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Green Finance Institute

Investors' Views on Sustainable Finance in Indonesia: Mobilising Investment for Decarbonisation

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1. Executive Summary

The Green Finance Institute is developing a programme of work in Indonesia for the UK Foreign, Commonwealth and Development Office (FCDO) to support mobilisation of private capital to deliver rapid decarbonisation. This report presents views of private sector investors on sustainable finance in Indonesia, including existing barriers to mobilising investment towards decarbonisation and indicative solutions. Whilst barriers differ by sector, and solutions will need to be tailored for domestic and international investors, the conclusions are clear. A new institutional approach is required, to coordinate policy, regulation, development capital and technical assistance. This will ensure that private capital flows at scale into priority NDC projects in Indonesia. This report evidences that and sets out how it can be delivered, through the National Committee on Sustainable Finance.

Summaries of existing policy and regulation were developed through independent desk-based research and analysis. Investor sentiment analysis involved engagement with four key stakeholder groups (banks, private equity / venture capital, law firms and development partners). The stakeholder views and GFI recommendations made within this report do not represent UK Government policy and instead provide an independent view on sustainable finance investment in Indonesia.

Background: Current Initiatives and Reforms to Accelerate Green Investments

Indonesia is actively pursuing economic growth and investment opportunities through a broad range of initiatives. These include the One Stop Service by the Indonesia Investment Coordinating Board (BKPM) and the Job Creation Act, aimed at improving the business and tax environment. Indonesia is also committed to reducing greenhouse gas emissions, with significant funding needs outlined in its Biennial Update Reports. However, private investment aligned with climate goals remains limited, underscoring the need to develop a broader range of sustainable investment opportunities.

To meet its 2030 climate targets, Indonesia is working on a sustainable finance framework, including the implementation of the Phase II Sustainable Finance Roadmap (2021 – 2025) and the Indonesia Taxonomy for Sustainable Finance (2024). This report focuses on all sectors from the enhanced NDC. However, much of the private capital mobilisation activity has so far focussed on energy given its contribution to emissions and key financing challenges – learning lessons that may be applied to other sectors will be important in building towards meeting Indonesia's overall climate targets.

Collaborative efforts with international partners, such as the Energy Transition Mechanism and the Just Energy Transition Partnership (JETP), aim to mobilise funds for a fair energy transition. These initiatives are coordinated through dedicated offices and supported by harmonised national fiscal policies. Indonesia's JETP has developed the Comprehensive Investment and Policy Plan (CIPP) to ensure a

consistent vision for transition pathways that contribute to the country's economy and ensure access to affordable energy. The JETP Secretariat prioritises project financing based on accessibility and cost. Blended finance schemes combine JETP funding sources to balance risk and returns, extending the reach and effectiveness of funding. The JETP can deploy a range of interventions, including blended finance for de-risking, guarantees, and incentives like Viability Gap Funding and the Project Development Facility, which help project developers reduce costs and mitigate risks.[1]

JETP remains a priority for expediting Indonesia's fair energy transition and has significant support from the Indonesian Government, developed countries through International Partners Group (IPG), and international organisations. JETP brings together the necessary parties for the first time, identifying key investments areas and requirements to fulfil energy transition commitments and key policy reforms to enable effective execution of the transition plan. Key policy reforms encompass issues such as reforming the local content policy, addressing significant surplus in the power grids, reforming the PLN business model and strengthening financial policy to support Indonesia's energy transition. Funding challenges arise from combining public and private investors from different countries, and obstacles associated with domestic sectoral policy. Governance challenges may include the absence of permanent, institutional coordination mechanisms.

Alongside sustainable finance regulation, there are numerous sectoral policy interventions designed to support growth and investment in priority NDC sectors. Examples include:

- **Energy:** minimum energy performance standards for consumer products and statements on renewable energy in the Coal to Clean Power Transition Statement
- **Forestry and Land Use:** legal framework for carbon pricing and standards for carbon trading and a dedicated agency for peatland restoration
- **Waste:** 30% waste reduction target, regulations encouraging waste-to-energy and technical standards on waste infrastructure
- **Agriculture:** consolidated approach to sectoral research and development (R&D), new import regulations and capacity building for farmers looking to transition using technology
- **Industrial Processes and Product Use:** certification for green cement, new standards for industrial wastewater quality for pulp and paper and new guidance on the use of technology to minimise environmental impact.
- **Transportation:** emissions testing of internal combustion engine (ICE) vehicles, incentives for electric vehicle (EV) manufacturing and consumers and technical standards for charging infrastructure.

Further detail on sector policy is included in the main body of the report.

Identified Barriers and Solutions

The object of this engagement was to better understand the private investor perspective on these various initiatives and develop solutions to evolve them to increase their impact on capital mobilisation into NDC sectors. During our engagement with four stakeholder groups (banks, private equity / venture capital, law firms, and development partners and others), the following barriers and interventions in mobilising private capital flows into sustainable financing opportunities were mentioned, as shown in Figure 2 below:

[1] Just Energy Transition Partnership Indonesia. (2023). Comprehensive Investment & Policy Plan. https://jetp-id.org/cipp

Barriers			
Type	**No.**	**Theme**	**Significance***
Macroeconomic /cross-sectoral market barriers	1	Higher risks associated with green investments (e.g. regulatory, return, political, economic trends)	High
	2	Economic volatility and currency fluctuations	High
	3	Lack of private investment competitiveness due to substantial public investment through public finance and state-owned enterprises	Low
	4	Inadequate infrastructure for green investments e.g., renewable energy projects, transmission lines, and storage facilities.	Low
Policy and Regulatory	5	Lack of a comprehensive framework that harmonizes all related plans, policies, and regulation	High
	6	Lack of enforcement mechanisms and clarity on repercussions related to noncompliance	Medium
	7	Lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries	Low
Supply-side	8	Financiers find there is a lack of bankable projects and deal flow due to insufficient investment opportunities	High
	9	Development fund stakeholders feel there is a lack of financing supply and involvement from local government	Medium
	10	Lack of expertise and technical capabilities within financial institutions to design and develop green financial products, and accurately assess, structure, and manage green finance transactions	Low
Demand-side	11	Limited green financial products and services due to preference for traditional investment options	High
	12	Investors and business agreed on the difficulty for project owners to access affordable capital and financing options tailored to green projects	High
	13	Lack of incentives to attract private investors	High
	14	Organisations lack the capability to develop and implement bankable projects	High

Interventions				
Stakeholders	**No.**	**Theme**	**Significance***	**Potential Barriers to Address**
Government and Financial Institutions	1	Employ a variety of financial instruments and risk mitigation strategies to attract private investors and enhance the bankability of opportunities	High	Barriers: 1, 3, 7, 8, 11, 12, 13
Government and Financial Institutions	2	Incentivise financial institutions to invest in decarbonisation projects by providing capital relief measures (e.g. lower risk weights, guarantees and insurance, regulatory reforms)	High	Barriers: 1, 2, 3, 7, 8, 10, 11, 12, 13
Government and Financial Institutions	3	Standardise ESG requirements to be assessed by investors (e.g. IFRS S-1 and S-2, IFC Performance Standards)	Medium	Barriers: 1, 5, 6, 10, 14
Government	4	Provide more incentives across priority sectors to attract private investors and boost investment supply	High	Barriers: 1, 3, 7, 8, 9, 11, 12, 13
Government	5	Formulate a clear and consistent regulatory framework that can effectively communicate regulations, requirements, and risk of non-compliance	High	Barriers: 1, 4, 5, 6, 14
Government	6	Enhance and clarify the regulations surrounding carbon pricing to incentivise and accelerate actions towards decarbonisation	High	Barriers: 1, 5, 6

Figure 2: Summary of Barriers and Interventions

*Significance is based on the number of times the barrier or intervention was raised. High – mentioned in five or more interviews; Medium – mentioned in three or four interviews; Low – mentioned in two or fewer interviews.

To analyse the barriers and potential interventions for proliferating green and sustainable financing in Indonesia, **barriers were categorised into four main themes:**

a. **Macroeconomic/cross-sectoral market barriers:** All stakeholder groups recognised higher risks associated with green investments, economic volatility, and currency fluctuations as the most significant market barriers. In addition, the reduced competitiveness of private investments and insufficient infrastructure for green investments were identified. Market barriers tended to apply more to international investors.
b. **Policy and regulatory:** The lack of a comprehensive overall framework for green finance was identified as the most significant barrier to investments by all stakeholder groups. Law firms, development financial institutions, and private equity pointed out the absence of enforcement mechanisms as a significant obstacle, while interviews with banks and private equity stakeholders mentioned the lack of market competition due to substantial government subsidies in carbon-intensive industries as a significant policy and regulatory barrier.
c. **Supply-side:** The lack of bankable projects and deal flow due to insufficient investment opportunities, which is a function of a and b above, was identified as the most significant barrier by all stakeholder groups. Additionally, development financial institutions and private equity highlighted the lack of financing supply from local government as a significant barrier, with engagement at the provincial and district level important for municipal bond issuances. Interviews with private equity identified the lack of technical capabilities within financial institutions to design green financial products as a supply-side barrier.
d. **Demand-side:** Among the four thematic barriers, demand-side issues were the most frequently discussed during the interviews. Law firms, banks, and development financial institutions emphasised the limited availability of green financial products in the market. Banks and private equity mentioned the difficulty in accessing financing options for green projects, while law firms, development financial institutions, and private equity stakeholders raised concerns about the lack of incentives and capabilities to develop bankable projects.

Recommendations

There is an opportunity to take an institutional approach to solving for these challenges across the capital mobilisation value chain. Law No,4/2023 Omnibus Law for Sustainable Finance, states that in the development of sustainable finance in Indonesia, the establishment of a sustainable finance committee is mandated to *(i) coordinate the formulation and implementation of strategies, policies, and programs for Sustainable Finance, (ii) optimize support for fiscal, microprudential, monetary, payment system, and macroprudential policies, (iii) develop a database and supporting infrastructure for the implementation of Sustainable Finance, and (iv) coordinate the formulation of a sustainable taxonomy.*

The National Committee on Sustainable Finance (NCSF), operating under the Ministry of Finance, could act as an intermediary between public and private sector, to ensure coordinated interventions and raise awareness of opportunities for both investors and developers. The diagram below sets out how this could work:

Key actors in the value chain

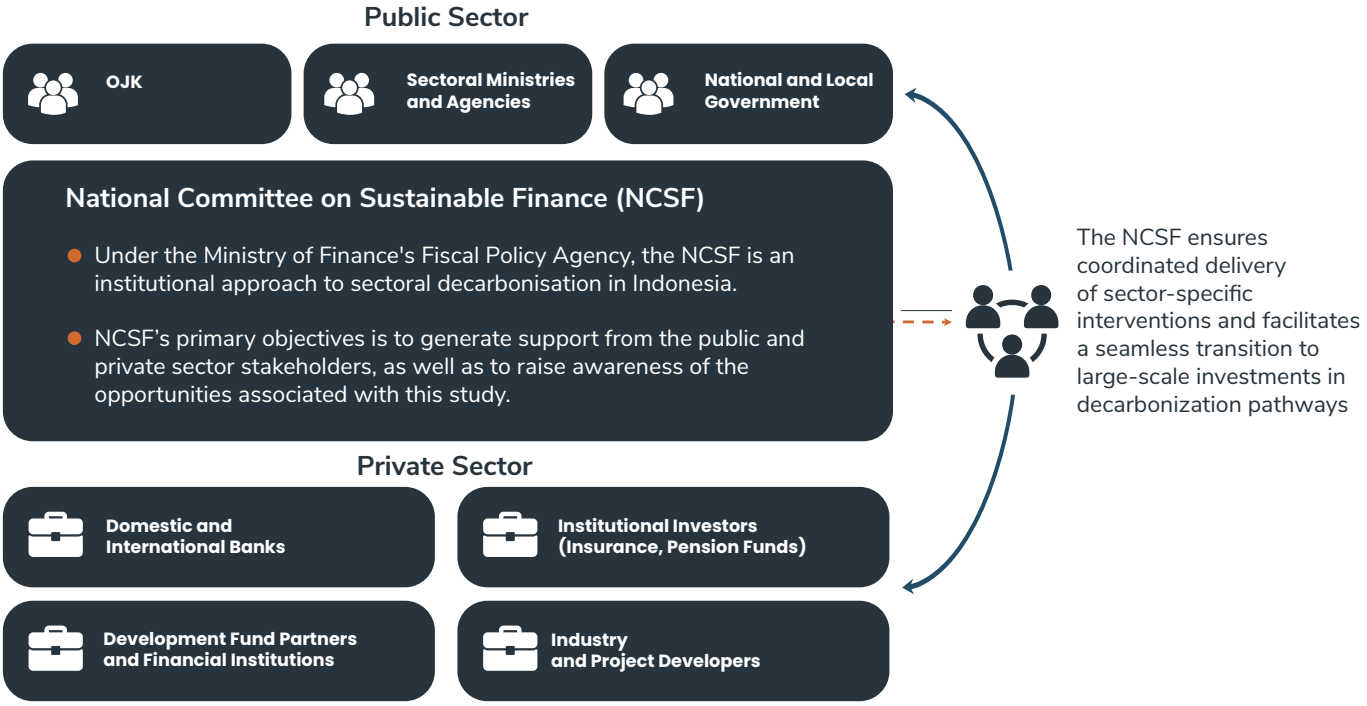

Figure 1: Key actors in capital mobilisation value chain

This study recommends that the NCSF should focus on accelerating green projects in priority sectors identified in the Enhanced NDC through a series of targeted programme and activities.

Existing activity, including domestic and international development finance institutions (DFIs), global initiatives like JETP, and domestic sectoral and financial regulation, all aim to mobilise capital. They would benefit from coordination and acceleration through an institutional approach under the NCSF.

To succeed, the NCSF will require a mandate from public and private stakeholders to align and coordinate actions and raise awareness of the opportunities in net zero investment.

Based on our analysis, our recommendations for key focus area include optimising financial tools and strategies, developing sectoral policy incentives, strengthening communication channels between ministries and with external investors, offering investment incentives through blended finance, and leveraging long-term funding options. **These initiatives would be designed to attract private investment, enhance the bankability of sustainable projects, and promote effective coordination among key actors, thereby advancing Indonesia's Sustainable Development Goals in alignment with the Enhanced NDC.**

More specifically, **the NCSF should consider the following possible actions to strengthen and accelerate the green finance landscape in Indonesia:**

1. Collaborate closely with the government and financial institutions to leverage a diverse range of financial instruments and risk mitigation strategies.
2. Develop policies designed to incentivise financial institutions to invest in decarbonisation projects in key NDC sectors, including the enabling role of the Taxonomy.
3. Establish and reinforce existing platforms and communication channels that connect government entities, financial institutions, investors, and industry stakeholders.
4. Introduce supplementary incentives across priority sectors to attract private investors and stimulate increased investment supply.
5. Recognising the significance of long-term funding for infrastructure projects, the NCSF should collaborate with financial institutions to provide viable long-term funding options.
6. Work closely with municipalities to develop a stronger pipeline of bankable projects to connect to development and private finance.

All of this activity should be coordinated and targeted at initial priority sectors from the Enhanced NDC, driven by the NCSF, to demonstrate and pilot a new approach. This could combine technical assistance and project preparation, with sector and financial policy, and where necessary, the deployment of blended finance solutions from for example, PT Sarana Multi Infrastruktur (PT SMI). This holistic package would change the investment calculus for private capital.

2. Acronyms

Acronym	Full description
ADB	Asian Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
AFTA	Association of Southeast Asian Nations Free Trade Area
ASEAN	Association of Southeast Asian Nations
AWG	Agriculture Working Group
AWR	Agricultural War Room
BAPANAS	National Food Agency
BKPM	Indonesia Investment Coordinating Board / Ministry of Investment
BOOT	Build Own Operate Transfer
BPDLH	Environmental Fund Management
BRG	Peatland Restoration Agency
BRIN	National Research and Innovation Agency
BULOG	Indonesia Logistics Bureau
BUR	Biennial Update Report
CBI	Climate Bonds Initiative
CBT	Climate Budget Tagging
CEP	Cirebon Electric Power
CELIOS	Centre of Economic and Law Studies
CFPP	Coal-Fired Power Plants
CIPP	Comprehensive Investment and Policy Plan
CIT	Corporate Income Tax
CPI	Climate Policy Initiative
CSRD	Corporate Sustainability Reporting Directive
DETER	Real-Time Deforestation Detection System
DPR	Indonesian House of Representatives
EPR	Extended Producer Responsibility
EIA	Environmental Impact Assessment
ESDM	Energy and Mineral Resources Ministry
ESG	Environmental, Social, and Governance
ETM	Energy Transition Mechanism
EU	European Union
EUGBS	European Green Bond Standard

Acronym	Full description
EV	Electric Vehicle
FCDO	Foreign, Commonwealth and Development Office
FOLU	Forestry and Other Land Use
GFANZ	Glasgow Financial Alliance for Net Zero
GFI	Green Finance Institute
GHG	Greenhouse Gases
GOI	Government of Indonesia
HHP	Tax Regulation Harmonisation Law
IC VCM	Integrity Council for Voluntary Carbon Markets
IEA	International Energy Agency
IFA	Investment Focus Areas
IKNB	Non-Bank Financial Industry
IMO	International Maritime Organisation
INA	Indonesia Investment Authority
INPE	National Institute for Space Research
IPG	International Partners Group
IPP	Independent Power Producer
ISPO	Indonesia Sustainable Palm Oil
JETP	Just Energy Transition Partnership
KKP	Ministry of Marine Affairs and Fisheries
LCR	Local Content Requirement
LHK	Environment and Forestry Ministry
MARPOL	International Convention for the Prevention of Pollution from Ships
MARVES	Ministry for Maritime and Investment Affairs
MEMR	Minister of Energy and Mineral Resources
MFO	Marine Fuel Oil
MOEF	Ministry of Environment and Forestry
MoU	Memorandum of Understanding
MSW	Municipal Solid Waste
NCSF	National Committee on Sustainable Finance
NDC	Nationally Determined Contribution
NEK	Carbon Economic Value

Acronym	Full description
NEP	National Energy Policy
NRE	New and Renewable Energy
OECD	Organisation for Economic Co-operation and Development
OJK	Indonesia Financial Services Authority
OPS	Onshore Power Supply
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PRODES	Program for the Calculation of Deforestation in the Legal Amazon
PT PLN	PT Perusahaan Listrik Negara
PT SMI	PT Sarana Multi Infrastruktur
RAN-GRK	National Action Plan on GHG Emission Reduction
RSPO	Roundtable on Sustainable Palm Oil
RUPTL	National Electricity Supply Business Plan
SDG	Sustainable Development Goal
SEF	Sustainable Energy Fund
SKD	Semi Knocked Down
SKEM	Minimum Energy Performance Standard
SOE	State-Owned Enterprise
SRN	National Registry System
TKBI	Indonesian Taxonomy for Sustainable Finance
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WtE	Waste-to-Energy

Table 1: List of Acronyms

3. Introduction and Scope of Study

3.1. Background and Objectives

The Green Finance Institute (GFI) is developing a programme of work in Indonesia for the Foreign, Commonwealth and Development Office (FCDO) on building out a private capital mobilisation strategy to deliver rapid decarbonisation. As part of this endeavour, the GFI is in discussions with the Ministry of Finance's Fiscal Policy Agency to advance sustainable finance in Indonesia through the establishment of a Sustainable Finance Committee. To support this, GFI commissioned a study to develop a better understanding of:

- sectoral decarbonisation progress and challenges in Indonesia,
- the current state of sustainable finance policy in Indonesia,
- private investor perspectives on barriers and solutions, and
- investor sentiment towards mobilising the capital that is required to meet Indonesia's Nationally Determined Contribution (NDC).

This report will synthesise findings of the market sentiments and identified barriers and provide recommendations to overcome such barriers and further enhance the mobilisation of investments for priority sectors. The outcome may become a reference for the Ministry of Finance working together with the Bank of Indonesia and Indonesia's Financial Services Authority for advisory purposes in the soon to be established Sustainable Finance Committee.

3.2. Scope and Limitations

For the purpose of this report and analysis, we include the NDC priority sectors, as well as the transportation sector.[2] For each sector, we have selected exemplar sub sectors to identify potential opportunities for the private sector to participate in financing. For this report, the focus for each of the NDC priority sectors and transportation are as follows:

1. **Energy**
   - **a.** Coal Phase-out
   - **b.** Solar Photovoltaic

2. **Forestry and Land Use**
   - **a.** Forest Management
   - **b.** Peatland Protection and Restoration

3. **Agriculture**
   - **a.** Rice Field
   - **b.** Crop Farming

4. **Waste**
   - **a.** Municipal waste management
   - **b.** Waste to Energy

5. **Industrial Processes and Product Use**
   - **a.** Cement production
   - **b.** Pulp and Paper

6. **Transportation**
   - **a.** Maritime transport
   - **b.** Electric vehicles

Due to availability of data, our analysis is primarily based on information that is publicly accessible. We have not included confidential data, such as details pertaining to specific transactions. As a result, accurately analysing the precise number of financing activities currently underway in each sector and sub-sector is incomplete. This limitation may impact the depth and specificity of our findings.

[2] Transportation is included at the request of the Green Finance Institute and the Ministry of Finance.

3.3. Methodology

Below is a high-level summary of the methodology, consisting of two key phases (further detail on this methodology can be found in Appendix 1):

- **Phase 1: Desk-based research** was carried out to: 1) review existing sustainable finance policy and regulation in Indonesia, including overview of relevant government department priorities, 2) identify existing sectoral decarbonisation initiatives in Indonesia and their progress to date, 3) provide an overview of an approach to crowd in private investment, including international investors, development finance and other programmes, 4) assess the impact to date of the Indonesia Taxonomy for Sustainable Finance (TKBI) in increasing investor understanding of sustainable investment.
- **Phase 2: Investor Sentiment Analysis** was carried out through structured interviews across stakeholder groups who operate in the Indonesian market to gauge investor's appetite in the NDC priority sectors. The following stakeholder groups were consulted on their exposure to sustainable financing as a financial intermediary or as an investor to understand the barriers and potential solutions to proliferate green finance:

  - Banks (International and Domestic)
  - Private Equity / Venture Capital
  - Development Partners and others
  - Legal professional services firm

  Legal professional services providers (law firms) were also consulted due to their extensive experience in assisting issuers of sustainable finance instruments. Stakeholders were shortlisted from a long list of institutions based on each institution's familiarity with the Indonesian market and presence. Formal invitations were then sent out to institutions to whom contact information were available. Ultimately, the stakeholders consulted were those who responded to our invitation.

  The stakeholder consultation process was carried out in March and April 2024, with a total of 24 organisations across the four stakeholder groups engaged.

  Below is a summary of the stakeholders who were engaged for the interview.

Category	Number
Banks	3
Private Equity / Venture Capital	3
Development Partners and others	13
Legal professional service Firms	3
Total	**22**

Table 2: Stakeholder Types

Prior to engagement, questionnaires were circulated to confirmed interviewees. There were distinct questionnaires prepared for financial institutions, development finance institutions, as well as for law firms. Despite the distinctive questionnaires (contextualised for each targeted interviewee) circulated, all had the following recurring themes:

- Investment appetite for sustainability-incorporated assets
- Sector prioritisation based on the NDC

- Risk assessment of green assets, which includes de-risking mechanism, blended financing and environmental risk assessment of portfolios
- Barriers to Sustainable Financing in Indonesia
- Potential solutions to increase disbursement of Sustainable Financing in Indonesia

After the interviews were conducted, several barriers and potential solutions were synthesised. Another survey was then circulated to the same interviewees after the consultation was conducted to validate what was collated across different stakeholders.

3.4. Structure of Report

This report is structured as follows:

Section	Title	Brief Description and Content
1	Executive Summary	• Summary of current green investments initiatives, JETP's blended finance initiatives and challenges, key actors in capital mobilisation • Key findings from the study • Summary of key recommendations and next steps
2	Abbreviations	• List of all abbreviations used in the report
3	Introduction and Scope of Study	• Brief background, objectives, scope and limitations, and methodology • Brief description of the sections of the report
4	Background and Analysis of Existing Policies	• Overview of initiatives and reforms to accelerate domestic and foreign investment • Overview of existing capital market ecosystem for green investments • Summary of notable policy developments which enable sustainable investment • Overview of financing flows across the NDC sectors
5	Sectoral Deep Dive Analysis	• Overview of investments and progress to finance the priority sectors • Deep dive on regulatory developments, institutional mechanisms, implementation, gaps and opportunities across the focus sectors
6	Investor Sentiment on Barriers and Interventions	• Summary of objectives, background on selection of stakeholders and questions for the interview • Summary of barriers and potential interventions • Deep dive on the barriers (macroeconomic/cross-sectoral market barriers, policy and regulations, supply-side and demand-side) and potential interventions (cross-cutting sectors and government)
7	Next Steps and Potential Policy Considerations	• Summary of next steps and potential policy considerations
8	References	• List of all references used in the report
Appendix 1	Report Methodology	• Details of the methodology used in our research and analysis
Appendix 2	Stakeholder Consultation Questions	• Details of the roundtable and interview questions

Table 3: Report Structure

4. Background and Analysis of Existing Policies

4.1. Overview of initiatives and reforms to accelerate private domestic and foreign investment

Indonesia is making concerted efforts to prioritise and accelerate private domestic and foreign investments, leveraging its considerable potential as an investment destination. Currently, the country is implementing various initiatives and reforms to speed up private domestic and foreign investments, with the goal of enhancing its economic outlook and attracting more capital.

UU No. 11 Tahun 2020 **on Job Creation is a comprehensive reform package aimed at stimulating economic growth and attracting private domestic and foreign investments.**[3] It works to streamline business processes, improve the investment climate, and enhance ease of doing business. The law introduces a range of investment incentives, such as tax breaks and investment allowances, to attract both domestic and foreign investors. It also ensures transparency and fairness in investment processes, safeguarding investors' rights. Additionally, the law includes provisions for environmental and social impact considerations, requiring assessments and mitigation measures to promote sustainable and responsible investment practices. These initiatives and reforms aim to enhance Indonesia's competitiveness as an investment destination and foster economic growth.

The Indonesia Investment Coordinating Board (BKPM) One Stop Service simplifies and speeds up the investment process for both domestic and foreign investors by centralising licensing and approval processes.[4] This eliminates the need for investors to deal with multiple government agencies. The One Stop Service offers integrated services including permits, licensing, land acquisition, and other essential approvals. It also features an online application system to improve accessibility and ensure transparency. Additionally, dedicated investment support is provided, offering guidance on regulations and help with resolving issues. The One Stop Service promotes investor protection through transparent procedures and ongoing improvement efforts, aiming to draw more investments, spur economic growth, and boost Indonesia's competitiveness as an investment location. There are opportunities to build on the approach with an approach tailored to attracting green investment.

[3] United Nations Conference on Trade and Development (UNCTAD). (2020). Indonesia Omnibus Law on Job Creation has been enacted. Investment Policy Monitor. https://investmentpolicy.unctad.org/investment-policy-monitor/measures/3567/indonesia-omnibus-law-on-job-creation-has-been-enacted

[4] Indonesia Investment Coordinating Board. (2024). One Stop Service. https://investindonesia.go.id/en/how-we-can-help/one-stop-service

4.2. Overview of initiatives and reforms to accelerate green investments

Indonesia, is at a pivotal moment, demanding urgent focus to propel sustainable growth, foster innovation, and address pressing development challenges. Moreover, it grapples with the looming threat of climate change. To address this, Indonesia enacted UU No. 16 Tahun 2016 on the Ratification of Paris Agreement to the (UNFCC) as well as PERPRES No. 59 Tahun 2017 on Achievements of the Sustainable Development Goals (SDG).

In 2018, Indonesia released its Second Biennial Update Report (BUR) under the United Nations Framework Convention on Climate Change (UNFCCC), estimating that a sum of $247 billion USD is required to meet the unconditional goal of reducing Greenhouse Gas (GHG) emissions[5]. These figures are derived from data on the government spending necessary to achieve the Counter Measure 1 (CM1) target, as outlined in Indonesia's Enhanced NDC. Additionally, the Third Biennial Update Report (BUR) noted that approximately $285 billion USD would be required for Indonesia to pursue a 41 percent reduction in GHG emissions by 2030.[6] This would assume that Indonesia is aiming to enhance its counter measures, which are detailed in the NDC document as Counter Measure 2 (CM2).[7] To estimate these numbers, the Ministry of Finance produced projections based on historical data on official government expenditure from Indonesia's Ministry of Finance Climate Budget Tagging (CBT) system.[8] In 2020, Indonesia published its first summary detailing state expenditures that are linked to CBT.[9] For example, the Energy and Mineral Resources Ministry (ESDM) has budgeted climate change mitigation activities such as procurement of energy efficient equipment, solar PV street lighting, geothermal and hydro energy infrastructure. The Ministry of Agriculture (Kementan) has allocated a budget to support organic fertiliser programmes. The Government has highlighted the importance of private sector participation, such as through direct investments in sustainable projects, or encouraging decarbonisation of key industries' operations.

Indonesia needs up to $285 billion USD to achieve its 2030 goal of reducing emissions by 41 percent.[10] However, there is a considerable gap of 51 percent in the total investment required. While 15 percent of the necessary investments are supplied by private and public financial sectors, the government's climate budget accounts for only 34 percent.[11] Presently, Indonesia is executing various initiatives and reforms aimed at speeding up investments and drawing funds to the priority sectors specified in the NDC. Figure 4 provides a summary of key initiatives from the last decade.

[5] Republic of Indonesia. (2018). Indonesia Biennial update report (BUR) 2 (Page 104). https://unfccc.int/documents/192165
[6] Republic of Indonesia. (2021). Indonesia Biennial update report (BUR) 3 (Page 151) https://unfccc.int/documents/403577
[7] Republic of Indonesia. (2022). Enhanced Nationally Determined Contribution (NDC) Indonesia (Page 29) https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced percent20NDC percent20Indonesia.pdf
[8] Dewan Perwakilan Rakyat Republik Indonesia. (2022). Anggaran Hijau Indonesia dalam Menghadapi Perubahan Iklim (Page 17). https://berkas.dpr.go.id/pa3kn/referensi-apbn/public-file/referensi-apbn-public-32.pdf
[9] Kementerian Keuangan Republik Indonesia. (2020). Catatan Berita Tahunan (CBT) Nasional 2018-2020. https://fiskal.kemenkeu.go.id/files/buku/file/CBT-NATIONAL-2018-2020.pdf
[10] Republic of Indonesia. (2021). Indonesia Third Biennial Update Report. https://unfccc.int/sites/default/files/resource/IndonesiaBUR%203_FINAL%20REPORT_2.pdf
[11] Climate Policy Initiative (CPI). (2023). Landscape of Climate-Aligned Investment in Indonesia's Financial Sector (Page 8). https://www.climatepolicyinitiative.org/wp-content/uploads/2023/12/Landscape-of-Climate-Aligned-Investment-in-Indonesias-Financial-Sector-CPI-December-2023.pdf

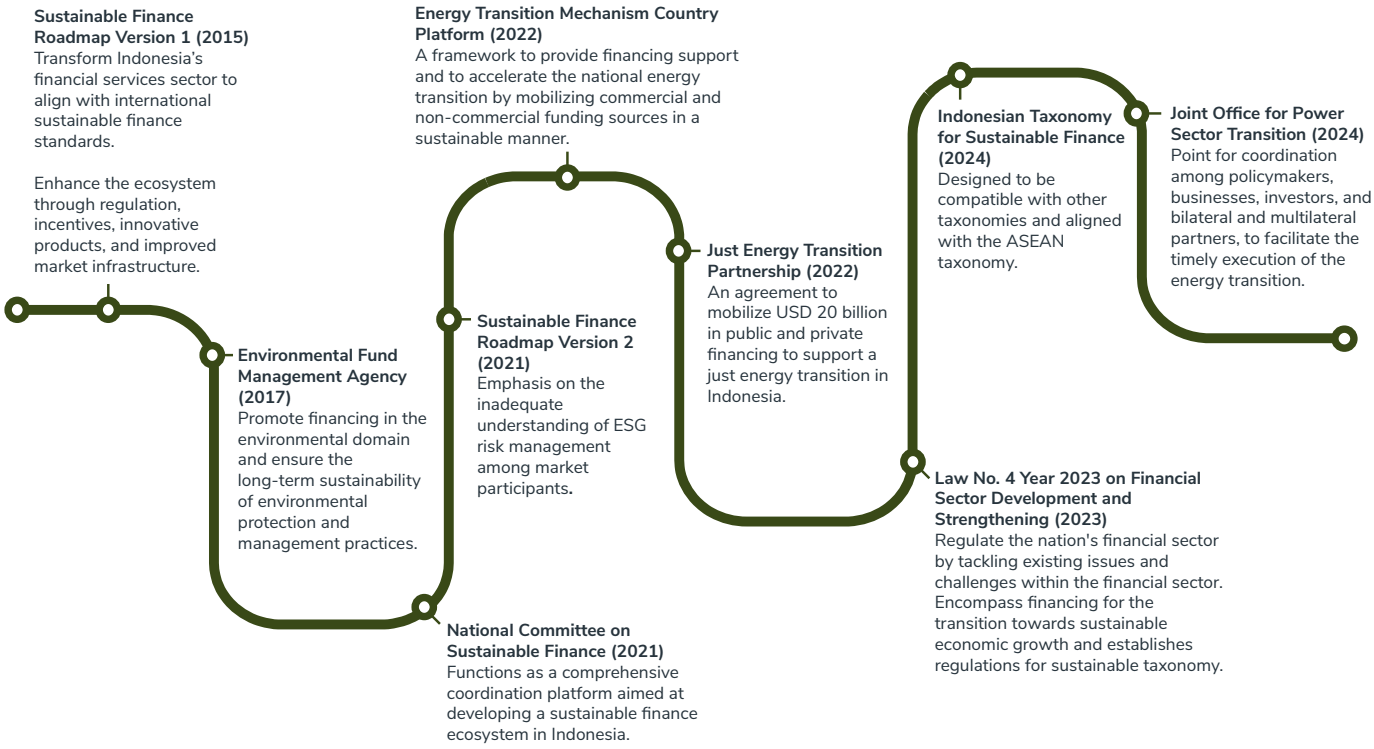

Figure 3: Key green investment initiatives and reforms in Indonesia

Law No. 4 Year 2023 on Financial Sector Development and Strengthening

The government of Indonesia introduced Law No. 4 2023, commonly known as the Financial Sector Omnibus Law or Pengembangan dan Penguatan Sektor Keuangan (PPSK), to regulate the nation's financial sector. This legislation was enacted with the objective of tackling existing issues and challenges within the financial sector while promoting innovation, efficiency, inclusivity, reliability, and stability to effectively address future challenges faced by Indonesia's financial industry. [12] Law No. 4 2023 incorporates a section that focuses on the implementation of sustainable finance. This section expands the scope of sustainable finance to encompass financing for the transition towards sustainable economic growth and establishes regulations for the sustainable finance taxonomy. By doing so, the law reinforces the crucial role of the financial sector in facilitating sustainable economic growth and addressing climate change concerns.

Indonesian Financial Services Authority (OJK) Sustainable Finance Roadmaps

Before implementing specific regulations, the OJK issued a Sustainable Finance Roadmap that sets the stage for transforming Indonesia's financial services sector to align with international sustainable finance standards. This roadmap details steps to enhance the sector's ecosystem through key elements such as regulation, incentives, innovative products, and improved market infrastructure.[13] Considered a foundational step in sustainable finance, the strategies laid out in the roadmap establish a basic framework. Following its release, Indonesia has enacted several regulations in the capital market and financial sector, notably concerning green bonds and sustainability disclosure. The roadmap also highlights the importance of increasing awareness among market participants through capacity building and cross-ministerial cooperation.

[12] U.S. Agency for International Development. (2023). Summary pf Law 4 Year 2023. https://pdf.usaid.gov/pdf_docs/PA00ZW63.pdf
[13] Otoritas Jasa Keuangan. (2022). Regulasi Keuangan Berkelanjutan. https://www.ojk.go.id/keuanganberkelanjutan/Uploads/Content/Regulasi/Regulasi_22073010372642.pdf

There have been two versions of the roadmap published. The first roadmap was published to outline the plans from 2015 to 2019. In the **second version of the roadmap**, there is an increased emphasis on the inadequate understanding of Environmental, Social, and Governance (ESG) risk management among market participants. While physical and transition risks related to climate are recognised as risks that need to be managed, there is still a lack of clarity and no standardised methods or tools to handle these risks effectively. Consequently, providing guidance on ESG risk management for banks will be the next significant milestone for OJK.

Indonesian Taxonomy for Sustainable Finance

On 20 February 2024, the OJK revised its initial Green Taxonomy to the "**Indonesian Taxonomy for Sustainable Finance" (TKBI).**[14] The TKBI is designed to be compatible with other taxonomies and to support national interests. It is aligned with the Association of Southeast Asian Nations (ASEAN) taxonomy and categorises activities into four Environmental Objectives: climate change mitigation, adaptation, ecosystem and biodiversity protection, and transitioning to a circular economy. This revision enhances the previous Indonesia Green Taxonomy by organising activities into three categories: "green," "transitional," and "does not meet criteria" for activities that do not adhere to the standards.

Significantly, the TKBI categorises financing for CFPP (coal-fired power plants) as a "transitional" activity if the plant supports a unit engaged in processing or mining minerals critical to the energy transition.[15] The OJK supports this classification by emphasising the importance of these minerals in advancing the energy transition, such as in electric vehicles and battery storage systems. Moreover, it requires these power plants to cease operations by 2050 and to cut their emissions by 35 percent by 2030 relative to the 2021 Indonesian average. Captive power plants established up until 2030 are deemed eligible.

National Committee on Sustainable Finance

In 2021, OJK established a sustainable finance task force within the financial services sector, known as the National Committee on Sustainable Finance.[16] The Chairperson of the OJK Board of Commissioners, stated that the task force is designed to function as a comprehensive coordination platform aimed at developing a sustainable finance ecosystem in Indonesia, which includes participation in various international forums. The formation of the task force included stakeholders from the entire financial services sector, encompassing banking, capital markets, and the Non-Bank Financial Industry (IKNB). The task force comprises 47 financial service institutions. Following the recent enactment of the Law on the Strengthening and Development of the Financial Services Sector, there are discussions about formally institutionalising the task force.[17]

[14] Otoritas Jasa Keuangan (OJK). (2024). Taksonomi untuk Keuangan Berkelanjutan Indonesia (TKBI) (Page 32) https://ojk.go.id/id/berita-dan-kegiatan/info-terkini/Documents/Pages/Taksonomi-untuk-Keuangan-Berkelanjutan-Indonesia/Buku percent20Taksonomi percent20untuk percent20Keuangan percent20Berkelanjutan percent20Indonesia percent20 percent28TKBI percent29.pdf

[15] Otoritas Jasa Keuangan (OJK). (2024). Taksonomi untuk Keuangan Berkelanjutan Indonesia (TKBI) (Page 32) https://ojk.go.id/id/berita-dan-kegiatan/info-terkini/Documents/Pages/Taksonomi-untuk-Keuangan-Berkelanjutan-Indonesia/Buku percent20Taksonomi percent20untuk percent20Keuangan percent20Berkelanjutan percent20Indonesia percent20 percent28TKBI percent29.pdf

[16] PT Sarana Multi Infrastruktur (Persero). (2021). OJK Forms Task Force to Develop Sustainable Finance Ecosystem https://ptsmi.co.id/ojk-forms-task-force-to-develop-sustainable-finance-ecosystem

[17] In establishing the task force, OJK involved the entire financial services sector (SJK), including banks, capital markets and the non-bank financial industry (IKNB). The membership of this task force consists of 47 financial service institutions.

In the UK, the Green Finance Institute was set up as an exemplary model of collaboration between the public and private sectors to deliver policy and support investment at scale. This setup has helped to address several challenges faced by both public and private sectors such as:

1. lack of coordinated policy development and implementation
2. insufficient public-private sector engagement on priority sectors
3. access to opportunities that meet private sector risk-return needs
4. support for municipalities on project pipeline development
5. private sector capacity building on product development
6. development of new market-led solutions to mobilise capital

Environmental Fund Management Agency (BPDLH)

In line with Government Regulation Number 46 of 2017 on Environmental Economic Instruments and Presidential Regulation Number 77 of 2018 on the Management of Environmental Funds, the Indonesian government has established the Environmental Fund Management Agency (BPDLH). The primary responsibility of the BPDLH is to oversee funds related to various sectors such as forestry, energy and mineral resources, carbon trading, environmental services, industry, transportation, agriculture, marine and fisheries, and other areas related to the environment. Operating under the Ministry of Finance, the agency collaborates with multiple ministries and institutions across sectors to effectively manage these funds. The establishment of the agency aims to promote financing in the environmental domain and ensure the long-term sustainability of environmental protection and management practices. This step taken by Indonesia underscores its commitment to addressing and managing climate change. The BPDLH is expected to provide a structured platform and play a significant role in the control and management of climate change.[18]

Energy Transition Mechanism Country Platform

To expedite blended finance in Indonesia, the Government of Indonesia (GOI) set up an energy transition mechanism (ETM). In collaboration with the Asian Development Bank (ADB), the GOI helped establish the ETM and has designated PT Sarana Multi Infrastruktur (PT SMI) as the ETM Country Platform Manager to create a financing and investment framework for the programme.[19] PT SMI is collaborating with various institutional partners consisting of:

- Financing partners (ADB, World Bank, Islamic Development Bank, Climate Investment Funds, HSBC, Standard Chartered, and Japan Bank for International Cooperation);
- Grant partners (Bloomberg Philanthropies and Climate Works Foundation's Global Energy Transition Initiative, UK MENTARI, and Global Energy Alliance for People and Planet);
- Knowledge and technical partners (United States Agency for International Development, Global Green Growth Institute, Climate Policy Initiative, United Nations Development Programme, Rocky Mountain Institute, and Climate Bonds Initiative); and
- An investment partner (Indonesia Investment Authority or "INA").

Each partner signed a Memorandum of Understanding (MoU) with PT SMI to jointly support the Government's agenda to accelerate a just and affordable energy transition in Indonesia.

[18] Sekretariat Kabinet Republik Indonesia. (2019). Government establishes Environmental Fund Management Agency. https://setkab.go.id/en/govt-establishes-environmental-fund-management-agency/

[19] PT Sarana Multi Infrastruktur (Persero). (2024). ETM Indonesia. https://ptsmi.co.id/etm-indonesia

Just Energy Transition Partnership

The Indonesia Just Energy Transition Partnership (JETP) is a joint initiative aimed at mobilising $20 billion USD in both public and private funds to support a fair energy transition in Indonesia.[20] This partnership was formalised on 15 November 2022, during the G20 Leaders' Summit in Bali, by the President of Indonesia and the International Partners Group (IPG), led by the United States and Japan. The JETP's goals include capping total power sector emissions at 290 million tons of CO2 equivalent by 2030, increasing renewable energy's share to at least 34 percent of total power generation, and setting a 2050 target for net zero emissions in the power sector.

To implement the JETP, the Indonesian government set up the JETP Secretariat, responsible for creating the Indonesia JETP Comprehensive Investment and Policy Plan (CIPP).[21] The development of the CIPP is facilitated by four independent working groups: the Technical Working Group (headed by the International Energy Agency, IEA), the Policy Working Group (led by the World Bank), the Financial Working Group (led by ADB), and the Just Transition Working Group (headed by the United Nations Development Programme, or UNDP). The UNDP-led Just Transition Working Group, which includes members like the WB, ADB, GIZ, International Labour Organisation, and ICEL, plays a critical role in developing the Just Transition Framework, a key element of the Indonesia JETP CIPP (Chapter 6 of CIPP). The CIPP is intended to be a living document, with updates planned annually by the JETP Secretariat.

There are various financing modalities to support JETP-compliant projects.[22] These include public, private, blended finance, philanthropy, and carbon finance as can be seen on Table 4. Public and private financing are provided by the IPG members as well as the GFANZ Working Group members and can be used on a stand-alone basis or combined to leverage blended concessional finance. By using a small amount of concessional funds to mitigate investment risks, blended finance can attract commercial financing to projects that would otherwise be considered unviable. Additionally, Indonesia invites philanthropic organisations at various levels to direct their grants and catalytic capital towards supporting just energy transition initiatives, including stakeholder engagement, capacity building, technical assistance, policy analysis, project development, resource mobilisation, and risk capital investments. Lastly, Indonesia has implemented carbon pricing measures, including a carbon market with an Emission Trading System (ETS) and carbon offset, a carbon tax, and result-based payments, aiming to attract financing for mitigation actions to meet its NDC targets. These measures provide the basis for domestic and international carbon markets, enabling the generation of carbon credits through projects such as early retirement of coal-fired power plants for sale to potential buyers as a source of finance for just energy transition activities.

[20] United Nations Development Programme Indonesia. (2023). Indonesia Just Energy Transition Partnership (JETP). https://www.undp.org/indonesia/projects/indonesia-just-energy-transition-partnership-jetp
[21] Just Energy Transition Partnership Indonesia. (2023). Comprehensive Investment & Policy Plan. https://jetp-id.org/cipp
[22] Just Energy Transition Partnership Indonesia. (2023). Comprehensive Investment & Policy Plan. https://jetp-id.org/cipp

Financing Modality	Funding Instrument / Type
Public	• Grants / technical assistance • MDB Guarantees • Concessional loans • Non-concessional loans • Equity investments
Private	• Commercial loans (private non-concessional loans) • Equity investments • Capital markets
Blended finance	• Credit enhancement mechanisms • Guarantees • Non-fiscal incentives
Philanthropy	• Grants / technical assistance / risk capital
Carbon Finance	• Carbon market: Emission Trading System and carbon offset • Carbon Tax • Result-based payment

Table 4: JETP Financing Modalities
Source: JETP CIPP (2023)

Joint Office for Power Sector Transition

The Joint Office is established to function as a pivotal point for coordination and communication among policymakers from various ministries and agencies, as well as business entities, investors, and bilateral and multilateral partners, to facilitate the timely execution of the energy transition in the power sector[23]. Consequently, the JETP Secretariat will collaborate with the Joint Office for the execution of JETP Priority Projects. Locally, the Joint Office is referred to as Rumah PATEN, an acronym for "Perencanaan Aksi Transisi Energi Nasional," which translates to the House of Planning the Action of National Energy Transition.

The Joint Office is hosted by PT Perusahaan Listirk Negara (PLN) in collaboration with the Coordinating Ministry for Maritime and Investment, Coordinating Ministry for Economic Affairs, Ministry for Energy and Mineral Resources, Ministry of Finance, Ministry of State-Owned Enterprises, Ministry of Environment and Forestry (MOEF), and the special mission vehicle of the Ministry of Finance, PT Sarana Multi Infrastruktur (PT SMI). The Joint Office is accountable to and receives direction from the Implementation Unit of the National Energy Transition Task Force, which is led by the Deputy Coordinating Minister of Maritime Affairs and Investment for Infrastructure and Transport Coordination.

[23] Just Energy Transition Partnership Indonesia. (2024). Joint Office for Power Sector Transition Launched. https://jetp-id.org/news/joint-office-for-power-sector-transition-launched#:~:text=The percent20National percent20Energy percent20Transition percent20Task, in percent20line percent20with percent20Indonesia's percent20goals

4.3. Notable policy developments on decarbonisation, sustainability-linked securities, carbon pricing and sustainability disclosures

European Green Deal and its implication for Indonesian suppliers

The European Green Deal intersects with multiple initiatives in Indonesia, including its climate and disaster resilience programmes, as well as its goals to reduce emissions. The opportunity for establishing a collaborative green partnership arises from the alignment between the objectives of the Green Deal and Indonesia's national development plan.[24] The Corporate Sustainability Reporting Directive (CSRD) of the European Union (EU), alongside the European Green Bond Standard (EUGBS) and other related regulations, significantly influences the global landscape for sustainable finance and environmental governance. Primarily targeting EU entities, these regulations also have far-reaching implications worldwide, including impacts on Indonesia, by establishing new standards for sustainability reporting and finance.

The CSRD mandates comprehensive reporting on a wide array of ESG topics, aiming to improve transparency and uniformity in sustainability reporting across companies. It requires disclosures on sustainability plans, business model alignment with climate objectives, and due diligence processes concerning sustainability issues, potentially affecting operations and value chains.[25] Notably, the directive applies to non-EU entities with significant operations in the EU, necessitating non-financial reports from those meeting specific criteria related to their EU activities, thus influencing foreign investors in countries like Indonesia.[26]

The directive's phased implementation from 2025 to 2029 for different entities allows for a gradual adjustment to these new reporting standards. Its global reach, including its effects on Asian markets and businesses engaging with the EU, underscores the directive's role in fostering sustainable business practices beyond Europe. This development indicates a shift towards a unified global framework for sustainability reporting, with potential ramifications for regulatory alignment and business practices in countries engaged in trade and investment with the EU, such as Indonesia.[27]

Aligned with the objectives of the European Green Deal, the EU has implemented the EU taxonomy as a crucial component of EU's sustainable finance framework and a significant tool for enhancing market transparency. The taxonomy serves to guide investments towards the economic activities that are most essential for facilitating the transition. By doing so, it plays a vital role in promoting the expansion of sustainable investments within the EU. It provides assurance to investors, safeguards against greenwashing practices, encourages companies to adopt more climate-friendly practices, and mitigates market fragmentation. The EU taxonomy is instrumental in scaling up sustainable investment efforts while fostering investor confidence and supporting the transition to a greener economy.[28]

[24] Konrad Adenauer Stiftung. (2024). Stepping up to the challenges of green recovery: Indonesia and the EU. https://www.kas.de/documents/272317/12679503/Indonesia+-+EU+Green+Deal+Series+%28website%29.pdf/db5c7a95-cd57-4802-c18b-966ff39e6a14?version=1.0&t=1638951699568

[25] Harvard Law School Forum on Corporate Governance. (2023). EU Finalizes ESG Reporting Rules with International Impacts. https://corpgov.law.harvard.edu/2023/01/30/eu-finalizes-esg-reporting-rules-with-international-impacts/

[26] Linklaters. (2023). The Impact of the EU's Corporate Sustainability Reporting Directive on Businesses. Sustainable Futures. https://sustainablefutures.linklaters.com/post/102ig4t/the-impact-of-the-eus-corporate-sustainability-reporting-directive-on-businesses

[27] Linklaters. (2023). The Impact of the EU's Corporate Sustainability Reporting Directive on Businesses. Sustainable Futures. https://sustainablefutures.linklaters.com/post/102ig4t/the-impact-of-the-eus-corporate-sustainability-reporting-directive-on-businesses

[28] European Union. (2024). European Union EU taxonomy for sustainable activities. https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en#what-the-eu-is-doing-and-why

By aligning with these international standards and regulations, Indonesia demonstrates its commitment to embedding sustainability into its economic and corporate frameworks. Adapting to these regulations strengthens Indonesia's push towards sustainable development, enhancing its attractiveness to foreign investors and partners looking for compliance with these emerging global norms.[29] [30]

Capital Market Regulations

OJK has enacted POJK No. 18 Tahun 2023 concerning the Issuance and Requirements for Debt Securities and Sukuk with a Focus on Sustainability.

This regulation is a continuation of the sustainable finance roadmap aimed at developing capital markets through Securities and Sukuk (EBUS), which are designed to incorporate sustainability values such as environmental preservation and social impact, as well as promoting the growth of sustainability focused EBUS.

Moreover, POJK No. 18 Tahun 2023 represents one of OJK's efforts to address global and ASEAN regional challenges in mitigating climate change impacts, aligning with Indonesia's commitments under the Paris Agreement. POJK No. 18 Tahun 2023 supersedes the previous Regulation Number 60/POJK.04/2017, which focused on the Issuance and Requirements for Environmental-centric Debt Securities (Green Bond). The new regulation expands the scope to include several types of securities, with an emphasis on sustainability themes and mechanisms for issuing these securities.

As a result, this will regulate not only green bonds but also green sukuk, social bonds/sukuk, sustainability bonds/sukuk, sukuk-linked waqf, and sustainability-linked bonds.

Tax Harmonisation Law

On October 7, 2021, the Indonesian House of Representatives (DPR) approved UU No. 7 Tahun 2021, also known as the Tax Regulation Harmonisation Law, or Harmonisasi Peraturan Pajak (HPP) Law. This law was signed by the President of Indonesia on October 29, 2021. The HPP Law aims to enhance the fiscal policy of Indonesia, with the goal of speeding up economic recovery in conjunction with tax reforms that came into force in 2022.

The HPP Law introduced changes to existing tax legislation and includes provisions for a Carbon Tax. The implementation of the Carbon Tax demonstrates the government's commitment to promoting a green economy, reducing global carbon emissions, and addressing climate change.

Carbon Pricing Regulations

President Joko Widodo issued PERPRES No. 98 Tahun 2021 on the Carbon Pricing Mechanism to achieve the NDC and GHG Emission Control in the National Development, commonly referred to as the Presidential Regulation on Carbon Pricing. Carbon Pricing (Nilai Ekonomi Karbon, or NEK) is defined in the regulation as a value for each GHG unit emitted from human and economic activities.

[29] Harvard Law School Forum on Corporate Governance. (2023). EU Finalizes ESG Reporting Rules with International Impacts. https://corpgov.law.harvard.edu/2023/01/30/eu-finalizes-esg-reporting-rules-with-international-impacts/

[30] Linklaters. (2023). The Impact of the EU's Corporate Sustainability Reporting Directive on Businesses. Sustainable Futures. https://sustainablefutures.linklaters.com/post/102ig4t/the-impact-of-the-eus-corporate-sustainability-reporting-directive-on-businesses

The regulation states that carbon emissions or GHG are a universal performance indicator for climate action which has important economic value and international economic benefit. With this consideration, the Government of Indonesia has made carbon-pricing one of the instruments to accomplish Indonesia's mandatory obligation in GHG emission reduction under its NDC, while incentivising or commercialising the results of such action. Hence, Carbon Pricing in Indonesia and the commercialisation of carbon are regulated as part of a compliance-based market. The investors and businesses entering Indonesia's carbon market need to be cognisant of the underlying principle of Carbon Pricing in Indonesia as it will further be streamlined in the implementing regulations.

The Presidential Regulation delegates explicitly which ministerial sector has the coordination authority over several sectors or sub-sectors. The delegation of authorities on climate mitigation action to different sectors led to the establishment of the Carbon Pricing regulatory framework. Multiple sector ministries have the authority to regulate Carbon Pricing implementing regulations at ministerial level. This is being enacted through Coordinating Ministry of Maritime Affairs and Investment (MARVES) regulation MARVES No. 5 Tahun 2022 on Structure and Work Procedures of the Steering Committee for the Implementation of Carbon Economic Value for Achieving Nationally Determined Contribution Targets and Controlling Greenhouse Gas Emissions in National Development.[31] Furthermore, the Ministry of Environment and Forestry (MOEF) has introduced Regulation No. 21 of 2022 concerning the guidelines for implementing Carbon Economic Value (NEK), referred to as MOEF Reg 21/2022. This regulation outlines specific provisions for the implementation of NEK, domestic and international carbon trading, buffer obligation, voluntary carbon market, and mutual recognition.[32]

The regulation addresses the structure and working procedures of the steering committee for the implementation of Carbon Economic Value for Achieving Nationally Determined Contribution Targets and Controlling Greenhouse Gas Emissions in National Development. To navigate this regulatory framework, businesses need to have a helicopter view of ministerial level regulations to understand how Carbon Pricing, especially carbon trading, works in each sector.

Sustainability Disclosure Regulations

OJK mandates financial institutions and publicly listed companies issue sustainability reports in accordance with POJK 51/POJK.03/2017, with the requirement being phased in starting from 2019.[33] The schedule for mandatory sustainability reporting is as follows:

- From 2019, large banks and foreign banks are required to publish sustainability reports.
- From 2020, smaller banks, other non-bank financial institutions, and listed companies must start reporting.
- From 2022, large credit unions and securities companies, as well as public listed companies with medium-scale assets, are included.
- By 2024, smaller credit unions, pawnbrokers, guarantee institutions, Islamic guarantee institutions, securities companies that do not manage customers' securities accounts, and public listed companies with small-scale assets must comply.
- From 2025, pension funds are also required to publish sustainability reports.

[31] Kementerian Koordinator Bidang Kemaritiman dan Investasi Republik Indonesia. (2022). Bentuk Komite Pengarah untuk Mencapai NDC dan Pengendalian Emisi GRK. https://jdih.maritim.go.id/en/infografis/bentuk-komite-pengarah-untuk-mencapai-ndc-dan-pengendalian-emisi-grk#:~:text=Permenko percent20Marves percent20Nomor percent205 percent20Tahun,kaca percent20(GRK) percent20untuk percent20pembangunan.

[32] ARMA Law. (2022). ESG Update: Key takeaways of Minister of Environment and Forestry Regulation No. 21 of 2022 on the Guidelines of Carbon Economic Value Implementation. https://www.arma-law.com/news-event/newsflash/permenlhk21-tahun-2022-key-takeaways-of-minister-of-environment-and-forestry-regulation-no-21-of-2022-on-the-guidelines-of-carbon-economic-value-implementation

[33] Otoritas Jasa Keuangan. (2017). Penerapan Keuangan Berkelanjutan bagi Lembaga Jasa Keuangan, Emiten, dan Perusahaan Publik. https://ojk.go.id/id/regulasi/Pages/Penerapan-Keuangan-Berkelanjutan-bagi-Lembaga-Jasa-Keuangan,-Emiten,-dan-Perusahaan-Publik.aspx

OJK has outlined eight principles of sustainable finance in Indonesia, which include Responsible Investment, Management of Environmental and Social Risks, Informative Communications, Development of Priority Sectors, Sustainable Business Strategy and Practice, Governance, Inclusivity, and Coordination and Collaboration.

Furthermore, guidelines for sustainability reports are detailed under Surat Edaran OJK No. 16/SEOJK.04/2021, which provide direction for companies in reporting their ESG performance. In addition to sustainability reporting, banks are obligated to publish a Sustainable Finance Action Plan annually. This plan should outline both their short-term (one-year) and long-term (five-year) strategies for sustainable finance.

4.4. Overview of financing across NDC Priority Sectors

Developing a financing strategy for the entire duration of NDC implementation remains a difficult task due to the challenge of projecting needs. For instance, Indonesia's 2nd Biennial Update Report (2nd BUR - 2018) initially estimated that approximately USD 247 billion would be required from 2018 to 2030. In 2019, Indonesia conducted another assessment and determined that around IDR 4,520 trillion (~ USD 322.86 billion) would be needed specifically for implementing mitigation actions in the NDC roadmap. This estimate only covered the costs associated with direct emission reduction measures and did not include expenses related to creating supportive environments. In the 3rd BUR (2021), the financial needs for the conditional target were estimated to be approximately USD 285 billion, while the unconditional target required around USD 281 billion. These figures represent the estimated international climate finance flows.[34] Below is a summary of UNCCC's (2022) report on climate financing flows from international, domestic, and private sector:

International Climate Finance Flows

Indonesia has received international support from various channels such as multilateral sources. These include the Global Environment Facility (GEF), World Bank, Green Climate Fund (GCF), Adaptation Fund, and other financial institutions. Bilateral channels such as Norway, Germany, Japan, the USA, and other partners have also provided support to Indonesia. From 2015 to 2016, Indonesia received a total of USD 1.23 million in the form of loans and grants through both bilateral and multilateral channels.[35] From 2016 to 2019, Indonesia has received a total of USD 3.10 billion from international sources; 72% of the total were allocated to the energy and transportation sectors, while forestry, waste, and agriculture received 2% of the total allocation.[36]

The following are funds that Indonesia has obtained under the UNFCCC financial mechanism:

1. Green Climate Fund (GCF)
The GCF contributes to financing climate actions to achieve Indonesia's Enhanced NDC targets. Until October 2021, the current portfolio of the GCF funding in Indonesia amounts to USD 287.3 million which ranges from 10-20 years. [37]At the time of writing, Indonesia has two direct access accredited entities, namely Partnership for Governance Reform/Kemitraan and PT Sarana Multi Infrastruktur (PT SMI).

[34] United Nations Climate Change. (2022). Enhanced NDC – Republic of Indonesia. https://unfccc.int/documents/615082
[35] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf
[36] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf
[37] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf

2. Adaptation Fund (AF)
Indonesia has had one National Implementing Entity (NIE) to access the Adaptation Fund, namely the Partnership for Governance Reform/Kemitraan. The Adaptation Fund has approved approximately USD 9.7 million for five project adaptation activities in Indonesia.[38]

3. Global Environment Facility (GEF)
GEF's operational focal point in Indonesia is the Ministry of Environment and Forestry. The total funding received through GEF amounts to USD 569.66 million, while the Special Climate Change Fund amounts to USD 10 million.[39]

Domestic Climate Finance Flows

From 2018 to 2020, the government of Indonesia allocated IDR 307.9 trillion to climate change projects.[40] The disbursement of the budget in 2018 amounted to IDR 126.0 trillion (95.1% share of disbursement to allocation), while in 2019 disbursements reached IDR 83.5 trillion (85.5% share of disbursement to allocation). In 2020, although most of the budget for climate priorities were reallocated to managing the Covid-19 pandemic, the government of Indonesia still allocated IDR 77.81 trillion for climate action. This shows the government's consistent commitment to fund low carbon and climate resilience development initiatives.[41]

Year	Climate Change Budget Allocation (IDR Trillion)	Climate Change Budget Disbursement (IDR Trillion)	Share of Disbursement to Allocation
2018	132.5	126.0	95.1%
2019	97.7	83.5	85.5%
2020	77.8	N/A	N/A
Total	307.9		

Table 5: Domestic Climate Change Budget
Source: UNFCCC (2022)

Private Financial Sector

Indonesia's initiatives to draw investments and foster economic growth are showing promise. Nonetheless, it is crucial to examine the distribution of these financial inflows within the country. According to a 2023 Climate Policy Initiative (CPI) report, there are three types of financing flows in Indonesia. The first type, climate-aligned finance, includes activities that directly reduce GHG emissions and enhance climate resilience, aligning with Indonesia's climate objectives and regulations such as sustainable finance and sustainability bonds. The second type, conditionally climate-aligned finance, encompasses activities that could meet Indonesia's climate targets under specific conditions, like certification for sustainable palm oil practices and compliance with local environmental laws.

[38] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf
[39] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf
[40] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf
[41] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf

The third type, non-climate-aligned finance, supports broader economic development but may have varying environmental impacts. Despite a rise in financing flows from 2015 to 2021, only 2.6 percent of private investments are climate-aligned.[42] Hence, there is an urgent necessity to broaden the range of investments aligned with climate goals, especially as the Indonesian government strives to reach its 2030 climate targets.

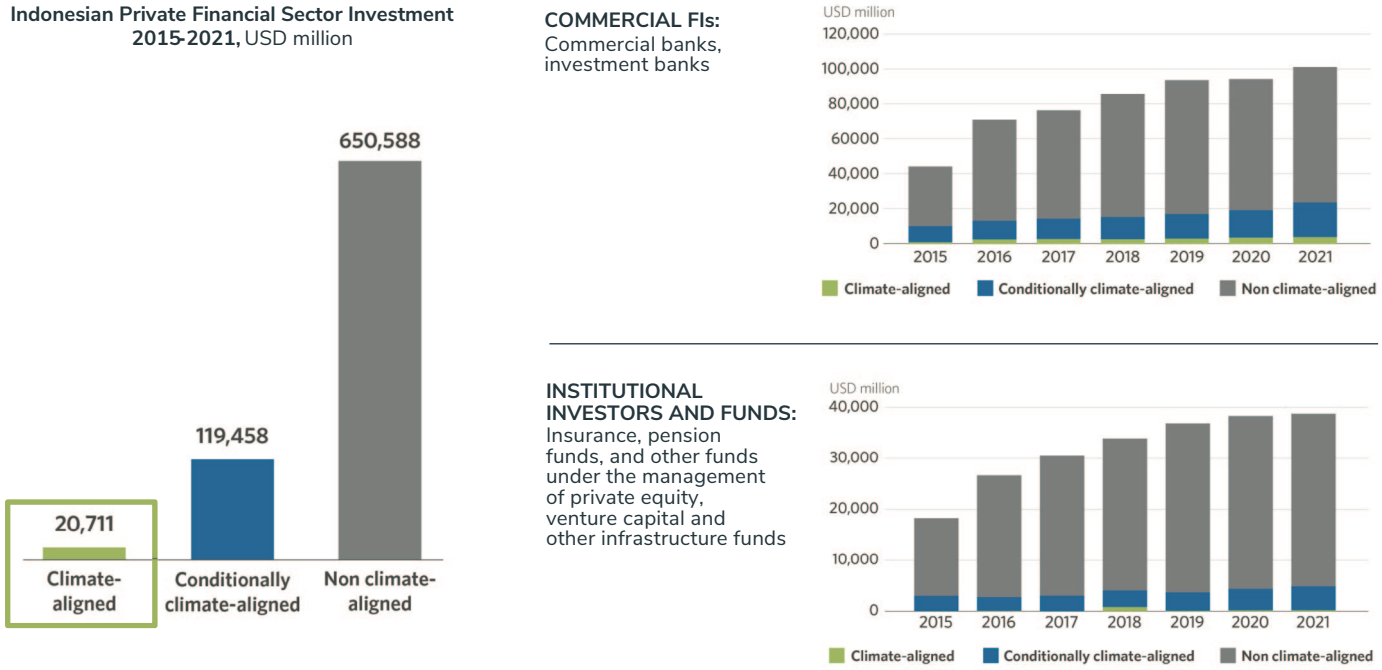

Figure 4: Overview of Indonesian Private Financial Sector Investment
Source: Climate Policy Initiative (2023)

Additionally, the private sector has contributed an estimated USD 21.3 billion of climate financing to Indonesia from 2015 to 2019.[43] These include investments from the commercial financial institutions, institutional investors, corporate actors, households, project developers, and others. The majority of this was dedicated to mitigation activities and mostly driven towards the energy and transport sector, specifically 53.5% of the total for expansion of hydro and geothermal projects, and sustainable transportation.[44]

[42] Climate Policy Initiative (CPI). (2023). Landscape of Climate-Aligned Investment in Indonesia's Financial Sector (Page 11) https://www.climatepolicyinitiative.org/wp-content/uploads/2023/12/Landscape-of-Climate-Aligned-Investment-in-Indonesias-Financial-Sector-CPI-December-2023.pdf

[43] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf

[44] United Nations Framework Convention on Climate Change. (2022). Submission by the government of the Republic of Indonesia. https://unfccc.int/sites/default/files/resource/Indonesia%20Submission%20on%205th%20BA%202022_FINAL.pdf

5. Sectoral Deep Dive Analysis

This section delves into the policies, plans, and programmes pertaining to each sector, while also drawing attention to notable advancements within the sub-sectors.

	Energy	FOLU	Waste	Agriculture	IPPU	Transportation
Key Objectives	• Ensure a just transition from fossil fuels to renewable energy sources • Achieve 23 percent share of renewables in its energy mix by 2025 • Leverage Indonesia's rich natural resources, including hydro, geothermal, and solar PV	• Achieve carbon neutrality in the FOLU sector (Indonesia FOLU Net Sink 2030) • Improve infrastructure for patrol and monitoring of forest from illicit activities or ecological catastrophe • Acquire advanced technologies (ie. satellite imaging, remote sensing) to enhance forest monitoring	• Achieve a 30% reduction in waste, 70% improvement in waste management through recycling, composting, biogas production, and thermal recovery, and a 70% reduction in marine plastic pollution by implementing these targets by 2025	• Achieve Net-Zero strategy by improving crop productivity and intensity, integrating farming and agroforestry, optimising unproductive land and reducing food loss and waste.	• Achieve GHG emissions reduction under unconditional and conditional NDC scenarios of 0.10% and 0.11% respectively, below the baseline emissions level in 2030 in the IPPU sector	• Achieve the target of zero emissions in the shipping industry by 2050 • Decarbonise the transportation sector through proliferation of EVs • Reduce emissions in the sector through fleet modernisation
Key Challenges	• Energy sector emissions reached 600 Mt CO2 in 2021 • Energy sector's contribution to total emissions was 58 percent in 2021 • Retirement of coal-fired power point challenges: inadequate regulations, no specific time limit, lack of clarity on the role of local governments • Solar PV challenges: increased costs, limited component availability, technological gaps, investment and innovation impediments, compliance and admin burdens, erratic regulatory environment, scalability issues, dependence on coal and gas.	• FOLU sector accounted for nearly 57 percent of total GHG emission in 2019 • Forest Management Challenges: Institutional constraints of regional implementers, cross-sectoral issues, complexity of decentralisation in natural resource management. • Peatland Restoration Challenges: Lack of legal enforcement on companies, perceived negative impacts on operations	• Indonesia ranks as the 2nd largest contributor to marine plastic pollution globally • Total municipal solid waste is estimated to increase from 67.8 Mton in 2020 to 71.3 Mton in 2025 • Waste Sector Challenges: Funding gaps, public awareness, and lack of enforcement	• Agriculture is responsible for 13% percent of the nation's GHG emissions in 2022 • Rice cultivation share of GHG emission is 43 percent of emissions from agriculture in 2022 • Agriculture Sector Challenges: Expansion of agricultural land and conversion of forests leading to ecosystem services and biodiversity loss; organic and inorganic pollution; uncontrolled use of water resources; and mismanagement of soil nutrients and poor site selection.	• IPPU sector accounts for less than 5% of total GHG emissions in 2021 • Cement industry produces an estimated 64-66 million metric tons annually, making it the sixth-largest cement producer in the world • Cement production challenges: challenging geography prevents scaling up sustainability initiatives, logistics costs • Pulp and paper challenges: lack of regulations to ensure implementation of sustainability initiatives (ie. land rights concession) and participation in carbon projects	• Transportation sector contributes to 25 percent of Indonesia's GHG emissions in 2021 • Maritime industry accounts for 19 percent of the total CO2 emissions in 2022 • Maritime Industry Challenges: Lack of specific regulations promoting fleet modernisation and climate resilience, marine pollution from ships, port activities, and waste discharge, lack of incentives for adopting environmentally friendly vessels, lack of plans for shipping industry to transition to green shipping
Policies and Regulations*	• Permen ESDM No. 14 Tahun 2021 SKEM • Permen ESDM No. 16 Tahun 2022 • Permen ESDM No. 26 Tahun 2021 • Permen ESDM No. 2 Tahun 2024 • PERPRES No. 112 Tahun 2022 on renewable energy • New and Renewable Energy Bill • Government Regulation PR 112/2022 • Coal to Clean Power Transition Statement • Global Declaration to Phase Out Coal	• Permen LHK No. P.71/MENLHK/SETJEN/KUM.1/12/2017 • Permen LHK No. 21 Tahun 2022 • Permen LHK No. 7 Tahun 2023 • POJK No. 14 Tahun 2023 on Carbon • PERPRES No. 98 Tahun 2021	• Law No. 18 of 2008 • Law No. 2 of 2012 • Perpres 35/2018 • PP 81/2012 • Permen PU 3/2013 • Permen Perekonomian 12/2015 • Perpres 3/2016 • Perpres 4/2016 • Perpres 38/2015 • Government Regulation No. 19 OF 2021	• Permen LHK No. 24 Tahun 2020 • UU Nomor 41 Tahun 2009 • PERMENTAN No. 13 Tahun 2022 • PERMENTAN Nomor 01 Tahun 2019	• MOEF Regulation No. P.51/MENLHK/SETJEN/KUM.1/6/2018 • Government Regulation No. 101 of 2014 • Ministry of Industry Regulation No. 30/M-IND/PER/3/2013 • MOEF Regulation No. P.30/MENLHK/SETJEN/KUM.1/5/2019 • Presidential Regulation No. 77 of 2018	• UU No. 32 Tahun 2014 • PERPRES No. 16 Tahun 2017 • Permen KKP No. 71 Tahun 2020 • Permen LHK No. P.75/MENLHK/SETJEN/KUM.1/12/2018 • PERMENHUB No. 29 Tahun 2014 • PERPRES No. 85 Tahun 2015 • PP No. 22 Tahun 2021 • PERPRES No. 55 Tahun 2019 • Permenperin No. 27 Tahun 2020
Sectoral Plans and Programmes*	• Clear Energy Transition Roadmap • Energy Transition Mechanism • Just Energy Transition Partnership • Legal Stability • Fiscal Incentives • Increased Exploration • Shift in investment to clean energy • Regulatory reforms	• Indonesia FOLU Net Sink 2030 Roadmap	• Clean-from-Waste Indonesia Roadmap • Waste-to-Energy projects • Extended Producer Responsibility programs • At-source segregation program • Waste decarbonisation • Green bonds, dedicated finds, and text incentives	▪ Land use optimisation for low emission crops ▪ Sustainable water management for agriculture ▪ Enhancing climate resilient agriculture through geospatial technology ▪ The use of organic fertilisers	• Exploring and implementing technologies such as waste heat recovery systems, alternative fuels usage, and advanced kiln designs to minimise environmental impact • Certified green cements	• Ballast Water Management • Emission Reduction Regulations • Onshore Power Supply • Tax breaks and subsidies for lower emission fleets and EV production • Regulatory Hurdle Reduction for Consumers and Manufacturers

Figure 5: Overview of Key Objectives, Challenges, Policies and Programmes across Enhanced NDC summary

*Policies, Plans and Programmes are non-exhaustive

5.1 Energy

Indonesia's energy sector is a significant contributor to its GHG emissions, with the sector's emissions doubling over the last two decades due to a substantial increase in energy demand, primarily met by coal. In 2021, Indonesia's energy sector emissions reached around 600 million tons of carbon dioxide (Mt CO2), positioning Indonesia as the world's ninth-largest emitter. Despite this, Indonesia's per capita energy CO2 emissions are relatively low, at only 2 tons, which is half the global average.[45] The power sector was responsible for approximately half of the emissions increase, with industry and transport also contributing to the rise in CO2 emissions.[46] The energy sector's contribution to total emissions has increased from 34 to 58%,[47] with industries contributing nearly 30%.[48]

Addressing social and economic equity is crucial in the global energy transition. Indonesia aims to ensure that its transition from fossil fuels to renewable energy sources is accessible and fair, particularly for vulnerable communities. The country has set ambitious renewable energy targets in its Rencana Umum Penyediaan Tenaga Listrik (RUPTL), aiming for a 23 percent share of renewables in its energy mix by 2025. This plan leverages Indonesia's rich natural resources, including hydro, geothermal, and solar PV, to move towards sustainability.[49]

However, the implementation of this plan has faced challenges, notably delays in large-scale hydro and geothermal projects. Although the current usage of solar PV is limited due to cost considerations, Indonesia has introduced new regulations to promote rooftop solar as a part of its strategy to meet renewable energy targets. Flexibility in energy planning, especially regarding the role of solar PV, is considered crucial for achieving Indonesia's renewable energy goals.

Permen ESDM No. 14 Tahun 2021 was a recent regulation introduced to ensure energy efficiency measures are applied to products that use energy, through the Minimum Energy Performance Standard (SKEM) scheme. The SKEM specifies the minimum energy efficiency requirements to effectively limit the maximum energy consumption which is indicated through a SKEM/Energy Saving label on the product. Both local manufacturers and importers must obtain SKEM certification for household products that use energy and are intended for sale in the Indonesian market.

The Indonesian government, recognising the benefits of renewable energy, has been working towards increasing the share of renewables in its energy mix in line with the targets presented above. The House of Representatives is deliberating the New and Renewable Energy (NRE) Bill, which, along with the Government Regulation PR 112/2022, aims to provide incentives for renewable projects and draft an energy transition and NRE development roadmap.[50]

[45] International Energy Agency (IEA). (2024). Executive summary: An energy sector roadmap to net zero emissions in Indonesia. IEA. https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia/executive-summary

[46] Organisation for Economic Co-operation and Development (OECD). (2022). Summary Report: Indonesia ETS FGD Series. https://www.oecd.org/environment/cc/cefim/indonesia/Indonesia-ETS-FGD-series-summary-report.pdf

[47] World Bank. (2021). Indonesia Economic Prospects Presentation - December 2021 Part B. https://thedocs.worldbank.org/en/doc/9ef37aadd64d2804fd42171bedf9e1b2-0070012021/related/IEP-Presentation-Dec-2021-Part-B.pdf

[48] United Nations Framework Convention on Climate Change (UNFCCC). (2024). Greenhouse Gas Profile: Indonesia. https://unfccc.int/files/ghg_data/ghg_data_unfccc/ghg_profiles/application/pdf/idn_ghg_profile.pdf

[49] Perusahaan Listrik Negara (PLN). (2021). Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) 2021-2030. https://web.pln.co.id/statics/uploads/2021/10/ruptl-2021-2030.pdf

[50] Fitriana Mahiddin, Syahdan Z. Aziz, Shafira A. Alif Hexagraha. (2023). Indonesia: Renewable Energy Laws And Regulations. https://www.mondaq.com/renewables/1286536/renewable-energy-laws-and-regulations-2023

However, the energy sector faces significant regulatory and infrastructure challenges. The regulatory framework for renewable energy projects has experienced frequent changes over recent years, creating a lack of clarity and stability, which deters investment. For example in initially allowing excess electricity generated to be sold back to the grid before this was overwritten by subsequent legislation. There has been a particular focus on addressing the economic regulation of the state-owned energy production monopoly, PLN, which is in a challenging position to support renewable projects due to its financial constraints and public service obligations.[51] Furthermore, the introduction of the Job Creation 'Omnibus' Law aimed at simplifying the business licensing process including environmental and forestry reforms, may impact the renewable energy sector's development.[52] [53] [54]

Investors in Indonesia's renewable energy sector seek clear policies and regulatory certainty to foster confidence. The introduction of financial and regulatory incentives, such as fiscal incentives, licensing facilities, and subsidies, is designed to promote investment in utility-scale renewable power projects. Despite these efforts, challenges remain, such as bankability issues and competing incentives with conventional energy projects, which still receive more substantial support.[55]

Below are some of the policies and regulations that could provide clarity, stability, financial incentives, and an enabling environment necessary for businesses and industries to invest confidently in the energy sector in Indonesia and contribute to a sustainable and clean energy future:

1. **Clear Energy Transition Roadmap:** It would be beneficial for the government to promptly develop and share a roadmap for the energy transition. This document should detail the intended steps and schedule for shifting from reliance on fossil fuels to the adoption of renewable energy sources.[56]
2. **Legal Stability:** Having a stable legal framework is important for companies across various sectors to plan their investments over the long term. Ensuring that regulations and policies consistently support the shift towards renewable energy, rather than fossil fuels, plays a key role in this stability.[57]
3. **Fiscal Incentives:** Tax incentives and subsidies for renewable energy projects, can make these projects more financially viable.[58]
4. **Increased Exploration:** There is a need for increased exploration of renewable energy sources. This includes investing in research and development (R&D) to discover innovative technologies and methods for harnessing renewable energy[59].
5. **Shift in Investment to Clean Energy:** A shift in investment from fossil fuels to clean energy is needed. This includes both public investment and encouraging private sector investment through favourable policies and regulations.[60]

[51] Frederic Draps. (2021). Indonesia Renewable Energy Laws and Regulations 2022. https://www.ashurst.com/en/insights/indonesia-renewable-energy-laws-and-regulations-2022/

[52] Herbert Smith Freehills. (2020). Omnibus Law Insights: Guide to Impact on Indonesia's Energy. https://hsfnotes.com/indonesia/2020/10/30/omnibus-law-insights-guide-to-impact-on-indonesias-energy-resources-and-infrastructure-sectors-licensing-environmental-forestry-and-construction-reforms/

[53] European Council for an Energy Efficient Economy (ECEEE). (2022). In Indonesia, regulatory gaps are holding back renewables. https://www.eceee.org/all-news/news/in-indonesia-regulatory-gaps-are-holding-back-renewables/

[54] China Dialogue. (2022). In Indonesia, regulatory gaps are holding back renewables. https://chinadialogue.net/en/energy/in-indonesia-regulatory-gaps-are-holding-back-renewables/

[55] Fitriana Mahiddin, Syahdan Z. Aziz, Shafira A. Alif Hexagraha. (2023). Indonesia: Renewable Energy Laws And Regulations. https://www.mondaq.com/renewables/1286536/renewable-energy-laws-and-regulations-2023

[56] Indonesian Petroleum Association (IPA). (2022). Upstream oil and gas investment needs legal certainty and bureaucracy improvement. https://www.ipa.or.id/en/news/convention-and-exhibition/upstream-oil-and-gas-investment-needs-legal-certainty-and-bureaucracy-improvement

[57] Organisation for Economic Co-operation and Development (OECD). (2021). OECD Economic Surveys: Indonesia 2021. https://www.oecd-ilibrary.org/sites/af43d376-en/index.html?itemId=/content/component/af43d376-en

[58] Asian Development Bank (ADB). (2020). Indonesia: Energy Sector Assessment, Strategy, and Road Map (Update) (Page 22). https://www.adb.org/sites/default/files/institutional-document/666741/indonesia-energy-asr-update.pdf

[59] Asian Development Bank (ADB). (2020). Indonesia: Energy Sector Assessment, Strategy, and Road Map (Update) (Page 22). https://www.adb.org/sites/default/files/institutional-document/666741/indonesia-energy-asr-update.pdf

[60] Asian Development Bank (ADB). (2020). Indonesia: Energy Sector Assessment, Strategy, and Road Map (Update) (Page 22). https://www.adb.org/documents/indonesia-energy-assessment-strategy-road-map-update

6. **Strengthening PLN's business model** which would allow for renewable energy to be more competitive. Measures could include: DMO reform for coal, PLN's procurement policy and operation planning, the introduction of a flexible tariff.[61]
7. **Regulatory Reforms:** Strengthening reforms, for example through measures to facilitate business development in the new Omnibus Law, can help Indonesia's regulatory framework to address policy gaps and market barriers to enable a vibrant and robust investment environment for clean energy development.[62]

In conclusion, while Indonesia's commitment to enhancing its renewable energy sector is evident through legislative efforts and incentives, significant challenges related to regulatory clarity, financial incentives, and infrastructure investment need to be addressed to accelerate the transition towards renewable energy.

5.1.1 Coal and Coal Phase-out

As there is still high dependency on coal as a source of nationwide energy, coal phaseout has been a central focus of Indonesia's energy transition. Coal remains a pivotal contributor to Indonesia's GHG emissions landscape. In 2021, the energy sector had emitted approximately 600 Mt CO2, positioning Indonesia as the world's ninth-largest emitter despite per capita energy CO2 emissions of merely 2 tons. As of 2022, a significant portion of Indonesia's energy mix, approximately 61.55% is attributed to coal,[63] where over 60% of power is generated by a relatively new fleet of coal-fired power plants.[64] These facilities stand as substantial contributors to Indonesia's GHG emissions.

Recognising the detrimental environmental impact associated with coal-based energy generation, Indonesia is committed to transitioning towards cleaner and more environmentally friendly sources of power. Below are key regulations and policies related to Indonesia's coal phaseout:

1. **Coal to Clean Power Transition Statement (COP 26):** At COP 26, the Indonesian Minister of the Ministry of Energy and Mineral Resources (ESDM) signed the Coal to Clean Power Transition statement.[65] This agreement aims to consider accelerating the coal phaseout into the 2040s, conditional on receiving additional international financial and technical assistance. The plan proposed by PLN includes a 2056 phaseout of coal-fired power plants (CFPPs) and prohibits new coal plants beyond 2023, allowing only the completion of plants already under construction or those that have reached their financial close.
2. **Global Declaration to Phase Out Coal:** Indonesia has signed the Global Declaration to Phase Out Coal, signalling its commitment to transitioning away from coal-fired power generation. The country is preparing a coal transition roadmap to align with global climate goals.
3. PERPRES No. 112 Tahun 2022 **on renewable energy**, which includes a provision on accelerating coal plant decommissioning. Allowing business entities to complete coal plant decommissioning projects, this regulation applies not only to PT PLN's plants but also privately-operated power plants. The government limits the age of PLN's plants to a maximum of 30 years, and for those owned by independent power producers (IPP), the limit is 25-30 years.

[62] Institute for Essential Services Reform (IESR). (2023). Policy breakthroughs will accelerate the takeoff of Indonesia's energy transition. https://iesr.or.id/en/policy-breakthroughs-will-accelerate-the-takeoff-of-indonesias-energy-transition

[61] https://jetp-id.org/storage/official-jetp-cipp-2023-vshare_f_en-1700532655.pdf

[63] Statista. (2022). Indonesia: Energy mix for power generation by source. https://www.statista.com/statistics/993362/indonesia-energy-mix-for-power-generation-by-source/#:~:text=As percent20of percent202022 percent2C percent20the percent20total,of percent20the percent20nation's percent20electricity percent20mix.

[64] International Energy Agency (IEA). (2024). Enhancing Indonesia's power system - Executive summary. https://www.iea.org/reports/enhancing-indonesias-power-system/executive-summary

[65] Ministry of Energy and Mineral Resources of Indonesia. (2021). Speaking at COP26, Energy Minister gives Indonesia's commitment to net-zero emission. https://www.esdm.go.id/en/media-center/news-archives/speaking-at-cop26-energy-minister-gives-indonesias-commitment-to-net-zero-emission

4. Permen ESDM No. 16 Tahun 2022 **on Procedures for Implementing the Carbon Economic Value of the Electricity Generation Subsector**, which may unlock carbon credit issuance opportunities for existing CFPP.
5. **Energy Transition Mechanism (ETM):** Indonesia is working with the ADB and has launched the ETM programme. This programme aims to raise around US$3.5 billion to facilitate the gradual cessation of coal-fired power plants. The funds will be used to retire 2-3 coal-fired power plants per country. Currently, PT SMI is the country platform for the Energy Transition Mechanism.
6. **Just Energy Transition Partnership (JETP):** As per the draft investment plan, US$1.5 billion out of the total pledged amount of US$20 billion for Indonesia's JETP is specifically allocated towards the early retirement and managed phaseout of coal-fired power plants within the country.[66]
7. **CIPP principles for managed phase out are:** 1) short- and long-term grid reliability continues, if not improves; 2) opportunities for economic growth and diversification, including support for workers and communities affected by climate change and by the economic impacts of the transition are provided; 3) electricity costs are minimized; 4) carbon emissions decline rapidly; and 5) institutions and companies that provide crucial public services remain financially stable[67].

Following these commitments, the Cirebon-1 CFPP in West Java, Indonesia, has emerged as a pivotal site in the nation's transition towards cleaner energy sources. Positioned within the framework of the ETM, a regional initiative focused on retiring existing coal-fired plants, the decision to phase out Cirebon-1 underscores a concerted effort among key stakeholders. Collaboration among entities such as the ADB, Cirebon Electric Power (CEP) - the independent power producer which owns Cirebon-1, PT PLN (Persero) - the state-owned utility company, and the INA aims to significantly reduce carbon dioxide emissions by replacing Cirebon-1 with cleaner power capacity. This initiative, if successful, could serve as a blueprint for independent power producers in Indonesia and beyond, signalling a shift towards sustainable energy solutions.[68]

However, amidst commendable efforts towards early retirement, regulatory uncertainties loom regarding potential state losses incurred. The intricacies of the power purchase agreement (PPA) between CEP and PT PLN raise important considerations. As discussions unfold, stakeholders must delicately balance environmental gains with economic implications. Shortening the PPA tenor may be a necessary step to facilitate the retirement process, yet it demands meticulous negotiation to mitigate adverse effects on state finances[69].

The early retirement of Cirebon-1 represents uncharted territory globally. Whilst countries worldwide are gradually transitioning away from coal, the accelerated retirement of a specific plant presents unique challenges. Lessons gleaned from Cirebon-1's phaseout will improve the global dialogue on energy transition. Policymakers, investors, and environmental advocates alike will closely monitor this case to glean insights into the complexities, benefits, and potential pitfalls associated with retiring coal plants ahead of schedule.

[66] The Jakarta Post. (2023). Coal phase-out scheme draws minimal JETP funding. https://asianews.network/coal-phase-out-scheme-draws-minimal-jetp-funding/
[67] https://jetp-id.org/storage/official-jetp-cipp-2023-vshare_f_en-1700532655.pdf - p85
[68] CNBC Indonesia. (2023). PLTU Cirebon 1 bakal disuntik mati 2035, ini dia pemiliknya. https://www.cnbcindonesia.com/news/20231204114002-4-494301/pltu-cirebon-1-bakal-disuntik-mati-2035-ini-dia-pemiliknya
[69] Tempo. (2023). Pensiun dini PLTU batu bara. Majalah Tempo. https://majalah.tempo.co/read/ekonomi-dan-bisnis/170084/pensiun-dini-pltu-batu-bara

5.1.2 Solar Photovoltaic (PV)

As part of the energy diversification effort, the government has set ambitious targets aiming to incorporate 4.68 gigawatts (GW) of solar power capacity by 2030, expanding dramatically to 264.6 GW by 2050.[70] These goals are part of Indonesia's commitment under JETP, reflecting a substantial increase from the previously mentioned target of 4.68 GW by 2030[71] [72]. To align with its NDCs, Indonesia is tasked with constructing approximately 0.7 GW of solar PV power plants annually.

Despite Indonesia's abundant solar resources, the path to achieving these goals is fraught with challenges, including geographical complexities, an oversupply of coal and gas, competition from low-cost alternatives, and import taxes, all of which impact the rollout of solar PV technologies.
To navigate these challenges and bolster the solar PV sector, Indonesia has enacted several key regulations. Permen ESDM No. 26 Tahun 2021, focusing on rooftop solar PV systems, sought to streamline application processes, establish customer service centres for rooftop solar, introduce carbon trading opportunities, and amended rules on electricity export. This scheme allows selling surplus electricity from rooftop solar PV systems back to the grid, reducing electricity bills for those generating excess power. The regulation also led to the establishment of the Sustainable Energy Fund (SEF), which is managed by the Environmental Fund Management Agency (BPDLH), and works to incentivise adoption among households, businesses, and social institutions.

Permen ESDM No. 2 Tahun 2024 marks a critical step in Indonesia's renewable energy policy, reflecting a nuanced approach to fostering solar energy adoption while ensuring grid stability and reliability. This regulation represents a pivotal shift in Indonesia's policy regarding PV systems and evolving strategy towards renewable energy adoption. It supersedes the earlier Permen ESDM No. 26 Tahun 2021, with several significant changes aimed at managing the integration of solar energy into the national grid more effectively, such as:

- Removing the net-metering scheme, with this regulation no longer compensating for surplus electricity or offsets electricity bills. It raised concerns about the investment appeal and economic viability of rooftop solar PV systems,[73] [74] particularly for residential and small business segments, and its alignment with national renewable energy targets.[75]
- Introducing advanced metering infrastructure to replace the previous export-import meter system, it aims to modernise the grid and enhance the management of solar PV integration.[76]

[70] EMBER. (2022). Solar capacity to see dramatic growth across Asia. https://ember-climate.org/press-releases/solar-capacity-to-see-dramatic-growth-across-asia/
[71] PV Tech. (2023). Indonesia plans to install 264.6GW of solar capacity by 2050. https://www.pv-tech.org/indonesia-plans-to-install-264-6gw-of-solar-capacity-by-2050/.
[72] The Diplomat. (2023). Three Takeaways from Indonesia's Just Energy Transition Roadmap. https://thediplomat.com/2023/11/three-takeaways-from-indonesias-just-energy-transition-roadmap/#:~:text=By%202030%2C%20total%20investment%20needs,in%20transmission%20and%20grid%20improvements..
[73] Ministry of Energy and Mineral Resources of the Republic of Indonesia. (2024). Revisi Permen ESDM: PLTS Atap Skema Jual Beli Listrik Dihapuskan. https://www.esdm.go.id/id/media-center/arsip-berita/revisi-permen-esdm-plts-atap-skema-jual-beli-listrik-dihapuskan-
[74] Dunia Energi. (2024). Permen ESDM 2/2024 Batasi Partisipasi Publik Dukung Transisi Energi Lewat PLTS Atap. https://www.dunia-energi.com/permen-esdm-2-2024-batasi-partisipasi-publik-dukung-transisi-energi-lewat-plts-atap/
[75] Dunia Energi. (2024). Permen ESDM 2/2024 Batasi Partisipasi Publik Dukung Transisi Energi Lewat PLTS Atap. https://www.dunia-energi.com/permen-esdm-2-2024-batasi-partisipasi-publik-dukung-transisi-energi-lewat-plts-atap/
[76] Solar Surya Indotama. (2024). Peraturan Menteri (Permen) No. 2 Tahun 2024 Revisi tentang Pemanfaatan PLTS Atap. https://solarsuryaindotama.co.id/news-and-updates/peraturan-menteri-permen-no-2-tahun-2024-revisi-tentang-pemanfaatan-plts-atap/

The regulations on Indonesia's solar PV industry have profound implications as they enforce local content requirements (LCRs) to foster growth in the domestic manufacturing sector, reduce reliance on imports, and promote energy self-sufficiency. These policies align with Indonesia's goals for energy independence and a transition to renewable sources.[77] [78] Furthermore, the regulations emphasise the importance of integrating local content in renewable energy infrastructure development, such as solar PV projects, which may result in technological advancements, cost reductions, and improved global competitiveness of Indonesian solar PV components.[79] [80]

However, the implementation of Permenperin No. 54/M-IND/PER/3/2012 and its amendments present several challenges and barriers to Indonesia's solar PV industry, despite its aim to foster domestic manufacturing. Internal analysis suggests these may include:

1. **Increased Costs:** The requirement for local content can potentially increase the costs of solar PV projects if domestic products are more expensive than their foreign counterparts. This price increase can arise from various factors, including lower economies of scale in the local manufacturing sector, higher production costs, or less advanced technology compared to established international producers.
2. **Limited Availability:** For certain specialised components required in solar PV systems, there might be limited availability of domestic products. This limitation could delay project timelines or force developers to compromise on the quality or efficiency of the solar PV systems, affecting the overall viability and performance of solar energy projects.
3. **Technological Gaps:** The domestic manufacturing sector may not always possess the technological capability or expertise to produce certain high-efficiency, cutting-edge solar PV components. This gap could hinder the adoption of the latest solar technologies in Indonesia, potentially placing the country at a technological disadvantage compared to regions that have access to more advanced components.
4. **Investment and Innovation Impediments:** While the regulation aims to protect and nurture the local industry, it might inadvertently act as a barrier to foreign investment and innovation in the Indonesian solar PV sector. International companies might be deterred from entering the market due to LCRs, thus limiting the flow of new technologies and investment into Indonesia.
5. **Compliance and Administrative Burdens:** For solar PV project developers and manufacturers, navigating LCRs can impose additional administrative burdens. Ensuring compliance with the regulation might require significant effort and resources, including the need to certify and document the local content in products and systems, which could add to the complexity of project implementation.

An example of PV projects is the Cirata Floating Photovoltaic Power Plant, which represents a significant advancement in Indonesia's pursuit of renewable energy. Launched on November 9, 2023, this venture between Masdar and PLN Nusantara Power (formerly PT PJB) is both Indonesia's inaugural floating solar PV facility and the largest of its kind in Southeast Asia. Given the reduced investment costs associated with solar PV technology — now deemed the most economical renewable energy source — Indonesia is well-placed to exploit its solar capacity, estimated to be between 3.7 TWp and 20 TWp. Such efforts are crucial for achieving the nation's peak emission targets by 2030 in an efficient and cost-effective manner[81].

[77] Peraturanpedia. "Peraturan Menteri Perindustrian Nomor 54/M-IND/PER/3/2012" Link.
[78] Paralegal.id. "Peraturan Menteri Perindustrian Nomor 54/M-IND/PER/3/2012 – Pedoman Penggunaan Produk Dalam Negeri Untuk Pembangunan Infrastruktur Ketenagalistrikan" Link.
[79] Peraturanpedia. "Peraturan Menteri Perindustrian Nomor 54/M-IND/PER/3/2012" Link.
[80] Paralegal.id. "Peraturan Menteri Perindustrian Nomor 54/M-IND/PER/3/2012 – Pedoman Penggunaan Produk Dalam Negeri Untuk Pembangunan Infrastruktur Ketenagalistrikan" Link.
[81] Institute for Essential Services Reform (IESR). (2023). Cirata Floating Solar PV Plant Ready to Operate, Important Milestone for Accelerating Solar Energy Development to Decarbonize Electricity in Indonesia. https://iesr.or.id/en/cirata-floating-solar-pv-plant-ready-to-operate-important-milestone-for-accelerating-solar-energy-development-to-decarbonize-electricity-in-indonesia

Moreover, a second phase of the Cirata project is in the pipeline, expected to enhance the facility's capacity by an additional 500MW. This expansion is indicative of the strategic significance attributed to floating solar PV plants within Indonesia's renewable energy strategy, especially considering the country's potential for large-scale floating solar installations across its extensive network of reservoirs[82] [83]. The Cirata Power Plant not only signifies Indonesia's commitment to renewable energy but also positions it as a leader in Southeast Asia's transition to cleaner energy sources.

The solar PV industry is also confronting various regulatory and policy challenges that slow its growth. Critical obstacles include inconsistent policy frameworks, insufficient incentives, and reliance on the state electricity company, PLN, as the sole purchaser of generated electricity, which ties the development of solar PV closely to the state of PLN's grid infrastructure.[84] [85] [86] [87]

In order to support the rapid development needed in the solar sector, Indonesia is considering a series of institutional reforms. These include restructuring the state-owned electricity company PLN, enhancing planning and procurement processes, and facilitating project development aspects such as land acquisition. The successful implementation of these reforms is crucial for integrating utility-scale solar energy into the national grid[88].

Furthermore, Indonesia recognises the necessity of significant investment to fulfil its solar energy ambitions and the expansion of transmission and distribution networks.[89] However, the investment climate, characterised by investor confidence and the attractiveness of solar PV investments, is a concern. There are gaps between the government's agenda to accelerate solar penetration and access to funding for both developers and household projects[90]. This necessitates overcoming regulatory and policy gaps, enhancing grid preparedness, and fostering a supportive environment for solar PV investments and development[91].

This section summarises several key barriers to the growth and development of the solar PV industry in Indonesia, illustrating the challenges within the market and regulatory frameworks.

1. **Erratic Regulatory Environment:** The landscape for solar PV regulations in Indonesia has seen considerable flux, with the Ministry of Energy and Mineral Resources (ESDM) introducing substantial changes to key policies like the Build Own Operate Transfer (BOOT) rules and local content requirements. These frequent policy shifts have created an unpredictable regulatory environment, complicating long-term planning and investments for solar developers[92] [93] [94] [95] [96].

[82] Power Technology. (2021). Cirata Floating Photovoltaic Power Plant. https://www.power-technology.com/projects/cirata-floating-photovoltaic-power-plant/
[83] World Energy. (2023). Cirata floating photovoltaic power plant in Indonesia begins commercial operation. World Energy. https://www.world-energy.org/article/38408.html
[84] Institute for Essential Services Reform (IESR). (2022). Regulatory Support Key to Unlock Indonesia's Solar Potential. https://iesr.or.id/en/regulatory-support-key-to-unlock-indonesias-solar-potential.
[85] Institute for Essential Services Reform (IESR). (2021). Indonesia Solar Potential Report. https://iesr.or.id/en/agenda-iesr/indonesia-solar-potential-report.
[86] Institute for Energy Economics and Financial Analysis (IEEFA). (2019). Indonesia's Solar Policies. https://ieefa.org/wp-content/uploads/2019/02/Indonesias-Solar-Policies_February-2019.pdf
[87] Tyco Run. (2024). Solar Energy in Indonesia. https://www.tycorun.com/blogs/news/solar-energy-in-indonesia
[88] The Diplomat. (2023). Three Takeaways from Indonesia's Just Energy Transition Roadmap. https://thediplomat.com/2023/11/three-takeaways-from-indonesias-just-energy-transition-roadmap/#:~:text=By%202030%2C%20total%20investment%20needs,in%20transmission%20and%20grid%20improvements..
[89] PV Tech. (2023). Indonesia plans to install 264.6GW of solar capacity by 2050. https://www.pv-tech.org/indonesia-plans-to-install-264-6gw-of-solar-capacity-by-2050/.
[90] Institute for Essential Services Reform (IESR). (2022). Looking for Funding Schemes and Readiness of Solar PV Project Development. https://iesr.or.id/en/looking-for-funding-schemes-and-readiness-of-solar-pv-project-development
[91] McKinsey & Company. (2023). How to power Indonesia's solar PV growth opportunities. https://www.mckinsey.com/id/our-insights/how-to-power-indonesias-solar-pv-growth-opportunities
[92] Katadata Insight Center. (2023). Here are 5 points of the revised rooftop solar power regulation. https://dinsights.katadata.co.id/read/2023/05/19/here-are-5-points-of-the-revised-rooftop-solar-power-regulation
[93] Ministry of Energy and Mineral Resources of Indonesia. (2021). Indonesia to invest more in solar energy. https://www.esdm.go.id/en/media-center/news-archives/Indonesia-to-invest-more-in-solar-energy
[94] Ministry of Energy and Mineral Resources of Indonesia. (2022). Energy Ministry launches SEF grant for rooftop solar systems. https://www.esdm.go.id/en/media-center/news-archives/energy-ministry-launches-sef-grant-for-rooftop-solar-systems
[95] Institute for Essential Services Reform (IESR). (2023). The amend of the MEMR regulation on rooftop solar PV has the potential to undermine the interest of the residential market. https://iesr.or.id/en/the-amend-of-the-memr-regulation-on-rooftop-solar-pv-has-the-potential-to-undermine-the-interest-of-the-residential-market

2. **Challenges with Scalability and Land Acquisition:** Expanding solar energy projects faces practical challenges such as scalability of projects and securing land, which are significant hurdles in developing solar infrastructure[97].
3. **Concentration of Solar Projects (Project Clustering):** The tendency for solar projects to cluster in certain regions poses a challenge, necessitating strategies to distribute energy transition efforts more evenly across Indonesia[98].
4. **Dependence on Coal and Gas:** Indonesia's reliance on coal and gas for energy production poses a substantial obstacle to the adoption of solar power. The abundant and economically advantageous position of coal and gas makes it difficult for renewable energy sources to compete, thereby impeding the growth of the solar sector[99] [100].
5. **Local Content Requirements on Solar PV:** LCR makes solar energy less competitive by increasing costs, compared to other energy sources available in Indonesia. CIPP calls for reform in this space.
6. **Need for More Supportive Policies:** While there has been progress in supporting solar energy since 2018, the pace of policy development and implementation has been slow. There is a pressing need for regulatory reforms and more supportive policies to foster the growth of solar energy, especially with critical deadlines approaching for meeting energy targets[101].
7. **Grid Upgrades:** Indonesia's power grid needs to be upgraded to enable variable renewable energy (VRE) absorption. Within the current grid system, it is difficult to inject large VRE capacity.

These challenges underscore the need for a more stable regulatory framework, improved policies to support renewable energy adoption, and strategies to address the practical barriers to solar PV development in Indonesia.

5.2 Forestry and Land Use (FOLU)

Indonesia has significant carbon sink potential, primarily due to its vast forests, peatlands, and mangroves. Emissions from FOLU accounted for nearly 57 percent of total GHG emission in 2019, according to Indonesia's third BUR (BUR3)[102]. The Government has formulated a roadmap to achieve carbon neutrality in the FOLU sector, dubbed Indonesia FOLU Net Sink 2030[103]. The Operational Plan outlines initiatives of the Environment and Forestry Ministry (LHK), agencies and regional governments as well as institutions in achieving carbon neutrality in the FOLU sector. Planned deforestation and land conversion will still occur, as outlined in the plan. This has caused criticism that the plan does not prevent absolute deforestation[104].

[96] Institute for Essential Services Reform (IESR). (2022). Having slow solar PV development in 2022, Indonesia needs to push the implementation of supporting policies. https://iesr.or.id/en/having-slow-solar-pv-development-in-2022-indonesia-needs-to-push-the-implementation-of-supporting-policies

[97] Institute for Essential Services Reform (IESR). (2022). Regulatory support key to unlock Indonesia's solar potential. https://iesr.or.id/en/regulatory-support-key-to-unlock-indonesias-solar-potential

[98] Ashurst. (2022). Indonesia Renewable Energy Laws and Regulations 2022 - Ashurst. https://www.ashurst.com/en/insights/indonesia-renewable-energy-laws-and-regulations-2022/.

[99] Universitas Gadjah Mada (UGM). (2023). Indonesia still faces challenges in energy transition. https://ugm.ac.id/en/news/indonesia-still-faces-challenges-in-energy-transition/#:~:text=Energy percent20transition percent20towards percent20renewable percent20sources, for percent2034.38 percent25 percent20of percent20energy percent20consumption.

[100] International Energy Agency (IEA). (2024). Enhancing Indonesia's power system - Executive summary. https://www.iea.org/reports/enhancing-indonesias-power-system/executive-summary

[101] Institute for Essential Services Reform (IESR). (2022). Having slow solar PV development in 2022, Indonesia needs to push the implementation of supporting policies. https://iesr.or.id/en/having-slow-solar-pv-development-in-2022-indonesia-needs-to-push-the-implementation-of-supporting-policies

[102] Republic of Indonesia. (2021). Indonesia Biennial update report (BUR) 3 (Page 6). https://unfccc.int/sites/default/files/resource/IndonesiaBUR percent203_FINAL percent20REPORT_2.pdf

[103] Ministry of Environment and Forestry, Republic of Indonesia. (2022). Indonesia's FOLU NETSINK 2030. https://gakkum.menlhk.go.id/assets/filepublikasi/Buku_RENOPS_Indonesia_s_FOLU_NETSINK_2030.pdf

[104] Greenpeace Southeast Asia. (2023). Playing with Fire: Deforestation, Net Sink, and the Risks to Indonesia's Climate Commitments. https://www.greenpeace.org/static/planet4-southeastasia-stateless/2023/12/e8daa302-folu_net_sink_deforestation_playing_with_fire_2023.pdf

Due to its vast carbon sink potential, Indonesia is regarded as a potential leading supplier of carbon credits solely from REDD+[105] projects, for both forest and peatland. Key regulations for carbon markets in Indonesia include:

- Permen LHK No. P.71/MENLHK/SETJEN/KUM.1/12/2017 on the Implementation of the National Registry System Controlling Climate Change – enacted on January 2018, this is one of the earliest regulations from the LHK Ministry to govern the implementation of the SRN. Currently, the LHK oversees the operations of the SRN.
- PERPRES No. 98 Tahun 2021 on the Implementation of Carbon Pricing – This regulation establishes the legal framework for carbon pricing in Indonesia. It outlines various mechanisms for carbon pricing, including a carbon tax, emissions trading scheme (ETS), carbon offsetting, and results-based payment. This regulation also governs the implementation of the National Registry System (SRN).
- Permen LHK No. 21 Tahun 2022 on the Procedures for Implementation of Carbon Pricing, which further details the carbon markets implementation at the LHK Ministry
- Permen LHK No. 7 Tahun 2023 on the Procedures for Carbon Trading of the Forestry Sector
- POJK No. 14 Tahun 2023 on Carbon Trading through Carbon Exchange

Despite introducing a slew of regulations on carbon pricing, significant challenges in the implementation of REDD+ projects remain. More capacity building and technical assistance is required to align local stakeholders with global standards on REDD+ carbon projects. However, a significant prerequisite to this would be the general acceptance of the Core Carbon Principles issued by the Integrity Council for Voluntary Carbon Markets (ICVCM) by other jurisdictions, before proceeding to have a national regulation on carbon offset[106].

Through Permen LHK No. 21 Tahun 2022, the first iteration of a national standard on carbon credit was set. However, the ICVCM Core Carbon Principles may evolve over time, leading to the need to update existing regulations. This translates to further challenges for capacity building and technical upskilling of carbon project developers located within the country.

Despite the recent launch of the carbon exchange, trading volumes remain low, and credits are cheap, leading to an inadequate push for organisations to decarbonise their operations. Foreign participation may help improve price discovery. However, regulation on international carbon trading mechanisms and corresponding adjustments is still being drafted by the LHK Ministry[107]. Some participants and business interest groups disagree with the idea that international voluntary trading would impact Indonesia's NDC fulfilment and argue that such voluntary trading should not be excessively restricted[108].

[105] Reducing emissions from deforestation and forest degradation in developing countries

[106] Covington & Burling LLP. (2023). Law Enacted by California Legislature Would Require Companies to Disclose Key Details About Voluntary Carbon Offsets and Claims Made in Reliance Upon Them. https://www.insideenergyandenvironment.com/2023/09/law-enacted-by-california-legislature-would-require-companies-to-disclose-key-details-about-voluntary-carbon-offsets-and-claims-made-in-reliance-upon-them/

[107] Center for Strategic and International Studies (CSIS). (2023). Indonesian Carbon Market: Hope or Hype?. https://s3-csis-web.s3.ap-southeast-1.amazonaws.com/doc/CSIS_Commentaries_CSISCOM00423_final1-Copy.pdf?download=1

[108] Ashurst. (2023). Carbon trading in Indonesia: OJK Regulation on Carbon Exchange. https://www.ashurst.com/en/insights/carbon-trading-in-indonesia-ojk-regulation-on-carbon-exchange/

5.2.1 Forest Management

Illegal logging, forest fires, and land rights disputes are common barriers to tackle forest degradation in Indonesia. Indonesia's BUR3 reported that from 2017 to 2019, forest fires have increased fivefold due to effects of El Nino[109]. Significant investments are needed to improve infrastructure for patrolling and monitoring of Indonesia's forest to deter illicit activities and identify ecological catastrophes. Advanced technologies like satellite imaging, drones, and remote sensing can enhance forest monitoring. However, Indonesia may not have widespread access to or utilisation of these technologies, limiting the ability to detect and respond to changes in forest cover or fire outbreaks in real time[110]. In this regard, Indonesia can work closely with the international community to draw lessons from their experience. For example, Brazil's National Institute for Space Research (INPE) utilises satellite imagery to monitor deforestation in the Amazon in real time through the Program for the Calculation of Deforestation in the Legal Amazon (PRODES) and Real-Time Deforestation Detection System (DETER) systems[111]. These systems provide timely data on forest cover changes, enabling quick response to illegal activities.

Corruption and weak governance can undermine forest patrol efforts. Illegal logging, land encroachment, and other illicit activities may be overlooked due to collusion between offenders and local authorities[112]. Stronger governance and risk management should be implemented by sub-national agencies that oversee forest covers (such as forestry agencies at the provincial level).

Indonesia outlined its roadmap to achieve carbon neutrality in the FOLU sector through the issuance of Indonesia's FOLU Net Sink 2030. The document details measures taken by the Government of Indonesia to achieve carbon neutrality through low-carbon compatibility in line with the Paris Agreement. The Government, however, has pointed out considerations on several key factors that may hinder progress, some of which are related to regulation:

1. **Institutional constraints of regional implementers,** such as local agencies, despite introducing streamlined regulations for sustainable forest management.
2. **Cross-sectoral issues,** for example, sustainable forest management may directly conflict with other initiatives such as biomass-based energy or food fortification.
3. **Complexity of decentralisation in natural resource management,** where capacity building and technical assistance is required for many local governments.

[109] Mongabay. (2024). 2023 fires increase fivefold in Indonesia amid El Niño. https://news.mongabay.com/2024/01/2023-fires-increase-fivefold-in-indonesia-amid-el-nino/#:~:text=Nearly%201%20million%20hectares%20(2.47,new%20plantations%20contributed%20to%20this

[110] Mongabay. (2021). 2021 deforestation in Indonesia hits record low, but experts fear a rebound. https://news.mongabay.com/2021/03/2021-deforestation-in-indonesia-hits-record-low-but-experts-fear-a-rebound/

[111] InfoAmazonia. (2022). PRODES and DETER systems against deforestation Amazon. https://infoamazonia.org/en/2022/02/15/prodes-and-deter-systems-against-deforestation-amazon/

[112] United Nations Office on Drugs and Crime (UNODC). (2024). Forest crime. https://www.unodc.org/roseap/en/indonesia/forest-crime.html

5.2.2 Peatland Protection and Restoration

To protect Indonesia's peatland, the Government of Indonesia established the Peatlands Restoration Agency through PERPRES No. 1 Tahun 2016[113]. The primary role of the Peatland Restoration Agency (Badan Restorasi Gambut or BRG) is to oversee and support the restoration efforts of peatlands across Indonesia, concentrating on seven key provinces: Riau, Jambi, South Sumatra, West Kalimantan, Central Kalimantan, South Kalimantan, and Papua. According to BRG, these provinces are home to the country's most extensive peatland areas, covering a combined total of 12.9 million hectares. It has been observed that peatland restoration efforts from the agency have been deemed successful. However, these are only limited in scope as there are portions of peatlands where the private sector is expected to contribute. The private sector is expected to restore peatland should concessions be in the areas where private businesses operate. Some potential regulatory gaps in restoring Indonesia's peatlands may include:

1. Legal enforcement on companies for peatland restoration within concessions can improve, and the Indonesian government can take greater action to address this.
2. BRG is primarily equipped with a technical mandate rather than enforcement authority, limiting its capability to compel private sector compliance in restoration activities. A more regulatory and enforcement role can potentially improve the oversight of private sector activities relating to peatland restoration.
3. There is a greater opportunity for LHK Ministry and BRG to work more closely to limit misalignments relating to peatland restoration, more specifically, regarding the classification of peatlands designated for restoration within private concessions.
4. Companies may be hesitant to undertake peatland restoration efforts within their concessions due to perceived negative impacts on their operations and material sourcing.

Indonesia's FOLU Net Sink 2030 roadmap recognises peatlands' vital role but faces threats from government-led land conversion for agriculture and private sector timber plantations, endangering peatland preservation and restoration efforts. Such activities not only risk increasing forest fires but also hamper progress towards national climate goals[114]. Regulations mandating the conservation of at least 30 percent of peat landscapes aim to minimise industrial damage. However, challenges in coordination, data availability, and data quality complicate monitoring efforts. Specifically, detecting carbon gains from restoration activities requires advanced techniques like high-resolution satellite imagery, often years after restoration efforts begin[115].

[113] Agung Wicaksono and Zainal. (2022). Peatlands Restoration Policies in Indonesia: Success or Failure. https://repository.uir.ac.id/19441/2/Cover percent20dan percent20Isi percent20SAC-SAFSE percent202021.pdf

[114] Greenpeace Southeast Asia. (2023). FOLU Net Sink and Deforestation: Playing with Fire. https://www.greenpeace.org/static/planet4-southeastasia-stateless/2023/12/e8daa302-folu_net_sink_deforestation_playing_with_fire_2023.pdf

[115] Nisa Novita et al. 2022. Natural climate solutions in Indonesia: wetlands are the key to achieve Indonesia's national climate commitment. https://iopscience.iop.org/article/10.1088/1748-9326/ac9e0a/pdf

5.3 Waste

Indonesia faces significant waste management challenges due to its vast archipelago and diverse population. It ranks among the world's largest waste producers, with urban centres like Jakarta struggling to handle the daily waste volume. The informal waste sector, despite its crucial role in recycling, lacks formal recognition. Landfill reliance poses environmental risks and emissions concerns due to limited space and unsustainable practices. Indonesia is the second-largest contributor to global marine plastic pollution, highlighting the urgency to address single-use plastics. Decentralised governance complicates waste management, requiring coordinated efforts among local authorities. Indonesia aims to transition to a circular economy, prioritising waste reduction, recycling, and resource recovery. Waste-to-energy projects and extended producer responsibility (EPR) programmes demonstrate progress towards sustainability.[116] Despite funding gaps, public awareness challenges, and enforcement hurdles, collaborative efforts involving the government, private sector, and communities are crucial to effectively address Indonesia's waste management challenges.

President Regulation No. 97/2017 outlines a roadmap towards achieving the goal of a Clean-from-Waste Indonesia (Indonesia Bersih Sampah 2025) by the year 2025. The regulation establishes specific targets, namely a 30% reduction in waste and a 70% improvement in waste management. Regarding the 70% waste handling target, the indicators involve increasing the amount of waste that undergoes treatment processes like recycling, composting, biogas production, and thermal recovery, while simultaneously decreasing the amount of waste that ends up in landfills. MOEF aims to achieve a 70% reduction in marine plastic pollution by implementing these targets by 2025.[117]

5.3.1 Municipal Waste

As Indonesia strives to achieve its climate goals, the municipal waste sector plays a crucial role in decarbonisation efforts. The total municipal solid waste (MSW) has increased 1.3% per year from 59.5 Mt in 2010 to 67.1 Mt in 2019. MOEF estimated that the number has increased to 67.8 Mt in 2020, while in 2025 the MSW is estimated to be 71.3 Mt.[118] Effective regulatory mapping is essential to identify key policies and regulations that drive sustainable waste management practices. In this analysis, we delve into regulations issued by various ministries, aiming to accelerate decarbonisation.

The government has introduced various regulations and policies to promote environmental sustainability, economic growth, and social welfare in this sector. Here are some key enabling regulations for making Indonesia's municipal sector more sustainable:

1. Law No. 18 of 2008 on Waste Management ("UU 18/2008"): The foundational law governing waste management practices, emphasising waste reduction, recycling, and proper disposal.
2. Presidential Regulation No. 35 of 2018 ("Perpres 35/2018"): Specifically targets waste-to-energy conversion using environmentally friendly technology. It encourages the construction of waste processing installations that generate electrical energy.
3. Government Regulation No. 81 of 2012 ("PP 81/2012"): Provides guidelines for managing household and equivalent waste. It sets standards for waste handling, collection, and disposal.
4. Minister of Public Works Regulation No. 03/PRT/M/2013 ("Permen PU 3/2013"): Focuses on waste infrastructure and facilities, ensuring technical standards are met.

[116] ASEF (2022). Waste Management in Indonesia and Jakarta. https://asef.org/wp-content/uploads/2022/01/ASEFSU23_Background-Paper_Waste-Management-in-Indonesia-and-Jakarta.pdf

[117] United Nations Environment Programme. (2024). Plastic Pollution in Indonesia. https://leap.unep.org/en/countries/id/case-studies/indonesia#:~:text=It%20sets%20the%20target%20of,waste%20leakage%20to%20the%20environment.

[118] United Nations Framework Convention on Climate Change. (2021). Indonesia Third Biennial Update Report. https://unfccc.int/sites/default/files/resource/IndonesiaBUR%203_FINAL%20REPORT_2.pdf

5. Coordinating Minister for Economic Affairs Regulation No. 12 of 2015 ("Permen Perekonomian 12/2015"): Accelerates priority infrastructure provision, indirectly impacting waste management projects.

In Indonesia's quest for sustainable development, the legal and regulatory framework is a crucial driver in shaping waste management strategies. At the forefront of this endeavour are initiatives and reforms aimed at accelerating decarbonisation within the municipal waste sector.

Key initiatives focus on harnessing Waste-to-Energy Conversion technologies, recognising their potential to transform organic waste into electricity or alternative energy sources. These projects not only reduce reliance on landfills but also mitigate greenhouse gas emissions, aligning with Indonesia's sustainability objectives. Additionally, promoting At-Source Segregation underscores efforts to enhance recycling rates and minimise waste disposal, fostering a more circular economy.

EPR programmes emerge as pivotal reforms, holding manufacturers accountable for product lifecycle management, including waste disposal. By incentivising eco-friendly design and proper disposal practices, EPR contributes significantly to decarbonisation efforts, driving sustainable consumption patterns.

Indonesia is exploring various mechanisms such as Public-Private Partnerships (PPPs), green Bonds, dedicated funds, and tax incentives to fund waste decarbonisation projects and to incentivise private sector involvement. Institutional mechanisms prioritise decarbonisation through inter-ministerial coordination, capacity building, and knowledge-sharing. These efforts enhance policy coherence, equip officials and professionals, and foster innovation and best practice.

5.3.2 Waste-to-Energy

In Indonesia, Waste-to-Energy (WtE) projects make significant contributions to sustainability goals in the waste sector. Despite the pandemic, strategic WtE projects are emerging in Legok Nangka, Bandung, and South Tangerang, with capacities of 10-20MW. The government plans to add 12 more plants with a total capacity of 234MW. The regulatory framework, including Presidential Regulation No. 35 of 2018, incentivises investment in WtE projects across 12 cities. The framework allows for PPPs or state-owned enterprises' involvement and offers flexibility for foreign developers. Developers benefit from tipping fees based on waste volume, ensuring reliable revenue streams for project viability.

In Indonesia's pursuit of WtE solutions to combat waste management and energy challenges, a comprehensive regulatory framework guides the landscape. Notable policies such as Presidential Regulation No. 18/2016 and Ministerial Regulation No. 12/2012 underscore the nation's commitment to renewable energy development, while regional regulations further shape WtE initiatives. Presidential Regulation No. 35 of 2018 particularly targets the acceleration of Municipal Waste-to-Energy Power Plant Development, prioritising investments in strategic cities. Complementing these efforts is Government Regulation (PP) No. 79 of 2014, aligning with Indonesia's renewable energy goals by promoting the utilisation of municipal solid waste for electricity generation. Additionally, below are a list of relevant regulations for Waste-to-Energy projects.

1. Law No. 18 of 2008 on Waste Management ("UU 18/2008");
2. Law No. 2 of 2012 on Land Acquisition for Development in the Public Interest ("UU 2/2012");
3. Presidential Regulation No. 35 of 2018 on Accelerating the Construction of Waste Processing Installations into Electrical Energy Based on Environmentally Friendly Technology ("Perpres 35/2018");

4. Presidential Regulation No. 3 of 2016 on Accelerating the Implementation of National Strategic Projects, last amended by Presidential Regulation No. 56 of 2018 (“Perpres 3/2016”);
5. Presidential Regulation No. 4 of 2016 on the Acceleration of Electricity Infrastructure Development, as amended by Presidential Regulation No. 14 of 2017 (“Perpres 4/2016”);
6. Presidential Regulation No. 38 of 2015 on Government Cooperation with Business Entities for the Provision of Infrastructure (“Perpres 38/2015”);
7. Government Regulation No. 19 of 2021 on the Implementation of Land Procurement for Development in the Public Interest;
8. Government Regulation No. 81 of 2012 on the Management of Household and Equivalent Waste (“PP 81/2012”);
9. Government Regulation No. 28 of 2018 on Regional Cooperation (“PP 28/2018”);
10. Government Regulation No. 54 of 2017 on Regional Owned Enterprises (PP 54/2017”);
11. Minister of Home Affairs Regulation No. 19 of 2016 on the Guidelines for the Management of Regional Property (“BMD”) (“Permendagri 19/2016”);
12. Minister of Public Works Regulation No. 03/PRT/M/2013 on the Implementation of Waste Infrastructure and Facilities in the Handling of Household and Equivalent Waste (“Permen PU 3/2013”);
13. Coordinating Minister for Economic Affairs Regulation No. 12 of 2015 on the Acceleration of Priority Infrastructure Provision, as amended by Coordinating Minister for Economic Affairs Regulation No. 5 of 2017 (“Permen Perekonomian 12/2015”);
14. Minister of Finance Regulation No. 171/PMK.04/2019 regarding Exemption of Import Duties on Imported Goods by the Central Government or Regional Governments Intended for Use the Public Interest (“Permenkeu No. 171/2019”);
15. DKI Jakarta Regional Regulation No. 4 of 2019 on Amendments to the DKI Jakarta Regional Regulation No. 3 of 2013 regarding Waste Management (“Perda No. 4/2019”);
16. DKI Jakarta Governor Regulation No. 65 of 2019 on Assignments to Jakarta Propertindo Limited Liability Companies (Regional Companies) for the Implementation of Intermediate Waste Processing Facilities in the City (“Pergub No. 65/2019”);
17. DKI Jakarta Governor Regulation No. 50 of 2019 on Guidelines for the Procurement of Goods/Services by Regional Owned Enterprises (“Pergub No. 50/2019”); and
18. Governor of DKI Jakarta Decree No. 1042 of 2018 on the List of Regional Strategic Activities (“Kepgub No. 1042/2018”).

Navigating the legal and regulatory framework for WtE projects involves coordination among stakeholders, including government bodies, local authorities, and private entities. Key considerations include permits, licensing, EIAs, and land use planning, while institutional mechanisms like tipping fees, PPPs, and oversight by waste management agencies and energy regulators are crucial. Implementing WtE requires assessing infrastructure readiness, sustainable funding models, and monitoring protocols. Challenges include economic viability, capacity building, and community engagement. Leveraging best practices, innovation, and stakeholder collaboration can address these challenges and unlock WtE’s potential in Indonesia’s sustainable development journey.

5.4. Agriculture

Agriculture is responsible for 13 percent of the nation's GHG emissions. [119] To effectively mitigate these emissions, it's crucial to address the entire AFOLU sector through coordinated policy measures that span different land uses. Additionally, the impact of biofuel mandates and subsidies on land use must be carefully assessed to avoid unintended negative consequences[120]. The government's current agricultural policies also do not seem to have specific net-zero targets, however the government's net zero strategy has at least four focus points: improving crop productivity and intensity, integrating farming and agroforestry, optimising unproductive land and reducing food loss and waste.[121]

Indonesia's agricultural policy has evolved to match global trade practices and sustainable agriculture goals. The transition from protectionism to trade liberalisation in the 1990s aligns with agreements like the ASEAN Free Trade Area (AFTA). The focus is on food security, farmer welfare, and diversification through subsidies, price support, and targeted assistance programmes. These measures balance international trade norms with self-sufficiency and competitive agricultural production.[122].

Furthermore, Indonesia has initiated significant structural changes in its food and agricultural governance and research systems. The Badan Pangan Nasional (BAPANAS), a National Food Agency directly overseen by the President, has been established, replacing the previous Food Security Agency within the Ministry of Agriculture. BAPANAS is tasked with several critical functions, including stabilising the prices of nine essential food commodities, ensuring nationwide food availability, overseeing food import policies, and guaranteeing food and nutrition security and safety. This agency amalgamates functions from several bodies, including the Ministries of Trade, Agriculture, State-Owned Enterprises, the Logistics Bureau (BULOG), and the Food Safety Agency[123].

Concurrently, Indonesia has consolidated its government R&D efforts in the agricultural sector under the newly formed Badan Riset dan Inovasi Nasional (BRIN). This shift aims to centralise R&D activities for better coordination and integration, transferring more than a third of the Indonesian Agency of Agriculture Research and Development's researchers to BRIN. This move leaves the remaining staff to focus on technology dissemination, especially to small-scale farmers[124].

In addition, under its G20 Presidency in 2022, Indonesia led the Agriculture Working Group (AWG) with the theme "Balancing Food Production and Trade to Fulfil Food for All." This initiative outlined three priorities: enhancing resilient and sustainable agriculture and food systems; fostering open, fair, predictable, and transparent agricultural trade; and encouraging innovative agricultural entrepreneurship through digital technologies to improve rural livelihoods[125].

[119] OECD (2022). Indonesia | Agricultural Policy Monitoring and Evaluation 2022: Reforming Agricultural Policies for Climate Change Mitigation. https://www.oecd-ilibrary.org/sites/2a372026-en/index.html?itemId=/content/component/2a372026-en
[120] OECD (2022). Indonesia | Agricultural Policy Monitoring and Evaluation 2022: Reforming Agricultural Policies for Climate Change Mitigation. https://www.oecd-ilibrary.org/sites/2a372026-en/index.html?itemId=/content/component/2a372026-en
[121] Centre for Indonesian Policy Studies. (2022). Indonesia's Net Zero Target and Sustainable Agriculture. https://www.cips-indonesia.org/post/indonesia-s-net-zero-target-and-sustainable-agriculture-are-we-on-the-right-track
[122] OECD (2022). Indonesia | Agricultural Policy Monitoring and Evaluation 2022: Reforming Agricultural Policies for Climate Change Mitigation. https://www.oecd-ilibrary.org/sites/2a372026-en/index.html?itemId=/content/component/2a372026-en
[123] OECD (2022). Indonesia | Agricultural Policy Monitoring and Evaluation 2022: Reforming Agricultural Policies for Climate Change Mitigation. https://www.oecd-ilibrary.org/sites/2a372026-en/index.html?itemId=/content/component/2a372026-en
[124] OECD (2022). Indonesia | Agricultural Policy Monitoring and Evaluation 2022: Reforming Agricultural Policies for Climate Change Mitigation. https://www.oecd-ilibrary.org/sites/2a372026-en/index.html?itemId=/content/component/2a372026-en
[125] OECD (2022). Indonesia | Agricultural Policy Monitoring and Evaluation 2022: Reforming Agricultural Policies for Climate Change Mitigation. https://www.oecd-ilibrary.org/sites/2a372026-en/index.html?itemId=/content/component/2a372026-en.

Recent years have seen the implementation of strategic initiatives aimed at bolstering the agricultural sector's resilience and inclusivity. Noteworthy among these are the World Bank's support for developing sustainable agriculture value chains and comprehensive updates to import regulations to ensure the safety and quality of agricultural products. Efforts to address fertiliser demand through a blend of local production and imports underscore the government's commitment to agricultural productivity. Furthermore, the establishment of digital platforms and the Agricultural War Room (AWR) illustrates a forward-thinking approach to leveraging data for agricultural enhancement[126]

Additionally, there has been a growing demand for agritech startups to enhance productivity, reduce GHG emissions, and alleviate some of the obstacles faced in the industry. Consequently, the agritech ecosystem in Indonesia has seen significant growth. Agritech startups emphasise the significance of government support, especially in the initial stages. Government initiatives that educate farmers on technology benefits are crucial for opening up the market to these startups. It is vital for the government to implement supportive programmes and establish policies that foster a conducive ecosystem, though it is noted that some programmes may involve substantial application and compliance costs[127].

Implementing alternative irrigation methods, utilising organic fertilisers, enhancing fertiliser application techniques, and reducing food waste can help lower emissions in this sector[128]. The Ministry of Agriculture identified the following activities that contribute to decarbonisation in the agricultural sector:

- Land use optimisation for low emission crops;
- Sustainable water management for agriculture;
- Enhancing climate resilient agriculture through geospatial technology;
- Fire prevention and management;
- The use of organic fertilisers;
- Integrated pest management; and
- Sustainable feedstock for livestock.

Furthermore, another barrier to decarbonisation across the sector is linked to the government's plans to address malnutrition. The government introduced a food fortification programme through the food estate strategic national project. The LHK Ministry issued Permen LHK No. 24 Tahun 2020 on the use of Forested areas for Food Estate to provide legal certainty to convert forested areas for agriculture. As forested areas turn into agricultural crops, it will make it more challenging for the government to achieve its net zero objectives and targets. As a concrete example, food estate projects in Central Kalimantan and Papua are being established in forest and peatland regions, exacerbating the climate crisis and resulting in the loss of 427.2 tons of carbon per hectare of transformed peatland[129]. Despite the aggressiveness of the food estate programme, actual implementation has proven challenging, facing both technical and social hurdles. [130] Experts have concluded that these programmes have led to more detrimental consequences (i.e., deforestation) for the environment.

[126] The World Bank (2022). The World Bank Supports Indonesia's Agriculture Sector to Become More Resilient and Inclusive. https://www.worldbank.org/en/news/press-release/2022/09/09/the-world-bank-supports-indonesia-agriculture-sector-to-become-more-resilient-and-inclusive

[127] Asian Development Bank (2023). Indonesia's Technology Startups: Voice from the Ecosystem. https://www.adb.org/sites/default/files/publication/888071/indonesia-tech-startups-voices-ecosystem.pdf.

[128] Climate Transparency. (2022). Indonesia Country Profile 2022 (Page 14). https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-Indonesia-Web.pdf

[129] Center for Indonesian Policy Studies (CIPS). (2022). Indonesia's net-zero targets and sustainable agriculture: Are we on the right track? https://www.cips-indonesia.org/post/indonesia-s-net-zero-target-and-sustainable-agriculture-are-we-on-the-right-track

[130] Mongabay. (2023). Report: Indonesia's Food Estate Program Repeating Failures of Past Projects. https://news.mongabay.com/2023/04/report-indonesias-food-estate-program-repeating-failures-of-past-projects/

World Agroforestry identified several challenges in implementing sustainable agriculture practices in Indonesia:

- Expansion of agricultural land and conversion of forests leading to ecosystem services and biodiversity loss;
- Organic and inorganic pollution;
- Uncontrolled use of water resources; and
- Mismanagement of soil nutrients and poor site selection.

These challenges were identified in 2015 and may have been exacerbated by the food estate programme as food fortification continues to remain a central focus to fulfil Sustainable Development Goals. In 2023 however, Indonesia supported the Emirates Declaration on Sustainable Agriculture, Resilient Food System and Climate Action during COP28[131].

5.4.1. Rice Field

Rice cultivation's share of GHG emission is 43 percent of emissions from agriculture[132]. Rice is a staple food for many households in Indonesia. To fulfil domestic needs, BULOG, the government agency responsible for managing the national food reserves, had to import 500,000 metric tons of rice from countries like Vietnam, Thailand, Myanmar, and Pakistan due to diminishing stock levels[133]. With only around 300,000 metric tons remaining in BULOG's reserves, which is significantly below the safe threshold of 1.2 million metric tons, the government is contemplating an additional import of 500,000 metric tons from India.

The food estate programme aims to transform Central Kalimantan into a new rice production hub. However, rice fields are decreasing due to conversion for non-agricultural purposes. UU Nomor 41 Tahun 2009 mandates sustainable agricultural practices to protect land and water resources. Despite this, rice production in Central Kalimantan has decreased since the programme's inception in 2020. Projections suggest higher yields in highland areas compared to lowlands in the future.[134]

Other social factors that should be taken into consideration prior to land use conversion for rice fields include consumer behaviour. For instance, land clearing for the food estate programme has been controversial in Papua as Papuans do not regard rice as a staple carbohydrate. The food estate programme has been viewed as Java-centric to cater to demands in other parts of the Indonesian region. To tackle challenges in sustainable rice production in Indonesia, several non-governmental organisation and private initiatives are helping rice farmers and smallholders to implement sustainable rice crop practices. Organisations such as Rikolto and Preferred by Nature are growing their presence in Indonesia to implement sustainable rice production. These organisations rely on external sources of funds from donors such as the Danish International Development Agency[135]. A notable global sustainability initiative is the Sustainable Rice Platform (SRP). SRP provides training and certification for producers aligning with its standard, the SRP Assurance Scheme 2.0[136]. SRP's footprint in Indonesia remains low, as it states that it has engaged less than 4,000 farmers[137].

[131] Ministry of National Development Planning/Bappenas. (2023). Indonesia Mendukung Emirates Declaration on Sustainable Agriculture, Resilient Food System, and Climate Action dalam Leaders Event COP28. https://ekon.go.id/publikasi/detail/5528/indonesia-mendukung-emirates-declaration-on-sustainable-agriculture-resilient-food-system-and-climate-action-dalam-leaders-event-cop28

[132] Agung Wicaksono and Zainal. (2022). Peatlands Restoration Policies in Indonesia: Success or Failure. https://repository.uir.ac.id/19441/2/Cover percent20dan percent20Isi percent20SAC-SAFSE percent202021.pdf

[133] Perum Bulog. (2022). Bulog rice import plan to secure domestic CBP supply. https://www.bulog.co.id/2022/12/09/bulog-rice-import-plan-to-secure-domestic-cbp-supply/

[134] Climate Transparency. (2022). Indonesia Country Profile 2022 (Page 4). https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-Indonesia-Web.pdf

[135] Rikolto in Indonesia. (2024). Promoting sustainable and inclusive rice value chain in Indonesia. https://indonesia.rikolto.org/en/project/promoting-sustainable-and-inclusive-rice-value-chain-indonesia

[136] Sustainable Rice Platform (SRP). (2024). The SRP Assurance Scheme 2.0. https://sustainablerice.org/the-srp-assurance-scheme-2-0/

[137] Sustainable Rice Platform (SRP). (2024). Registered SRP Projects. https://sustainablerice.org/registered-srp-projects/

Due to the stringent standards applied by the SRP Assurance Scheme[138], the Government of Indonesia has not adopted sustainable rice production standards into national policies or guidelines. Food fortification through increasing overall production remains a central focus. This is evident as the Agricultural Ministry issued PERMENTAN No. 13 Tahun 2022 which governs the dosage of chemical fertilisers with the aim of optimising productions. There are no regulations that mandate the use of organic fertilisers during agricultural production, including for rice paddies. Only PERMENTAN Nomor 01 Tahun 2019 governs the registration of organic fertilisers for industrial use.

5.4.2. Crop Farming

Top yields of Indonesia's agricultural outputs, apart from rice, include palm oil, rubber, cocoa, coffee, tea, cassava, and tropical spices[139]. The government has set its sights on achieving self-sufficiency in soybeans, corn, and sugar through various sponsored programmes[140]. These efforts are aimed at reaching this goal between 2024 and 2025. However, there is scepticism about the programmes' effectiveness in making substantial progress toward self-sufficiency in these food crops. Rice continues to be a staple in Indonesian diet, with cassava being the second most widely consumed carbohydrate staple. There are efforts to reduce dependencies on rice through crop diversification. Rising temperatures lead to declining agricultural yields. Indonesia's maize yield is projected to decrease by 6.2% with a 1.5°C temperature increase, and the reduction would be 2.4 times larger with a 3°C increase. To address this, sorghum is being introduced as a climate-resilient food alternative to rice.[141]The government needs to modify consumer behaviour and diversify food sources. Current infrastructure, governance, and cultural practices hinder sustainable agriculture. Investments in both hard and soft infrastructure are crucial. Smallholder farmers face challenges in accessing financing from traditional institutions, but alternative sources like credit unions and private financiers can help. Inclusive financing for smallholders is essential, and state-owned banks have special units to support them.

5.5. Industrial Processes and Product Use

Emissions from the industrial processes and product use sector accounts for less than 5% of total GHG emissions. Referring to Indonesia's NDC, the targets of the GHG emissions reduction under unconditional and conditional NDC scenarios for IPPU sector are 0.10% and 0.11% respectively, below the baseline emissions level in 2030.[142] We highlight below two sub sectors, cement production and pulp and paper, due to their national importance.

5.5.1. Cement Production

Indonesia's cement industry is vital for economic growth, contributing about 5% to GDP and employing approximately one million people. Despite a temporary decrease in demand due to the pandemic, there has been a resurgence in activity. With a population of around 270 million, Indonesia has a significant need for public infrastructure and commercial buildings. The construction of the new capital, Nusantara, further intensifies this need. Indonesia is the sixth-largest cement producer globally, producing 64-66 million metric tons annually. The sector expects significant growth, driven by new construction projects, including the new capital in Borneo. President Joko Widodo prioritised maritime development with plans for large seaports and harbour projects.[143]

[138] Sustainable Rice Platform (SRP). (2022). SRP Standard for Rice Cultivation V2.2. https://sustainablerice.org/wp-content/uploads/2022/12/NO-202308-ST-EN-SRP-Standard-for-Rice-Cultivation-V2.2.pdf

[139] Indonesia Investments. (2024). Agriculture in Indonesia. https://www.indonesia-investments.com/culture/economy/general-economic-outline/agriculture/item378

[140] Ministry of Agriculture. (2015). Rencana Strategis Kementerian Pertanian. https://www.fao.org/faolex/results/details/en/c/LEX-FAOC169456/

[141] Channel NewsAsia. (2022). 'It will be just rice': Why Indonesia turns to sorghum as alternative staple food. https://www.channelnewsasia.com/asia/it-will-be-just-rice-why-indonesia-turns-sorghum-alternative-staple-food-3166476

[142] United Nations Framework Convention on Climate Change. (2021). Indonesia Third Biennial Update Report. https://unfccc.int/sites/default/files/resource/IndonesiaBUR%203_FINAL%20REPORT_2.pdf

[143] Asian Insiders (2023). Cement is big business in Indonesia. Retrieved from https://asianinsiders.com/2023/03/21/cement-is-big-business-in-indonesia/

PT Semen Indonesia, the largest cement producer in Indonesia, plans to focus more on the domestic market due to improved coal supply availability. With a 41% market share, the company reported a net profit of IDR 2 trillion in 2021, with the government benefiting from its majority ownership.[144] Environmental concerns arise from increased cement demand, as coal consumption is necessary for cement production. The use of state-of-the-art technologies, such as waste heat recovery systems and alternative fuels, can help mitigate the environmental impact. PT Semen Indonesia has implemented some of these initiatives and introduced certified sustainable green cements. However, the challenging geography of Indonesia poses logistical challenges for expanding sustainability initiatives. Investment in decarbonising the supply chain presents an opportunity for PT Semen Indonesia.

5.5.2. Pulp and Paper

Due to the abundance of natural resources, Indonesia boasts a thriving paper manufacturing industry.[145] Continuous economic and population growth, coupled with limited digital infrastructure for a paperless system further increases Indonesia's domestic demand for paper. The private sector is mostly dominant in the pulp and paper manufacturing industry, with no state-owned enterprise in the sector. There are several laws the Government of Indonesia has enforced to ensure that pulp and paper companies adhere to prevent environmental degradation including:

1. Ministry of Environment and Forestry Regulation No. P.51/MENLHK/SETJEN/KUM.1/6/2018: This regulation sets standards for industrial wastewater quality for the pulp and paper industry, aiming to reduce water pollution.
2. Government Regulation No. 101 of 2014 on the Management of Hazardous Waste (B3): This regulation outlines the responsibilities of pulp and paper companies in managing hazardous waste generated from their operations.
3. Ministry of Industry Regulation No. 30/M-IND/PER/3/2013: This regulation sets guidelines for the implementation of eco-friendly technology in the pulp and paper industry to minimise environmental impact.
4. Ministry of Environment and Forestry Regulation No. P.30/MENLHK/SETJEN/KUM.1/5/2019: This regulation sets guidelines for environmental impact assessments (AMDAL) for businesses, including pulp and paper companies, ensuring that they assess and mitigate their environmental impacts before commencing operations.
5. Presidential Regulation No. 77 of 2018 on the National Strategy for the Prevention and Control of Forest and Land Fires: This regulation aims to prevent and control forest and land fires, which can be caused by land clearing practices for pulp and paper plantations.

Many private sector stakeholders have committed to sustainability efforts, such as zero deforestation pledges.[146] Pulp and paper companies in Indonesia continue to further invest in their sustainability efforts through enhancing and modernising existing technologies and decarbonising operations. However, the pulp and paper industry may be seen as less regulated, where specific sustainability disclosures mandated by OJK are applicable only if they are publicly listed. This presents an opportunity for the Government to monitor and enforce sustainability initiatives e.g. implementing sustainability initiatives can be a requirement to extend land rights concession.

There are expectations for pulp and paper companies to participate in carbon markets, such as setting aside an area of their forest concession for REDD+ projects. These efforts can be for offset or in setting purposes. However, participation of pulp and paper companies in carbon projects now remains voluntary.

[144] Asian Insiders. (2022). The Cement Industry in Indonesia – Looking Ahead. https://asianinsiders.com/2023/03/21/cement-is-big-business-in-indonesia/
[145] Invest in Asia (2024). Top paper manufacturers in Indonesia. https://investinasia.id/blog/top-paper-manufacturers-in-indonesia/
[146] WALHI (2022). Ekspansi perusahaan pulp and paper APP dan APRIL di Indonesia: Lebih banyak deforestasi dan kekerasan. https://www.walhi.or.id/ekspansi-perusahaan-pulp-and-paper-app-dan-april-di-indonesia-lebih-banyak-deforestasi-dan-kekerasan

5.6. Transportation

In Indonesia, the transport sector is the second-largest source of GHG emissions, contributing to 25% of national emissions in 2021.[147] A more recent report from the International Council on Clean Transportation estimated that transport is responsible for approximately 15% of Indonesia's GHG emissions.[148] [149] In the context of the NDC, the Government's initiative to decarbonise the transportation sector is through proliferation of EVs. EV-related initiatives are marked in the NDC as initiatives under the Energy sector.

Efforts to prevent the extreme impact of climate change have encountered challenges in low-carbon transition in the energy and transport sectors in Indonesia. One of the factors is low public transport modal share (2-5%) in many cities, including in Jakarta where the public transport modal share only reaches 10%.[150]

For this analysis, the study selected maritime transport due to Indonesia's unique position as an archipelagic nation, boasting huge blue economy potential, and EVs due to Indonesia's abundant supply of nickel as a critical component of EV batteries.

5.6.1. Maritime Transport

Although Indonesia heavily relies on water-borne navigation for transportation, maritime transport accounts for a disproportionately low percentage (0.01%) of its total greenhouse gas (GHG) emissions in 2019.[151] However, at COP 26, the Indonesian government stated that 19% of the country's CO2 emissions outlined in its NDC are attributed to the maritime industry specifically shipping, indicating a significant contribution to GHG emissions not officially recorded.[152] The discrepancy in emission numbers may stem from how energy consumption is aggregated and how fuels are assigned to transportation modes in Indonesia's national energy statistics. The current method of aggregating fuel consumption by sector does not differentiate diesel and gas usage between transport modes, potentially leading to lower reported emissions for the maritime sector.

In response to the discrepancies in emissions reporting and the significant role of the maritime industry in Indonesia's carbon footprint, the government has introduced various regulations and policies aimed at promoting environmental sustainability, economic growth, and social welfare within this sector. These initiatives are crucial for addressing the challenges posed by GHG emissions and ensuring a more sustainable future for Indonesia's maritime activities. Here are some key enabling regulations for making Indonesia's maritime sector more sustainable:

1. UU No. 32 Tahun 2014 on Marine Affairs: This law provides the legal framework for the management and utilisation of marine resources in a sustainable manner. It emphasises the protection of marine ecosystems, the sustainable development of marine resources, and the importance of integrated coastal zone management.

[147] Climate Transparency. (2022). Climate transparency Report: Comparing G20 Climate Action. https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-Indonesia-Web.pdf
[148] International Council on Clean Transportation (ICCT). (2023). Comparison of life-cycle GHG emissions of combustion engine and electric PV and 2W in Indonesia. https://theicct.org/publication/comparison-life-cycle-ghg-emissions-combustion-engine-and-electric-pv-and-2w-indonesia-sept23/
[149] International Council on Clean Transportation (ICCT). (2023). Life-cycle GHG emissions of combustion engine and electric PV and 2W in Indonesia. https://theicct.org/wp-content/uploads/2023/09/ID-17- percentE2 percent80 percent93-LCA-Indonesia_report_final2.pdf
[150] World Bank. (2023). Indonesia Country Climate and Development Report https://documents1.worldbank.org/curated/en/099042823064027780/pdf/P17724501e40e50940a6ae035cd74193a44.pdf
[151] United Nations Conference on Trade and Development. (2019). Review of Maritime Transport 2019. https://unctad.org/system/files/official-document/rmt2019_en.pdf
[152] Global Maritime Forum. (2022). Shipping's Energy Transition: Strategic Opportunities in Indonesia. from https://www.globalmaritimeforum.org/content/2022/08/Shippings-Energy-Transition_Strategic-Opportunities-in-Indonesia.pdf

2. PERPRES No. 16 Tahun 2017 on Indonesia's Ocean Policy: This regulation outlines the national policy for ocean management, aiming to balance economic development with environmental sustainability. It includes strategies for sustainable fisheries, marine conservation, and the development of sustainable maritime industries.
3. Minister of Maritime Affairs and Fisheries (KKP) issued Permen KKP No. 71 Tahun 2020 on Sustainable Fishery Management: This regulation sets guidelines for sustainable fishing practices, including quotas, gear restrictions, and protected areas. It aims to prevent overfishing and protect marine biodiversity.
4. Permen LHK No. P.75/MENLHK/SETJEN/KUM.1/12/2018 on Marine Pollution and Damage Control: This regulation addresses marine pollution, including from ships and land-based sources. It sets standards for waste disposal, oil spill response, and other measures to protect marine ecosystems.
5. The Ministry of Transportation issued PERMENHUB No. 29 Tahun 2014 on Maritime Pollution Prevention
6. PERPRES No. 85 Tahun 2015 on the Coral Triangle Initiative on Coral Reefs, Fisheries, And Food Security stipulates principles to protect and restore coral reef ecosystems, which are critical for marine biodiversity and coastal protection. It includes measures for conservation, rehabilitation, and sustainable tourism.

Indonesia's maritime transport sector faces challenges due to the lack of specific regulations promoting fleet modernisation and climate resilience. In the context of global shipping, Indonesia is part of the International Maritime Organisation (IMO), a United Nations agency comprising over 170 member countries that oversees the international shipping sector. The IMO establishes worldwide norms for maritime safety, security, and environmental performance. Indonesia has embraced, joined, and/or ratified various international agreements and conventions related to climate change, marine environmental conservation, and the shift towards a maritime sector with lower emissions. Indonesia has agreed to various international treaties, such as the International Convention on Civil Liability for Oil Pollution Damage of 1969 and its 1992 amendment. In 2010, Indonesia enacted regulations to safeguard the marine environment, focusing on preventing marine pollution from ships, port activities, and waste discharge in accordance with MARPOL 73/78. In 2012, Indonesia ratified Annexes III, IV, V, and VI of the MARPOL Convention, which were incorporated into domestic law through the PERMENHUB No. 29 Tahun 2014. Many of IMO's convention have been formalised into a national regulation[153]. There are, however, strategic initiatives of the IMO to decarbonise the maritime industry, that have not been adopted by Indonesia. Some examples below:

- Ballast Water Management: Indonesia could adopt more robust regulations related to ballast water management in line with the International Convention for the Prevention of Pollution from Ships (MARPOL) and the regulations on ballast water management[154].
- Emission Reduction Regulations: Indonesia could implement stricter regulations to reduce emissions to air from maritime activities. Following the example of the International Maritime Organisation's (IMO) global cap on sulphur content in fuels (0.5 percent), Indonesia could enforce similar regulations to improve air quality in coastal zones. FuelEU Maritime would also serve as a good benchmark[155].
- Onshore Power Supply (OPS) for Ships: Indonesia could promote the use of Onshore Power Supply (OPS) technology for ships at berth to eliminate GHG emissions and air pollutants. OPS technology has proven effective in reducing environmental impact and improving air quality in ports. By incentivising the use of OPS systems, Indonesia can contribute to a more sustainable maritime industry.

[153] Kementerian Perhubungan Republik Indonesia. (2020). Daftar Konvensi Internasional Bidang Maritim. https://ppid.dephub.go.id/fileupload/informasi-berkala/20200819131943.DAFTAR_KONVENSI_INTERNASIONAL_BIDANG_MARITIM.pdf

[154] International Maritime Organization (IMO). (2024). Ballast Water Management. https://www.imo.org/en/ourwork/environment/pages/ballastwatermanagement.aspx

[155] DNV. (2023). FuelEU Maritime. https://www.dnv.com/maritime/insights/topics/fuel-eu-maritime/#:~:text=FuelEU percent20Maritime percent20is percent20a percent20regulation,the percent20European percent20Union percent20(EU).

To promote fleet modernisation and reduce emissions, Indonesia should consider incentivising ship owners to adopt environmentally friendly vessels through tax breaks or subsidies. This aligns with global efforts to combat climate change and air pollution. Additionally, the maritime sector needs regulations to enhance climate resilience, including improved navigation systems, weather forecasting, crew training programmes, and design standards for new vessels. Measures like carbon taxes and initiatives for low emission fuels also require regulatory implementation. These enhancements would foster a sustainable and resilient maritime sector in Indonesia, benefiting both the environment and the economy.

Indonesia needs to do more to align its shipping industry with the IMO decarbonisation initiatives. Existing measures are considered inadequate and require high investment. The government has not provided a clear plan for transitioning to green shipping, including a specific timeline for achieving zero emissions. Compliance with regulations for low-sulphur fuel is challenging in remote ports due to limited access. As a result, Indonesian-flagged vessels are allowed to use high-sulphur marine fuel oil in certain cases.

5.6.2. Electric Vehicles

The government has introduced several regulations and policies to encourage the growth of the EV market and the development of related infrastructure. Here are some key enabling regulations for Indonesia's EV industry:

1. PP No. 22 Tahun 2021 on Environmental Conservation, specifically Clause 206, requiring emission testing of gasoline-fuelled vehicles and limitations on how much vehicles can emit.
2. PERPRES No. 55 Tahun 2019 on the Acceleration of Battery Electric Vehicle Programs for Road Transportation: This regulation provides a legal framework for the development of the EV industry, including incentives for manufacturers and consumers, as well as guidelines for infrastructure development.
3. Permenperin No. 27 Tahun 2020 on Electric Motor Vehicle Local Industry Development: This regulation outlines the roadmap for EV development in Indonesia, including standards for production, safety, and environmental sustainability. It also provides incentives for investment in the EV industry.
4. Permen ESDM No. 13 Tahun 2020 on Electric Vehicle Charging Infrastructure: This regulation establishes guidelines for the development of EV charging infrastructure, including technical standards, tariff structures, and safety requirements.

As Indonesia ventures into the EV industry, it faces significant competition from China, a global leader in EV production and adoption[156]. China's extensive manufacturing capabilities, substantial investments, and supportive policies have propelled its EV manufacturers to dominance. To stay competitive, Indonesia must prioritise innovation and R&D efforts while fostering an ecosystem conducive to local manufacturers. Collaboration opportunities with Chinese companies for technology transfer and joint ventures could be explored to leverage their expertise.

Central to Indonesia's EV industry success is the development of a robust domestic manufacturing base. This entails providing investment incentives such as tax breaks and subsidies to encourage local manufacturers to invest in EV production. Establishing specialised industrial zones dedicated to EV manufacturing, equipped with necessary infrastructure and access to skilled labour, can attract investment and promote growth. Additionally, strengthening the domestic supply chain for EV components is vital to reduce reliance on imports and enhance competitiveness. Training programmes focusing on relevant EV manufacturing skills will be essential to develop a skilled workforce.

[156] Davidson, H. (2021). Battery arms race: How China has monopolised the electric vehicle industry. The Guardian. https://www.theguardian.com/global-development/2021/nov/25/battery-arms-race-how-china-has-monopolised-the-electric-vehicle-industry

In assessing Indonesia's trajectory towards decarbonising its transport sector, several gaps and opportunities emerge, providing valuable insights for strategic interventions and policy enhancements. Indonesia's transport sector currently constitutes a sizable portion of the country's energy-related emissions, with projections indicating a steep rise in emissions by 2030 and beyond. Addressing fossil fuel combustion in transportation is imperative to achieve net zero emissions, with EVs emerging as a key solution. Globally, EV sales have seen a remarkable surge, driven by advancements in range, performance, and model availability. Despite challenges such as supply chain disruptions and inflation, global EV sales reached a record 10.6 million vehicles in 2022, with projections expecting a further increase to 21 million by 2025. However, Indonesia's current EV adoption targets, while ambitious, fall short of aligning with the objectives outlined in the Paris Agreement, necessitating more ambitious decarbonisation efforts[157].

The government has implemented several policies to address these challenges and promote the growth of the EV sector. Below is a list of policies related to EVs in Indonesia that promotes their overall use and production[158].

1. **Financial Incentives for Consumers:** The Financial Services Authority has lowered the risk weight for loans for EV purchasing to 75 percent compared to 100 percent for other industries. There is also a subsidy of IDR 7 million for EV two-wheelers and other subsidies for four-wheelers, currently limited to individuals and medium- and small-sized enterprises that meet certain conditions.
2. **Tax Incentives for Consumers:** There is a luxury goods tax reduction for EVs to zero percent for battery electric vehicles (BEVs) / fuel cell electric vehicles (FCEVs) if the local content requirement is met. This is regulated by a Presidential decree.
3. **Regulatory Hurdle Reduction for Consumers:** EVs are exempted from road restrictions and are eligible for parking fee discounts.
4. **Financial Incentives for Manufacturers:** The Financial Services Authority has lowered the risk weight for loans for EV value chain activities to 75 percent and provided an exemption from the maximum credit limit if guaranteed by BUMN.
5. **Tax Incentives for Manufacturers:** There is a Corporate Income Tax (CIT) holiday for up to 20 years for investment in the EV industry and a tax deduction of up to 300 percent of costs incurred in R&D, technological innovation activities, and industrial vocation.
6. **Regulatory Hurdle Reduction for Manufacturers:** There is an import duty exemption on Semi Knocked Down (SKD) kits for EVs.
7. **Capability Building for Manufacturers:** The government grants free access to government-owned BEV-related technology to EV players and provides professional certification for the battery industry.
8. **Charging Network Support:** The government provides a discounted rate for home power capacity upgrades and special electric price rates up to 30 percent for home charging. There is also a 35 percent - 50 percent discount on electricity rates given to public electric vehicle charging station (SPKLU) businesses. The process for SPKLU licensing has been simplified to encourage more businesses to set up charging stations.
9. **Industry Standardisation:** The government is setting up product certification and technical standards for the EV industry. This includes standards for EV charging infrastructure to ensure safety and compatibility. These standards are crucial for the development and growth of the EV industry.

[158] AC Ventures. (2023). Indonesia's Electric Vehicle Outlook: Supercharging Tomorrow's Mobility. https://acv.vc/wp-content/uploads/2023/07/Report-Indonesias-Electric-Vehicle-Outlook-Supercharging-Tomorrows-Mobility_NEW.pdf

Additionally, Indonesia plans to increase the number of charging stations to 2,400 by 2025[159], a significant rise from the current provision. Furthermore, aligning green industrial policies with global trade norms is paramount, requiring a delicate balance between promoting state-owned companies and attracting foreign investment.

Several regulatory and policy barriers hinder Indonesia's transition to widespread EV adoption. Challenges in domestic manufacturing and supply chain development must be addressed[160]:

- Existing regulations on limiting emission from vehicles require further attention and action to accelerate the transition of consumers to EVs. There is also a lack of enforcement from authorities to ensure vehicles are checked[161].
- While Indonesia boasts abundant nickel reserves crucial for EV battery production, regulations mandating high levels of local components could deter foreign investment. Additionally, affordability and charging infrastructure remain significant barriers. Despite the government's target for EVs to constitute 20 percent of all cars by 2025, affordability concerns persist, while the expansion of charging infrastructure is deemed critical.
- Safety is paramount for widespread EV adoption. However, more regulations are required to ensure safe EV adoption[162]. Indonesia can enact and enforce regulations ensuring the safety of EVs and their users. Establishing vehicle safety standards aligned with international norms, including crash tests and fire safety measures, is crucial. Similarly, ensuring the safety of EV charging infrastructure through proper installation and adherence to electrical safety standards is imperative. Educating consumers about safe EV usage and implementing recall mechanisms for addressing safety defects promptly will further enhance consumer confidence in EVs. Through strategic regulation and proactive safety measures, Indonesia can pave the way for a successful transition to electric mobility.

As Indonesia navigates these challenges, strategic policy interventions, collaborations, and investment incentives will be essential to accelerate the transition towards a low-carbon transport sector. By addressing regulatory barriers, enhancing supply chain resilience, and promoting affordability and accessibility, Indonesia can unlock its potential as a leader in sustainable transportation, aligning with global climate objectives while fostering economic growth and innovation.

[159] The Diplomat. (2023). Can Indonesia Achieve Its Electric Vehicle Ambitions?. https://thediplomat.com/2023/02/can-indonesia-achieve-its-electric-vehicle-ambitions/

[160] Institute for Essential Services Reform (IESR). (2023). Indonesia Electric Vehicle Outlook 2023. https://iesr.or.id/wp-content/uploads/2023/02/Indonesia-Electric-Vehicle-Outlook-2023.pdf

[161] Kompas. (2024). Banyak warga tahu uji emisi tapi belum melakukannya. https://www.kompas.id/baca/metro/2024/01/31/banyak-warga-tahu-uji-emisi-tapi-belum-melakukannya

[162] Kompas. (2022). More regulations needed to ensure safety in Indonesia's electric vehicle. https://go.kompas.com/read/2022/11/18/210551874/more-regulations-needed-to-ensure-safety-in-indonesias-electric-vehicle?page=all

6. Investor Sentiment Analysis

Although one of the primary objectives of the consultation was to gauge investor's appetite in the NDC priority sectors, it became clear that only a handful of priority sectors are being considered as potential deal pipelines. Energy, agriculture, and transportation were the three main focus areas for private sector investors as there are more opportunities for non-government sanctioned projects. Forestry and Land Use were not heavily discussed, despite the abundant potential in carbon markets, due to the government having a more significant role in managing forest restoration and preservation.

6.1 Identified Barriers to Green Finance

Below is a summary of the identified barriers to proliferate green or sustainable financing in Indonesia, categorised into four types: Market, Policy and Regulatory, Supply-side and Demand-side. The barrier significance was classified as high, medium and low based on the number of times it was mentioned or validated during our stakeholder interviews, as follow:

High	Medium	Medium
Mentioned in five or more interviews	Mentioned in three to four interviews	Mentioned in two or fewer interviews

Table 6: Barrier Significance Legend

Summary of Barriers

Type	No.	Theme	Significance
Macroeconomic /cross-sectoral market barriers	1	Higher risks associated with green investments (e.g. regulatory, return, political, economic trends)	High
	2	Economic volatility and currency fluctuations	High
	3	Lack of private investment competitiveness due to substantial public investment through public finance and state-owned enterprises	Low
	4	Inadequate infrastructure for green investments e.g., renewable energy projects, transmission lines, and storage facilities	Low
Policy and Regulatory	5	Lack of a comprehensive framework that harmonises all related plans, policies, and regulation	High
	6	Lack of enforcement mechanisms and clarity on repercussions related to noncompliance	Medium
	7	Lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries	Low
Supply-side	8	Financiers find there is a lack of bankable projects and deal flow due to insufficient investment opportunities	High
	9	Development fund stakeholders feel there is a lack of financing supply and involvement from local government	Medium
	10	Lack of expertise and technical capabilities within financial institutions to design and develop green financial products, and accurately assess, structure, and manage green finance transactions	High
Demand-side	11	Limited green financial products and services due to preference for traditional investment options	High
	12	Investors and business agreed on the difficulty for project owners to access affordable capital and financing options tailored to green projects	High
	13	Lack of incentives to attract private investors	High
	14	Organisations lack the capability to develop and implement bankable projects	High

Table 7: Summary of Barriers

6.1.1 Macroeconomic/cross-sectoral market barriers

As can be seen from the table above, higher risks associated with green investments, economic volatility, and currency fluctuations are the most significant market barriers recognised by all stakeholder groups. The lack of private investment competitiveness and inadequate infrastructure for green investments were recognised in fewer interviews with the development financial institution stakeholders.

Higher risks associated with green investments

Stakeholders across multiple groups have expressed their concerns regarding perceived risks associated with green investments such as high costs, longevity, and revenue uncertainty. Stakeholders from local banks and private equity revealed that the high costs are due to huge upfront financing costs, substantial spending on certifications and licenses, and other transactional expenses required for green investments.

Evidence of unlocking green finance in Turkey shows that renewable energy, energy efficiency, and low carbon investments often require significant upfront capital investment hence the perceived high risk of green projects among lenders and the tendency of lenders to offer investment capital at a higher rate.[163]

Additional costs mentioned by financial institutions with interest in agriculture are the certifications and permit requirements specifically citing Roundtable on Sustainable Palm Oil (RSPO) certification and AMDAL permit. Research shows that the costs of RSPO certification for sustainable production of palm oil are high and the financial benefits are not fully recovered by independent palm oil holders in the short-term. Despite 21% increased income from sales, the RSPO certification generates up to 8% in net income losses per hectare in the first year after the certification.[164] Other transaction costs mentioned by stakeholders is the AMDAL permit which is applicable across sectors. The Chairperson of the Industrial Estate Association supports this by stating that AMDAL has always been associated with expensive fees, as well as long processes.[165]

Apart from risks associated with high costs, stakeholders suggested longevity of green projects also contributes to the perceived risks. According to multilateral development banks, some of their partner banks lack the appetite to invest in certain NDC sectors such as agriculture and FOLU due to the long-term nature of projects. Aside from agriculture and FOLU, other NDC subsectors such as renewable energy and energy efficiency have long maturity profiles which adds to the perceived high risk of green projects.[166] Stakeholders suggests that considering the green finance ecosystem is nascent, the development stage may take longer compared to traditional investments.

Another common perception across the investor community is that decarbonisation projects are perceived to have uncertain revenue or at least would take time to recover profit. Normally even traditional investments will not generate financing opportunities from investors if the financial statements show uncertain revenue streams. Direct revenues may not always be considered in the financial calculations of green projects due to unquantified or indirect green benefits. Hence, green projects are not perceived as strong revenue generating assets due to the non-monetisation of externalities in environmental and social terms. This barrier prevents green projects from being comparable to traditional projects. Currently there are no solutions on how to capture these green revenues, however doing so may offset the uncertain revenue or lost green revenues associated with green projects.[167]

Economic volatility and currency fluctuations

Stakeholders across multiple groups have identified high interest rates and foreign exchange as significant risks in the economic market. Private equity and multilateral banks identified high interest rates as a barrier to attracting sustainable investments. As an illustration, at the time of report writing, Indonesia's interest rate is at 6.25%, in comparison to the interest rate in Malaysia, Thailand, Singapore, and Vietnam which is in the range of 2.5 to 4.5%.[168] Furthermore, historical trends show that Indonesia has the highest interest rates compared to its neighbouring countries since 2014 which could be an indication of something endemic.[169] Private equity stakeholders expressed concerns on how collateral requirements are unattainable on top of inflated interest rates. This is aligned with the World Bank statement citing difficulties encountered in the use of collateral in Indonesia.[170]

[163] World Bank. (2022). Unlocking Green Finance in Turkey: Green Growth Analytical and Advisory Program. https://openknowledge.worldbank.org/server/api/core/bitstreams/861f626e-c40b-40f1-bd14-9f3ccea7c202/content
[164] Hutabarat et al. (2018). Costs and benefits of certification of independent oil palm smallholders in Indonesia. https://www.wageningenacademic.com/doi/10.22434/IFAMR2016.0162
[165] Waste4Change. (2022). If AMDAL is Abolished, What is the Best Solution for the Environmental Feasibility Study in Indonesia? https://waste4change.com/blog/if-amdal-is-abolished-what-is-the-best-solution-for-the-environmental-feasibility-study-in-indonesia/
[166] World Bank. (2022). Unlocking Green Finance in Turkey: Green Growth Analytical and Advisory Program. https://openknowledge.worldbank.org/server/api/core/bitstreams/861f626e-c40b-40f1-bd14-9f3ccea7c202/content
[167] Asian Development Bank. (2017). Catalyzing Green Finance: A concept for leveraging blended finance for green development. https://www.adb.org/sites/default/files/publication/357156/catalyzing-green-finance.pdf
[168] Trading Economics. (2024). Interest Rate. https://tradingeconomics.com/indonesia/interest-rate
[169] Trading Economics. (2024). Interest Rate. https://tradingeconomics.com/indonesia/interest-rate
[170] International Monetary Fund. (1997). 10 Indonesian Financial System: Its Contribution to Economic Performance and Key Policy Issues.

Country	Interest Rate		
	Latest Estimates	Lowest	Highest
Indonesia	6.25%	3.50%	7.75%
Malaysia	3.00%	1.75%	3.25%
Thailand	2.50%	0.50%	2.50%
Singapore	3.42%	0.01%	4.39%
Vietnam	4.50%	4.00%	6.50%

Table 8: Interest Rates
Source: Trading Economics (As of 9 May 2024)

Aside from high interest rates, foreign exchange risks limit institutional investors in financing long-term projects. Stakeholders from various financial institutions reveal that green infrastructure projects suffer from foreign exchange risks as unanticipated currency movements could result in increased project costs and eroding profit margins, thus potentially leading to financial distress for organisations and investors. This type of currency volatility risk is considered a transaction exposure risk where exchange rate fluctuations impact an organisation's capacity to make short-term to medium-term payments denominated in foreign currencies. Additionally, financial institutions reveal that these foreign exchange risks are further exacerbated by the lack of hedging markets. Stakeholders cited that hedging instruments such as exchange rate guarantees are limited as the tenure is only available for 3 to 6 months. As multilateral development bank stakeholders only provide sustainable financing loans in non-local currency e.g. US dollar and Euros, borrowers in Indonesia and the government of Indonesia may be exposed to greater foreign exchange risks; this includes the JETP terms and conditions.[171]

Lack of private investment competitiveness due to substantial public investment through public finance and state-owned enterprises

The private sector has expressed concerns about a structural issue in the market where sustainable financing is predominantly directed towards the public sector and state-owned enterprises (SOEs). As a result, the stakeholders perceive that this may lead to a situation where investments in the private sector are being crowded out.

Large-scale public investments and preferential treatment toward the public sector and SOEs can distort market conditions, making it difficult for private enterprises to compete. The private sector perceives that public entities might receive preferential treatment, access to subsidised resources, or regulatory favours that are not available nor easily accessible to private companies. As half of JETP's financing commitment is from the International Partners Group (IPG), the loans offered by IPG are channelled as sovereign lending which can only be accessed by SOEs, thus limiting access to concessional financing for independent power producers (IPPs).[172]

Public investment and SOEs might effectively control access to the market, limiting opportunities for private investment. This could be due to regulatory barriers, or the sheer scale of public operations crowding out private entities. This is a clear example of SOEs preventing other players from accessing the market and limiting opportunities for private investments to enter the renewable energy market.

https://www.elibrary.imf.org/display/book/9781557756374/ch010.xml
[171] Climate Policy Initiative. (2023). Highlights from Indonesia's JETP Comprehensive Investment and Policy Plan. https://www.climatepolicyinitiative.org/highlights-from-indonesias-jetp-comprehensive-investment-and-policy-plan/
[172] Climate Policy Initiative. (2023). Highlights from Indonesia's JETP Comprehensive Investment and Policy Plan. https://www.climatepolicyinitiative.org/highlights-from-indonesias-jetp-comprehensive-investment-and-policy-plan/

The significant involvement of public entities in certain markets might alter the risk perception among private investors. They might view the market as less attractive due to the potential for policy shifts, regulatory changes, or direct competition with government-backed entities. Private equity stakeholders perceive the regulatory environment as highly volatile, specifically citing solar PV regulations which changed multiple times in recent years.

Other barriers to private capital are the preference of allocating resources toward SOEs thus leading to lower levels of overall innovation and efficiency in the economy. A study in China on selective allocation of resources in the industry reveals that resource misallocation is a major obstacle to improving innovation quality and economic efficiency.[173] In this case, public investments and SOEs might have easier access to capital, land, or other resources due to government backing, making it challenging for private companies to secure the resources they need on competitive terms. Thus, markets dominated by SOEs and substantial public investment may lead to decreased innovation and efficiency in the market. This could eventually deter private domestic and foreign investors who seek dynamic and efficient markets to invest in.

Inadequate infrastructure for green investments e.g., renewable energy projects, transmission lines, and transportation

Stakeholders from multilateral development banks suggested that the lack of infrastructure, such as land and technology, for green investments in the energy and transportation industry posed a challenge in the market.

Land use and tenure in Indonesia is a highly contentious subject. The process of acquiring land for energy project development is lengthy and complex.[174] Thus, land acquisition e.g. 8,000 km2 to achieve Indonesia's target of 1,500 GW of solar PV power plants by 2050, poses a significant risk for energy project developers.[175] Aside from land, stakeholders have expressed concerns about the lack of advanced technology for grid infrastructure that can facilitate a smooth transition between baseload and intermittent power sources. Low carbon development projects encounter technological barriers such as the lack of smart grid infrastructure that can integrate conventional and renewable energy sources.[176]

As for the transportation sector, stakeholders also mentioned that the lack of charging infrastructures for electric vehicles is a significant roadblock. Although the country aims to increase the adoption of electric vehicles, there are not enough public charging stations in the country. PLN, whose job is to provide the stations, has been struggling to fulfil demand. Additionally, charging costs are high making consumers reluctant to install these in their homes.[177]

6.1.2 Policy and Regulatory-related Barriers

In terms of policy and regulatory barriers, the lack of a comprehensive framework is the most significant barrier to investments as suggested by all stakeholder groups. Law firms, development financial institutions, and private equity stakeholders have raised the lack of enforcement mechanisms as a significant barrier. Interviews with banks and private equity stakeholders have brought up the lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries, as a less significant policy and regulatory barrier.

[173] Huang. (2024). Selective industrial policy and innovation resource misallocation. https://www.sciencedirect.com/science/article/abs/pii/S031359262400050X
[174] Kennedy. (2020). Research: land use challenges for Indonesia's transition to renewable energy. https://theconversation.com/research-land-use-challenges-for-indonesias-transition-to-renewable-energy-131767
[175] Asian Development Bank. (2020). Indonesia: Sustainable Infrastructure Assistance program. https://www.adb.org/sites/default/files/project-documents/46380/46380-023-dpta-en.pdf
[176] Sambodo et al. (2022). Breaking barriers to low-carbon development in Indonesia: deployment of renewable energy. https://www.sciencedirect.com/science/article/pii/S2405844022005928
[177] The Diplomat. (2023). Are We There Yet? Indonesia's Huge EV Challenge. https://thediplomat.com/2023/11/are-we-there-yet-indonesias-huge-ev-challenge/

Lack of a comprehensive framework that harmonises all related plans, policies, and regulation

The majority of stakeholders across multiple groups have pointed out the lack of a comprehensive framework that harmonises all related plans, policies, and regulations. While Indonesia has introduced legislation and policy reforms designed to stimulate investment in green growth and achieve energy security, there is evidence of policies that lack harmonisation to drive investment in renewable energy.

For instance, three policies are incompatible with supporting renewable energy growth: The National Action Plan on GHG Emission Reduction (RAN-GRK), the National Energy Policy (NEP), and National Energy Plan. When combined, these policies simultaneously pursue increased renewable energy targets while also embedding the role of coal in the country's energy future. Although the RAN-GRK outlines Indonesia's targets for increasing modern renewable energy to 23% of total primary energy supply by 2025 and supports over 45 GW of additional renewable energy, the NEP establishes new targets for oil, gas, and coal to drive the remaining 77% of the total primary energy supply by 2025.[178]

Additionally, banks and multilateral development agencies indicated the presence of local content requirements (LCR) as a regulatory roadblock as it significantly increases the initial outlay on projects. This compounds with the high upfront costs that organisations must shoulder in the beginning of projects. LCRs in Indonesia can be a key roadblock for renewable IPPs. For solar modules, the current LCR has reached 40% and is expected to continue rising up to 60%. However, with the new Ministry of Industry Regulation No. 23/2023, the mandatory LCR of 60% for solar modules will be delayed until 1 January 2025.[179] Given the typical small size of IPPs and lack of competitiveness in the market, developers may struggle to get projects off the ground. While Indonesia's goals such as promoting industrial expansion and job creation are laudable, global evidence shows that LCRs for wind and solar have overall had mixed (if not negative) effects on industrial development, jobs and value creation.[180]

In the agriculture sector, domestic banks pointed out the difficulty of having to follow several regulations with different standards. They specifically cited RSPO and ISPO, as well as having the need to apply Indonesia's green taxonomy on top of those regulations. According to bank stakeholders, RSPO certification, although voluntary, is internationally recognised and allows their clients in the palm oil industry to access premium markets and improve their productivity and profitability, while ISPO certification is mandatory for all palm oil plantations. Overall, stakeholders expressed concern about the challenges of having the need to manage various standards for the sector.

As for the carbon market, stakeholders pointed out the lack of clarity on the guidelines and delayed implementation of the carbon tax. There is evidence of uncertainty among project developers regarding the issuances of carbon credits surfaces due to the lack of clarity on the government's guidelines on trading in the carbon market. South Pole, an environmental consulting firm, stated that no carbon credits had been rejected and that they were merely on hold until there was further clarity on the regulation - one of which concerns the economic value of carbon.[181] Moreover, the carbon tax implementation which was legislated and introduced in 2022 has been delayed.[182] Following the launch of the emissions credit trading system in 2023, there were concerns on the lack of comprehensive market ecosystem and whether Indonesia is adequately prepared to manage it.[183]

[178] Liebman et al. (2019). Green Finance in Indonesia Barriers and Solutions. https://www.researchgate.net/publication/333641900_Green_Finance_in_Indonesia_Barriers_and_Solutions

[179] JETP Indonesia. (2023). Comprehensive Investment and Policy Plan 2023. https://jetp-id.org/cipp

[180] Organisation for Economic Co-operation and Development. (2024). Clean Energy Finance and Investment Policy Review of Indonesia. https://www.oecd-ilibrary.org/sites/d877bde1-en/index.html?itemId=/content/component/d877bde1-en

[181] S&P Global Commodity Insights. (2022). Carbon credit issuances from Indonesia on hold, developers await clarity. https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/040722-carbon-credit-issuances-from-indonesia-on-hold-developers-await-clarity

[182] International Monetary Fund. (2024). Unlocking Climate Finance in Asia-Pacific. https://www.imf.org/-/media/Files/Publications/DP/2024/English/UCFAPEA.ashx

Lack of enforcement mechanisms and clarity on repercussions related to non-compliance

According to law firms and financial institutions, the key barriers to green finance policy and regulations in Indonesia boil down to a lack of enforcement mechanisms and clarity on repercussions for non-compliance. The stakeholders particularly cited the weakly enforced environmental regulations, lack of strong carbon pricing implementation, lack of punishment mechanisms, and perceived uncertainty on the regulatory environment.

A study shows that the current Indonesian investment law is unable to respond to global developments that promote green investments.[184] Indonesia's investment law does not align with the global investment law which requires companies to carry out environmental responsibilities in addition to social responsibility and good governance. The local investment law does not strictly regulate sanctions against investors who violate their obligations and responsibilities to maintain the environment. Because of weak government supervision of the implementation of investor obligations and lack of sanctions for non-compliance, the investment law in Indonesia is not effective in terms of supporting law enforcements particularly in forestry and land fire cases.[185]

On the other hand, stakeholders have also suggested the lack of strong carbon pricing implementation and relatively lower carbon price compared to other countries that have implemented the carbon pricing scheme. The Director General of Electricity at the Ministry of Energy and Mineral Resources (ESDM), predicts that the carbon price will be in the range of $2-18 per ton of CO2e, while Singapore has set a carbon price of $3.94 per ton of CO2e and South Korea's carbon price reaches $30 per ton of CO2e. The low carbon price goes against Indonesia's target for early retirement from coal, as the operation of CFPPs continues to be enabled by purchasing carbon quotas. Additionally, there is a lack of regulation obliging companies to disclose their carbon emissions and lack of transparency as carbon emissions data from companies and CFPP are not accessible to the public.[186] More evidence in Turkey shows that a weak and partial environmental policy backdrop that fails to sufficiently price pollution renders clean infrastructure projects less competitive than polluting ones, introduces regulatory risk, and raises uncertainty among private investors. Thus, a credible and durable policy environment and enforcement mechanisms are essential to provide security for private investors.[187]

Lastly, a common concern raised by stakeholders is that the perceived uncertainty surrounding the political environment in Indonesia, due to lack of enforcement mechanisms, has a significant impact on project outcomes and implementation. In Vietnam, an unpredictable and unstable regulatory environment in the energy sector e.g. short-term FIT Policy and lack of solid and protectable PPA regulations hinder long-term private participation, as it is difficult to predict power prices, which are crucial for PPA decision-making and for directing PPA contracts from private investors.[188]

As stated above, the weak enforcement of environmental regulations, lack of strong carbon prices, and lack of punitive mechanisms raises uncertainty among investors.

[183] Institute for Essential Services Reform. (2023). Navigating Indonesia's Carbon Market. https://iesr.or.id/en/navigating-indonesias-carbon-market-challenges-opportunities-and-the-road-ahead

[184] Wuryandari et al. (2022). Weak Investment Law Enforcement in Land and Forest Fire Cases in Indonesia. https://www.researchgate.net/publication/366735793_Weak_Investment_Law_Enforcement_in_Land_and_Forest_Fire_Cases_in_Indonesia

[185] Wuryandari et al. (2022). Weak Investment Law Enforcement in Land and Forest Fire Cases in Indonesia. https://www.researchgate.net/publication/366735793_Weak_Investment_Law_Enforcement_in_Land_and_Forest_Fire_Cases_in_Indonesia

[186] Aksi Ekologi & Emansapasi Rakyat. (2023). POJK Inadequate Carbon Pricing Fails to Combat Climate Crisis. https://www.aeer.or.id/pojk-inadequate-carbon-pricing-fails-to-combat-climate-crisis/

[187] World Bank. (2022). Unlocking Green Finance in Turkey. https://openknowledge.worldbank.org/server/api/core/bitstreams/861f626e-c40b-40f1-bd14-9f3ccea7c202/content

[188] Asian Development Bank. (2019). Avoiding energy insecurity by promoting private investment. https://www.adb.org/sites/default/files/publication/539741/adbi-wp1038.pdf

Lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries

Indonesia faces significant challenges when it comes to a fair and competitive transition to renewable energy. Banks and private equity stakeholders suggest that the playing field is heavily tilted in favour of carbon-intensive industries due to substantial government subsidies, which currently account for as much as 2% of Indonesia's total GDP.[189]

These subsidies include the price cap on coal, gasoline and diesel subsidies, and below-market tariff system, all of which could hinder the country's energy transition:

- **Price cap on coal:** Coal mining companies in Indonesia are subject to a price limit on coal and a requirement to sell 25 percent of their coal to PLN. Similar obligations exist for oil and natural gas, although their contribution to overall energy generation is comparatively smaller than that of coal. These coal producers are prohibited from selling coal to PLN at a price exceeding US $70 per metric ton. Over the period from 2013 to 2022, with the exception of three years (2015, 2016, 2020), the market price consistently surpassed the price limit. As a result, the sales requirement and price cap artificially reduce PLN's expenses for generating electricity through coal-fired power plants.
- **Gasoline and diesel subsidies:** In 2022, the Indonesian government increased the prices of subsidised gasoline and diesel, although they still remain below the market rates for consumers in Indonesia. Typically, these subsidies are provided as reimbursements to Pertamina, covering the gap between the purchase cost of oil and gas and the price paid by consumers. Similarly, petroleum subsidies will discourage Indonesian consumers from adopting electric vehicles since gasoline-powered vehicles will continue to be more affordable.
- **Below-market tariff system:** A below-market tariff system guarantees that consumers in Indonesia pay less than the actual cost of generating and distributing electricity. To make up for this shortfall, the Indonesian government provides annual compensation to PLN. Until the year 2012, all electricity customers enjoyed the advantages of this below-market tariff structure. However, in that year, the government decided to eliminate tariff support for wealthier segments of society.

Additionally, some of the policies presented in the CIPP are supply-side incentives and PPAs that do not challenge the fossil fuel subsidies will not bring about significant changes to Indonesia's fossil fuel subsidy system. Rather, the government's policies outlined in the CIPP primarily aim to tackle the anti-competitive consequences of these subsidies. This evidence reinforces the concerns expressed by private sector stakeholders, as a substantial portion of the funding for new renewable energy generation is expected to come from the private sector.

- **Supply-side incentives:** One of the policies outlined in the CIPP is referred to as "supply-side incentives," which primarily aims to reduce domestic support for the coal industry. The CIPP outlines Indonesia's domestic market obligation, which mandates that coal producers sell 25 percent of their total production to the domestic market at a maximum price of $70 per metric ton. As a result of this arrangement, PLN can obtain a reliable supply of coal at a low cost, making coal-fired electricity considerably cheaper compared to renewable sources or natural gas. These policies fail to provide incentives for PLN to shift towards decarbonisation or to collaborate with renewable energy developers. Consequently, due to PLN's ability to access coal or coal-fired power at below-market prices, renewable energy developers face significant challenges in competing, which hampers investment and undermines Indonesia's energy transition.

[189] The Diplomat. (2024). Indonesia's Fossil Fuel Subsidies Threaten its Energy Transition. https://thediplomat.com/2024/02/indonesias-fossil-fuel-subsidies-threaten-its-energy-transition/

- PPAs: Another policy outlined in the CIPP pertains to power purchase agreements (PPAs). In Indonesia, PLN holds the exclusive role of offtaker, meaning that entering a PPA with PLN is essential to secure funding and develop a new renewable energy project. The CIPP provides recommendations to enhance Indonesia's PPA framework, such as standardising PPA templates to simplify negotiations and establishing regulations for a clearer allocation of risk among PPA signatories. However, these measures alone are insufficient to make renewable energy competitive with coal. Renewable energy PPAs in Indonesia are subject to a tariff ceiling, which sets a maximum price at which they can sell electricity to PLN. By law, PLN is required to ensure that entering into a new renewable energy PPA does not lead to an increase in customers' electricity prices. Consequently, the energy price generated from solar or wind farms "should be equal to or lower than the cost of supplying electricity generated by subsidised fossil fuels". As long as PLN can procure subsidised coal, renewables will struggle to compete in Indonesia.[190]

Indonesia has recently unveiled its plans to achieve carbon neutrality and promote its domestic renewable technology industry in accordance with the JETP agreement. However, these plans do not include any measures to address the prevailing issue of fossil fuel subsidies, which poses a significant threat to Indonesia's energy transition.

6.1.3 Supply Side-related Barriers

The lack of bankable projects is the most significant barrier recognised by all stakeholder groups on the supply side. To a lesser degree, the lack of financing supply from the local government was also raised as a significant barrier as suggested by development financial institutions and private equity stakeholders. Private equity stakeholders brought up the lack of technical capabilities within financial institutions to design green financial products as a supply side barrier.

Lack of bankable projects and deal flow due to insufficient investment opportunities

Numerous sustainable project opportunities being presented to financial institutions often fail to meet the rigorous lending criteria set forth, particularly by regulated financial institutions like banks. In Indonesia, banks are primarily obligated to adhere to stringent regulations regarding good credit governance before they can finance assets that carry higher risks. For instance, OJK may impose penalties on banks if they provide financing to projects that lack clear and reliable revenue streams, a common issue with many sustainable financing opportunities. This stringent approach is compounded by the risks associated with sustainable projects, which often involve newer technologies or business models that do not have established track records or predictable cash flows. The complexity and uncertainty of these projects make them less attractive under traditional financial evaluation frameworks used by banks, which prioritise stability and predictable returns.

Furthermore, state-owned institutions, including Special Purpose Vehicles designed to support specific policy objectives, frequently reject potential sustainable projects that do not meet their credit due diligence standards. These institutions have a mandate to manage public funds prudently, which often leads them to adopt conservative credit appraisal methods that can exclude innovative but riskier sustainable projects. Similar sentiments were also echoed by unregulated institutions, such as private equity and venture capital. The lack of clarity on revenue streams have led to many sustainable opportunities being rejected within the deal pipelines, driven by the limited partners from the funds.

[190] The Diplomat. (2024). Indonesia's Fossil Fuel Subsidies Threaten its Energy Transition. https://thediplomat.com/2024/02/indonesias-fossil-fuel-subsidies-threaten-its-energy-transition/

Despite a growing consensus that there is substantial sustainable capital available, largely due to more global investors committing to sustainability ambitions, the reality is that the actual disbursement or financing of these funds remains relatively low. This low level of financing can be attributed primarily to a scarcity of viable investment opportunities, which is itself caused by two key factors.

First, many projects fail to meet the stringent criteria required for sustainability or prudent lending. Investors and financial institutions have set high standards for sustainability, looking for projects that not only promise good financial returns but also have a positive environmental impact, comply with social governance standards, and contribute to sustainable development goals. Projects that cannot clearly demonstrate these outcomes, or provide robust data to support their claims, struggle to attract funding.

Second, the high technical complexities involved in initiating certain projects pose a significant barrier. Sustainable projects, particularly those involving new technologies or innovations in sectors like renewable energy, waste management, or sustainable agriculture, often require specialised knowledge and skills to get off the ground. The complexity of these projects can deter investors who are cautious of the risks associated with new or unproven technologies.

Lack of financing supply and involvement from the local government

Development fund stakeholders suggest that more engagement from local government is key, specifically citing the lack of financing supply and the struggle of seeking approvals in underwriting bonds. Stakeholders have also specifically cited that funding regional projects are heavily reliant on central government with little to no participation from local government. There is evidence showing that the majority of climate actions need to be implemented at local level, however local regions experience challenges in receiving the funds directed toward local regions and governments to support their climate activities. One of the possible reasons behind this could be that 97% of the state budget goes to ministries and agencies, while only 3% goes to local governments.[191] Additionally, the stakeholders have also expressed the difficulty in seeking approvals from the local government e.g. in the case of municipal bonds issuance in the West Java region. However, stakeholders have suggested that the recent implementation of Government Regulation 1/2024 enables the local government to issue bonds. A clearer framework for project delivery, including clear lines of responsibility for project development and finance would lower friction costs for private capital. This is something that could be addressed by the NCSF.

Lack of expertise and technical capabilities within FIs to design and develop green financial products, and accurately assess, structure, and manage green finance transactions

There seems to be a limited expertise in the market in terms of designing and developing green financial products. Based on discussions with a domestic bank that has successfully underwritten a sustainability-linked loan for a pulp and paper borrower, it is evident that banks still depend heavily on external consultants to provide technical capabilities and second-party opinions for sustainable finance transactions. This reliance on outside expertise underscores a gap within the internal structures of even the most progressive financial institutions, which have yet to develop sufficient in-house capabilities to accurately assess and manage sustainable finance deals and opportunities. Sustainable finance requires specialised knowledge of environmental impacts, social governance, and long-term sustainability outcomes that traditional financial analysts may not possess. Additionally, sustainability projects frequently involve complex metrics for success and require detailed understanding of niche markets and technologies. Evidence shows that the private financial sector and project developers are often unfamiliar with the low-carbon technologies thus preventing them from understanding associated risk profile of

[191] Climate Policy Initiative. (2014). The Landscape of Public Climate Finance in Indonesia. https://climatepolicyinitiative.org/wp-content/uploads/2014/07/The-Landscape-of-Public-Finance-in-Indonesia.pdf

financial products.[192] Another study on key risks in green projects also shows that there is a lack of experience among financial institutions to structure strong financial models with highly leveraged financing plans for green projects.[193]

6.1.4 Demand Side-related Barriers

Among the four thematic barriers, the demand side was brought up frequently during interviews. Law firms, banks, and development financial institutions significantly cited the limited green financial products in the market. Banks and private equity stakeholders have raised the difficulty of accessing financing options for green projects, while the lack of incentives and capability to develop bankable projects were raised by law firms, development financial institutions, and private equity stakeholders.

Limited green financial products in the market

Enhanced NDC projects addressing climate-mitigating activities and decarbonisation initiatives are long-term in nature, e.g. renewable energy expansion, sustainable transport infrastructure, forest conservation and reforestation. Stakeholders across various groups noted the lack of long-term green financial instruments that can support such projects in Indonesia. For instance, green bonds are a perfect match for long-term investments. However, the green bond market in Indonesia is still very limited in terms of instruments. Investors in the country, especially retail investors, only pay attention to returns and do not pay much attention to environmental aspects which is a challenge for the development of the green bond market. Retail investors still see green bonds from the commercial side through its coupon rate, and not the compensation from its "green" label.[194] Although monetary policy is being pushed to its limits, there is still lack of increase in long-term investments and infrastructure financing for green energy projects. In most countries, particularly in developing countries, the private sector has not shown much interest due to the low rate of return from financing long-term infrastructure projects.[195] Additionally, while the financial sector is dominated by the domestic banks, short-term financing i.e. bank loans does not match the long-term maturity of many green projects. [196]

Difficulty accessing financing options for green projects

Despite available capital, investors and businesses face significant challenges in securing financing for green projects. In addition to the perceived high costs associated with such investments, including upfront financing expenses, certification and licensing fees, and other transactional costs, stakeholders highlight the difficulty in accessing capital and financing options tailored to green initiatives. Domestic banks and private equity stakeholders point out that green financing alternatives, particularly through sovereign funds and concessionary financing, may be limited and hard to obtain for their clients. This is evidenced by concerns expressed by private stakeholders in Indonesia regarding the allocation of JETP funds, which involve a combination of grants, concessional loans, market-rate loans, guarantees, and private investments. Among these stakeholders, there is a widespread desire for a greater proportion of grants or concessional loans as part of the funding structure.[197]

[192] World Bank. (2022). Unlocking Green Finance in Turkey. https://openknowledge.worldbank.org/server/api/core/bitstreams/861f626e-c40b-40f1-bd14-9f3ccea7c202/content

[193] Asian Development Bank. (2017). Catalyzing Green Finance: A concept for leveraging blended finance for green development. https://www.adb.org/sites/default/files/publication/357156/catalyzing-green-finance.pdf

[194] Asian Development Bank. (2022). Green Bond Market Survey in Indonesia. https://www.adb.org/sites/default/files/publication/843491/green-bond-market-survey-indonesia_0.pdf

[195] Asian Development Bank. (2019). Why is green finance important? https://www.adb.org/sites/default/files/publication/481936/adbi-wp917.pdf

[196] ISEAS Yusof Ishak Institute. (2023). Financing the Green Economy: Options for Indonesia. https://www.iseas.edu.sg/wp-content/uploads/2023/03/ISEAS_Perspective_2023_19.pdf

[197] The Diplomat. (2023). Indonesia Submits Plan on How it Will Spend $20 Billion on Clean Energy Transition. https://thediplomat.com/2023/08/indonesia-submits plan-on-how-it-will-spend-20-billion-on-clean-energy-transition/

Moreover, JETP's concessionary financing, as previously mentioned, is readily accessible to state-owned enterprises but restricted for independent power producers, creating an inequitable situation. Furthermore, statistics show that there is a significant disparity between the available market-rate debt instruments and concessionary financing. Market-rate debt instruments account for 78% of the total financial instrument mix utilised for climate-aligned activities, whereas low-cost debt, grants, and other types of instruments represent less than 12% of the mix.[198]

Lack of incentives to attract private investors

Stakeholders across various groups have raised concerns about the lack of de-risking mechanisms, specifically citing blended finance, insurance and pension funds, backstop guarantees, long-term guarantees, credit enhancement facilities, debt and equity grants, among others, in the Indonesian market. Given the high-risk nature of green projects in NDC sectors, stakeholders suggest that the presence of these de-risking mechanisms would facilitate private investment in the sector. These financial de-risking instruments could help transfer the financial risks of green projects from financial institutions to other actors such as public institutions and development banks.

One of the most frequently cited sources of capital lacking in the market are insurance and pension funds. Evidence show that insurance and pension funds are not well developed in Indonesia, and their expansion could play a vital role in generating the much-needed financing for large-scale green projects. Several reasons explain why global institutional investors, such as insurance and pension funds, have not adequately invested in long-term projects. These include uncertainties in regulation, political changes, market risks, insufficient project pipeline, limited experience, and knowledge, hampering their ability to effectively mitigate long-term risks associated with investing in long-term projects spanning over two decades and hindered further by the lack of available information, visibility, and accessibility for investors in viable project pipelines.[199]

Another concern is the lack of ability to transfer carbon credits, which are issued in Indonesia, overseas. Stakeholders cite that engaging in international carbon credit trading can help companies meet their compliance obligations more effectively and at potentially lower costs. In some cases, it may be more economical for a company to purchase carbon credits from another organisation or country that has successfully reduced emissions beyond their own targets. This flexibility enables companies to optimise their emission reduction strategies and potentially minimise costs associated with transitioning to low-carbon technologies.[200] Article 6.2 of the Paris Agreement covers government-to-government carbon credit deals where the credits are reported to a central registry. Three bilateral deals have occurred already, each with Switzerland as the buyer. These deals support low-carbon rice cultivation in Ghana, electric buses in Thailand, and solar panels in Vanuatu, respectively. They resemble bilateral government cooperation agreements rather than market-level deals (IISD, 2023).[201]

Finally, it is worth noting that the use of blended financing, which combines public financing with other sources, is viewed negatively by private equity and venture capital firms. Stakeholders perceive blended finance and other de-risking mechanisms that involve public financing as unattractive opportunities due to their perceived lack of reliability and time-consuming nature. These financing options are considered less appealing because they lack stability and require substantial time and resources to navigate and secure. This perception acts as a significant barrier, as institutional investors and organisations may be deterred from utilising these de-risking mechanisms due to prevailing negative sentiment in the market.

[198] Climate Policy Initiative. (2023). Landscape of Climate-Aligned Investment in Indonesia's Financial Sector. https://www.climatepolicyinitiative.org/wp-content/uploads/2023/12/Landscape-of-Climate-Aligned-Investment-in-Indonesias-Financial-Sector-CPI-December-2023.pdf
[199] ISEAS Yusof Ishak Institute. (2023). Financing the Green Economy: Options for Indonesia. https://www.iseas.edu.sg/wp-content/uploads/2023/03/ISEAS_Perspective_2023_19.pdf
[200] Environmental Protection Agency. (2023). Environmental Economics. https://www.epa.gov/environmental-economics/economic-incentives
[201] International Institute for Sustainable Development. (2023). Will International Carbon Markets Finally Deliver?. https://www.iisd.org/articles/deep-dive/will-international-carbon-markets-finally-deliver

Lack of capability to develop and implement bankable projects

Stakeholders suggest that organisations and investors on the demand side may lack awareness and understanding of the opportunities and benefits associated with investing in Indonesia's Enhanced NDC sectors, further citing that this limited knowledge can result in a reluctance to engage in sustainable financing and investment initiatives. In the renewable energy sector, evidence shows that barriers to the development of the sector include lack of public awareness and understanding, lack of information, and lack of skilled labour and technical capabilities.[202]

Stakeholders have suggested there could also be a lack of expertise and technical capabilities on the company side to develop projects or green their business. Furthermore, companies may face challenges in terms of assessing and monitoring Environmental, Social, and Governance (ESG) compliance requirements. Investors, lenders, or project developers are often unfamiliar with low-carbon technologies; hence they are unable to develop a sound understanding of the associated risk profiles.[203] Additionally, stakeholders also suggest that the perception of additional costs associated with hiring technical assistance for these purposes may deter companies from pursuing sustainable projects.

Inadequate risk management practices can undermine investor confidence and deter private investment. Stakeholders state that insufficient understanding and implementation of strategies to identify, assess, and mitigate risks associated with sustainable financing can limit investor participation. Among the main reasons for the lack of green investments is their increased riskiness from the point of view of existing financial markets. For instance, when assessing investments against risk-return, it does not fully consider a number of social and environmental effects that do not have a direct monetary value and do not contribute to increasing market returns.[204]

Limited availability of reliable and comprehensive data related to sustainable financing can impede decision-making processes. Moreover, stakeholders suggest that investors require accurate data on market trends, project viability information, and environmental impact assessments to make informed investment choices. However, the lack of accessibility to such data in green projects can hinder private investments. A survey by an analytics firm, Coalition Greenwich, found that a majority of fixed-income investors consider ESG-related information in their decision-making, yet only a third of these investors fully integrates ESG into their risk analysis. The gap from these statistics is due to the limited amount of data on ESG.[205] Furthermore, some of the most pressing issues for green investments include misinformation, corporate greenwashing tactics, and unreliable data.[206]

[202] Sambodo et al. (2022). Breaking barriers to low-carbon development in Indonesia: deployment of renewable energy. https://www.sciencedirect.com/science/article/pii/S2405844022005928

[203] World Bank. (2022). Unlocking Green Finance in Turkey: Green Growth Analytical and Advisory Program. https://openknowledge.worldbank.org/server/api/core/bitstreams/861f626e-c40b-40f1-bd14-9f3ccea7c202/content

[204] Dzeraviaha. (2023). Developing a Comprehensive Approach to Green Investment Risk-Management. https://www.researchgate.net/publication/376787897_Developing_a_Comprehensive_Approach_to_Green_Investment_Risk-Management

[205] Bloomberg News. (2022). ESG's real-problem is a alack of data. https://www.bloomberg.com/professional/insights/sustainable-finance/esgs-real-problem-is-a-lack-of-data-fixed-income-pros-say/

[206] Raymond A. Mason School of Business. (2024). The Rise of Sustainable Finance: Green Investing, ESG and Impact on Finance Careers. https://online.mason.wm.edu/blog/the-rise-of-sustainable-finance

6.2 Potential Interventions to Mobilise Green Finance

Summary of Potential Interventions

During our detailed interview sessions with investors, we actively engaged on potential strategies to increase the flow of green and sustainable finance within Indonesia. Similar to the barriers, the significance of interventions was classified as high, medium and low based on the number of times mentioned or validated during our stakeholder interviews, as follow:

High	Medium	Medium
Mentioned in five or more interviews	Mentioned in three to four interviews	Mentioned in two or fewer interviews

Table 9: Interventions Significance Legend

These interventions could take the form of a government-sanctioned programme or policy, with specific roles and expectations from three main types of stakeholders: Governments, Financial Institutions, and Businesses. It is important to note that the responsibility for implementing these interventions does not rest solely with private sector stakeholders (or private investors). Successful implementation of interventions requires the mobilisation of commitment from several stakeholders. For example, interventions on financial incentives require commitments from the Ministry of Finance, technical line ministries, as well as businesses and organisations. The aim of these interventions is to catalyse and increase capital flows from private investors, by providing a conducive environment and the necessary frameworks to encourage investment in sustainable initiatives.

The interventions identified are summarised in the following table:

No	Possible Intervention	Significance	Possible Allocation of Responsibilities			
			Government	Financial Institutions	Businesses	Category
1	Employ a variety of financial instruments and risk mitigation strategies to attract private investors and enhance the bankability of opportunities	High				Cross-cutting sectors (Government and Financial Sectors)
2	Incentivise financial institutions to invest in decarbonisation projects by providing capital relief measures (e.g. lower risk weights, guarantees and insurance, regulatory reforms)	High				Cross-cutting sectors (Government and Financial Sectors)
3	Standardise ESG requirements to be assessed by investors (e.g. IFRS S-1 and S-2, IFC Performance Standards)	Medium				Cross-cutting sectors (Government and Financial Sectors)
4	Provide more incentives across priority sectors to attract private investors and boost investment supply	High				Government Sector
5	Formulate a clear and consistent regulatory framework that can effectively communicate regulations, requirements, and risk of non-compliance	High				Government Sector
6	Enhance and clarify the regulations surrounding carbon pricing to incentivise and accelerate actions towards decarbonisation	High				Government Sector

Table 10: Summary of Possible Interventions

6.2.1 Potential Interventions for cross-cutting sectors (Financial Sector and Government)

Employ a variety of financial instruments and risk mitigation strategies to attract private investors and enhance the bankability of opportunities

Barriers being addressed	
Market	Higher risks associated with green investments (Barrier No. 1)
	Lack of private investment competitiveness due to substantial public investment through public finance and state-owned enterprises (Barrier No. 3)
Policy and Regulatory	Lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries (Barrier No. 7)
Supply-side	Lack of bankable projects and deal flow due to insufficient investment opportunities (Barrier No. 8)
Demand-side	Limited green financial products and services due to preference for traditional investment options (Barrier No. 11)
	Difficulty accessing affordable capital and financing options tailored to green projects (Barrier No. 12)
	Lack of incentives to attract private investors (Barrier No. 13)

Table 11: Barriers Addressed by Intervention No. 1

The Government of Indonesia, with the support of the OJK as the regulator of the financial services industry, is well-positioned to pilot innovative financial instruments designed to boost sustainable investments from the private sector. For instance, the OJK could explore financial tools specifically aimed at facilitating the early retirement of coal-fired power plants, such as enabling the environment to allow financial instruments that primarily generate carbon credits instead of financial returns. This would only be possible if there are relaxations on OJK regulation on credit losses for banks, allowing banks to not be penalised on financial losses in return for carbon credit issuance.

Moreover, easing specific regulatory constraints could significantly help facilitate this process. For example, modifying the OJK's regulations on credit losses for financial institutions, or adjusting national regulations regarding state losses for state-owned enterprises, could serve as critical enablers for these initiatives. Ultimately, the government's role should be to spearhead the development and adoption of these innovative financial instruments, creating opportunities for banks and investors to craft solutions that align financial returns with environmental sustainability.

Development financial institutions suggested the government and financial institutions should provide long-term funding options for infrastructure and decarbonisation projects which are usually long term in nature. Long-term financing options, such as project loans or bonds, can provide developers with the necessary funds to initiate and sustain the project over an extended period. This allows developers to cover construction costs, purchase equipment, acquire land, and meet other financial obligations. Additionally, infrastructure and decarbonisation projects often have a long lifespan, spanning several years or even decades. Long-term financing enables developers to spread the costs of the project over its useful life, rather than requiring immediate repayment. This reduces the financial burden on developers and allows for more manageable cash flow, as they can repay the debt gradually over time.

Overall, long-term financing provides stability and funding flexibility for project developers thus supporting the successful implementation of projects and attracting a wider range of investors interested in long-term infrastructure assets.

To provide long-term financing options for project developers, the government and financial institutions can set up specialised funds that focus on providing long-term financing for infrastructure and decarbonisation projects. These can be dedicated to funding and supporting infrastructure development, offering favourable terms and conditions to project developers. Additionally, financial institutions can create specialised investment funds that pool capital from various investors and provide long-term financing for projects. These funds can be structured to align with the needs and risk profiles of project developers. The government and financial institutions can foster international cooperation to support long-term infrastructure financing. This can include partnerships between development banks, multilateral organisations, and regional financial institutions to pool resources, share knowledge, and provide financial support for infrastructure projects. By implementing these measures, governments and financial institutions can create an enabling environment that encourages long-term financing for infrastructure projects.

Additional strategies to boost sustainable investment in Indonesia could include the implementation of credit enhancement facilities that mitigate the financial risks associated with such investments. These facilities can take various forms, such as credit insurance or revenue guarantees, which provide investors with a layer of security against potential losses, thereby making sustainable projects more attractive[207]. The government, in collaboration with other financial institutions, could take inspiration from the successful models employed by state-owned entities like PT Penjaminan Infrastruktur Indonesia (PT PII). PT PII has established a framework for guaranteeing infrastructure projects, which could be adapted to support sustainable investment opportunities. By replicating and expanding the scope of PT PII's mechanisms, the government can help proliferate credit enhancement facilities tailored specifically for green and sustainable assets.

This approach would not only increase the attractiveness of investing in sustainable projects but also foster a more robust market for green finance by reducing the perceived risk and encouraging more private sector participation. The ultimate goal would be to create a favourable environment that promotes substantial flows of investment into sustainable development projects, contributing significantly to Indonesia's environmental and economic objectives.

[207] https://www.greenfinanceinstitute.com/programmes/green-finance-guarantee-facility/

Incentivise financial institutions to invest in decarbonisation projects by providing capital relief measures (e.g. lower risk weights, guarantees and insurance, regulatory reforms)

Barriers being addressed	
Market	Higher risks associated with green investments (Barrier No. 1)
	Economic volatility and currency fluctuations (Barrier No. 2)
	Lack of private investment competitiveness due to substantial public investment through public finance and state-owned enterprises (Barrier No. 3)
Policy and Regulatory	Lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries (Barrier No. 7)
Supply-side	Lack of bankable projects and deal flow due to insufficient investment opportunities (Barrier No. 8)
	Lack of expertise and technical capabilities within FIs to design and develop green financial products, and accurately assess, structure, and manage green finance transactions (Barrier No. 10)
Demand-side	Limited green financial products and services due to preference for traditional investment options (Barrier No. 11)
	Difficulty accessing affordable capital and financing options tailored to green projects (Barrier No. 12)
	Lack of incentives to attract private investors (Barrier No. 13)

Table 12: Barriers Addressed by Intervention No. 2

The current OJK regulations on Capital Adequacy Requirement, aligned with guidelines from the Basel Committee on Banking Supervision, do not yet account for the unique characteristics of high-risk yet sustainable assets. Given that many sustainable financing opportunities in Indonesia are still emerging and lack historical data, the existing regulations (specified in Surat Edaran OJK No. 24/SEOJK.03/2021 Tahun 2021) mandate that banks assign a higher risk weighting to these assets. A higher risk weighting compels banks to reserve more capital on their balance sheets to safeguard against potential large-scale financial disruptions, such as a financial contagion.

Nevertheless, feedback from global banking interviewees and several development institutions suggests that a controlled and supervised easing of capital requirements for sustainable assets could lead to an increased flow of capital into these sectors. This perspective is based on the premise that reducing the capital held against these investments would free up resources for further sustainable investments, potentially accelerating green initiatives.

Currently, there seems to be no immediate plans from the OJK to amend these regulations. However, moving forward, a potential approach to implementing such changes might involve the further standardisation of what qualifies as sustainable assets. This standardisation could build upon the definitions and criteria outlined in the sustainable finance taxonomy, providing a clearer framework for banks and investors. Such standardisation would help ensure that the relaxation of capital requirements is done in a way that maintains financial stability while promoting investment in environmentally beneficial projects.

Standardise ESG requirements to be assessed by investors (e.g. IFRS S-1 and S-2, IFC Performance Standards)

Barriers being addressed	
Market	Higher risks associated with green investments (Barrier No. 1)
Policy and Regulatory	Lack of a comprehensive framework that harmonises all related plans, policies, and regulation (Barrier No. 5)
	Lack of enforcement mechanisms and clarity on repercussions related to non-compliance (Barrier No. 6)
Supply-side	Lack of expertise and technical capabilities within FIs to design and develop green financial products, and accurately assess, structure, and manage green finance transactions (Barrier No. 10)
Demand-side	Lack of capability to develop and implement bankable projects (Barrier No. 14)

Table 13: Barriers Addressed by Intervention No. 3

ESG requirements can vary significantly among investors and regulators, potentially leading to confusion and inconsistent practices among businesses, organisations, or financial intermediaries. For instance, while some businesses might choose to align with the recommendations of IFRS S-1 and S-2, others may be required to adhere to the International Finance Corporation's (IFC) performance standards, which are often more stringent. The specific standards that a business adheres to often depend on the context of each financing arrangement.

This disparity in ESG standards can create barriers that prevent organisations from effectively sharing experiences and lessons learned. As a result, many ESG practices are not easily replicable, particularly for organisations that are in the early stages of their sustainability journey. This situation can hinder the widespread adoption of effective ESG practices and slow the overall progress towards sustainability goals.

To address these challenges, there is a need for greater harmonisation of ESG standards across different sectors and regions. Developing a more standardised approach could help ensure that all entities are on a level playing field, which would enhance transparency and comparability in sustainability reporting. This could involve setting minimum ESG criteria that all businesses must meet, while also allowing for more stringent measures where applicable.

Moreover, establishing forums or platforms for sharing best practices could greatly benefit organisations at different stages of their sustainability journey. Such initiatives would facilitate the exchange of knowledgemaking it easier for emerging businesses to adopt proven practices and accelerate their ESG compliance.

Furthermore, providing clear, accessible guidance on navigating various ESG frameworks would also be crucial. This could include training programmes, detailed guidelines, and dedicated support services to help organisations understand and implement the ESG standards that are most relevant to their operations and financial contexts.

6.2.2 Potential Interventions for the Government

Provide more incentives across priority sectors to attract private investors and boost investment supply

Barriers being addressed	
Market	Higher risks associated with green investments (Barrier No. 1)
	Lack of private investment competitiveness due to substantial public investment through public finance and state-owned enterprises (Barrier No. 3)
Policy and Regulatory	Lack of a competitive landscape due to the substantial volume of government subsidies in carbon-intensive industries (Barrier No. 7)
Supply-side	Lack of bankable projects and deal flow due to insufficient investment opportunities (Barrier No. 8)
	Lack of financing supply and involvement from the local government (Barrier No. 9)
Demand-side	Limited green financial products and services due to preference for traditional investment options (Barrier No. 11)
	Limit Difficulty accessing affordable capital and financing options tailored to green projects (Barrier No. 12)
	Lack of incentives to attract private investors (Barrier No. 13)

Table 14: Barriers Addressed by Intervention No. 4

To effectively meet Indonesia's climate targets, it is crucial to strategically design incentives that bolster investments within NDC priority sectors e.g. Energy, Forestry and Land Use, and Agriculture. The incentives should aim to lower the administrative burdens associated with doing business in these sectors, which can be a major deterrent for potential investors and businesses.

For example, the costs associated with obtaining necessary certifications or securing Second Party Opinions on sustainable assets are high and often act as barriers to entry. Many businesses find these expenses prohibitive when trying to qualify for sustainable loans. As an illustration, a Palm Oil plantation company seeking to qualify for sustainable financing might need to acquire the RSPO certification. This certification is more expensive compared to the local ISPO certification, making it less accessible for many businesses.

Incentives could be structured to directly reduce these costs for borrowers, such as subsidising part of the certification expenses or providing tax credits for the costs incurred during the certification process. This approach would make it financially easier for companies to obtain necessary certifications and adhere to sustainability standards, thereby encouraging more businesses to pursue sustainable practices. Moreover, incentives can also be structured to de-risk investments in sustainable financing. For instance, the Government of Indonesia could play a pivotal role in mitigating foreign exchange risks associated with sustainable projects. This could be achieved by enhancing the hedging market and increasing access to hedging instruments. By providing better mechanisms for managing currency risk, the government can make sustainable investments more attractive and viable for both local and international investors.

Formulate a clear and consistent regulatory framework that can effectively communicate requirements, and risk of non-compliance

Barriers being addressed	
Market	Higher risks associated with green investments (Barrier No. 1)
	Inadequate infrastructure for green investments e.g., renewable energy projects, transmission lines, and storage facilities. (Barrier No. 4)
Policy and Regulatory	Lack of a comprehensive framework that harmonises all related plans, policies, and regulation (Barrier No. 5)
	Lack of enforcement mechanisms and clarity on repercussions related to non-compliance (Barrier No. 6)
Demand-side	Lack of capability to develop and implement bankable projects (Barrier No. 14)

Table 15: Barriers Addressed by Intervention No. 5

Currently, many sustainability frameworks are voluntary and are implemented in a self-driven manner by individual organisations, with each institution adopting them differently. To adopt sustainable practices effectively, various organisations refer to different standards that are applicable to their specific operations, which can differ significantly from the regulations that financial institutions might use. This disparity in standards and regulations can lead to inconsistencies and confusion, undermining the effectiveness of sustainability initiatives.

What may be beneficial for Indonesia is a unified and consistent method for effectively communicating regulations across all sectors. A more streamlined approach would ensure that all organisations, regardless of their field or size, have clear and consistent guidelines to follow, which would aid in the broader adoption of sustainable practices.

There are valuable lessons to be learned from how OJK manages and communicates regulations within the financial services sector. OJK was initially established to abolish the roles of multiple regulators governing different types of financial institutions. Currently, licensed financial institutions of different categories can conveniently refer to OJK, as they have established a single regulatory repository. This repository provides a centralised platform where all necessary regulations are available, making it easier for financial entities to comply with current laws and guidelines.

The government can also develop a regulatory framework on communicating the roles and responsibility between the BKPM and NCSF. When it comes to simplifying and speeding up investment processes for both the domestic and foreign investors, the NCSF can work with the BKPM to streamline administrative steps such as approval of licensing and other certification requirements. The NCSF shall promote and utilise the One Stop Service, developed by BKPM, which consists of processing permits, licenses, land acquisition, and other approval requirements.

Adopting a similar model for communicating sustainability regulations could greatly benefit Indonesia. By creating a centralised platform where all sustainability-related regulations and standards are available, organisations can more easily access and understand the requirements they need to meet. This approach would not only simplify the regulatory process, such as obtaining feedback from the general public prior to enacting a regulation, but also promote greater transparency and uniformity in how sustainability is implemented across various sectors.

Furthermore, enhancing regulatory communication could involve regular updates and guidance sessions through workshops, seminars, and online forums, helping organisations stay informed about new developments and changes in sustainability practices. Such proactive communication efforts would support organisations in their transition to more sustainable operations, aligning corporate actions with national and international sustainability goals.

Enhance and clarify the regulations surrounding carbon pricing to incentivise and accelerate actions towards decarbonisation

Barriers being addressed	
Market	Higher risks associated with green investments (Barrier No. 1)
Policy and Regulatory	Lack of a comprehensive framework that harmonises all related plans, policies, and regulation (Barrier No. 5)
	Lack of enforcement mechanisms and clarity on repercussions related to non-compliance (Barrier No. 6)

Table 16: Barriers Addressed by Intervention No. 6

Indonesia has significant potential to enhance its carbon pricing mechanism, providing clearer guidelines and broader application across different sectors. Currently focused primarily on power plants, the scope of carbon trading within the compliance market could be expanded to include the manufacturing sector as well. This expansion would necessitate increased collaboration and regulatory support from various ministries, notably the Ministry of Industry. Such initiatives would help ensure that a more comprehensive range of industries is engaged in carbon trading, thereby increasing the effectiveness of emission reduction efforts across the economy.

However, while expanding regulations, it is crucial to avoid over-regulation that could lead to inconsistencies in implementation. Regulations must be crafted carefully to enhance clarity and coherence. Additionally, any new regulations should be accompanied by clear and easily understandable guidance to ensure that market actors can easily comprehend and implement them. This guidance should specifically address existing gaps in the voluntary carbon markets, including the standardisation of carbon credit issuance. Clear criteria should be established to define what constitutes high integrity carbon credits, ensuring they are issued from projects that genuinely contribute to emission reductions. In carbon taxation, businesses require substantial guidance to measure greenhouse gas (GHG) emissions effectively without incurring undue cost or effort. For example, the current practice to rely on external ESG data management service providers can be a significant burden for businesses. Instead, the government should step in to provide direct guidance and support, helping businesses and organisations to measure GHG emissions accurately and transparently. This support could include the development of standardised tools and methodologies for emission measurement that are applicable across various industries, ensuring that all businesses, regardless of size or sector, can comply with carbon taxation regulations efficiently and fairly.

7. Next Steps and Potential Policy Considerations

The National Committee on Sustainable Finance (NCSF) is expected to operate across public and private sectors to accelerate the pace of green finance and sectoral decarbonisation in Indonesia. Therefore, NCSF will implement a series key programmes and activities to accelerate decarbonisation initiatives within the priority sectors identified in the Enhanced NDC. The primary objectives of these initiatives are to generate support from the public and private sector stakeholders, as well as to raise awareness of the opportunities associated with this approach. Subject to discussions with the Ministry of Finance, **the following focus areas can be further explored for consideration for NCSF.**

1. **Optimise financial tools and strategies**
   - The NCSF may collaborate closely with the government and financial institutions to leverage a diverse range of financial instruments and risk mitigation strategies. The aim is to attract private investors and enhance the bankability of sustainable opportunities.
2. **Leverage funding options**
   - Recognising the significance of long-term funding for infrastructure projects, the NCSF may collaborate with financial institutions to provide viable long-term funding options. This may include mechanisms such as fixed-rate ten-year bonds to assist infrastructure investors in securing the necessary capital.
3. **Development of incentive policies**
   - The NCSF may develop policies designed to incentivise financial institutions to invest in decarbonisation projects. These policies may include capital relief measures such as lower risk weights, guarantees and insurance, and regulatory reforms.
4. **Standardisation of ESG requirements**
   - The NCSF may work in conjunction with the government and financial institutions to establish standardised ESG requirements. These requirements will serve as a framework for evaluation by investors, drawing on established standards such as IFRS S-1 and S-2, and IFC Performance Standards.
5. **Incentives and investment supply**
   - In partnership with the government, the NCSF may introduce supplementary incentives across priority sectors to attract private investors and stimulate increased investment supply.
6. **Strengthening communication channels**
   - The NCSF may establish and reinforce existing platforms and communication channels that connect government entities, financial institutions, investors, and industry stakeholders. This may facilitate effective coordination and collaboration among key actors.

All of this activity should be coordinated and targeted at one initial priority sector from the Enhanced NDC. This could combine technical assistance and project preparation, with sector and financial policy, and where necessary, the deployment of blended finance solutions from for example, PT SMI. This holistic package would change the investment calculus in that sector for private capital.

The implementation of these next steps outlined by the NCSF will pave the way for accelerated progress in sustainable development, aligning with the goals of the Indonesia's Enhanced NDC.

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Appendix 1: Report Methodology

The Report Methodology consists of research, investor sentiment analysis, and drafting of the final report. Phase 1: Research starts with desktop-research on sectoral decarbonisation plans and crowd-in private investment approaches. Phase 2: Investor Sentiment Analysis consists of drafting the stakeholder engagement plan, reaching out to stakeholders from various industries, conducting online and face-to-face interviews, and sending follow-up surveys back to the stakeholders. Phase 3: Final Report is the compilation and mapping of results leading to the development of the summary and set of recommendations as a potential policy and program interventions.

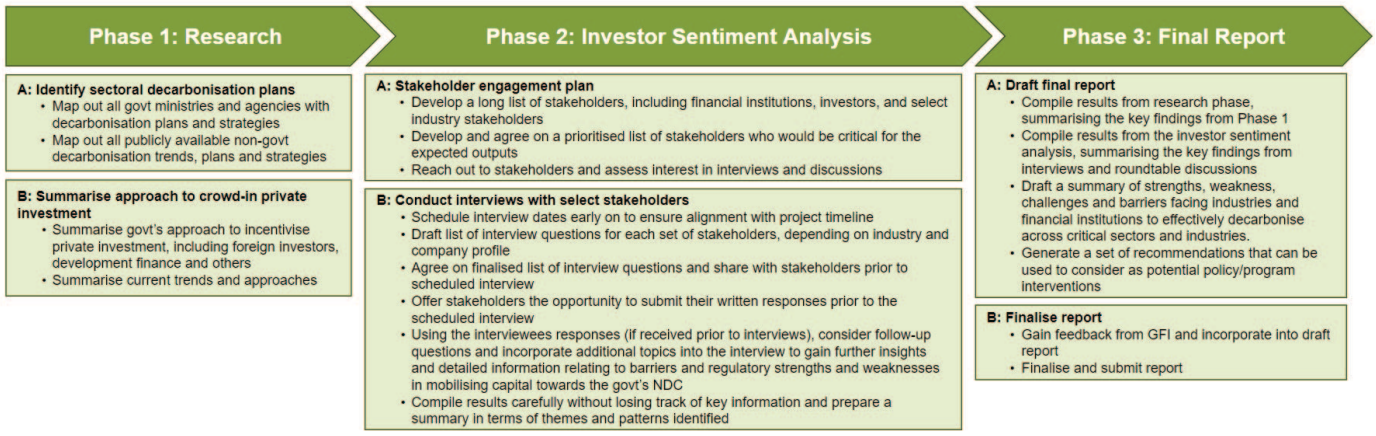

Figure 6: Report Methodology Illustration

Appendix 2: Stakeholder Consultation Questions

The questions asked to the stakeholders were industry-specific, however the questions below are general and applies to all stakeholder types:

1. When it comes to your investments, where do you typically stand on the above investment spectrum? Please elaborate how you incorporate ESG into your investment decisions?
2. Of the primary sectors identified in Indonesia's Nationally Determined Contribution (NDC), which of these do you invest in? This may also include government mandates.
   a. Agriculture
   b. Energy
   c. Forestry and other land-use
   d. Industrial processes and production use
   e. Waste
   f. Other, e.g. Transportation
3. Which of your internal investment/lending criteria most often prevent you from financing sustainable investment opportunities?
4. How important do you see the role of public financing to de-risk sustainable investment opportunities? In your view, is there an adequate amount of blended financing opportunities for you to de-risk opportunities in your pipeline?
5. Do you have adequate capabilities internally to assess the risks of sustainable investment opportunities?
   a. If yes, how did the capability develop and what was required to reach that status?
   b. If not, what support do you need to enhance internal capabilities?
6. Are there any other countries where you have identified a best practice or particularly interesting policy measure/funding scheme that you feel could benefit Indonesia?
7. How do Indonesia's policies and regulatory frameworks impact your ability to finance the NDC sector, particularly in terms of any obstacles they may present or the effectiveness they offer in encouraging and enabling investments in this area?

8. What are your views on the following policies? How could these policies make investing in NDC sector more attractive? Where you have had interactions with any of these policies, please share your insights or feedback on how the policies could improve the investing ecosystem.
   - **a.** Carbon pricing
   - **b.** Green sovereign guarantees
   - **c** Green finance subsidies
   - **d.** Phaseout of fossil fuel subsidies
   - **e.** Sovereign green, social, sustainability, and sustainability-linked bond issuance
   - **f.** Green Taxonomy
   - **g.** Tax incentives for sustainable investments
   - **h.** Power Purchase Agreement (PPA)
   - **i** Coal Power Phaseout
   - **j.** Accelerating programs for battery electric vehicles (PR 55/2019)
   - **k.** Renewable energy tariffs

9. What do you see as key barriers to sustainable investment in Indonesia? Do any of these have an impact on your investment decisions?
   - **a.** Inadequate regulatory framework and enforcement
   - **b.** Lack of awareness, understanding, and knowledge (e.g. technical, operational)
   - **c.** Perceived high costs and risks
   - **d.** Lack of policy support
   - **e.** Limited access to green financing
   - **f.** Lack of suitable investments (e.g. size, sector, level of ambition, credit quality)
   - **g.** Lack of transparency (e.g. reporting, frameworks, agreed definitions)
   - **h.** Regulatory policy and political uncertainty

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