More improved/expanding clean coal and gas power generation |
| 5 | Post-mining Reclamation | No program since 2010 | 81.069 Ha | Further expansion of post-mining reclamation |

Table 9. Adaptation action scenarios

| Key Program | Strategy | Action | Priority Sector | Notes |
|---|---|--|-------------------|--|
| Economic Resilience | | | | |
| Utilization of degraded land for renewable energy | Integrated program for rehabilitation of degraded land and development of biomass energy | Rehabilitation of degraded land with species suitable for energy. R&D to support sustainable biomass energy plantations and the bioenergy industry. | Energy, Ecosystem | Potential synergy with UNCCD implementation Potential additional benefits for mitigation in AFOLU |
| Improvement of energy efficiency and consumption patterns | Increasing the awareness of all stakeholders about the benefits of mitigation adaptation through improving energy efficiency and consumption patterns | Energy Efficiency Campaign | Energy | |
| Social resilience and livelihoods | | | | |
| Upgrading human settlements, providing essential services, and constructing climate-resilient infrastructure. | Integrating adaptation into the construction and maintenance of infrastructure. | Increase compliance with regulations related to carrying capacity in infrastructure development. | Energy, disaster | Potential synergy with SFDRR |

| Ecosystem and Landscape Resilience | | | | |
|------------------------------------|--|--|------------------|--|
| Climate-resilient cities | Promoting climate resilient cities development | Capacity building and institutional strengthening | Energy, Disaster | |
| | | Increase the area of urban forests and other green open spaces | | |

4.5. Energy transition funding

Indonesia has two energy transition funding schemes: the Energy Transition Mechanism Country Platform (ETMCP) and the Just Energy Transition Partnership (JETP). Even though they are different, the two funding schemes can complement each other to accelerate the energy transition target. ETMCP runs under government coordination through PT Sarana Multi Infrastruktur (Persero) (PT SMI) as the country platform, while JETP is carried out collectively by the agreed parties.

4.5.1. Energy Transition Mechanism Country Platform

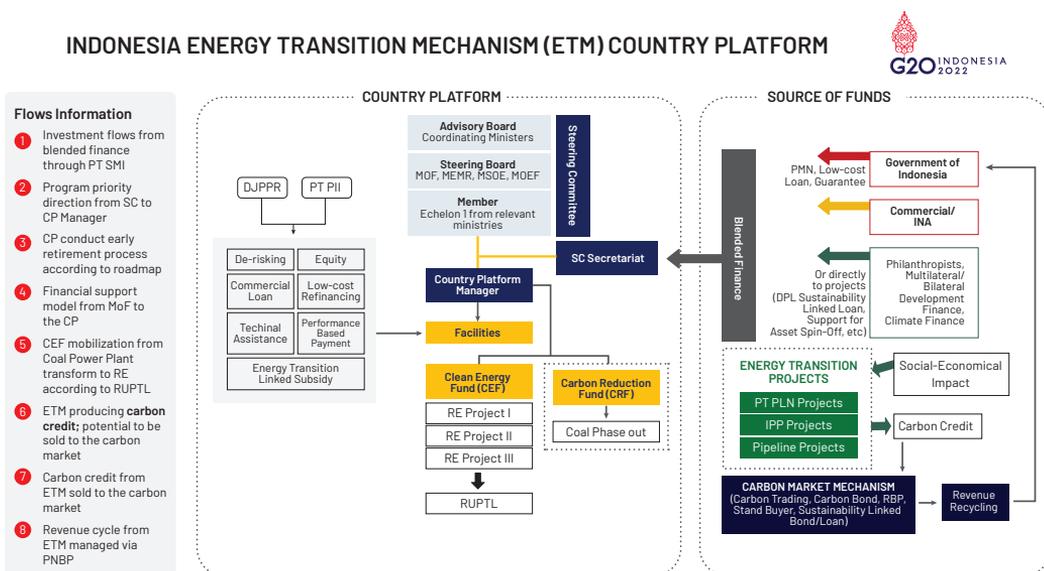
To institutionalize the energy transition financing scheme, the government issued Presidential Decree No. 112 of 2022 concerning the Acceleration of the Development of Renewable Energy for the Provision of Electricity. Presidential Decree 112/2022 creates an energy transition framework and serves as the basis for preparing a detailed energy transition roadmap as a guideline for implementing renewable development in Indonesia. Through the Ministry of Finance, the government appointed PT SMI as the secretariat and manager of the Energy Transition Mechanism Country Platform (ETMCP) funds.

The ETM comprises the Carbon Reduction Facility (CRF) and the Clean Energy Facility (CEF). CRF is used for the early retirement of coal-fired power plants (PLTU) in Indonesia. Meanwhile, the CEF scheme aims to develop or invest in the construction of green energy facilities (BKF, 2022).

The Ministry of Finance has assigned PT SMI to make various energy transition financing instruments such as debt (loans), equity, guarantees, bonds, and carbon financing. PT SMI is vital as the primary executor and coordinator of the clean energy transition (pts.co.id, 18/07/22). ETMCP is a framework that provides financing needed to accelerate the national energy transition by mobilizing funds from public and private sources. This platform and other related mechanisms will derive from the broader policy framework on

energy transition to achieve the NDC and NZE targets. This platform also welcomes the involvement of all investors, including the Asian Development Bank (ADB), World Bank, Investment Management Agency (Indonesia National Authority/INA), GFANZ, and other multilateral development banks, state, private sector, and philanthropists (Ministry of Finance, 2022). Indonesia's country platform investment sources will come from blended finance through PT SMI, including philanthropists, bilateral or multilateral development agencies, and climate finance institutions. Some sources of financing include the Glasgow Financing Alliance for Net Zero and SDG Indonesia One (SIO) (Ibid, 2022).

Figure 9. ETM Country Platform by PT SMI



Source: Kemenkeu

The Ministry of Finance identified three mixed funding sources for the ETMCP. First, funds from the Indonesian government originate through State Investment (PMN), soft loans (low-cost loans), and guarantees. Second, funding from the Indonesia Investment Authority (INA) and the private sector (including financial institutions). Third, sources of funds come from philanthropy, bilateral/multilateral development financing, and financial financing such as the Climate Investment Fund. This mixed funding source will then be managed by PT SMI as ETMCP and channeled through financing instruments such as debt (loans), equity, guarantees, bonds, and carbon financing targeting CEF and CRF.

4.5.2. Just Energy Transition Partnership

Indonesia secured the Just Energy Transition Partnership (JETP) energy financing commitment, inaugurated on the sidelines of the G20 Summit in Bali on 16 November 2022.

Countries and organizations participating in Indonesia's JETP commitment are Japan, the United States, Canada, Denmark, the European Union, Germany, Germany, France, Norway, Italy, the United Kingdom, and Northern Ireland (referred to as the International Partners Group/ IPG). JETP's initial funding scheme used a mixture of grants, concessional loans, loans at market interest rates, guarantees, or private parties. The JETP scheme is accompanied by an agreement containing several financing requirements, including:

- Indonesia must limit the peak emissions of the electricity sector in 2030 to no more than 290 MT CO₂, and the electricity sector must have zero emissions by 2050, including ensuring the acceleration of early retirement of PLTU
- Indonesia accelerates the achievement of a renewable energy mix of 34 percent of the total power generation capacity in 2030.
- Indonesia, with support from IPG, accelerates early retirement for coal-fired power plants as a priority in the JETP Investment and Policy Plan.
- Indonesia accelerates energy efficiency..
- Indonesia accelerates the development of a competitive local renewable energy industry.
- Indonesia develops a plan for an equitable energy transition, which also includes identifying vulnerable segments of society affected by the transition's adverse effects.
- Indonesia limits the construction of coal-fired power plants following Presidential Decree 112/2022.
- Indonesia has frozen plans to build coal-fired power plants, including those in the 2021-2030 RUPTL.
- Indonesia aligns local content requirements with the domestic renewable energy manufacturing capability roadmap to achieve the renewable energy mix in RUPTL.

Within the JETP, the parties committed to mobilizing US\$20 billion in grants and loans over the next 3-5 years. The US\$10 billion came from public funding mobilized by IPG members, including grants and loans. The remainder came from private funds, led by GFANZ, including financial institutions, including Bank of America, Citi, Deutsche Bank, HSBC, Macquaire, MUFG, and Standard Chartered.



Chapter 5

BANKING PORTFOLIO FOR RENEWABLE ENERGY FINANCING

The economic activities attributed to the fossil and renewable energy sectors are inputs to power generation and/or energy use in the transportation, manufacturing, and construction industries.

This section outlines trends in energy financing by the twelve selected banks. An analysis was carried out for 2016-2022 based on loan and investment categories and the proportion of financing for the fossil and renewable energy sectors. The economic activities attributed to the fossil and renewable energy sectors are inputs to power generation and/or energy use in the transportation, manufacturing, and construction industries. Fossil energy includes coal, oil, and gas, while renewable energy includes solar, wind, geothermal, hydro, and other non-fossil energy. The description also identifies the company and sector to which loans and investments are made.

In this analysis, the observed companies were selected based on the following criteria: (1) the 25 largest energy companies in Indonesia and PT PLN; (2) companies producing fossil fuels registered on the Global Coal Exit List (GCEL) and Global Oil & Gas Exit List (GOGEL) (3) companies engaged in the field of “clean energy” which includes geothermal, green hydrogen, mini-hydro, ocean energy, solar energy, and wind energy. The number of companies that became the object of research reached around 300 companies.

5.1. Loan Portfolio Composition and Bonds and Shares Issuance

Judging from the composition of the financing portfolio (loans and issuance of bonds & stocks) for fossil energy and renewable energy companies, financing for renewable energy is still relatively meager. Of the total funding of US\$25 billion between 2016 and June 2022, financing for the fossil energy sector was still very large, as can be seen in Figure 10 below:

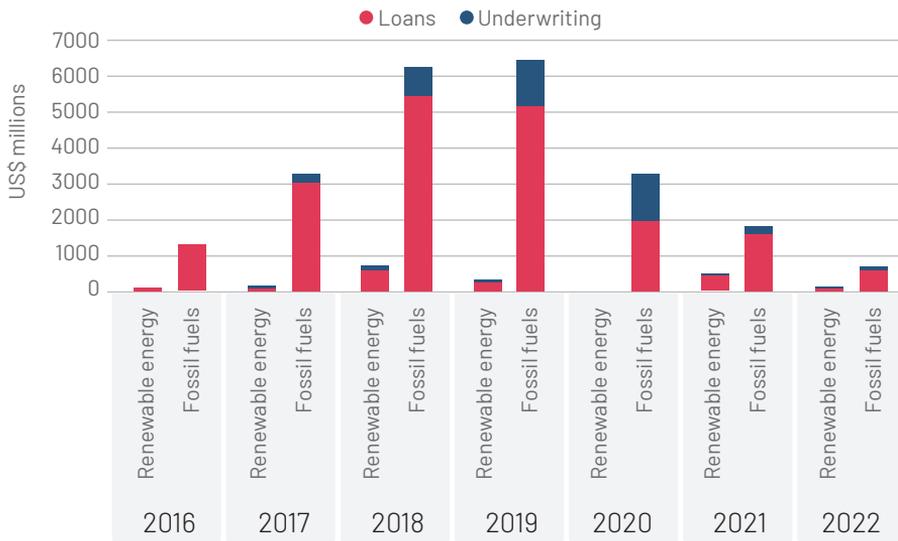
Figure 10. Total loans and issuance of shares and bonds to fossil and renewable energy companies (2016-2022)



Based on the financing composition, divided into loans and issuance of shares & bonds
Source: various (processed)

(underwritings) to fossil and renewable energy companies, the loan portion was dominant. With total financing of US\$ 25 billion from 2016 to June 2022, the loan portion reached US\$ 21 billion, while the portion for issuance of bonds & stocks was only US\$ 4 billion (see Figure 11).

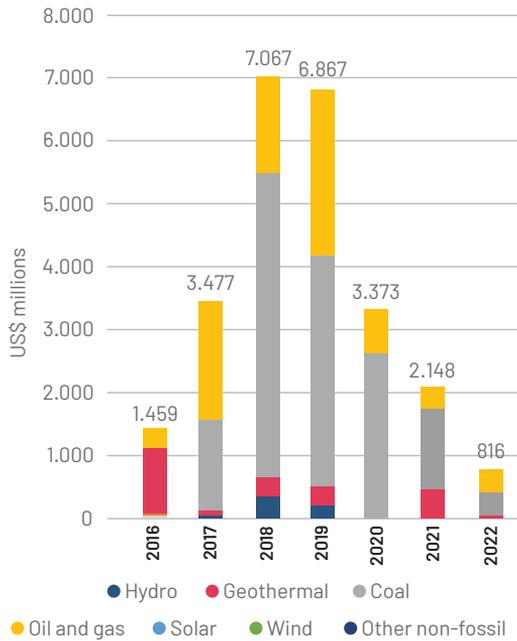
Figure 11. Composition of the financing portfolio: loans and issuance of shares & bonds (underwriting)



Source: various (processed)

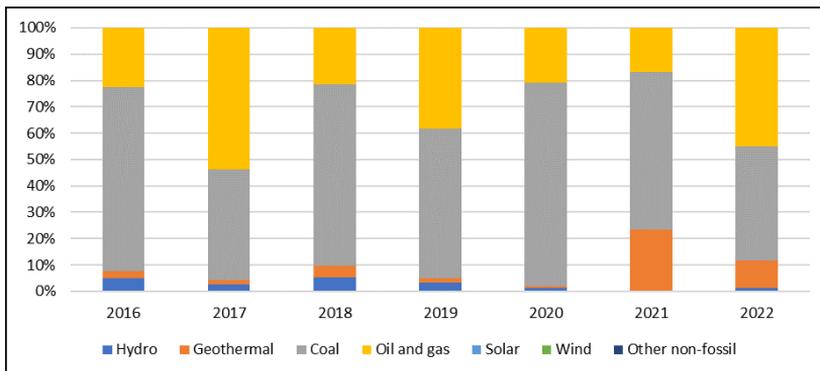
Furthermore, when viewed from changes in the composition of the financing portfolio based on the energy sector in Indonesia, there was an increase in renewable energy. The two figures show a slight increase in the renewable energy financing portfolio in the geothermal sector. Financing in the geothermal sector increased from 3 percent in 2017 to 11 percent in June 2022. Meanwhile, the hydro energy sector decreased from 5 percent in 2017 to 1 percent in June 2022, as seen in Figures 12 and 13 below.

Figure 12. Financing portfolio by the energy sector



Source: various (processed)

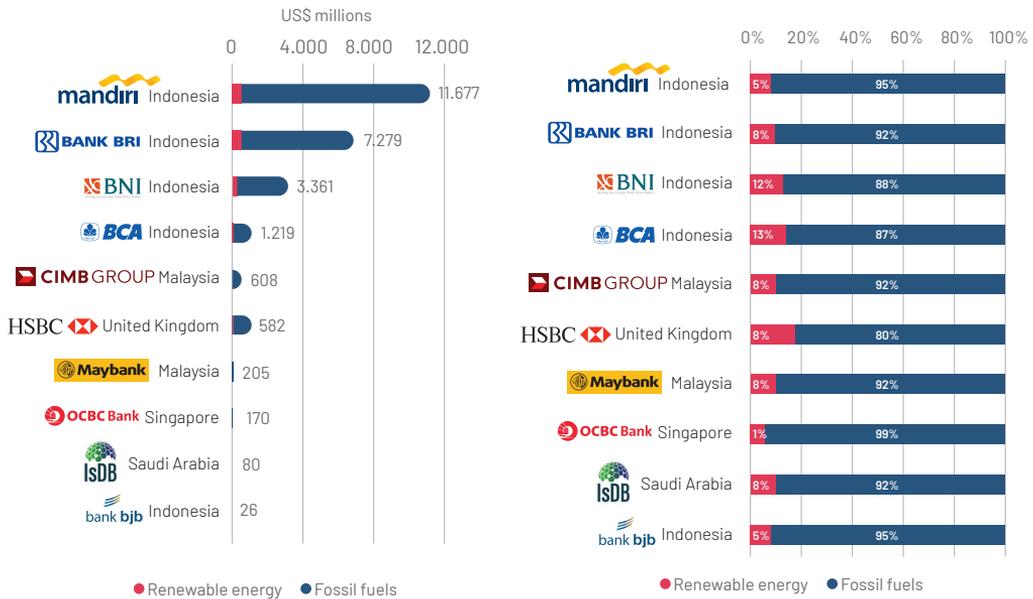
Figure 13. Percentage of financing portfolio by the energy sector



Source: various (processed)

The results of a ranking conducted on 12 banks in Indonesia related to financing for fossil energy and renewable energy in the 2016-2022 period show that for renewable energy, the average rate is still below 20%. Bank Mandiri, BRI, and BNI's dominated most loans and underwriting. Seen in Figure 14 below:

Figure 14. Ranking of 12 banks in Indonesia related to fossil energy and renewable energy financing



Source: various (processed)

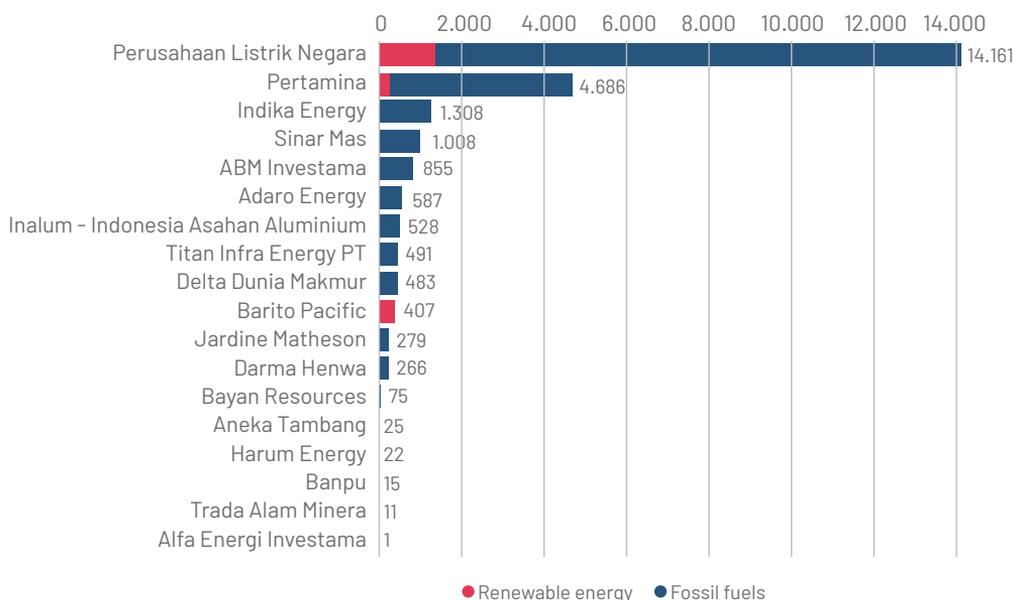
Figure 14 shows that during 2016–2022, Bank Mandiri disbursed financing of up to US\$ 11.68 million, with a proportion of around 95 percent for financing the fossil energy sector and 5 percent for renewable energy. As for Bank Rakyat Indonesia (BRI), the total financing disbursed reached US\$ 7.28 million, with 92 percent sharing for fossil energy financing and 8 percent for renewable energy financing.

Bank Negara Indonesia (BNI), as the third largest financier, occupies the position of the national bank with the most significant portion of renewable energy financing among other national banks. Total financing disbursed during 2016–2022 reached US\$ 3.361 million, with 88 percent of fossil energy financing and 12 percent of renewable energy financing.

Among the 12 banks, HSBC has the most considerable portion of renewable energy financing from the total financing it distributed. Of the US\$ 582 million disbursed financing, the portion of renewable energy financing reached 20 percent, the highest among the 12 other banks. Meanwhile, OCBC NISP has the least portion of renewable energy financing (1 percent) of the total energy financing it distributed.

Furthermore, Figure 15 below compares the financing received by the largest energy companies and the allocation of financing for each energy sector during 2016–2022. The graph explains that the State Electricity Company (PLN) dominates financing for fossil and renewable energy, with a total financing of US\$ 14,16 million.

Figure 15. The largest companies receiving loans and underwriting (2016-2022)



Source: various (processed)

Besides PLN, other companies have had renewable energy projects. As in the graph above, Pertamina and Barito Pacific received renewable energy financing, which means the two companies had renewable energy projects, even though the financing value was much smaller than PLN.

5.2. Bonds and Shares Ownership

Data as of December 2022 shows of the 12 banks studied, it was found that only Bank Mandiri and Malayan Bank had investments in energy companies. Bank Mandiri was recorded to have an investment value of US\$ 15.2 million in the Pertamina group company, while Maybank invested US\$ 1.7 million in the Darma Henwa group company. Table 7 below shows that all investments were attributable to fossil energy (oil & gas and coal).

Table 10. Ownership of bonds and shares of Bank Mandiri and MayBank in energy companies (in US\$ million)(December 2022)

| Investor Parent | Group | Coal | Oil and gas | Wind | Solar | Geothermal | Hydro | Other non-fossil | Total |
|-----------------|-------------|------|-------------|------|-------|------------|-------|------------------|-------|
| Bank Mandiri | Pertamina | - | 15,2 | - | - | - | - | - | 15,2 |
| MayBank | Darma Henwa | 1,7 | - | - | - | - | - | - | 1,7 |
| Total | | 1,7 | 15,2 | - | - | - | - | - | 16,8 |

Source: Refinitiv, 2022 (processed)

Apart from investments from the financial services sector, it was found that there were non-bank financial services institutions that were attributable to energy companies. Table 11 below shows that these financial institutions did not have a proportion of investment ownership in renewable energy companies. Of all the financial institutions listed, only BPJS Employment and Sucorinvest Inti Investama invested in coal and oil and gas, and the remaining institutions 100% invested in the coal sector. Table 10 and 11 show that financial service institutions, both banks and non-banks, have yet to be interested in investing in the renewable energy sector business.

Table 11. Non-bank financial services institutions bonds and shareholdings in energy companies (in US\$ million)(December 2022)

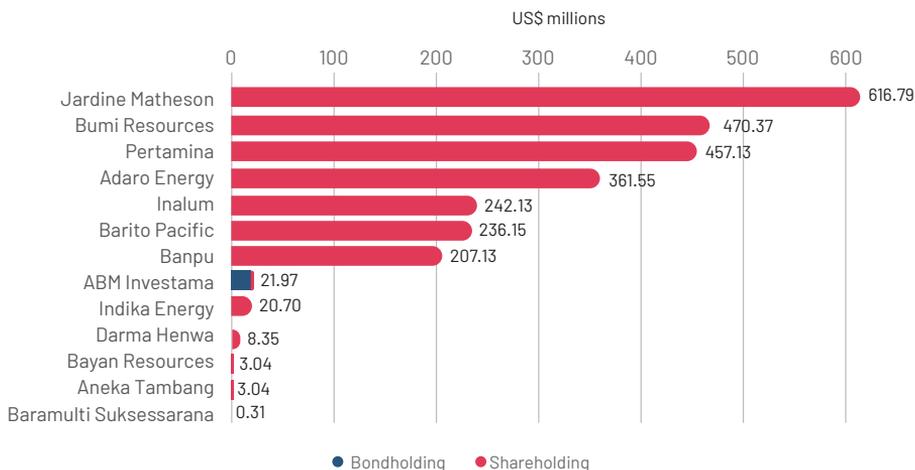
| Investor Parent | Coal | Oil and gas | Wind | Solar | Geothermal | Hydro | Other non-fossil | Total |
|----------------------------|------|-------------|------|-------|------------|-------|------------------|-------|
| Bpjs Ketenagakerjaan | 47,7 | 108,7 | - | - | - | - | - | 156,4 |
| Taspen | 49,6 | - | - | - | - | - | - | 49,6 |
| Sucorinvest Inti Investama | 14,2 | 18,2 | - | - | - | - | - | 32,4 |
| Intercipta Sempana | 7,7 | - | - | - | - | - | - | 7,7 |
| Pool Advista | 3,5 | - | - | - | - | - | - | 3,5 |

| | | | | | | | | |
|------------------------------------|--------------|--------------|----------|----------|----------|----------|----------|--------------|
| Pan Arcadia Capital | 0,8 | - | - | - | - | - | - | 0,8 |
| Polaris Investama | 0,7 | - | - | - | - | - | - | 0,7 |
| Prospera Asset Management | 0,5 | - | - | - | - | - | - | 0,5 |
| Batavia Prosperindo Aset Manajemen | 0,5 | - | - | - | - | - | - | 0,5 |
| MNC Investama | 0,3 | - | - | - | - | - | - | 0,3 |
| Total | 125,6 | 142,1 | - | - | - | - | - | 267,6 |

Source: Refinitiv, 2022 (processed)

Based on data obtained from Refinitiv (2022), investments made by financial institutions flowed to 13 energy companies, as shown in Figure 16. Based on the type, most of the investments were made in shareholding; only a small portion of investments was in the form of bonds, and it was only on the ABM Investama group.

Figure 16. Groups of companies receiving investments, by types of investments (December 2022)



Source: Refinitiv, 2022 (processed)



5.3. The biggest energy projects in Indonesia

Judging from the value of the project, financing for renewable energy projects in Indonesia is still dominated by financing for fossil energy projects. Of the top five renewable energy project financing, the Pertamina Geothermal Energy Refinancing 2021 project is the largest, valued at US\$ 800 million. Compared to financing the fifth largest fossil energy project, Piton 3 Power Plant Refinancing 2017, valued at US\$ 2,754 million, the Pertamina Geothermal Energy Refinancing 2021 project is still much smaller. Figure 17 displays Indonesia’s five largest fossil energy projects during 2016-2022. Meanwhile, Figure 18 displays the five largest renewable energy projects.

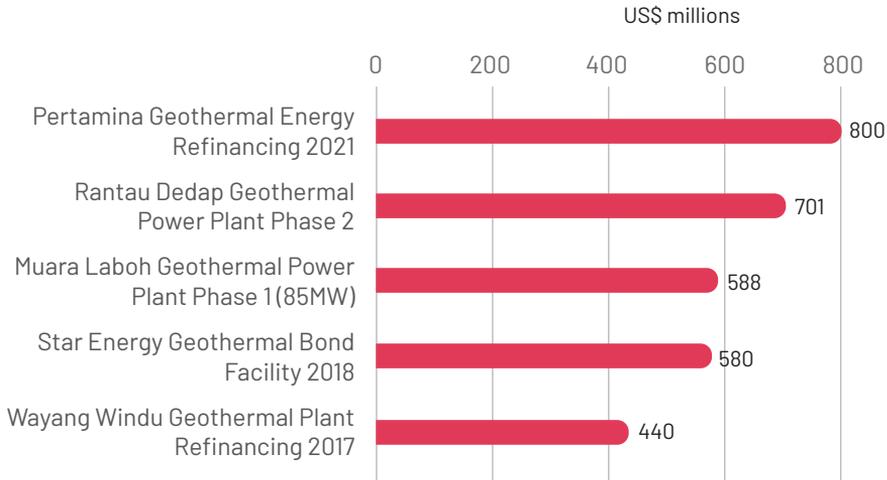
Figure 17. The five largest fossil energy financing projects in Indonesia (2016-2022)



Source: IJ Global, 2016-2022 (processed)

Figure 17 shows Indonesia’s five most significant fossil energy projects during 2016-2022, four of which are on the island of Java. Only the Tangguh LNG Expansion project is outside Java Island, to be precise, in Bintuni Bay, West Papua. This illustrates how high the disparity in electricity supply between regions is in Indonesia, which is genuinely Java-centric. So, it is unsurprising that the electricity surplus experienced by PLN is in Java. Meanwhile, some areas outside Java are still experiencing a shortage of electricity supply.

Figure 18. The five largest renewable energy financing projects in Indonesia (2016-2022)

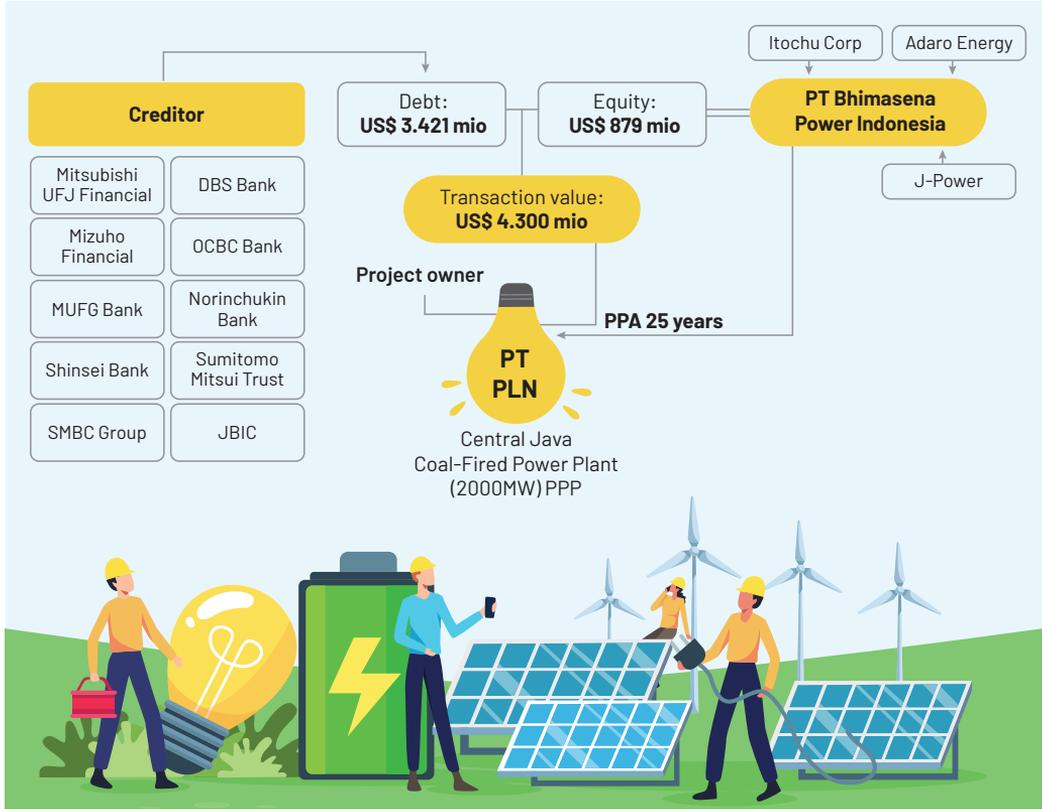


Source: IJ Global, 2016-2022 (processed)

Figure 18 above shows that Indonesia’s geothermal sector dominated renewable energy projects. Of Indonesia’s five largest renewable energy projects during 2016-2022, not a single renewable energy was sourced from energy other than geothermal (wind, solar, water/hydro, and others). In fact, the potential for renewable energy in Indonesia, which comes from sources other than geothermal, is enormous.

Furthermore, this research also looks at the financing flow of Indonesia’s most significant energy projects for both fossil energy and renewable energy based on the financing data above. For fossil energy, we analyzed the flow of financing for the Central Java Coal-Fired (2,000MW) PPP project located in Batang, Central Java, as shown in the following figure.

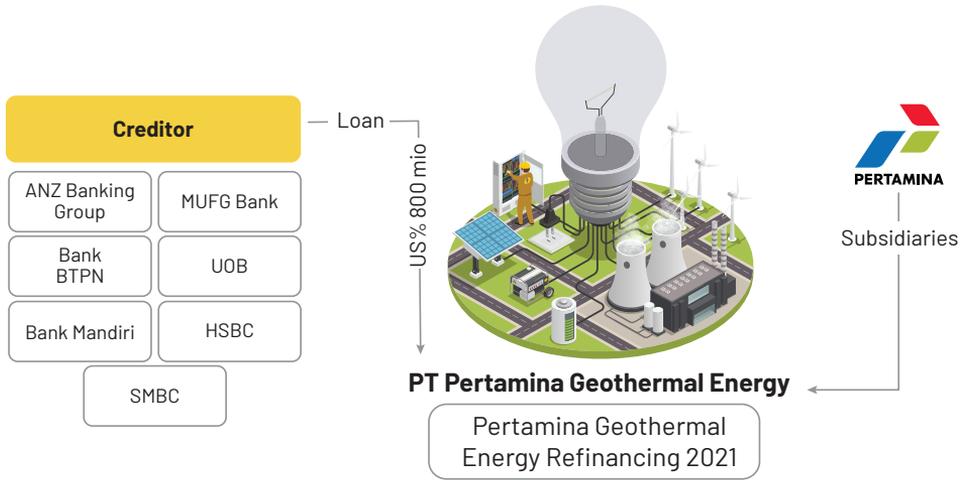
Figure 19. The flow of financing for the Central Java Coal-Fired (2,000MW) PPP project



Source: IJ Global, KPPIP, dan BPI (processed)

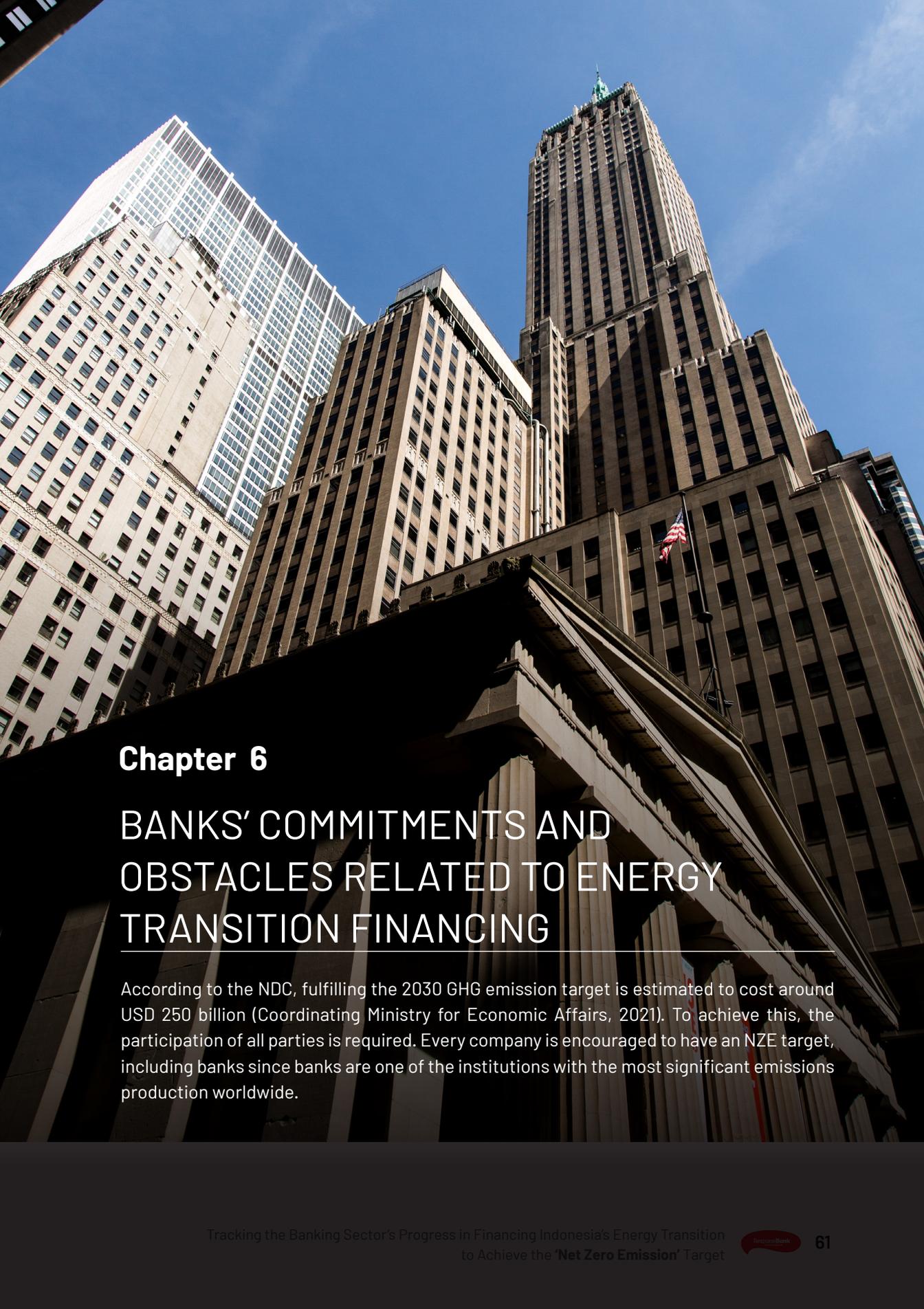
PLTU Batang was built on two financing schemes: loans and equity. Based on Figure 19, it was recorded that ten financial institutions provided loans to this project, 8 of which came from financial institutions from Japan and two came from financial institutions from Singapore (DBS Bank and OCBC Bank). PLTU Batang was constructed and operated by PT Bhimasena Power Indonesia as a consortium company formed by three companies, namely Electric Power Development Co., Ltd. (J-Power) with 34 percent equity, PT Adaro Power (Adaro Power) with 34 percent equity, and ITOCHU Corporation (ITOCHU) with 32 percent equity, to supply electricity to PT PLN (PT BPI, 2016). The financing value of US\$ 4,300 million was obtained from transaction data for 2016 (IJ Global, 2022). Based on information from the Committee for the Acceleration of Priority Infrastructure Provision (KPPIP), the construction phase of PLTU Batang began in 2016 and will start operating in 2020.

Figure 20. The financing flow for the Pertamina Geothermal Energy Refinancing 2021 project



Source: IJ Global 2021 and PT PGE 2021 Preliminary Prospectus (processed)

As for renewable energy, the flow of financing in the form of loans by financial institutions for the Pertamina Geothermal Energy Refinancing 2021 project can be seen in Figure 20. The total loans flowing to the project in 2021 were recorded at US\$ 800 million. The project was carried out by PT Pertamina Geothermal Energy as a subsidiary of PT Pertamina Persero. National banks were involved in the loan syndication, namely Bank BTPN and Bank Mandiri; the rest came from foreign bank subsidiaries operating in Indonesia.



Chapter 6

BANKS' COMMITMENTS AND OBSTACLES RELATED TO ENERGY TRANSITION FINANCING

According to the NDC, fulfilling the 2030 GHG emission target is estimated to cost around USD 250 billion (Coordinating Ministry for Economic Affairs, 2021). To achieve this, the participation of all parties is required. Every company is encouraged to have an NZE target, including banks since banks are one of the institutions with the most significant emissions production worldwide.

6.1. Banks' Climate Change Commitments

Indonesia is committed to reducing carbon emissions following the 2015 Paris Agreement to achieve a sustainable future. The country is committed to contributing to limiting global warming not to exceed the 2-degree Celsius threshold and to making maximum efforts not to exceed 1.5 degrees Celsius. Indonesia has also declared a new emission reduction target. In the latest NDC document, the emission reduction target is 31.89% in 2030, with an international support target of 43.20% (Indonesia.go.id, 2022).

According to the NDC, fulfilling the 2030 GHG emission target is estimated to cost around USD 250 billion (Coordinating Ministry for Economic Affairs, 2021). To achieve this, the participation of all parties is required. Every company is encouraged to have an NZE target, including banks since banks are one of the institutions with the most significant emissions production worldwide. Any financing provided can generate emissions.

In addition, the banking sector is also a strategic actor in accelerating the energy transition. Banks can contribute to financing green projects, sustainable development, facilitating carbon trading, issuing green bonds, or other financing schemes such as green sukuk or green climate funds.

This study assesses the policies held by banks in terms of three themes: climate change, biodiversity, and power generation. The followings are the results of the rankings on 13 banks for each theme and the analysis of the field findings

6.1.1. Climate Change Theme

The reduction of global carbon emissions has now begun to be strictly regulated, so the business world will also play a role in reducing CO₂ emissions. One of the most influential business sectors is financial institutions because they are one of the providers of funds for energy projects. Financial institutions can play an essential role by directing their investments toward a low-carbon economy.

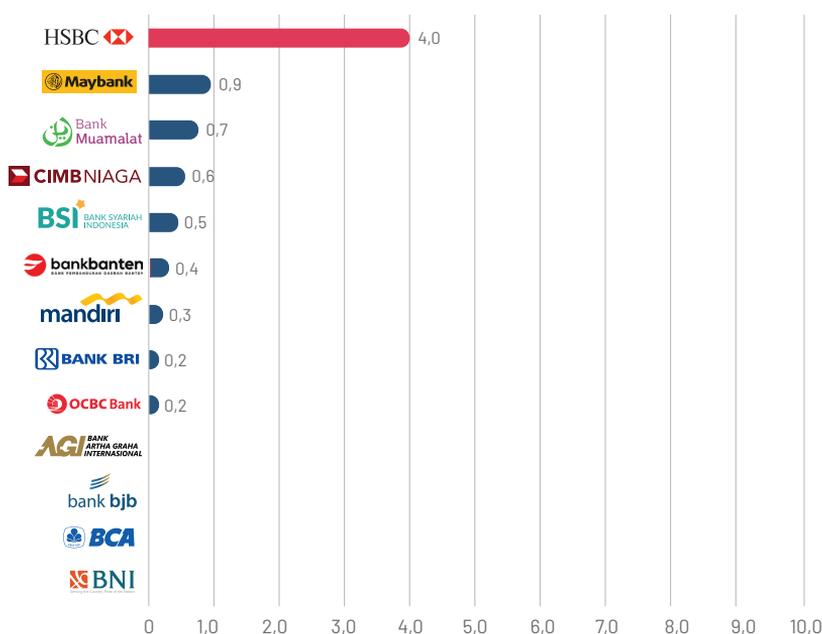
In this study, the financial institutions, especially the banking sector, are banks that are members of the Indonesian Sustainable Finance Initiative (IKBI). In this theme, banks are expected to apply CO₂ reduction standards that align with the United Nations (UN) goals, which aim to reduce global warming. Assessment was carried out on several elements related to financial institutions' internal operational policies and investment policies in considering the entities/companies they provide loans. In more detail, the elements contained in the climate change theme can be seen in the appendix.

On the climate change theme, 9 out of 13 banks affiliated with IKBI gained scores. The three banks that received the highest scores were HSBC Indonesia, Maybank Indonesia, and Muamalat. In the first place, HSBC Indonesia scored 4.0 (out of a maximum of 10). This bank, as part of HSBC International, has a consistent policy; where in HSBC Indonesia's

climate strategy (2020), it is written that the bank will make its operations and supply chain zero-emission no later than 2030 and align emission financing from the customer portfolio with the aim of the Paris Agreement, namely zero emission no later than 2050.

HSBC earned several points automatically for project financing for implementing the International Finance Corporation (IFC) Performance Standards as part of its Equator Principles membership. In critical sectors (oil and gas, thermal coal), HSBC has encouraged companies/clients to have a transition/decarbonization and phase-out plan. HSBC aims to increase the renewable electricity for operations to 100% by 2030 and align financed emissions with the Paris Agreement goal of net zero by 2050. However, there are no additional points for freehold assets and asset management, as there is only a general net zero commitment by 2050 for asset management. In addition, the bank has also set funding emission targets and conducted climate reporting according to the Task Force on Climate-related Financial Disclosures (TCFD).

Figure 21. IKBI bank assessment results based on natural elements



Source: processed from research

Maybank was ranked 2nd and got scores on only three elements, such as for its operational activities. The bank has policies and efforts to reduce its greenhouse gas emissions, both directly and indirectly. Internal policies such as reducing the use of operational cars and switching to online taxis for Bank operations, implementing green offices, and the Maybank Group Sustainability Framework 2021 have become commitments to achieve a Carbon

Neutral position in 2030 and a Net Zero Carbon Equivalent position in 2050. Maybank has also committed to avoiding financing new borrowers who are involved in activities related to thermal coal and coal.

The third rank was occupied by Bank Muamalat, which scored 0.7. Bank Muamalat's sustainability report (2021) explicitly states that the bank has stopped financing in the coal-related sector since 2018. Apart from emphasizing its attitude towards coal financing, internally, this bank has also taken a policy to avoid financing projects that endanger the environment. However, it has not explicitly referred to IUCN categories 1-4 or protected areas designated by UNESCO.

Based on the in-depth interviews conducted, several banks have started implementing practices to address climate change through internal policies and encouraging customers to participate in reducing emissions or by using environmentally friendly products. One of the informants stated that increasing the bank's internal awareness is the first step in what they are doing to contribute to climate change, considering that the understanding of sustainability is also unknown to many internal resources.



When asked about climate change, at CIMB Niaga, we are only at the awareness stage. How do you think climate change will impact our business? So, in the last two years, we have created more awareness about sustainability first. You don't have to go all the way to climate change; not even many understand sustainability itself. So, there are many ways that we have been doing to create awareness.

(MH, Sustainability Unit - Cimb Niaga)

MH also stated that CIMB Niaga already has a sustainability roadmap with five pillars and has socialized it to all employees. Awareness building among banking employees is then measured and included in key performance indicators (KPI) and sustainability champion awards. Thus, the banking sustainability report section assess and include employees who contribute to activities that support sustainability. This is done not only at the employee level but also at the board of directors and leadership levels. A source from Bank BRI also stated the bank's internal commitment:

“

We start from ourselves; one way [is] we can reduce electricity consumption significantly, use paper, and sort waste. And another example, as far as I know, that BRI has been doing is replacing official vehicles with electric vehicles; it's easier to buy electricity, and it's also low-cost there. That's what we do internally

(NR, BRI)

Apart from the internal side, both BRI and CIMB Niaga, the informants in this study, stated that they had tried to encourage customers to reduce emissions and use environmentally friendly products. BRI does this by encouraging the reporting of carbon emissions by their customers and emphasizing that this is long-term in nature, as has been done in developed countries.

“

One of the products that we will make is a product for carbon capture from our customers. So, our customers, hopefully, can calculate their carbon emissions. Carbon capture for customers is a long-term project, like how can our customers in the future have a requirement that they must report their carbon emissions. Well, it has already been implemented in American and European companies. When we enter blockchain products, the hope is that everyone can regularly report 'oh our carbon emissions are this much' as a form of transparency that the company's sustainability report is accurate, which will be used as one of the considerations for investors.

(NR, BRI)

Meanwhile, CIMB Niaga has a project that encourages its customers to promote sustainability in various ways, including providing incentives in the form of price discounts for those who succeed in achieving sustainability performance targets.



That's why at the end of 2020, CIMB Niaga Syariah made a project called Abipraya, which means having hope. In this project, we have nine initiatives to get our customers involved in supporting the sustainability program. There is green-licensed housing financing, then financing for electric motorbikes, electric cars, and the purchase of solar panels; [for] financing for MSMEs and commercial, we have sustainable financing – sustainable link financing. So, we try to invite our customers to join us if they implement the Sustainable Performance Target; if they achieve it within one year, then next year, we will give them a rebate. Then we offer a savings product with waqf prizes, in which we distribute the waqf to build clean water wells in places that don't have clean water sources or drought areas.”

(MH, Sustainability Unit - Cimb Niaga)

Climate change commitments are being realized from the efforts made by the two banks. These realizations can be seen in the issuance of environmentally friendly oriented financial products.

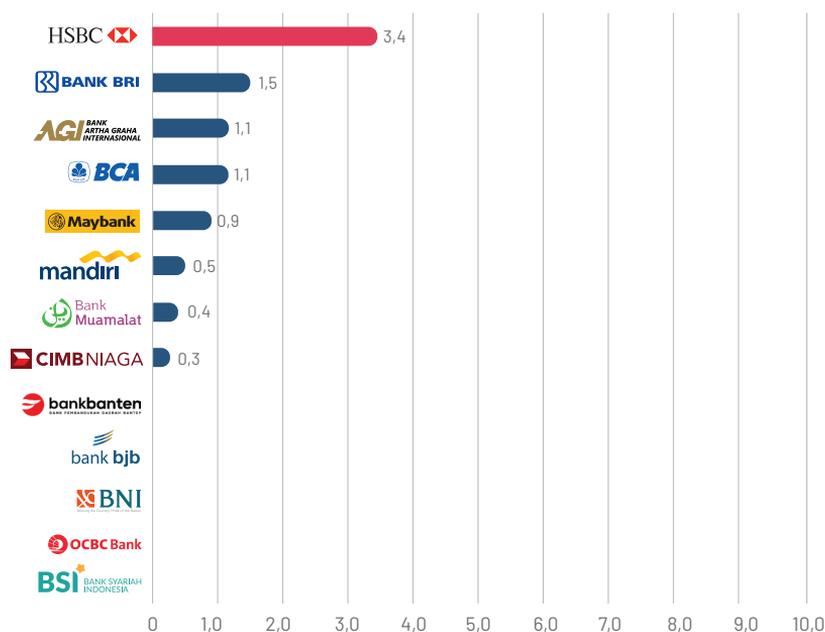
6.1.2. Nature Theme

Financial institutions can affect the sustainability of nature, primarily if they invest in industries that have the potential to cause severe impacts on biodiversity, such as forestry, extractive industries, oil and gas industries, fisheries, water supply and infrastructure, and industries that use genetic material such as agriculture, biotechnology, medical and cosmetic industry. Protecting nature is included in efforts to maintain the sustainability of the environmental ecosystem. To respond to risks to nature and other threats to biodiversity, financial institutions must develop an investment policy that aligns with international conventions and national policies. In managing environmental and social risks, the private sector is also required to participate, as stated in Law 32 of 2009, which regulates the obligation of the industry to protect nature and the environment.

On the nature theme, 8 out of 13 banks gained scores. The three banks that received the highest scores were HSBC Indonesia, Bank BRI, and Arta Graha. In the first place, HSBC Indonesia scored 3.4 (out of a maximum of 10). HSBC Indonesia has several policies as a commitment to protect biodiversity. HSBC Indonesia's annual report (2021) states that the bank consistently encourages oil palm plantations in Indonesia to stop deforestation practices and apply a sustainable framework. In addition, it was reported that HSBC Indonesia assists its debtors in understanding and managing their environmental and social

impacts. The bank also has a sustainability risk policy that covers the agricultural, chemical, defense, energy, forestry, mining, and metal commodity sectors, as well as UNESCO World Heritage Sites and Ramsar wetlands. It has also applied the Equator Principles in providing project funding.

Figure 22. IKBI bank assessment results based on natural elements



Source: processed from research

BRI is the second-ranked bank with a score of 1.5. On the nature theme, the sustainability report (2021) states that BRI has developed an environmentally friendly financing policy for the palm oil sector and pays attention to the social aspects of palm oil financing, including mapping plantation areas to avoid overlapping with surrounding communities and conservation areas. BRI’s palm oil debtors are required to have Indonesia Sustainable Palm Oil (ISPO) and Roundtable Sustainable Palm Oil (RSPO) certifications. This requirement applies to all debtors of business actors, both large and small. The bank is also committed not to providing credit financing for businesses that damage the environment, such as national parks and historical heritage, nor does it support financing for land acquisition activities through violence. Further, the bank does not finance debtors’ activities and businesses that can damage UNESCO World Heritage Sites.

Bank Arta Graha secured the third rank with a score of 1.1. In the 2021 sustainability report, through Artha Graha Cares in collaboration with the Bukit Barisan Selatan National Park Center (TNBBS) and the Bengkulu Natural Resources Conservation Agency, Bank Arta

Graha optimized the management of the Bukit Barisan Selatan National Park in the southern tip of Sumatra Island. Then, in the same document, it is reported Bank Artha Graha does not finance business activities that do not meet sustainable business activities, such as illegal production or trading of products or activities against Indonesian regulations or international conventions/agreements, including ozone-depleting substances, wild animals, or products under CITES². Another practice demonstrated was the presence of TWNC conservation officers in Pesisir Barat Regency, Lampung, on a mission to rescue and release one hawksbill turtle (*Eretmochelys imbricata*) and one dugong to CAL BBS. Both animals are protected and included in the endangered species list by the IUCN.



6.1.3. Power plant theme

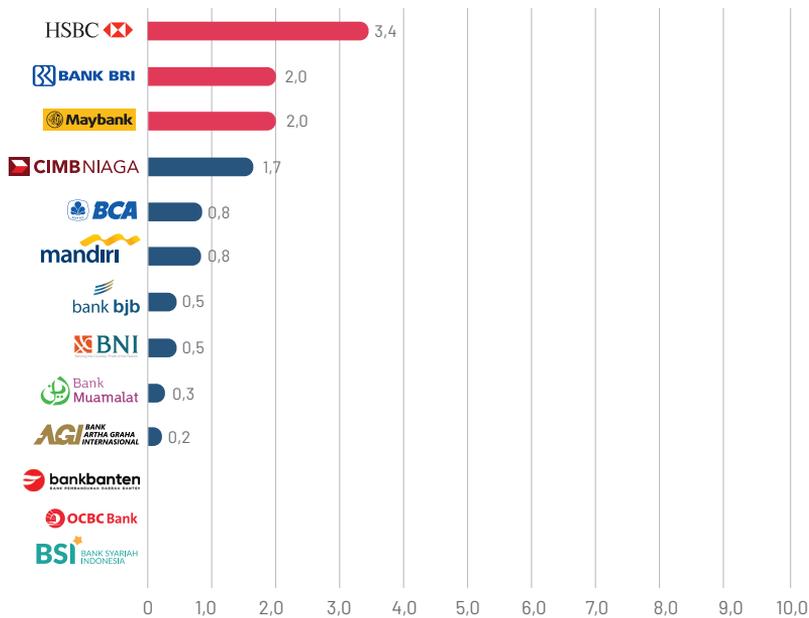
Power plants are vital to meet the needs of society. Energy, including electricity from power plants used for businesses, households, and transportation, is the largest source of human-made greenhouse gas emissions (64% of all global emissions). Power plants are a critical component in efforts to achieve sustainable development goals.

Financial institutions investing in the energy sector should carefully consider how they can direct their investments to support the transition to a low-carbon economy, in line with the roadmap suggested by the IPCC. They can choose to finance renewable energy generation specifically or set a clear roadmap to reduce financing of controversial fossil-fuel energy sources and replace them with low-carbon financing.

On the power plant theme, 10 out of 13 banks scored. The three banks that received the highest score were HSBC Indonesia, BRI, and Maybank Indonesia. In first place, HSBC Indonesia scored 3.4 (out of a maximum of 10). This score was earned because HSBC already has a good financing policy for the power generation sector. In its internal policy, HSBC has measurable targets to increase financing for renewable power plants and reduce financing for fossil fuel-based power plants. HSBC is also committed to no longer financing power plants originating from steam (coal), nuclear energy, and large-scale hydropower.

In its 2021 sustainability report, HSBC Indonesia also stated that it acted as Lead Arranger for a bridging loan of US\$800 million. HSBC contributed US\$140 million to PT Pertamina Geothermal Energy to help Indonesia expand its renewable energy as part of the transition towards net zero emissions. The bank, in 2021, also launched a five-year project to accelerate the use of renewable energy and encourage the private sector to invest in supporting the transition to renewable energy with an emphasis on Indonesia's commercial and industry sectors

Figure 23. IKBI bank assessment results based on power plant elements



Source: processed from research

Bank BRI is in second place with a score of 2. BRI received this score because, in the 2021 sustainability report, the bank reportedly contributed to new and renewable energy (EBT) through lending to Hydropower Poso Energy for US\$ 35 million and Kerinci Merangin for US\$ 10 million. BRI supports increasing the EBT mix through the Hydro Power Plant (PLTA) project. The portion of renewable energy financing increased from IDR 4.7 trillion to IDR 5.6 trillion in 2021. BRI is also committed not to providing loans to businesses that damage the environment, such as destroying national parks and historical sites. It also does not support financing for land acquisition activities through violence and activities and businesses that can damage UNESCO World Heritage Sites.

Maybank occupied the third position with a score of 2. The bank has provided financing to the renewable energy sector following the principles of ESG. It also already provides financing for motorized vehicles with electricity and hybrid power and purchasing bonds under sustainable finance principles. Furthermore, Maybank has an Action Plan for the Implementation of a Sustainable Finance Plan, which consists of extending credit to customers to finance renewable energy projects and their supporters; in which to achieve this, Maybank determined the achievement of indicators by the end of 2022. Maybank also has a blocklist of activities, i.e., the production or trade of radioactive materials, including nuclear power generation and related services for which a score is assigned.

Several other banks, such as CIMB Niaga, have also committed to being more selective in financing companies to prevent environmental damage. This is because the bank received encouragement from the government, as in the following statement:



We may have previously financed companies engaged in the coal sector. [But,] now in the future, we will have started selecting and have issued policies that regulate that this financing will be directed towards being environmentally friendly. We are cautious about providing financing to companies that damage the environment – we have been [very careful] because there are already policies we must follow.

(MH, Sustainability Unit - Cimb Niaga)

MH also said that currently, his party is actively looking for companies engaged in the renewable energy sector as directed by the Financial Services Authority (OJK) so that customers whose businesses are headed there will be supported with financing.

Despite having sustainable policies and several encouraging practices presented in the Sustainability Report based on three assessment themes, the 13 Indonesian banks that were the object of research were inseparable from criticisms from parties outside the banking sector. Two things that have been in sharp focus/criticisms of banks are the gap between financing commitments and practices and the issue of greenwashing.

National banks in Indonesia have indeed started financing the renewable energy sector. It is only that this has not been supported with targets or commitments to get out of fossil financing immediately. In addition, banks have yet to have emission reduction targets in financing and investment activities that align with the Paris Agreement targets in bank documents.

Banks in Indonesia do not have detailed policies yet regarding commitments to reduce financing for dirty energy or stop financing for energy with high emissions. The International Energy Agency (IEA), in its document, clearly states that to reach the NZE, one of the ways is there must be no new investment for the construction of coal-fired power plants (IEA, 2021).



Looking at the sustainable finance reports, most of them [banks] include the Micro, Small, and Medium Enterprises portfolio into sustainable finance. If we dissect it, the renewable energy portfolio may be minimal. In terms of fossil financing, they do not declare the number of high-emission credit portfolios. They also do not have a policy that says they will stop financing coal; that doesn't exist at all, right. Meanwhile, let me take the closest example, Malaysia. In that case, Malaysian CIMB has already mentioned that there is still a coal portfolio now, but towards 2040, they are now reducing [the coal portfolio]; so, by 2040, it will be zero, and they will no longer want to have a coal portfolio in 2040. Then they also said that they would no longer be financing new ones.

“(BB, Marketforce)

In addition to the gap between commitments and financing practices, banks in Indonesia are also considered to be practicing greenwashing. There has not been a national banking policy that states that banks will leave high-emission financing in their documents, even though banks have stated that they have implemented the environmental, social, and governance (ESG) pillars. An example is PT Bank Negara Indonesia (Persero) Tbk or BNI, which claimed to strengthen commitment in the green banking segment by offering green bonds of up to IDR 5 trillion. BNI also claimed they are a pioneer of green banking and are the first national bank to issue green bonds denominated in rupiah (BNI, 2022). A bank must be free from dirty coal energy funding to be considered green banking. Meanwhile, in BNI's 2021 Annual Report, coal mining and trading was one of the businesses given jumbo loans.

6.2. Barriers and Challenges to Renewable Energy Development on the Regulatory Side

Issues of regulation, funding, infrastructure, geographical conditions, and political dynamics dominate the obstacles to renewable energy development. Regulatory planning or development of renewable energy as the primary power generation source is complex. Especially regulations at the technical level include the Electricity Supply Business Plans (RUPTL), which often changes, although the planning is for ten years, where it has the potential to disrupt the energy transition strategy. PLN's strong position in determining power generation projects in the RUPTL, and as the sole off-taker, makes it seem that investors or funders are resigned to PLN's policies. PLN has become the gatekeeper in the electricity business market structure in Indonesia.

PLN is not the only institution managing renewable energy development in Indonesia. Many parties are involved, starting from regulators and executors such as the Ministry of Finance, Ministry of Energy and Mineral Resources, Ministry of State-Owned Enterprises (BUMN) and Minister of Investment/BKPM, PLN, PT SMI and Indonesia Endowment Fund (BPDLH), and banks who are BUMNs. Then there are the private sector such as developers, banking or insurance, and philanthropic institutions as fund distributors. Unfortunately, the coordination problem between stakeholders in Indonesia is also one of the inhibiting factors in developing the energy transition in Indonesia. Each actor has rules or policies, even though there are already rules above them that must be implemented together.

Coordination is one of the essential management functions after planning. This determines how planning can be carried out synergistically according to the planning lines.

“

Coordination between ministries sometimes has a lot of things that we both need to fix. Don't let the policy become unstable. The policy could be more useful when it comes to today's issues (for example, rooftops). The Ministry of Energy and Mineral Resources says this way; the BUMNs say that way. So, who is the 'king' in Indonesia? It will always be the same question. So, we can't flash out a stable policy yet.

(PA, IEEFA)

Among developers or investors, including banks, unaligned regulations from the Ministry of BUMN make it difficult for them to move; there is no certainty about the project because PLN does not conduct regular tenders.

“

Sometimes in practice, we see decisions related to renewable energy issued by ESDM, and they cannot be easily applied in the field. What's more, it has been complicated by the regulation that electricity can only be sold to PLN. In this case, it makes the IPPs more rigid. Why? We can only sell to PLN, and PLN has its own rules and regulations, which sometimes confuse us as business people in the field.

(NA, Executive Director of Renewable Energy Company).

However, obstacles to renewable energy development regarding the institutional aspect are not only encountered by state institutions and technical business entities. Inadequate knowledge of financing risks in applying the precautionary principles by financial institutions also has the potential to become a barrier to renewable energy development. In general, financial institutions have yet to see the risks and benefits of renewable energy financing.



The [level of] comprehension has not been similar between financial service institutions. There are those who are well-informed; there are those who really need to learn, which means they have very little knowledge about sustainable finance.

(AH, LPEM UI)

Following Presidential Decree 112 of 2022 concerning the Acceleration of the Development of Renewable Energy for the Provision of Electricity, it is hoped that it can overcome coordination problems between institutions. However, only the Ministry of Finance and the Ministry of Business Entities will prepare the energy transition roadmap, as in Article 3, paragraph (2) of the Decree. It does not mention the involvement of other parties outside the government. In fact, in preparing the road map, the involvement of stakeholders or parties is critical, considering that this road map concerns the needs of the whole community at large, not only in terms of investment. The energy transition roadmap needs to involve relevant ministries, state enterprises, state-owned and private banks.

6.3. Barriers and Challenges to Financing the Energy Transition on the Banking Side

The distribution of green financing by banks is certainly not without challenges. At least six challenges exist in encouraging banks to play a more significant role in financing a just energy transition (Katadata, 2020). First, there is a need to increase banking awareness of the importance of climate crisis mitigation and sustainable financing. Second, the green finance ecosystem is still undeveloped. Third, banking regulations, frameworks, and standards for green products (green products) are not yet massive. Fourth, there is a need for green financial commitments nationally by banks in Indonesia. Fifth, there are additional costs in implementing ESG, both tangible and intangible. Sixth, there is a need to develop effective incentives in line with banking needs.

In addition to the challenges and barriers above, this research found several obstacles and challenges in accelerating banking to help promote the energy transition. Obstacles

and challenges found in the research are classified based on three aspects: the aspect of policy and regulation, the aspect of corporate financing, and the aspect of individual customer financing.

6.3.1 Obstacles and Challenges for Banks from Policy or Regulatory Aspect

6.3.1.1. Policies and Regulations Yet to Become a Catalyst

The regulatory environment for renewable energy in Indonesia is still considered not to provide the same benefits as policies for fossil energy. Even though there has been a sustainable finance policy from the OJK, the energy policy itself has yet to be able to encourage banks to finance more renewable energy. The existing regulatory ecosystem is not in harmony between sectoral policies and policies governing banking.



So actually, there should be harmony between sectoral policies and policies in banking so that from a sectoral perspective, the prospects for the renewables business are better than fossils. In financial service institutions, it is also going in that direction.

(AH, LPEM UI)

According to JG, Professor of Sustainability Accounting at Trisakti University, banks will comply if there is a more explicit policy that regulates or provides guidance on strategy, mechanism, risk assessment, and return on investment to a target. Policies made by the government are expected not only at the appeal level but at the enforcement level so that they will have more impact on the banking sector and follow the results achieved by the policy. In addition, to accelerate the energy transition and address climate change, the government must be more aggressive in providing disincentives for carbon-intensive business activities and continuing to develop incentives for low-carbon businesses. In other words, the government must signal to the market and banking that the government is serious about promoting an inclusive energy transition.

6.3.1.2. Lack of Incentives for Banks

The government has provided several incentives to encourage all parties to be involved in pushing for the energy transition. The incentives provided include fiscal and non-fiscal such as tax allowances, import duty-free, and tax holidays incentives. The tax allowance policy has been regulated in Government Regulation No. 18 of 2015 in conjunction with Government Regulation No. 9 of 2016 and BKPM Regulation No. 6 of 2018. In addition, Minister

of Energy and Mineral Resources Regulation No. 16 of 2015 facilitates the deduction of net income tax (PPH) for six years by 5% annually or 30% of the investment value, covering 145 business segments eligible for tax benefits, which has been expanded from the original 129 segments.

Then, the duty-free import incentives are regulated in PMK No. 176 of 2009 jo. PMK No. 188 of 2015, PMK No. 66 of 2015, and BKPM Regulation No. 13 of 2017. Exemption from import duty applies to machinery and equipment, goods, and raw materials for production. The incentive is in the form of two years of exemption from import duty on raw materials, then an additional two years of exemption from import duty on raw materials if the company uses local production machinery and equipment of at least 30%. Meanwhile, the tax holiday policy is regulated in PMK No. 35 of 2018 and BKPM Regulation No. 1 of 2019. This regulation stipulates that investors get tax relief facilities for 5-20 years with a minimum investment of IDR 500 billion and a maximum of 100% income tax deduction. There is also a mini tax holiday incentive in which investors can get five years of tax relief facilities with a minimum investment of IDR 100-500 billion and a maximum of 50% income tax reduction.

From the incentives mentioned above, and based on interviews with the Ministry of Energy and Mineral Resources (MEMR) and banking sector, this research has yet to find a specific incentive that can stimulate banks to intensively finance renewable energy projects and environmentally friendly products. This study only found incentives from MEMR in the form of free audits for banks implementing energy efficiency. Meanwhile, banks have no special incentives to finance renewable energy and green banking products. One banker admitted that so far, the efforts made by the bank where he works to attract customers to access green financing have been to reduce the portion of the bank's profits. Therefore, he hoped for incentives from the government to banks.

“

Maybe the bank can have a special rate from the regulator, [maybe] when we provide the financing to customers. [It's like] for now, we reduce our profits right [to provide that financing]. So, maybe if there were other incentives given by the regulator to banks that, for example, have an increasing green portfolio, that would be very good. Now we are reducing our profit by sharing it with the customers. So, for example, when we can make a profit of 10, because we want the customers to be interested, to know about this program and support the government's program, we share it, the 2 points of the profit are given to customers. So, we are reducing our profits.

(MH, Sustainability Unit - Cimb Niaga)

The government needs to design incentive regulations to stimulate banks to pour out green financing. Incentives are provided, for example, by providing tax discounts for banks whose renewable energy financing portfolio has reached 30 percent.

6.3.1.3. Lack of Information on Renewable Energy Project Risks

The lack of information regarding renewable energy power plant projects is an obstacle for banks to be more progressive in increasing financing for renewable energy development. Lacking understanding about clean energy projects, project information, and high-risk perceptions (OECD, 2021, p.16) makes banks careful channeling their funding. Fransiska Oei, Compliance Director of CIMB Niaga, in an interview with Katadata (2022), stated that one of the obstacles for banks in financing renewable energy projects is the difficulty in analyzing the risks of renewable energy projects.

In addition, information on renewable energy development projects that are certain, including the size of the generating capacity to be built and the type of renewable energy sources to be built, is also information needed by banks because the type of energy and the size of the generating capacity will determine the environmental risks or impacts that arise during construction. Therefore, to overcome obstacles due to limited information and risk management, banks must have started incorporating ESG risks into financing analysis and financial risks. As has been done by CIMB Niaga as disclosed by MH as follows:



One of our pillars is related to governance and risk. We core it when setting targets. When we want to take financing, now [we] have started to include risks related to ESG. Before maybe not [like this], [we were] more [anticipative] to the financial risks that occur, but now I think the risks that have an impact on the social economy and the environment have also been incorporated.

(MH, Sustainability Unit - CIMB Niaga)

ESG risk analysis by banks is a new challenge for banks. This is because banks are used to analyzing financing risks purely financially. Moreover, banks are used to channel financing to the fossil energy sector, and channeling financing to the renewable energy sector requires a distinguishable risk analysis. Plus, banks need to include ESG criteria in addition to financial criteria.

6.3.2 Obstacles and Challenges from the Corporate Financing Side

6.3.2.1. Lack of Regulatory certainty and investor interest

The banking sector has started to state various commitments and programs to support green financing according to the government's climate mitigation targets and consumer encouragement (public and companies). Private companies and banks continue to be encouraged to invest in green projects. Still, several sources, both banks, and Independent Power Producers (IPPs) acknowledged that there are not many large-scale renewable energy projects in Indonesia.

Bank funding is expected to start coming in when there is a strong push from the government to open various renewable energy projects. Renewable energy projects have not developed much in Indonesia because they are still not attractive to investors from the perspective of current policies. The existing policies are unstable and can change anytime, and determining renewable energy tariffs is not competitive enough. When the government makes firm policies and can encourage the formation of various green projects or renewable energy, then banks will enter.



For example, an investor or bank wants to fund a solar rooftop project at a particular factory. They say, 'oh yes, it looks like Indonesia is starting to be prospective, the government issued a regulation regarding 100% rooftop solar', for example. But one month later, PLN say, oh no, we cannot accept it. So, if we become investors or banks, policy instability like this will inevitably return to the investment costs, which continue to rise. So maybe our context is that the current financing regulation is starting to be positive, but the answer from the banking sector will always be which project and whether the policy is stable or not

(PA, IEEFA)

With regulatory certainty and clear information about renewable energy projects, investor interest will rise, which will undoubtedly impact the stability of renewable energy development gradually. Under such circumstances, banks will be stimulated to enter the renewable energy financing market, both in the upstream and downstream sectors.

PA emphasized that unstable policies that can change at any time will increase the burden on investments made and are, of course, unattractive for banks to conduct financing. To achieve the targets in RE development, regulations are needed that can provide business certainty and security, including determining the purchase price of RE electricity that is more attractive without having to worry about policies that can change at any time. JG, a

professor of sustainable accounting at Trisakti University, also stressed that the conditions of renewable energy are unstable; for example, the geothermal and solar panel markets are still very small. Also of concern is behavior change for climate change mitigation.

6.3.2.2. Carbon Tax Rates Not Yet Attractive for Banks

The Government of Indonesia and the DPR passed the Law on the Harmonization of Tax Regulations (UU HPP) in 2021. This policy regulates, among other things, the imposition of a carbon tax to support international commitments to tackling climate change.



Unfortunately, the plan to impose a carbon tax rate has been postponed, and the value of the tax rate has yet to be progressive. Chapter IV of the HPP Law Article 13 explains that the carbon tax rate is set at Rp 30 per kilogram of carbon CO₂e, much lower than Singapore, which has a tariff of US\$ 3.71 per tonne of CO₂e or US\$ 0.0040 per kilogram of CO₂e or around Rp. 56.89 per kilogram of CO₂e.

This is regardless of the number of emissions produced by Indonesia being far above Singapore. The carbon tax rate of IDR 30 per kilogram of CO₂e carbon is a step forward, but the rate is still too low. Ideally, the tariff is IDR 75-100 per kilogram of CO₂e carbon (PRAKARSA, 2021). The low carbon tax rate is also affirmed by NR, a Manager Level Officer at BRI, who said the current carbon tax rate is unattractive to the market.

Europe and Singapore, for example, have implemented tax credits for renewable energy, while Indonesia has not implemented such a policy. NR also stated that the government is expected to be able to create a more attractive investment ecosystem for projects in the renewable energy sector or fields that have a significant impact on sustainable development, one of which is by increasing carbon tax rates.

“

Suppose the carbon tax was high; for example, for every ton wasted, we equated it to Switzerland at Rp. 1 million, so people may begin to think about it. But if the carbon tax is only Rp. 30 per kilogram of CO₂e, then it's not interesting. If one ton of carbon is only priced at Rp. 30 per kilogram of CO₂e, the cost for ratification alone is already very expensive, right? So the hope is that the carbon tax will increase as much as possible, for what? So that what is behind it is attractive for renewable energy.

(NR, BRI Manager Level Employee)

6.3.2.3. Renewable Energy Financing Not Yet Profitable

Coal early retirement is one of the efforts made to achieve NZE. However, stopping coal-fired power plants in Indonesia will likely take longer. This is because energy consumption in Indonesia is still dominated by coal energy. In addition, coal-fired power plants are also considered more profitable because of their competitive prices, while renewable energy is relatively more expensive.

Regarding profit prospects, long-term investment in renewable energy is still not promising. This is because the demand for renewable energy is still minimal. Small demand results in low cash flow streams. Investment in power plants also has a relatively long return on investment compared to other sectors.

“

For example, for the power plant business, the pay period is long; this is my view when compared with the property business, for example. The bank funds the construction of the apartment, with a construction period of, say, two years completed. After that, it's sold out; let's say 80% is sold out. For the bank, the return is certain. It's fast. For power plants, it can take 15-20 years. I think the returns or maybe the rate [in renewable energy investment] is not as high as the interest rate for consumptives, like housing.

(PR, Directorate of ESDM Electricity Program Development)

Other informants also stated that investment in the renewable energy power generation sector, which has a small production scale, is not attractive for developers and banks. Investing in large projects is considered to be fine, whereas, for projects with small values, it is considered that it will take more time and effort. This means there needs to be an early funding instrument to help reduce corporate and banking risks in financing small projects.

6.3.2.4. Assessment Of Financing Risks In Renewable Energy

Inter-institutional understanding of financial services regarding sustainable finance cannot be generalized. There are banks that are very familiar with it, there are those who do not have the slightest knowledge about it. Instruments used by banks for risk assessment currently still use a check-list system such as ownership of an Environmental Impact Management Assessment (AMDAL), and no field checks are carried out. Screening of this kind is still considered as voiding obligations or simply fulfilling documents without knowing the social and environmental impacts that will be created. Checking standards or documents should also be carried out by an assessor with a certain capacity. Such less comprehensive assessment is backgrounded by banks' lack of attention to social and environmental risks. Currently, banks are still struggling with the risk of bad credit.

Financing the construction of renewable energy plants also has risks; this is also what financial institutions are trying to understand. In contrast to coal-fired power plants (PLTU) financing, which banks are already very familiar with, to carry out green financing, banks are required look at new sectors that they might not have fully understood, including the risks and ways to mitigate the emerging risks.

Inter-institutional understanding of financial services regarding sustainable finance cannot be generalized. Some banks are very familiar with it, and there are those who do not have the slightest knowledge about it. Instruments used by banks for risk assessment currently still use a check-list system, such as ownership of an AMDAL, and no field checks are carried out. Screening of this kind is still considered as voiding obligations or simply fulfilling documents without knowing the social and environmental impacts that will be created. Checking standards or documents should also be carried out by an assessor with a specific capacity. Such a less comprehensive assessment is backgrounded by banks' lack of attention to social and environmental risks. Currently, banks are still struggling with the risk of bad credit.

“

the important thing is that the risk of repayment is controlled. [Whether] they have good sponsors of all kinds, usually the 5C, so the risks [assessed] is more [related to] credit risks. So, what financial service institutions must understand is that risks also include environmental and social risks, which might later affect the bank or financial service institution's [general] risks. Now, this is something that is not fully understood, and in fact, the bank or the financial service institution will also be affected by that.

(AH, LPEM UI)

Banks will receive losses if the loans disbursed do not return to them, so they will avoid financing on loans that are indicated as bad credit. In the context of renewable energy development, where the repayment of loans is still uncertain, banks are reluctant to finance them and prefer to finance companies with a much smaller risk of bad credit, namely companies that rely on fossil fuels. This is despite, currently, for the banking sector, there is already a climate change risk measurement. However, banks in Indonesia have not included climate change risks and calculated losses from the risks arising from the financing they do. Regardless, the impact of the climate crisis is already evident, such as ports sinking due to rising sea levels or flooding.

An incomplete understanding of sustainable development, sustainable finance, climate change, and an assessment of the risks of green financing has resulted in low bank financing for renewable energy development. Making clear guidelines, for example, from the OJK on risk assessment, is required by banks so that commitments to financing for renewable energy can increase.

6.3.3 Barriers and Challenges from the Side of Financing Individual Customers

Banks face several obstacles in selling green banking products to individual customers (consumers). Based on interviews with experts and a literature review, the main obstacle for banks in financing individual customers to purchase environmentally friendly goods is a consumer behavior that is not fully aware of climate change and renewable energy consumer goods, which are still expensive.

Banks in Indonesia are generally quite familiar with climate change issues. This is indicated by banks' commitments to sustainable finance, although there is still a gap between the commitment and the practice of financing, as described in the previous section. In the consumer finance sector, several banks already have products in the form of micro-credit schemes for purchasing end-use products that use renewable energy or more

environmentally friendly goods, such as solar panels. One example is bank CIMB Niaga, which has several sustainable financing products.

“

For consumer banking related to housing finance, [and] motor vehicle financing, we also have electric car financing, then financing for purchasing solar panels. For example, if a customer wants to install solar panels, [the cost] is quite expensive, so we provide financing so they can pay in installments.

(MH, Sustainability Unit - Cimb Niaga)

MH, the CIMB Niaga bank manager in charge of the sustainability unit, also added that for green housing financing, CIMB Niaga synergizes with developers to provide subsidies to attract prospective debtors.

“

Definitely, we work together with developers. Developers also provide subsidies for the [products] offered. Specifically for houses licensed 'green,' for example, from banks, [we] also provide subsidies for the rate offered; for example, customers, [they are given] free or reduced provision fees or administrative costs.

(MH, Sustainability Unit - Cimb Niaga)

The Global Green Growth Institute (GGGI)(2019) explains that in Indonesia, there are already various types of consumer finance products with sustainable themes with financing requirements that are more or less the same as consumer banking product financing. In principle, banks will provide credit if the prospective customer's portfolio is proven capable of paying credit (creditworthiness), such as through ownership of assets that can be used as collateral (GGGI, 2019, p. 7). It is just that the penetration of sustainable financing for consumer banking is still small and has not attracted much interest from the public.

The lack of public interest in accessing credit for installing renewable energy supplies or buying environmentally friendly goods is partly due to the lack of public understanding of climate change. According to JG, Associate Professor of Sustainable Accounting - at Trisakti University, consumer behavior in Indonesia generally prioritizes adequacy of life's needs, regardless of the origin of the products they consume, whether they are sustainable, environmentally friendly, or not. In line with JG, BB from Marketforce stated that public

attention to climate change is still lacking. According to BB, one of the factors that also influences people's antipathy towards climate change is the impact of climate change which has yet to be felt by most Indonesians.

“

It's different from people in Europe who clearly feel climate change there. If it's hot, it's really hot; if it's cold, it can be freezing. So, in there, like in Europe, when the banks there are 'shifting,' they really stop financing 'fossil fuel,' they start (financing) renewable energy, the community actually drives that, because the people are very aware that one of the causes of climate change is that these banks are still financing 'fossil fuel.'

(BB, Marketforce)

Consumer behavior that pays little attention to climate change is an obstacle and a challenge for banks to sell environmentally friendly banking products. According to MH, CIMB Niaga's Sustainability Unit, financing for renewable and environmentally friendly energy products from banks is still a tiny portion because,

“

"... not many customers are 'aware,' so we want to invite them; let's say we want to prepare the product, and we prepare the program, but if the customers are not 'aware,' they don't feel it's important for them to go there, that's the challenge for us. Because for customers, the important thing is that the interest is cheap, and the administration [fee] is low.

(MH, Sustainability Unit - Cimb Niaga)

Another thing related to consumer behavior is people's unfamiliarity with measuring the externality of the goods they consume. PA from IEEA gave an example; for example, people have not understood the health effects of pollution, coal, and the likes. PA believes that the public needs to pay more attention to the health impacts of a carbon-intensive economic culture. Another example from PA, the community is not used to calculating the price of energy spent. "

“

So, like today, people feel that electricity prices are low. Cheap electricity is just because of the policy. That is because of the subsidy policy.

(said PA)

The high price is an equally important factor that causes the public's low interest in accessing bank financing to purchase renewable energy products. For example, the price of installing a home-scale rooftop solar power generator (PLTS) is still considered by observers to be expensive. According to IESR, several housing developers have yet to dare to install rooftop solar power plants because of the high costs. Fabby Tumiwa, Executive Director of IESR, said that the average price for a 2-kilowatt peak (kWp) PLTS for a house-scale roof ranges from Rp. 13 million to Rp. 15 million, not including the cost of Certificates of Operation Worthiness and export meters per kWp, so the total can reach Rp. 20 million-Rp. 30 million for 2 KwP (Bisnis.com, 23/09/21).

Marija Maisch (2019), the editor of PV Magazine, compared the levelized cost of electricity (LCOE) for solar power in ASEAN countries using the Cost of Energy Mapping Tool. As a result, under a 'moderate technical potential' scenario, the LCOE of solar power in ASEAN is very diverse, ranging from \$64/MWh in Vietnam to more than \$200/MWh in Indonesia. The lowest ASEAN LCOE values were found in Vietnam (\$64/MWh), followed by Myanmar (\$70/MWh), Thailand (\$80/MWh), and Cambodia (\$82/MWh). Based on Maisch's calculations, the main factor causing high LCOE in Indonesia is the installation cost factor.

In contrast to Maisch, F.X Sutijastoto, Director General of New, Renewable Energy and Energy Conservation, explained that the high price of rooftop solar in Indonesia is due to its significant economic scale, which is influenced by its low production scale. According to Sutijastoto, the capacity of solar panel manufacturers in Indonesia is still around 40 megabytes, which is still very low compared to China, whose capacity can be 500-1,000 megabytes. So, the price difference is too much. Sutijastoto compared the average price of solar panels in Indonesia at around US\$1 per Watt peak, while in China, it has touched US\$2 cents per Watt peak (Detik Finance, 28/07/20).

“

We actually see why many customers don't want to be there (to access credit). Like solar panels, for example, because the price is still high, right? But suppose the customers know that by using solar panels, they are far more efficient and support saving electricity. In that case, that's really good, and we are ready to provide related financing.

(MH, Sustainability Unit - CIMB Niaga)

To make the price of PLTS competitive and affordable to the public, the IRS from Batara Energy considers that there is a need for incentives provided by the government, one of which is the exemption from importing PPh for solar panel components. As implemented in Vietnam, the government must exempt import duties and import PPh for components of solar modules, PV modules, inverters, and others related to Rooftop PLTS.

“

Regulations are needed if we are to catch up like Vietnam, for example. Vietnam experienced a 'solar boom' in 2020, one of which was due to waiving import fees and income tax. So, the import duties are exempted for the components of solar modules, PV modules, inverters, and others related to the PLTS, and the import income tax is also nulled. That's Vietnam; that's why the price is very competitive; the LCOE is very low, so the generation cost is also low. That's why it experienced a boom in its solar rooftop, as well as in its IPPs. In ASEAN, Vietnam is number one.

(IRS, Batara Energy)

6.4. Policies and Support Required to Support the Energy Transition

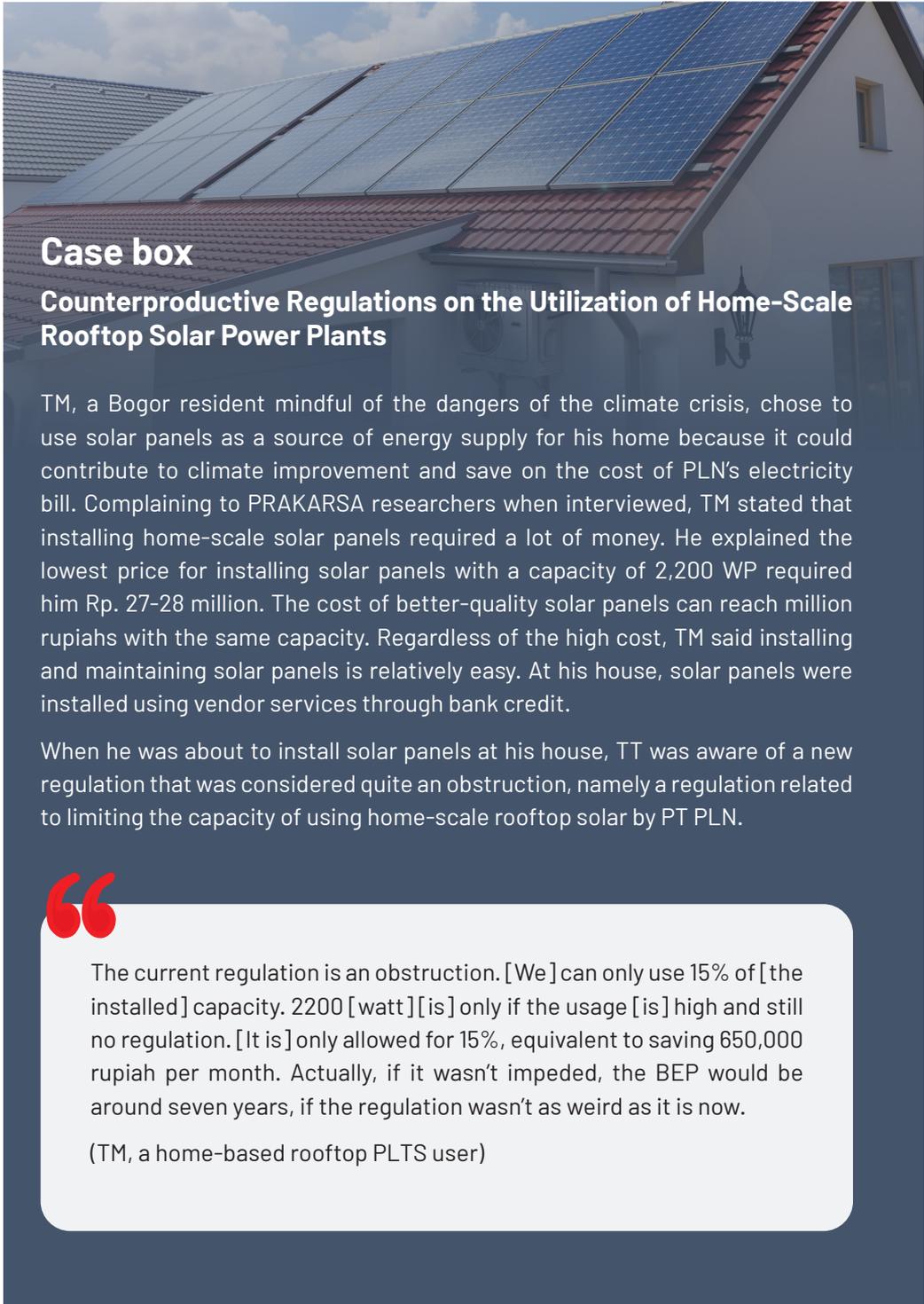
Regulatory obstacles and challenges in the energy transition mentioned in the previous section show that renewable energy development also faces many blocks. In Indonesia, the government cannot carry out the energy transition towards zero carbon emissions (NZE) alone. Therefore, the government must strive for a regulatory environment that enables stakeholders or other actors, such as financial service institutions, the private sector, and the public, to contribute to achieving the NZE targets.

6.4.1. Support for Consumers

One of the efforts to support the energy transition and reduce air pollution is to switch to electric vehicles. This is because the burning of oil fuel (BBM) is significantly polluting. Therefore, the government has begun encouraging people to switch to electric vehicles. The problem is that the public still has a pragmatic view as the price of electric vehicles is relatively high, and there needs to be supporting infrastructure such as electric charging in public places. On the other hand, fuel oil still becomes the choice because of its accessibility and subsidized economic price.

One way to address the concern of the high price of electric vehicles is to convert to an electric motor. However, this comes with obstacles. Electric motor conversion requires a conversion workshop, which of course must be certified, including certification of mechanical skills, as well as the availability of machine components for the conversion. The highest conversion costs are for machinery component items, especially converters, and batteries. Even the battery cost accounts for half the total conversion cost of an electric motor. KR, one of the Ministry of Energy and Mineral Resources (MEMR) Energy Conservation Program team, gave a rough estimate of the cost of converting an electric motor to Rp. 15 million, which means the battery costs around Rp. 7.5 million. According to KR, this price is still relatively expensive and does not attract the public's interest. By adding Rp. 5 million, consumers can buy new oil-fueled (BBM) motorcycles. Accordingly, the government needs to subsidize electric motor conversion, at least for the battery components, to make it more affordable for the public.

In addition to subsidy conversion to electric motors, the government can also provide incentives for installing home-scale solar panels to accelerate the achievement of NZE. The public's lack of interest in installing solar panels is due to the relatively high cost. There are two ways of providing incentives for home-scale solar panel installations. First, the government sets a maximum interest limit for banks that provide credit for purchasing and installing solar panels, or second, the government subsidizes the cost of installing solar panels. These incentives can arouse people's interest in installing home-scale solar panels. On the other hand, this can be a business opportunity for banks, manufacturers, and vendors of solar panel installations. Providing these incentives also needs to be accompanied by improving the existing regulations for household electricity that uses solar panels on the grid with PLN, as stated by one of the informants in the case box below.



Case box

Counterproductive Regulations on the Utilization of Home-Scale Rooftop Solar Power Plants

TM, a Bogor resident mindful of the dangers of the climate crisis, chose to use solar panels as a source of energy supply for his home because it could contribute to climate improvement and save on the cost of PLN's electricity bill. Complaining to PRAKARSA researchers when interviewed, TM stated that installing home-scale solar panels required a lot of money. He explained the lowest price for installing solar panels with a capacity of 2,200 WP required him Rp. 27-28 million. The cost of better-quality solar panels can reach million rupiahs with the same capacity. Regardless of the high cost, TM said installing and maintaining solar panels is relatively easy. At his house, solar panels were installed using vendor services through bank credit.

When he was about to install solar panels at his house, TT was aware of a new regulation that was considered quite an obstruction, namely a regulation related to limiting the capacity of using home-scale rooftop solar by PT PLN.



The current regulation is an obstruction. [We] can only use 15% of [the installed] capacity. 2200 [watt][is] only if the usage [is] high and still no regulation. [It is] only allowed for 15%, equivalent to saving 650,000 rupiah per month. Actually, if it wasn't impeded, the BEP would be around seven years, if the regulation wasn't as weird as it is now.

(TM, a home-based rooftop PLTS user)

TM explained that home-scale rooftop PLTS on the grid with PLN could not exceed the capacity, which is limited to 15%. He said installing the EXIM meter also took a long because the stock was empty from PLN. This also certainly hinders vendors who conduct installations due to delayed payments. TM's experience is an example that a low-capacity restriction is an obstacle for people who want to use renewable energy through home-scale rooftop PLTS.

The ensuing incentive that can be given is a subsidy for the difference between the PPA's electricity price and the community's economic capacity. President Jokowi has issued Presidential Decree 112 of 2022 concerning the Acceleration of the Development of Renewable Energy for the Provision of Electricity. One of the things regulated in the Decree is solar energy tariff based on the highest price benchmark. Although it highly depends on the auction mechanism used by the government and PLN, setting the highest benchmark price can provide wider opportunities for developers to submit bids. Accordingly, the bidding process will involve many developers, including small-capacity PLTS. Regardless of the highest benchmark figure and price agreed between the government and PLN and IPPs, the government needs to consider granting subsidies if there is a difference in the price of the PPA and the rate applied to the community to maintain people's purchasing power.

6.4.2. Support for Business Players

To accelerate the NZE target, the government needs to create an attractive business ecosystem for business people. Regulatory interventions that the government can take can be in the form of incentives and disincentives. First, incentives can be provided through tax reductions for business actors who use renewable energy for their production activities. For example, the government provides incentives by reducing the Corporate Income Tax rate (%) for a certain period for business actors who use 30 percent of the renewable energy mix as the company's energy source.

Second, the government can set a maximum credit interest rate of 8 percent with a tenor that adjusts the PPA period for banks financing renewable energy IPPs. Thus, renewable energy IPP companies are more flexible in allocating their budget to other productive matters, such as increasing the cost of capital goods, paying workers' wages, and allocations for research & development (R&D), which occupy the highest portion of expenditure for most companies.

“

If, for example, we want to transition to ‘renewable,’ which is a significant amount, it means we cannot do it alone. There must be something attractive for business friends from renewable [energy], so they are interested in investing in renewables. What is it...if you asked, what do you think might be interesting? One, maybe from the banking side, if you have the tenor, don’t rush it; you must adjust it to the PPA contract. Then the second one might be lowering the interest, for what? [so that] investors are also interested. The third one is probably the tariffs. About the tariffs, we say this together, the buyer and the seller must have a win-win solution, for what? [So] PLN [can] also feel ‘Oh, the tariffs are still reasonable; oh’ this also gives investors returns. So the incentives can be in the form of tariffs given to us IPP players.

(NA, Executive Director of a Renewable Energy Company)

Considering that the economy of scale for solar panel production in Indonesia is still minimal, resulting in high prices, the government can provide incentives by reducing customs tariffs for imported solar panel component goods to make prices more competitive. Reflecting on Vietnam’s experience, which experienced a solar panel boom for solar panel installation, one of the factors was the exemption from import duty for solar PV components.

“

Regulations are needed if we are to catch up like Vietnam, for example. Vietnam experienced a ‘solar boom’ in 2020, one of which was due to waiving import fees and income tax. So, the import duties are exempted for the components of solar modules, PV modules, inverters, and others related to the PLTS, and the import income tax is also nulled. That’s Vietnam; that’s why the price is very competitive; the LCOE is very low, so the generation cost is also low. That’s why it experienced a boom in its solar rooftop, as well as in its IPPs. In ASEAN, Vietnam is number one.

(IRS, Batara Energy)

In addition, to increase the economies of scale for solar panels, the government needs to standardize thin-film solar panels. According to IRS from Batara Energy, currently in Indonesia, there are only two Indonesian National Standard (SNI) test centers for Crystalline Silicone PV solar panels. Meanwhile, the thin-film Terrestrial PV type has yet to be categorized as SNI, although the thin-film type solar panel has met the International Electrotechnical Commission (IEC 61215) standard. In addition, according to the American Solar Energy Society (2021), thin-film Terrestrial PV is cheaper than Crystalline Silicone PV, although the quality is lower. Another advantage of terrestrial thin-film solar panels is that they are easier to install than crystalline panels, so the installation costs are cheaper. Therefore, the government needs to standardize terrestrial crystalline solar panels to increase the population of solar panel users.

The government can provide disincentives for carbon-intensive business sectors, along with incentives for business actors developing renewable energy or producers of environmentally friendly products and companies adapting to applying renewable energy as their energy mix. The government can refer to the OJK green taxonomy to determine which business sectors are in the 'red' category. These sectors in the red category need to be given a disincentive, except if the companies listed have reduced their emissions.

One disincentive that can be implemented immediately is a carbon tax. The implementation of the carbon tax, which was initially planned for 2022, was postponed until 2025 on the grounds of safeguarding the national economy (CNBC Indonesia, 13/10/22). In addition, the carbon tax rate was reduced from IDR 75 per kilogram to IDR 30 per kilogram (Kontan, 07/10/21). An urgent carbon tax should be applied to control GHG emissions while accelerating the transition to a green economy. The carbon tax rate must also be increased, at least back to Rp. 75/kg CO₂e, so carbon tax revenue is significant and can increase investment in renewable energy through existing channels, such as the ETM Country Platform. In addition, accelerating the implementation of carbon taxes and increasing carbon tax rates will stimulate industry players and society to transition to green energy.

6.4.3. Support for Independent Power Producers (IPPs) and PLN

To accelerate the transition to renewable energy, government support (relevant Ministries/Agencies, PLN, and Regional Governments) to IPPs also needs to be provided in the form of accelerating the licensing process for the electricity supply. As it is known that the government achieved a new renewable energy achievement of 23 percent in 2026, the procurement process for buying and selling electricity for a joint project with IPPs needs to be accelerated. In addition to accelerating the energy transition, this procurement process will also impact the finances of IPPs and surrounding communities.

According to NA, a Corporate Secretary of a renewable energy company, the process for one project takes 2 to 3 years to reach the Power Purchase Agreement (PPA) signing stage. This lengthy process impacts the company's financial management because the company

has invested in: buying land, capital equipment, and others. In addition, the faster the process of procuring electricity in an area, the faster the impact will be felt by the people who do not have adequate electricity. Therefore, not only PLN, local governments, and related Ministries/Institutions involved in the electricity supply scheme need to formulate more efficient licensing processes.



There is a process to get the licensing to get the Power Purchase Agreement (PPA). So, the process has its challenges. It is not as easy as if we make a Limited Liability Company (PT) tomorrow, and [by] tomorrow we get the permit, no. We have many [requirements] to fulfill. Our example is from a site where the land must be acquired. To get the location permit, we must first acquire the land; that's one requirement. So, to get the land, of course, funding must be prepared. After we get the land, then we can process the location permit. After acquiring the location permit, the permit becomes a requirement to get the PPA. The process is quite long because many permits must be fulfilled, especially if, for example, this is a case of business with generators, with social issues. There is an environmental permit that we must prepare, and there is also a location permit [that I said]. Then there will also be, if, for example, we are in a protected forest area, a Borrow-Use Permit for Forest Areas (IPPKH) that we must approach. These processes are then collected and later processed for [getting] the PPA. Inside this PPA processing itself, there is another process. There is another Selection of Provider List (DPT) process, [go through] DPT first. We must be registered as a PLN partner; then later, we will be invited to tender, [like] 'oh yes, in this area we will make a tender for the supply of 10 mW electricity, for example'. That's where we begin to approach them. After we get the authority, we will proceed with negotiations to get the PPA. Yes, the process, you could say, can take 2-3 years.

(NA, Executive Director of a Renewable Energy Company)

Further government support can be provided to regional energy IPPs in PLN's operating areas through PLN transmission network leasing. As understood, IPPs in the operating areas sell electricity not through PLN but directly to users. However, many of these IPPs cannot expand due to a limited transmission infrastructure network. In this case, PLN can lease its transmission network to the renewable energy IPPs of these areas. According to Minister of Energy and Mineral Resources Regulation No. 1 of 2015 concerning Cooperation in the Supply of Electricity and Joint Utilization of Electricity Networks, transmission

usage is feasible by Holders of Business Licenses for the Supply of Electricity who hold the Operating Areas. It is only that PLN still needs to detail the derivative regulations regarding rental prices for approval by the relevant Minister or Governor. Therefore, to increase the population of renewable energy IPPs in the operating areas, it is necessary to enact a regulation that clarifies the transmission network rental rate scheme because it is complicated in terms of costs and regulations for the IPPs to build their transmission network outside the business area they operate.

6.4.4. Regulation for the banking sector: from voluntary to mandatory

The existence of OJK Regulation No. 51/2017 concerning the Implementation of Sustainable Finance for Financial Service Institutions, Issuers, and Public Companies is progress for the Regulation of sustainable finance. However, to ensure that financial service institutions are genuinely sustainable, stable, and inclusive to achieve the NZE target, sustainable finance regulations in Indonesia must be transformed from voluntary to mandatory. This is because the nuances of POJK 51/2017 are still more like an encouragement; its legal position still needs to contain elements of law enforcement. Apart from not containing an element of punishment, observers of sustainable finance also assess that POJK 51/2017 does not yet contain an element of reward. Reward and punishment in Regulation are deemed necessary to ensure that the Regulation in question has the desired impact.



This Regulation (POJK 51/2017) is still like an encouragement. Encourage, support, encourage. So that in terms of legal standing, there is no law enforcement and no reward-penalty. Second, there are no rewards either. [In the Regulation,]The reward is given free training, so it becomes a reward. But, the business world wants a real visible reward that can support their image, so they know the best practices. For example, giving awards or announcements on which banks implement best practices or what is actually supported by the OJK because the regulations come from the OJK.

(JG, Associate Professor of Sustainable Accounting - Trisakti University)

In line with the statement above, another source also stated that until now, there has been no precise measure or target for achieving NZE in existing policies.

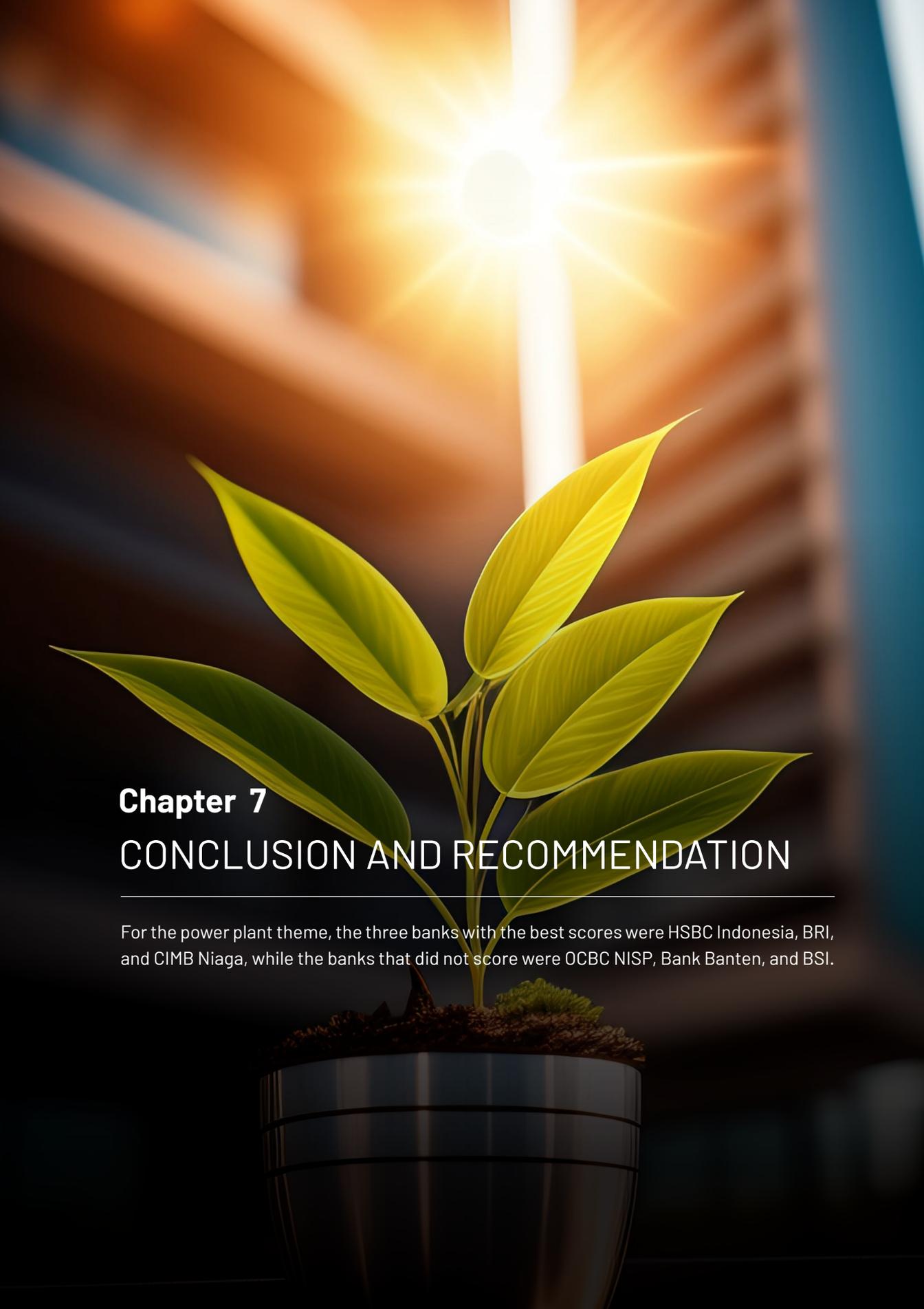
“

Then also, from a green portfolio perspective, there isn't any [measure]; for example, a bank has to increase its green portfolio to such a degree, it's not [there] yet. It's more to encourage banks to disclose and then encourage them to increase their portfolios, but there's no target yet; there's no target for what percentage of the portfolio. Well, so [far], the Regulation is more like that, meaning that achievements such as net zero emission still cannot be ascertained either because this Regulation encourages banks to make plans in a better direction, then increase their green portfolio. Yet, there is no target from there what will ultimately support net zero emissions.

(AH, LPEM UI)

Setting clear achievement targets further encourages the involvement and commitment of financial or banking institutions in their green financing portfolio. Until now, the portion of fossil financing channeled by banks is much more significant than that of financing the renewable energy sector.

This page has been intentionally left blank.



Chapter 7

CONCLUSION AND RECOMMENDATION

For the power plant theme, the three banks with the best scores were HSBC Indonesia, BRI, and CIMB Niaga, while the banks that did not score were OCBC NISP, Bank Banten, and BSI.

7.1. Conclusion

Banks have a crucial role in the energy transition in Indonesia. Banks can utilize the public funds they allocate to financing renewable energy projects through credit, guarantees, or buying shares and bonds from renewable energy companies. Banks can also plan a financing transition from financing the fossil fuel business to the renewable energy business by divesting in stages.

Based on the ranking results, on average, 13 banks in Indonesia already have sustainability commitments, at least for the themes of climate change, nature, and electricity generation. For the theme of climate change, the banks that received the highest scores were HSBC Indonesia, Bank BJB, and Bank Muamalat, while the banks that did not score were BCA, BRI, and Artha Graha. For the nature theme, the three banks with the highest scores were HSBC Indonesia, BRI, and Artha Graha, while those with no scores included OCBC NISP, Bank BJB, Bank Banten, and BSI. For the power plant theme, the three banks with the best scores were HSBC Indonesia, BRI, and CIMB Niaga, while the banks that did not score were OCBC NISP, Bank Banten, and BSI. Not getting a score can mean two things: the banks do not have policies or commitments for related themes or have policies/commitments that are not published.

Banks have designed various strategies to embody climate change commitments. Some of them include HSBC Indonesia's commitment to stop financing new investment projects in coal-fired power plants and geothermal mining; Bank BJB committing to increasing its green loan financing portfolio; Bank Muamalat stopping financing in the coal-related sector since 2018; BRI developing an environmentally friendly financing policy for the palm oil sector; CIMB launching two financial solution programs focusing on sustainability in the form of attractive interest rates aimed at customers engaged in product manufacturing/trading activities directly involved in recycled materials and renewable energy; Bank Artha Graha not financing business activities that do not fulfill sustainable business activities; and so forth.

Realizing climate change commitments by banks through energy transition financing is not without barriers and challenges. The obstacles and challenges banks face in financing the energy transition at least stem from the political and regulatory environment and the internality of the banking business itself. In the regulatory environment, the obstacles and challenges banks face in financing the energy transition through renewable energy include changing regulations (e.g., RUPTL) and counterproductive regulations (e.g., policies on rooftop solar). Regulatory instability and policies counterproductive to accelerating the energy transition affect banks' business strategy in financing the energy transition. These instability and counterproductive regulations must be addressed through dialogue and coordination mechanisms. Unfortunately, coordination between Ministries/Institutions related to the energy transition is still considered minimal and sectoral.

The existence of OJK Regulation No. 51/2017 concerning the Implementation of Sustainable Finance for Financial Service Institutions, Issuers, and Public Companies is progress for the regulation of sustainable finance. However, to ensure that financial service institutions are genuinely sustainable, stable, and inclusive to achieve the NZE target, sustainable finance regulations in Indonesia must be transformed from voluntary to mandatory. This is because the nuances of POJK 51/2017 are still more of an encouragement than its legal position does not yet contain elements of law enforcement. Apart from not containing elements of law enforcement, POJK 51/2017 does not contain elements of rewards. In fact, reward and punishment are deemed necessary to ensure the regulation has the desired impact.

From the banking sector's side, the obstacles and challenges revolve around banks' internal knowledge regarding the urgency of the energy transition and the perception of the bonafide-ness of renewable energy, which is relatively lower than fossil energy. Banks generally have not seen the long-term profit potential from renewable energy financing. Banks still consider that renewable energy financing has yet to generate a profit, unlike the financing of fossil energy companies. The little interest from banks in financing renewable energy compared to fossil energy is also influenced by the lack of information that banks have regarding the details of renewable energy projects and their risk profiles. On the other hand, there are no specific incentives aimed at banks in financing renewable energy.

Another challenge when a renewable energy project already exists is to what extent the project is profitable for the bank. For example, a small-scale renewable energy power plant project may not necessarily attract banks to finance it. Banks prefer to finance large and long-term renewable energy projects.

In addition to obstacles and challenges in financing renewable energy aimed at corporate customers, banks face obstacles and challenges in financing renewable energy for individual customers. The two biggest obstacles for banks in financing renewable energy for individual customers are public awareness of climate change which is considered minimal, and the prices of renewable energy or environmentally friendly products that are expensive (for example, the installation of home-scale rooftop PLTS and electric vehicles). Both impact the small number of customers applying for loans for green financing products from banks. Therefore, there is a need for government intervention to reduce the high price of renewable energy goods through the provision of incentives in the form of subsidies.

In general, based on an analysis of the flow of energy financing, this study concludes that among the 12 banks in Indonesia that became the unit of analysis, financing for the fossil fuel and renewable energy sectors experienced a fluctuating trend from 2016 to June 2022. However, despite the fluctuating trend in the financing, the proportion of energy sector financing attributable to fossil fuel energy was always far more dominant than renewable energy financing for all types of financing: loans, guarantees, share ownership, and bonds. During 2016-2022, the average proportion of financing attributable to renewable energy

was only 9.1 percent, while the average proportion of financing attributable to fossil energy was 90.9 percent.

The large proportion of financing in the fossil energy sector must be a reflection for banks in Indonesia so that they are serious about fulfilling climate change commitments by immediately transitioning to renewable energy financing. Banks must understand that the financing transition from the fossil fuel energy sector to renewable energy is a real contribution to climate change mitigation. They must also realize that renewable energy financing is not solely for business interests but for humanitarian purposes, namely, saving people—especially the most vulnerable—from the adverse effects of climate change.

7.2. Recommendations

This study recommends several points addressed to regulators and financial institutions as follows:

1. The President of the Republic of Indonesia to regulate banks to transition financing from the fossil fuel energy sector to the renewable energy sector in stages and measurably within a certain period per Indonesia's NZE targets;
2. Recommendation for Member of Parliament of Republic of Indonesia:
 - Do not include coal-derived products such as coal bed methane, liquefied coal, and gasified coal as the New Energy category in the EBT Bill because it will slow down the reduction of greenhouse gas emissions;
 - Ensure that the use of biomass as a raw material for co-firing PLTU does not originate from forest clearing activities in the EBET Bill because it will release large amounts of CO₂ into the atmosphere, which is certainly counterproductive to the spirit of the Paris Agreement;
 - Publish the EBT Bill through broad public participation to create a conducive energy transition climate for all parties, including the government, energy companies, financial service institutions, investors, and civil society. Participatory policy formulation will produce stable policies in the future for the long term;
3. Recommendation for Ministry of Finance:
 - Formulate incentive schemes for business actors in the field of renewable energy power plants and manufacture of renewable energy goods, as well as incentives in the form of subsidies for consumers who access renewable energy goods (such as solar rooftops) and environmentally friendly goods for middle-and-low-income people and (such as electric vehicles that are not subject to PPnBM). Along with incentives for consumers, the Ministry of Finance also needs to impose a disincentive in the form of an increase in VAT for goods that produce high emissions, such as fossil-fuel vehicles. Apart from disincentives to consumers, the Ministry of Finance also needs

- to impose disincentives on carbon-intensive industrial sectors such as mining and manufacturing through increased tax and royalty rates;
- It is necessary to accelerate the implementation of the Carbon Tax and increase the carbon tax rate to the original figure of IDR 75 per kilogram of carbon dioxide equivalent;
 - It is necessary to issue regulations directing banks to participate in financing the energy transition program in Indonesia through the ETM and JETP platforms;
4. Recommendation for Financial Services Authority (OJK):
- It is necessary to immediately develop guidelines for financing for the energy sector as a basis for financial institutions in developing policies, understanding, and managing Environmental, Social, and Governance (ESG) risks, and encouraging sustainable business practices in the energy sector;
 - Encourage the development of green bonds, green loans, and risk mitigation facilities to incentivize banks to finance energy transition projects. OJK needs to provide technical assistance and capacity building to banks for risk mitigation facilities to help them understand and assess risks and financing opportunities for the energy transition;
5. Recommendation for Financial Institutions:
- Formulate sectoral policies that specifically regulate the distribution of credit and investment to the energy sector and set specific targets for financing energy projects. The policy must support reducing greenhouse gas emissions in line with the Paris Agreement target by considering ESG factors and adopting minimum standards that refer to international standards, industry best practices, and applicable legal regulations;
 - It is necessary to create a loan scheme for customers who are oriented towards the use of renewable energy and are environmentally friendly by setting a flat interest rate for 1-5 years with a maximum interest rate of 1.5% of the reference interest rate to increase interest and support the customer's financial condition. In the following phase, floating can be done in the range of 8-13% or adjusting to global economic conditions;
 - Banks can reduce the risk of financing renewable energy projects by sharing risks with the public, both individuals and corporations, through securitization, mutual fund, and co-financing processes;
6. The community, as banking customers, can encourage or demand banks to take more responsibility for their financing, as evidenced by the policies and practices of the banks' financing. The public can also more thoroughly distinguish between green banking and greenwashing practices;

7. The private sector can play a role in carrying out more responsible business practices according to ESG principles and switching to renewable energy.



REFERENCES

- American Solar Energy Society. (27/02/2021). Thin-Film Solar Panels. <https://ases.org/thin-film-solar-panels/>
- Arcade, J., Godet, M., Meunier, F., Roubelat, F. (2009). Structural analysis with the MICMAC method & Actors' strategy with MACTOR methor. *The Millenium Project, Future Research Methods—V3.0*. <https://millennium-project.org/wp-content/uploads/2020/02/11-Structural-Analysis.pdf>
- Arta Graha. (2021). Laporan Keberlanjutan 2021. <https://www.arthagraha.com/storage/app/media/Laporan%20Keberlanjutan/2021/Sustainability%20Report%20PT%20BAGI%20Tbk%20Tahun%20Buku%202021.pdf>
- Bank Indonesia. (2022). Statistik Sisten Keuangan Indonesia (Indonesia's Financial System Statistics). https://www.bi.go.id/id/statistik/ekonomi-keuangan/sski/Pages/SSKI_Juli_2022.aspx
- Bank Indonesia. (2021). BI kembangkan instrumen pasar keuangan hijau untuk dorong pembiayaan ekonomi. Diakes melalui https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_2327321.aspx
- Bank Indonesia. (2021). BI kembangkan instrumen pasar keuangan hijau untuk dorong pembiayaan ekonomi. Diakes melalui https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_2327321.aspx
- BBC News. (07/05/21). Report: China emissions exceed all developed nations combined. <https://www.bbc.com/news/world-asia-57018837>
- Bhimasena Power. (10/03/2016). Business Scheme and IPP profile. <https://www.bhimasenapower.co.id/content/10/skema-bisnis-dan-profil-ipp/2>

- Bisnis.com. (23/11/21). Harga masih mahal, IESR sarankan pengembang beli PLTS Atap untuk rumah secara borongan. <https://ekonomi.bisnis.com/read/20210923/47/1445995/harga-masih-mahal-iesr-sarankan-pengembang-beli-plts-atap-untuk-rumah-secara-borongan>
- BJB. (2021). Laporan Keberlanjutan 2021. <https://bankbjb.co.id/files/2022/03/laporan-keberlanjutan-bank-bjb-2021-2.pdf>
- BNI. (2021). Laporan Tahunan 2021. <https://www.bni.co.id/Portals/1/BNI/Perusahaan/HubunganInvestor/Docs/AR-BNI-TB-2021-IND-v2.pdf>
- BNI. (2022). Tingkatkan Pembiayaan Hijau, BNI Akan Menerbitkan Green Bond. <https://www.bni.co.id/id-id/beranda/kabar-bni/berita/articleid/21044>
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77– 101. BRI. (2021). Laporan Keberlanjutan 2021. <https://bri.co.id/documents/20123/56786/SR%202021%20Bank%20BRI%20-%20IND.pdf> CDKN. Indonesia Feed-in tariffs: Challenges & Option. 2014
- Cimb Niaga. (2021). Laporan Keberlanjutan 2021. <https://investor.cimbniaga.co.id/misc/SR/SR2021-EN.pdf>
- CNBC Indonesia. (17/01/22). Simak! Peta jalan penurunan emisi menuju netral karbon 2060. <https://www.cnbcindonesia.com/news/20220117133041-4-307960/simak-peta-jalan-penurunan-emisi-menuju-netral-karbon-2060>
- CNBC Indonesia. (13/10/22). Pajak karbon ditunda sampai 2025. <https://www.cnbcindonesia.com/news/20221013175437-4-379582/pajak-karbon-ditunda-sampai-2025>
- CPI. (2022). Private Financial Institutions' Paris Alignment Commitments: 2022 Update. Matthew Solomon. *Climate Policy Initiative*. United States. Private Financial Institutions' Paris Alignment Commitments: 2022 Update - CPI (climatepolicyinitiative.org)
- DBS. (2021). Accelerating our net zero commitment: A responsible, pragmatic and impactful approach. <https://www.dbs.id/id/corporate/sustainability/our-path-to-net-zero>
- Detik Finance. (28/07/20). Harga Panel Surya di RI lebih mahal dibanding China. <https://finance.detik.com/energi/d-5110980/harga-panel-surya-di-ri-lebih-mahal-dibanding-china>
- Enhanced Nationally Determined Contribution Republic of Indonesia, 2022. https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf

- European Commission. (2022). Joint Statement by the Government of the Republic of Indonesia (GOI) and the Governments of Japan, the United States of America, Canada, the Kingdom of Denmark, the European Union, the Republic of France, the Federal Republic of Germany, the Republic of Italy, Norway, United Kingdom of Great Britain and Northern Ireland (together the "International Partners Group" or IPG). 15 November 2022. Bali. https://ec.europa.eu/commission/presscorner/api/files/document/print/en/statement_22_6892/STATEMENT_22_6892_EN.pdf
- Fearnside, P.M. (2016, April), "Greenhouse gas emissions from hydroelectric dams in tropical forests". in: *Alternative Energy and Shale Gas Encyclopedia*, [J. Lehr & J. Keeley (eds.)], John Wiley & Sons Publishers, New York, USA, hal. 428-438.
- FFA and SEI (2022). Financing the Just Transition: Powering Asia's Sustainable Energy Future.
- GGGI. (2019). Product Analysis of Diverse de-Risking Financial Instruments Available in Indonesia's Market. GGGI.
- Global Green Growth Institute. (Oktober 2014). Extended cost benefit analysis scoping paper. *Component 1B: Green Growth Tools, Government of Indonesia – GGGI Green Growth Program*. http://greengrowth.bappenas.go.id/wp-content/uploads/2018/05/20151021120010.eCBA_Methodology_Paper.pdf
- Greenhouse Gas Protocol. (tanpa tahun). Corporate Value Chain (Scope 3) Accounting and Reporting Standard. WRI & WBSCD. https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf
- HSBC Indonesia. (2021). Annual report 2021. <https://www.about.hsbc.co.id/-/media/indonesia/en/hsbc-in-indonesia/financial-and-regulatory-reports/220613-pt-bank-hsbc-indonesia-annual-report-2021-en.pdf>
- HSBC Indonesia. (2020). Keberlanjutan – strategi iklim kami. <https://www.about.hsbc.co.id/id-id/our-company/sustainability>
- IEA. (2022). An Energy Sector Roadmap to Net Zero Emissions in Indonesia. International Energy Agency Special Report. <https://iea.blob.core.windows.net/assets/b496b141-8c3b-47fc-adb2-90740eb0b3b8/AnEnergySectorRoadmaptoNetZeroEmissionsinIndonesia.pdf>
- IEA. (2021). World Energy Outlook 2021: Phasing out coal. <https://www.iea.org/reports/world-energy-outlook-2021/phasing-out-coal>
- ILO. (2018). World Employment Social Outlook Trends 2018. International Labour Office. Geneva. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_615594.pdf

- Indonesia.go.id. (2022). Indonesia Peroleh Komitmen Hijau dari G20. <https://indonesia.go.id/kategori/editorial/6687/indonesia-peroleh-komitmen-hijau-dari-g20?lang=1>
- International Electrotechnical Commission. (tanpa tahun). IEC 61215-1:2021 RLV. <https://webstore.iec.ch/publication/68594>
- Intergovernmental Panel on Climate Change. (2015). Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. *New York: Cambridge University Press*, hal. 539-540.
- International Energy Agency. (2021) Net Zero by 2050 - A Roadmap for the Global Energy Sector, p. 21. https://iea.blob.core.windows.net/assets/405543d2-054d-4cbd-9b89-d174831643a4/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
- Investor.id. (23/02/22). Pensiun Dini PLTU Batu Bara. <https://investor.id/editorial/283862/pensiun-dininbsppltu-batu-bara>
- IPCC. (2018). Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments. <https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/>
- J. Neilson. "Who owns the carbon? Indonesia's carbon stores spark international attention", *Insede Indonesia*. 2010, hal.7-8.
- Katadata.co.id. (26/2/22). Kapasitas Pembangkitan Listrik Indonesia Capai 73,74 GW pada 2021, PLTU Mendominasi. <https://databoks.katadata.co.id/datapublish/2022/01/26/kapasitas-pembangkitan-listrik-indonesia-capai-7374-gw-pada-2021-pltu-mendominasi>
- Kementerian ESDM. (2021). Keputusan Menteri Energi dan Sumber Daya Mineral Republik Indonesia Nomor 188.K/HK.02/MEM.L/2021 tentang Pengesahan Rencana Usaha Penyediaan Tenaga Listrik PT Perusahaan Listrik Negara (Persero) Tahun 2021 sampai dengan Tahun 2030. <https://web.pln.co.id/static/uploads/2021/10/ruptl-2021-2030.pdf>
- Kementerian ESDM. (2022). Empat Kerja Sama Menuju Net Zero Emission Tahun 2060 Ditandatangani. Siaran Pers Kementerian ESDM 24 Maret 2022. <https://www.esdm.go.id/id/media-center/arsip-berita/empat-kerjasama-menuju-net-zero-emission-tahun-2060-ditandatangani>
- Kementerian ESDM. (2020). Turunkan Emisi 314 juta ton CO2 Tahun 2030, Indonesia Perlu Investasi Rp 3.500 Triliun. <https://www.esdm.go.id/id/media-center/arsip-berita/turunkan-emisi-314-juta-ton-co2-tahun-2030-indonesia-perlu-investasi-rp-3500-triliun>

- Kemenko Perekonomian. (2021). Peran Penting Perbankan Dalam Mengakselerasi Transisi Ekonomi Melalui Ekonomi Rendah Karbon. Diakses melalui <https://ekon.go.id/publikasi/detail/3483/peran-penting-perbankan-dalam-mengakselerasi-transisi-ekonomi-melalui-ekonomi-rendah-karbon>
- KLHK. (2016). First Nationally Determined Contribution of Republik of Indonesia. November 2016. http://ditjenppi.menlhk.go.id/reddplus/images/resources/ndc/First_NDC.pdf
- Kontan. (07/10/21). Pajak karbon mulai berlaku 1 April 2022, ini besaran tarifnya. <https://nasional.kontan.co.id/news/pajak-karbon-mulai-berlaku-1-april-2022-ini-besaran-tarifnya>
- KPPIP. (tanpa tahun). Batang Power Plant/ Central Java Power Plant. <https://kppip.go.id/en/priority-projects/electricity/batang-power-plant-central-java-power-plant/>
- Lewis, S. Estefen, et al. (2011). "Ocean Energy," in: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, hal. 518.
- Maisch, Marija. (2019). Cost of developing renewables in Southeast Asia put through mapping tool. PV Magazine 24 Juni 2019. <https://www.pv-magazine.com/2019/06/24/cost-of-developing-renewables-in-southeast-asia-put-through-new-mapping-tool/>
- McKinsey & Company. (2020). Banking imperatives for managing climate risks. <https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/banking-imperatives-for-managing-climate-risk>
- McKinsey & Company. (2021). Climate neutrality in Germany is possible as early as 2045, but decisive action must be taken now to achieve this target. <https://www.mckinsey.com/business-functions/sustainability/our-insights/net-zero-germany-chances-and-challenges-on-the-path-to-climate-neutrality-by-2045>
- Ministry of Economy, Trade and Industry of Japan. (2021). Basic Guidelines on Climate Transition Finance. https://www.meti.go.jp/english/press/2021/pdf/0507_001b.pdf
- Muamalat. (2021). Laporan Keberlanjutan 2021. https://www.bankmuamalat.co.id/uploads/hubungan_investor/1_laporan-keberlanjutan-2021.pdf
- Natural Resources Development Center: Kebijakan Nasional Perubahan Iklim. Program Terrestrial the Nature Conservancy Indonesia. 2013, hal, 26.

- OJK. (2022). Assessing Progress of Indonesia's Financial Institutions Towards the Clean Energy Transition (Pilot Survey Result). *Otoritas Jasa Keuangan*. Jakarta. <https://www.ojk.go.id/id/data-dan-statistik/research/prosiding/Documents/OJK-CEFIM%20Research%202022.pdf>
- PLN. (2021). Diseminasi RUPTL 2021-2030. Direktorat Perencanaan Korporat PLN. <https://web.pln.co.id/statics/uploads/2021/10/materi-diseminasi-2021-2030-publik.pdf>
- PRAKARSA. (2022). Mendekarbonisasi Ekonomi Indonesia: Meneilai Peran Lembaga Keuangan Internasional dalam Percepatan Transisi Energi. Ambarsari et.al. PRAKARSA. Jakarta.
- PRAKARSA. (2021). Pajak Karbon dalam UU Harmonisasi Peraturan Perpajakan (HPP): Langkah Maju, Namun Tarif Terlalu Rendah. <https://theprakarsa.org/pajak-karbon-dalam-uu-harmonisasi-peraturan-perpajakan-hpp-langkah-maju-namun-tarif-terlalu-rendah/#:~:text=Selain%20itu%2C%20pada%20Pasal%2013,industri%20lain%20akan%20dianggap%20sebagai>
- PT PGE. (2023). Prospektus Awal. <https://e-ipo.co.id/en/pipeline/get-propectus-file?id=216&type=>
- SEI, IISD, ODI, E3G, and UNEP. (2020). The Production Gap Report: 2020 Special Report. <http://productiongap.org/2020report>
- Sekretariat Negara. (2021). Presiden Jokowi Sampaikan Komitmen Indonesia dalam Penanganan Perubahan Iklim di COP26. https://www.setneg.go.id/baca/index/presiden_jokowi_sampaikan_komitmen_indonesia_dalam_penanganan_perubahan_iklim_di_cop26
- Siaran Pers BKF. (15/07/22). Indonesia Luncurkan Country Platform untuk Mekanisme Transisi Energi. SP-29/BKF/2022. https://fiskal.kemenkeu.go.id/files/siaran-pers/file/1657866407_siaran_pers_country_platform_etm_final.pdf
- Sustainable Market Initiative. (2021). A Practitioners's Guide for Bank: Considerations for banks in setting a net zero strategy. *Sustainable Markets Initiative – Financial Services Taskforce*. file:///C:/Users/Dia%20Mawesti/Downloads/a-practitioners-guide-to-net-zero-for-banks.pdf
- Taplin, Dana H. & Clark, Heléne. (2012). Theory of change basics: A primer on theory of change. *ActKnowledge*. New York.
- Tim NZE – KESDM. (2022). Peta Jalan Net Zero Emission Sektor Energi (Disampaikan pada Rapat Lanjutan Koordinasi Pemodelan Kebijakan Sektor Energi, 2 Agustus 2022).
- UK COP 26. (n.d). Climate Finance Deliver Plan: Meeting the US\$100 Billion. <https://ukcop26.org/wp-content/uploads/2021/10/Climate-Finance-Delivery-Plan-1.pdf>

- UN Climate Change Conference. (2021). Global coal to clean power transition statement. UN Climate Change Conference UK 2021 in Partnership with Italy. <https://ukcop26.org/global-coal-to-clean-power-transition-statement/>
- UNFCCC. (2021). Glasgow Climate Pact. https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf
- UNFCCC. (tanpa tahun). GHG Profiles, Annex I. https://di.unfccc.int/ghg_profile_annex1
- UNFCCC. (tanpa tahun). Land use, land-use change and forestry (LULUCF). <https://unfccc.int/topics/land-use/workstreams/land-use-land-use-change-and-forestry-lulucf>
- UNFCCC. (2022). Sharm el-Sheikh Implementation Plan. https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf
- UN Climate Action. (n.d). For a livable climate: Net-zero commitments must be backed by credible action. <https://www.un.org/en/climatechange/net-zero-coalition>
- United Nations. (n.d). For a livable climate: Net-zero commitments must be backed by credible action. <https://www.un.org/en/climatechange/net-zero-coalition>
- United Nations Environment Programme. (2014). Demystifying Private Climate Finance. <https://www.unepfi.org/fileadmin/documents/DemystifyingPrivateClimateFinance.pdf>
- World Bank. Indonesia Rising: Policy Priorities for 2010 and Beyond. World Bank, Washington DC. 2010.

LIST OF APPENDICES

Appendix 1. IKBI bank assessment results based on elements of climate change

| NO | Assessment elements | HSBC | Indonesia | BSI | CIMB Niaga | OCBC NSP | Maybank | Mandiri | BRI | BNI | BCA | BJB | Artha | Graha | Bank | Bank | Banten | |
|--|---|------|-----------|-----|------------|----------|---------|---------|-----|-----|-----|-----|-------|-------|------|------|--------|---|
| | | | | | | | | | | | | | | | | | | |
| <i>Elements of policy assessment for the internal operations of financial institutions.</i> | | | | | | | | | | | | | | | | | | |
| 1 | Regarding direct and indirect greenhouse gas emissions, financial institutions set measurable reduction goals that are aligned with limiting the maximum global temperature increase to 1.5°C | 1.0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | Regarding their internal operations, financial institutions are committed to use only renewable energy sources | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>Elements of assessment for policies regarding the management of financial institutions for their corporate loan and investment portfolios</i> | | | | | | | | | | | | | | | | | | |
| 3 | Financial institutions disclose related greenhouse gas emissions with the choice of certain companies and/or sectors that are financed or invested | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Financial institutions disclose related greenhouse gas emissions with all companies and projects financed or invested in | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | For financing large-scale projects, financial institutions make one environmental impact assessment that includes data on greenhouse gas emissions and climate risk | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|---|---|---|---|---|---|---|-----|-----|---|---|
| 26 | Companies include a clause on fulfilling the criteria climate change in their contracts with subcontractors and suppliers. | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total Score on the Climate Change Theme | 4.0 | 0.5 | 0.6 | 0.2 | 0.9 | 0.3 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0.4 | | |

Appendix 2. IKBI bank assessment results based on elements of nature

| NO | Assessment elements | Elements of policy assessment regarding companies invested or financed by financial institutions | | | | | | | | | | | | | | | | | |
|----|--|--|-----|------------|----------|-------------------|---------|-----|-----|-----|-----|-------------|---------------|-------------|-----|-----|-----|-----|---|
| | | HSBC Indonesia | BSI | CIMB Niaga | OCBC NSP | Maybank Indonesia | Mandiri | BRI | BNI | BCA | BJB | Artha Graha | Bank Muamalat | Bank Banten | | | | | |
| 1 | Companies prevent negative impacts on High Conservation Value areas in their business operations and the areas they manage. | 0.8 | 0 | 0.5 | 0 | 0.5 | 0 | 0.8 | 0 | 0.8 | 0 | 0.0 | 0.0 | 0 | 0.8 | 0.0 | 0.0 | 0.0 | 0 |
| 2 | Companies prevent negative impacts on protected areas included in categories I-IV by the International Union for Conservation of Nature (IUCN) in their business operations and the areas they manage. | 0.6 | 0 | 0.0 | 0 | 0.8 | 0 | 0.0 | 0 | 0.0 | 0 | 0.5 | 0.0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |
| 3 | Companies prevent negative impacts on UNESCO World Heritage sites in their business operations and the areas they manage. | 0.6 | 0 | 0.0 | 0 | 0.0 | 0.8 | 0.6 | 0.9 | 0.6 | 0 | 0.0 | 0.6 | 0 | 0.6 | 0.0 | 0.6 | 0.0 | 0 |
| 4 | Companies prevent negative impacts on protected areas covered by the Ramsar Convention on Wetlands in their business operations and managed areas. | 0.6 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |

| | | | | | | | | | | | | | | | | | | | |
|----|--|-----|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|-----|---|
| 5 | Companies prevent negative impacts on the population or number of animal species included in the IUCN Red List of Threatened Species. | 0 | 0.6 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.5 | 0.0 | 0 |
| 6 | Trade in endangered species of plants and animals is in accordance with the CITES requirements. | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| 7 | Trade in endangered species of plants and animals on the CITES list is unacceptable. | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.6 | 0.0 | 0 |
| 8 | Activities in the field of genetic material and genetic engineering only take place if they meet permits and processing requirements as described in the United Nations Convention on Biological Diversity and related Bonn Guidelines or the Nagoya Protocol. | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| 9 | Production or trade in live genetically modified organisms may only occur if permits have been obtained from the importing country and all requirements of the Cartagena Protocol have been met. | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| 10 | Companies prevent invasive alien species from entering the ecosystem. | 0.6 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| 11 | Companies conduct an impact assessment of water scarcity in water scarcity areas. | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.8 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |
| 12 | Companies have comprehensive mitigation measures to address the needs of communities and aquatic ecosystems in areas where the environmental impact assessment identifies potentially significant impacts on water resources. | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0 |

| | | | | | | | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 13 | Companies make an environmental impact assessment of the total consequences of large-scale projects on biodiversity, at least following GRI 304: Biodiversity 2016 or other relevant standards (mentioned in section 2.8.2). | 0.6 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 |
| 14 | Companies integrate nature criteria into their procurement and operational policies. | 0.6 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 |
| 15 | Companies include clauses regarding compliance with natural criteria in their contracts with subcontractors and suppliers. | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 |
| | Total Score on the Nature Theme | 3.4 | 0.0 | 0.3 | 0.0 | 0.9 | 0.5 | 1.5 | 0.0 | 1.1 | 0.0 | 1.1 | 0.0 | 1.1 | 0.0 |

Appendix 3. IKBI bank assessment results based on elements of power plant

| NO | Assessment elements | HSBC | Indonesia | BSI | CIMB Niaga | OCBC NSP | Maybank | Mandiri | BRI | BNI | BCA | BJB | Artha Graha | Bank Muamalat | Bank Banten |
|--|--|------|-----------|-----|------------|----------|---------|---------|-----|-----|-----|-----|-------------|---------------|-------------|
| | | | | | | | | | | | | | | | |
| <i>Elements of policy assessment regarding the internal operations of financial institutions:</i> | | | | | | | | | | | | | | | |
| 1 | Financial institutions finance companies generating renewable energy (wind, solar, small, and medium-scale hydropower, geothermal power, tidal power, etc.). | 1.0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1.0 | 1 | 1 | 0.0 | - | 0 |
| 2 | Financial institutions have measurable targets to increase their financing for renewable energy generators. | 0.0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 3 | Financial institutions have measurable targets to reduce the total amount financed for fossil fuel power generation, or to reduce financing for fossil fuel power generation, relative to their financing for renewable energy generation. | 0.5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| <i>Elements of policy assessment regarding companies invested or financed by financial institutions:</i> | | | | | | | | | | | | | | | |
| 4 | Unsustainable coal-fired power plants (i.e., without operational carbon capture and storage) are unacceptable. | 0.8 | 0 | 0 | 0 | 0 | 0.75 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 5 | Coal-fired power plants are unacceptable. | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 6 | Fossil fuel power plants are unacceptable. | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 7 | Nuclear energy is unacceptable. | 0.0 | 0 | 0 | 0 | 0 | 0.75 | 0 | 0.5 | 0.0 | 0 | 0 | 0.0 | - | 0 |

| | | | | | | | | | | | | | | | | |
|----|---|-----|---|-----|---|------|------|------|------|------|-----|------|---|-----|-----|---|
| 8 | Large-scale hydroelectric power plants are unacceptable. | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 9 | Companies prevent negative impacts on protected areas included in categories I-IV by the International Union for Conservation of Nature (IUCN) in their business operations and the areas they manage. | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.5 | - | 0 |
| 10 | Companies prevent negative impacts on UNESCO World Heritage sites in their business operations and the areas they manage. | 0.6 | 0 | 0 | 0 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.0 | 0.75 | 0 | 0.0 | 0.6 | 0 |
| 11 | Companies prevent negative impacts on protected areas covered by the Ramsar Convention on Wetlands in their business operations and the areas they manage. | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 12 | Companies prevent conflicts over land rights and acquire natural resources only by conducting serious consultations with local communities and obtaining free, prior, and informed consent (FPIC) for indigenous peoples. | 0.6 | 0 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 13 | Companies prevent conflicts over land rights and acquire natural resources only with free, prior, and informed consent (FPIC) from communities with customary tenure rights. | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 14 | Companies have processes in place to enable the remediation of any adverse human rights impacts they cause or contribute to. | 0.5 | 0 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |
| 15 | Dam constructions are in accordance with the seven principles of the World Commission on Dams. | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | - | 0 |



P R A K A R S A

Welfare Initiative for Better Societies

The PRAKARSA is a research and capacity-building institution established to create a democratic, just, and prosperous society through ideas development, policy and institutional reforms, and evidence-based problem-solving innovations. The PRAKARSA focuses on fiscal policy, social policy, and sustainable development issues.

We conducts research activities, policy analysis, and training on a wide range of topics related to welfare issues. In executing its various activities, The PRAKARSA consistently adopts collaborative and engagement approaches to collaborate with varied parties: governments, parliaments, civil society organizations, universities, think tanks, international organizations, private sectors, development donor agencies, and mass media.

We believe that this multi-stakeholder approach will strengthen our works and initiatives in the knowledge production and dissemination as well as the evidence-based policymaking process. We also believe that networking will facilitate and reinforce one another. Therefore, we have received support from various donors and participated in multifarious initiatives with The PRAKARSA partners.

www.theprakarsa.org

Komplek Rawa Bambu 1
Jl. A No. 8E Kel. Pasar Minggu,
Kec. Pasar Minggu, Jakarta Selatan

 +62 21 7811 798

 perkumpulan@theprakarsa.org

    The PRAKARSA

  PRAKARSA Podcast