



Intersessional Meeting of the CTF Trust Fund Committee

Washington D.C. (Hybrid)

Tuesday, October 25 - Wednesday, October 26, 2022

INDONESIA (ACT) INVESTMENT PLAN



CLIMATE
INVESTMENT
FUNDS

CLIMATE INVESTMENT
FUNDS
1818 H Street NW
Washington, D.C. 20433 USA
T: +1 (202) 458-1801
climateinvestmentfunds.org

CTF/TFC.IS.3/04

October 18, 2022

PROPOSED DECISION

(To be added)



**MINISTER OF FINANCE
OF THE REPUBLIC OF INDONESIA**

Ref : S-837/MK.010/2022

18 October 2022

Ms. Mafalda Duarte

Head of Climate Investment Funds (CIF)
Washington D.C.

Subject: Indonesia CIF Accelerating Coal Transition (ACT) Investment Plan (IP) - Endorsement Request

Dear Ms. Mafalda Duarte,

On behalf of the Republic of Indonesia, the Ministry of Finance (MoF) is pleased to submit this CIF ACT IP for consideration for endorsement of the CIF Trust Fund Committee (TFC).

This IP, developed by the Government of Indonesia (GoI) in collaboration with the Asian Development Bank (ADB) and the World Bank Group (WBG), is a business plan that identifies potential areas for ADB and WBG investment and support to initiate the accelerated retirement and repurposing of coal-fired power plants (CFPPs) and mines, and scale up of clean energy alternatives.

The IP is designed to proactively address associated challenges linked to the energy transition as it applies to national strategies, people and communities, and land and infrastructure. Through US\$600 million in CIF ACT concessional funding, together with US\$2.2 billion in MDB co-financing, potentially over US\$1 billion in government contribution and over US\$1.3 billion in commercial co-financing, the IP aims to:

- (i) address overcapacity issues across the country's coal-intensive grids by accelerating the retirements of 1-2 GW of grid-connected, baseload CFPPs by 5-10 years;
- (ii) pave the way for a range of power sector interventions in the medium term that include policy reform, renewable energy (RE) capacity scale-up, system development, CFPP retirement, and CFPP repurposing (including flexibility); and
- (iii) integrate just, inclusive, gender-balanced and affordable approaches along the entire value chain, taking into account induced impacts in the economy, as well as enabling activities that can support Indonesia to capitalize on energy transition opportunities.



**MINISTER OF FINANCE
OF THE REPUBLIC OF INDONESIA**

The IP's outcomes will be pursued through the deployment of results-based loans, project loans, financial intermediary loans, grants and direct investments. Its activities build on earlier commitments of Indonesia to (i) reduce emissions by 31.89% relative to a business-as-usual (BAU) baseline of 2.87 gigatons (GT) of carbon emission equivalent by 2030 (or 43.2% over the same period with sufficient international support) and (ii) reach Net Zero emissions by 2060 (or earlier).

We look forward to the continued support of CIF and the timely consideration of this IP proposal.

Thank you very much for your kind cooperation.

Sincerely Yours,
Minister of Finance,



Ditandatangani secara elektronik
Sri Mulyani Indrawati

Copy to:

1. Chairman of Fiscal Policy Agency
2. Director General of Budget Financing and Risk Management
3. Special Assistant Minister for Fiscal Policy and Macroeconomic
4. Director of Center for Climate Finance and Multilateral Policy, Fiscal Policy Agency
5. Director of Center for State Budget Policy, Fiscal Policy Agency

Gedung Juanda I Lantai 3, Jalan DR. Wahidin Raya Nomor 1 Jakarta 10710, Kotak Pos 21
Telepon (021) 3449230, Faksimile (021) 3453710, website www.kemenkeu.go.id



CIF Accelerating Coal Transition (ACT): Indonesia Country Investment Plan (IP)

by the Government of Indonesia

18 October 2022



Fiscal Policy Agency
Ministry of Finance
Republic of Indonesia

This Investment Plan Report is a draft for consultation purposes. The projects set out herein are at an early conceptual stage and are subject to review and confirmation by the Asian Development Bank and the World Bank Group during project preparation. The scope and financing of each project is subject to change.

The views expressed in this Investment Plan Report are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) and the World Bank Group (WBG) or their Board of Governors or the governments they represent. ADB and WBG do not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use. By making any designation of or reference to a particular territory or geographic area, or by using the term "country" in this document, ADB and WBG do not intend to make any judgments as to the legal or other status of any territory or area. If any material in the Investment Plan Report is attributed to another source, please contact the copyright owner or publisher of that source for permission to reproduce it. Neither ADB nor WBG can be held liable for any claims that arise as a result of your use of the material.

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of 30 September 2022)

Currency Unit = Indonesia Rupiah (IDR)
 US\$1 = IDR 15,263
 US\$0.000066 = IDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	KfW	Kreditanstalt für Wiederaufbau, The Reconstruction Credit Institute of Germany
ACT	Accelerating Coal Transition	kWh	kilowatt-hour
BAPPENAS	National Planning and Development Agency	LULUCF	Land use, land use change and forestry
BAU	Business as usual	LUCE	Land use change and forestry
BPPT	Agency for the Assessment and Application of Technology	MDB	Multilateral Development Bank
CDM	Clean Development Mechanism	MEMR	Ministry of Energy and Mineral Resources
CFPP	Coal-fired power plant	Mtoe	million ton of oil equivalent
CIF	Climate Investment Funds	MtCO ₂ e	million ton of carbon dioxide equivalent
CO ₂	Carbon dioxide	MW	Megawatt
CTF	Clean Technology Fund	NAP	National Action Plan for Climate Change
DPL	Development Policy Loan	NCCC	National Council on Climate Change
EE	Energy efficiency	NCRE	Non-coal Renewable Energy
ETM	Energy Transition Mechanism	NOx	Nitrogen oxides
ETMCP	Energy Transition Mechanism Country Platform	PCG	Partial credit guarantee
FI	Financial intermediary	PGE	PT. Pertamina Geothermal Energy
G20	Group of Twenty	PLN	PT. Perusahaan Listrik Negara
GDP	Gross domestic product	PPA	Power purchase agreement
GHG	Greenhouse gas	PPP	Public private partnership
GOI	Government of Indonesia	RE	Renewable energy
GWh	gigawatt-hour	RBL	Results-based loan
IBRD	International Bank for Reconstruction and Development	RUPTL	Indonesia's Electricity Supply Business Plan for 2021-2030
ICCTF	Indonesia Climate Change Trust Fund	SESA	Strategic Environmental and Social Assessment
IEA	International Energy Agency	SESMP	Strategic Environmental and Social Management Plan
IFC	International Finance Corporation	SME	Small and medium enterprise
IP	Investment plan	SOE	State owned enterprise
ISO	International Standards Organization	SO ₂	Sulfur dioxide
JET	Just Energy Transition	tCO ₂ e	ton of carbon dioxide equivalent
JETP	Just Energy Transition Partnership	UNFCCC	United Nations Framework Convention on Climate Change
JICA	Japanese International Cooperation Agency	WBG	World Bank Group

TABLE OF CONTENTS

	SECTION	Page #
1.	Proposal Summary	5
2.	Country Context – Accelerating the Coal to Clean Energy Transition	10
2.1	Coal as a Driving Factor of Emissions Intensity	10
2.2	National Ambitions for a Net-zero Pathway	13
2.3	Implementation Framework for Clean Energy Transition	15
2.4	Just Transition and Safeguards Needs across Clean Energy Transition Activities	22
3.	Program Description and Financing Proposal	25
3.1	Overview of Process and Collaboration across MDBs and Stakeholders	25
3.2	IP Cross-cutting Priorities: Supporting Just Transition, Gender and SESA analyses	26
3.3	IP Financial Plan and Instruments	29
3.4	Component 1: Accelerating Retirement of Coal-fired Power Plants	30
3.5	Component 2: Governance, Just Transition and Repurposing	32
3.6	Component 3: Scaling Up Renewable Energy + Storage	33
4.	Additional Development Activities	35
5.	Implementation Potential with Risk Assessment	37
6.	Monitoring and Evaluation	41
Appendices		
1.	Assessment of country's capacity for coal assets' retirement and phase-out activities	46
2.	Theory of Change and Integrated Results Framework (IRF)	51
3.	Stakeholder consultations and Comments Matrix	66
4.	Overview of Just Transition Activities supporting CIF-ACT IP	80
5.	Overview of Strategic Environmental and Social Assessment (SESA)	84
6.	Overview of Gender Mainstreaming Activities supporting CIF-ACT IP	97
7.	ADB Energy Sector Support Program and Experience in Indonesia	99
8.	WBG Energy Sector Support Program and Experience in Indonesia	102
9.	Project Concept Note – PLN Results-based Loan	105
10.	Project Concept Note – PT SMI Indonesia ETM Country Platform	107
11.	Project Concept Note – IPP CFPP Accelerated Retirement	109
12.	Project Concept Note – PLN/MEMR Energy Transition P4R	111
13.	Project Concept Note – Just Transition & Repurposing Project (Phase 1 & 2)	113
14.	Project Concept Note – PRIME STeP	115
15.	Project Concept Note – Dispatchable Renewable Energy Program	117

1. PROPOSAL SUMMARY

1. ACT program objectives. In March 2021, the Climate Investment Funds (CIF) established the Accelerating Coal Transition (ACT) Program to support developing countries that are heavily reliant on coal to accelerate the transition away from coal to renewable energy (RE) while ensuring a holistic, integrated, socially inclusive, and gender-equal transition. The program is structured around three pillars of governance, people and communities, and infrastructure. In October 2021, Indonesia, along with three other countries namely, South Africa, India, and the Philippines, was selected as an ACT pilot country and invited to develop its ACT Investment Plan (IP). This IP, developed by the Government of Indonesia (GoI) in collaboration with the Asian Development Bank (ADB) and the World Bank Group (WBG), is a business plan that identifies potential areas for ADB and WBG investment and support to initiate the accelerated retirement and repurposing of coal-fired power plants (CFPPs) and mines, and financing of clean energy alternatives. The IP is designed to proactively address associated challenges linked to the energy transition as it applies to national strategies, people and communities, and land and infrastructure.

2. Indonesia's ambitious GHG-reduction plans. Indonesia is heavily dependent on domestic coal for electric power generation and is the world's largest coal exporter (see Section 2). The fact that coal is an abundant domestic resource underpinning the majority of electricity generation in the country creates structural challenges to transitioning away from coal. However, the GoI has started to lay the foundation for its clean energy transition. Under its Enhanced Nationally Determined Contributions (Enhanced NDC) Indonesia has committed to reducing emissions by 31.89% relative to a business-as-usual (BAU) baseline of 2.87 gigatons (GT) of carbon emission equivalent by 2030. With sufficient international support, it plans to reduce emissions by 43.2% over the same period.¹ On 21 July 2021, Indonesia submitted the Indonesia Long-Term Strategy for Low Carbon and Climate Resilience 2050 (LTS) to the United Nations Framework Convention on Climate Change (UNFCCC), which sets out a framework for reaching Net Zero emissions by 2060.

3. Clean energy transition in the context of coal-dominated grid overcapacity. With excess coal generation capacity (i) coming from a young fleet with an average age of ~12 years, and (ii) contributing to reserve margins up to 20% in excess of planned targets, Indonesia can only advance its RE and climate ambitions in a timely manner by initiating the decommissioning and/or repurposing of CFPPs. Repurposed CFPPs can enhance grid stability and flexibility with respect to absorbing variable renewable energy. As a first step towards managing overcapacity, the state national utility, PT. Perusahaan Listrik Negara (PLN), recently announced plans to begin permanently retiring CFPPs. In the first stage of its plan, PLN plans to retire 2-3 CFPPs with a combined capacity of about 1 gigawatt (GW) by 2030, and about 9 GW by 2035. In the next stage, from 2030 to 2055, it aims to retire a further 49 GW of CFPPs.² However, to achieve Paris alignment, unabated coal must be phased out in developing Asia between 2040-2050. Further international support and concessional capital, by way of CIF and multilateral development bank (MDB) support, will be required to accelerate PLN and MEMR's planned retirements by 5-10 years and pave the way for a range of power sector actions in the medium term that include RE capacity scale-up, system development, CFPP retirement, and CFPP repurposing (including flexibility).

¹ GoI NDCs were initially submitted in 2016 and revised and updated in 2021. The enhanced NDC was submitted and published in September 2022.

² The IP is mainly focused on grid connected large CFPP, either PLN-owned or PLN-contracted (i.e. IPPs), which are part of the national power system and subject to annual national planning, budgeting and expenditure frameworks. Private power utilities that serve industrial load in remote regions and captive power plants are excluded from main consideration as they are privately-owned with private offtake. However, further study is underway by MDBs to understand the scope for private sector financing for renewable energy and storage projects in the captive context.

4. **Institutionalizing the clean energy transition.** For RE and storage to meet power demand in the event of accelerated coal retirements, the right clean energy enabling environment must be in place. A key first step is the highly anticipated Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for the Supply of Power (RE PR), which was signed and enacted by President Joko Widodo on 13 September 2022. The RE PR creates a broad framework for the clean energy transition and calls for the drafting of detailed road maps and implementing guidelines to address some of the historical bottlenecks in Indonesia's RE development. The GoI has also identified a key partner for clean energy transition implementation, PT Sarana Multi Infrastruktur (Persero) (PT SMI), a state-owned enterprise overseen by the Ministry of Finance (MoF). MoF has assigned PT SMI as the Energy Transition Mechanism Country Platform³ (ETMCP) secretariat and fund manager. The ETMCP will play a critical role in coordinating various energy transition activities, channeling fiscal support where needed, and supporting the just transition framework and implementation.

5. Successful acceleration of CFPP retirements will require a (i) robust policy framework for the broader energy transition alongside the (ii) development of pilot transactions; and (iii) just transition considerations at plant, community, sub-regional and national levels of intervention, as well as an (iv) increased effort to equip the workforce with the new skills, training, and perspectives to capitalize on the opportunities that will come with the expanded deployment of renewable energy and transition impacting other industries. Further considerations include the following:

- Special emphasis will be needed to ensure that women participate equitably and fully in this ongoing energy transition. Women only made up 12% of all graduates of science, technology, engineering and mathematics (STEM)-related fields in Indonesia in 2018, and according to the Ministry of Women Empowerment and Child Protection, less than 1% of women participate in the electricity and gas labor force.⁴
- Prior to the coronavirus disease (COVID-19) pandemic, the main factor constraining growth had been a low productivity growth, partly attributed to (i) limited technology sophistication in Indonesian industries (use of advanced operations and technologies with extensive research and development [R&D] in production and industry processes), and (ii) lack of absorptive capacity for technology and innovation across Indonesia's workforce.⁵
- As the coal-phase out efforts scale up, coal-producing regions (i.e., Kalimantan and South Sumatra) and centers of coal power generation (i.e., Sumatra-Java-Bali grids) will be disproportionately affected and will need tailored consideration in the design of just transition approaches.

6. **IP target outcomes.** This IP (as laid out in Table 1) proposes a project pipeline that is broadly split into three key components: (i) Component 1 - Accelerated CFPP retirement, (ii) Component 2 – Governance, Just Transition and Repurposing, and (iii) Component 3 - Scale up of RE and storage. In summary, through US\$600 million in CIF ACT funding, together with US\$2.2 billion in MDB co-financing and over US\$1.3 billion in commercial co-financing, the IP aims to achieve the following:

³ The Indonesian ETM program and country platform is distinct from the ADB Energy Transition Mechanism (see footnote 22 and Appendix 7 for more details). ADB's ETM is a regional effort which is being piloted in select Asian developing countries including Indonesia. ADB's ETM is broadly aligned with the Indonesian ETM and will seek to support specific activities and projects being pursued by the Indonesia ETM Country Platform.

⁴ Data concerning the employment of women across different energy sectors (e.g., RE or conventional) is limited.

⁵ A study by ADB and the Ministry of Finance (MoF) indicates that adoption of new technologies could result in an additional annual GDP growth of 0.55 percentage points over the next two decades, thereby putting Indonesia's economy in the high-income group. Designing support to enhance workforce productivity will be critical in achieving more transformative, lasting shift across the Indonesian energy sector.

- **Governance:** The adoption or amendment of up to 4 policies, regulations, standards or codes and 3 accelerated CFPP retirement roadmaps, including policies and regulations that are explicitly inclusive of gender and other social exclusion factors and/or the gaps/barriers faced by specific social groups and targeted actions to address those gaps.⁶
- **People:** Up to 1,160 (i.e., 89% of) employees of retired CFPPs/coal mines with access to sustained income and up to 2,200 direct beneficiaries of social plans and economic regeneration activities, to be disaggregated by gender, and reflecting other social characteristics (age, disability status, formal vs. informal workers etc.) as well as documented information about the quality of the jobs (income, skilled/ non-skilled positions) whenever relevant and possible.⁷
- **Infrastructure:** Avoided greenhouse gas emissions of up to 50 million tons carbon dioxide equivalent (CO₂e) through the accelerated retirement of up to 2 GW of CFPP generation capacity, as well as up to 15 million tons of coal diversion, up to 150 hectares (ha) of mine area reclaimed, reforested or restored, and an increase of up to 400 MW of installed RE and 90MW of energy storage capacity.⁸

Table 1: Indicative Financing Plan (\$ Million)

		MDB Sector	ACT	MDB	Other/ Private	Gol ^a	TOTAL	Pillars		
								People & Governance	Communities	Infrastructure
Component 1: Accelerated Retirement of Coal Plants										
1.1	PLN RBL (early retirement of ~1 GW)	ADB Public	50	600	300	[600]	1550	✓	✓	✓
1.2	PT SMI ETMCP - Facility 1 (PLN Sustainability-Linked Loan)	ADB Public	50 1 (grant)	50	100	[250]	451		✓	✓
1.3	IPP CFPP early retirement program	ADB Private	100	400	300 ^b	N/A	800			✓
Component 2: Governance, Just Transition and Repurposing										
2.1	PLN/MEMR Energy Transition P4R	WB Public	30 5 (grant)	400	0	[100]	535	✓	✓	✓
2.2	Just Transition & Repurposing Investment Project (Phase 1 & 2)	WB Public	180 5 (grant)	415	0	[60]	660		✓	✓
2.3	PRIME STeP	ADB Public	9 (grant)	139	0	[21]	169		✓	
Component 3: Scaling Up Renewable Energy & Storage										
3.1	Dispatchable Renewables Program	IFC Private	70	140	350	N/A	560			✓
3.2	PT SMI ETMCP - Facilities 2 & 3 (Standby Facility & RE Loans)	ADB Public	100	100	300	N/A	500		✓	✓
TOTAL			600	2244	1350	[1031]	5225			

Note: CFPP = Coal-fired Power Plant, ETMCP = Energy Transition Mechanism Country Platform, IPP = Independent Power Producer, P4R = Program For Results, RBL = Results Based Loan, PRIME STeP = Skills Development and Center of Excellence on Energy Transition Program, RE = Renewable Energy.

Source: ADB, Gol (Ministry of Finance, PLN, PT SMI, Ministry of Education, Ministry of Energy and Mineral Resources) and WBG.

^aGol contribution figures subject to further discussion of program or project needs as well as annual budget approvals or endorsements. These numbers do not include broader MoF corporate support for implementing agencies such as PLN and PT SMI.

^bTo be confirmed in future market sounding.

7. The IP is structured to maximize transformational change. This IP will cover CFPP retirement from enabling policies and financial incentives to asset-level retirement and repurposing. The program design considers just transition issues along the entire value chain, induced impacts in the economy, as well as enabling activities that can support Indonesia to capitalize on energy transition opportunities. The proposed investment operations are summarized in Figure 1 and discussed in greater detail in subsequent sections of this document along with cross-cutting priorities (Sections 2 and 3). ADB will work with the Gol, PLN, PT SMI

⁶ Tracked by ACT Core Indicator 1 and 2.

⁷ Tracked by ACT Core Indicators 3 and 4.

⁸ Tracked by ACT Core Indicators 5, 6, 7, 8, 9 and 11.

Figure 1: Summary of IP Activities by Theme

<h3>Pillar 1 Governance</h3> <p>PLN RBL: (i) supporting MEMR and PLN in finalizing roadmap for coal retirement, (ii) strengthening PLN ESG framework for JT planning and implementation, including gender.</p> <p>P4R: (i) analytical work to support policy and regulatory reform for coal transition; (ii) energy transition capacity building and training programs for government counterparts and (iii) improving power sector transparency, sustainability and efficiency;</p>	<h3>Pillar 2 People and Communities</h3> <p>PLN RBL: (i) strengthening PLN institutional capacity to manage a just energy transition including how to integrate just transition into internal policies and procedures; (ii) engagement with PLN university for workforce and skills planning (integrating efforts with PRIME STeP loan for storage and solar PV technology training); (iii) supporting communities and workers associated with 1-2 GW of early PLN CFP retirement, with special consideration for women and vulnerable groups.</p> <p>PT SMI ETMCP: ADB to use CIF ACT grant funds to design and implement the just transition framework for the Indonesia ETM country platform under PT SMI. This will then feed into broader ADB engagements with the GoI on national level just transition and related interagency collaboration.</p>
<h3>Pillar 3 Infrastructure</h3> <p>PLN RBL + PT SMI ETMCP: (i) 1-2 GW of accelerated early retirement of PLN CFP assets and associated system planning adjustments, (ii) expanding the smart transmission grid infrastructure.</p> <p>IPP CFP early retirement program: Up to 1GW of accelerated early retirement of private CFP assets contracted to PLN.</p> <p>P4R: replacement RE, storage capacity and grid enhancements.</p> <p>JT & Repurposing (Phase 1 & 2): (i) decommissioning of 1 or more of PLN CFP assets (i.e. abatement, removal of materials, structural demolition, environmental remediation, and restoration to make sites suitable for repurposing); (ii) CFP repurposing investments such as Battery Energy Storage Systems (BESS), Synchronous Condensers (SYNCON), solar PV and Biomass; and (iii) closed mine site repurposing through implementation of RE generation through PPP arrangements will also be explored.</p> <p>PT SMI ETMCP + Dispatchable RE: (i) investment in upwards of 300MW of RE generation in new/replacement capacity; and (ii) up to 90MW of storage (co-located or standalone).</p>	<p>IPP CFP early retirement program (private sector): Just transition plans, particularly to safeguard the job security of the employees of the assets retired under the program, will be developed by ADB and the associated costs will be reflected in overall financing structure and budget during due diligence.</p> <p>JT & Repurposing (Phase 1 & 2): World Bank activities to minimize the social, economic, and environmental risks and impacts associated with decommissioning and repurposing of CFPPs and coal mines, while enhancing the opportunities of this transition. Pilot project activities will be scoped to address labor transition, reskilling, retraining and outplacement, social risks and gender impacts.</p> <p>PRIME STeP: (i) targeted R&D for new energy technologies (i.e. storage systems and photovoltaic cells) commercialization (with private corporates and start-ups); (ii) deployment of online and offline solar photovoltaic and battery storage trainings targeted to support labor transitions underway, (iii) jobs and skills study to assess supply and demand for upskilling/reskilling in Indonesian labor market with respect to a just energy transition, and (iv) establishing Centers of Excellence for the clean energy transition.</p>
<p>Cross cutting initiatives</p> <p>(1) National Strategic Environmental and Social Assessment (SESA) (ADB) (2) Just transition baseline analyses conducted for the clean energy transition & coal phase out (ADB & WBG) (3) Gender activities by ADB and WBG: Conducting of gender assessments per project/program, as well as implementing gender mainstreaming policies and draft regulatory documents for counterparties (as applicable). More broadly supporting enabling environment and capacity building for women in RE associations, increasing female decision makers in the labor unions/associations, associations of indigenous women (among others) including female representation, leadership and input in human rights NGOs and CSOs in the SESA Steering committee, gender considerations in JT assessment and planning purposes.</p>	

and select IPPs to accelerate the retirement of the first 1-2 GW of baseload CFPs by ~5 years, while developing just and inclusive approaches for the clean energy labor transition. WBG will then support the decommissioning and repurposing aspects of the first PLN-owned CFPs to close, looking at various replacement technologies such as battery storage, solar photovoltaic (PV), and other technologies that can provide ancillary services. The WBG repurposing project will also explore options to support pilot coal mine closure sites to enable a holistic view from downstream to the upstream side of coal supply transformation. Simultaneously, WBG policy initiatives will establish a stronger enabling environment and infrastructure readiness for CFP retirements and replacement with RE power generation, addressing remaining policy bottlenecks to renewables investments; supporting capacity building and training; and strengthening the grid to handle variable renewable energy. Both the International Finance Corporation (IFC) and PT SMI will simultaneously target pioneering RE and storage projects led by the private sector that will aim to serve demand both in grid-connected and captive power contexts.

8. ADB and WBG will incorporate just transition and gender mainstreaming considerations across these pilot projects, while also working with counterparts to develop their institutional capacities and establish an enabling environment to scale up just transition and gender mainstreaming activities. These efforts will be complemented by ADB's collaboration with top universities to establish centers of excellence on energy transition, providing the foundation for skills mapping and the development and retraining required for the clean energy labor transition. In parallel, the World Bank will engage in energy transition dialogue with coal-based communities, to better support workers and communities adversely impacted by the cessation of mining operations and maximize the value of post-mining lands by repurposing them for a diverse range of uses towards economic regeneration. Efforts will be made to include women, women's rights organizations, and gender equality advocates and organizations as stakeholders and ensuring they are accessing the training, retraining options and capacity building opportunities. Transition plans will include education for local people, including youth/children. Through the IP, the GoI, ADB, and WBG collaborate to lay a strong foundation for sustainable change, (i) paving the way for more opportunities for RE scale up and development by both PLN and the private sector; (ii) promoting realization of environmental and socio-economic co-benefits for sustainable development; (iii) crowding-in capital; and (iv) enabling more integrated, innovative approaches for a greener, more inclusive and affordable and gender-equal energy transition.

2. COUNTRY CONTEXT – Accelerating the Coal to Clean Energy Transition

9. **Indonesia's extraordinary development record and ongoing challenges.** Indonesia is the largest economy in Southeast Asia. It is also the world's fourth-most populous country; seventh-largest economy; twelfth-largest energy consumer, and the largest coal exporter.⁹ Its solid macroeconomic fundamentals, supported by two decades of political stability from 2000 to 2022, have allowed for robust economic growth. While economic growth slowed from an average of 5.0% per year over 2015-2019 to 3.7% in 2021 during the COVID-19 pandemic, the Indonesian economy is projected to accelerate to 5.1% growth in 2022 and 5.3% in 2023 due to the release of pent-up demand, improved consumer confidence, and improved terms of trade.¹⁰ In tandem with the economic expansion, the proportion of the population living below the national poverty line almost halved between 2006 and 2019, reaching a record low of 9.4%.

10. Despite the country's economic achievements, there remains a longer path to becoming a more advanced economy. GDP per capita at purchasing power parity today is 30% lower than the world average. Economic development is regionally imbalanced and highly resource dependent. While the whole archipelago encompasses 17,000 islands, the two islands of Java and Bali are home to 60% of the country's population and 75% of the manufacturing GDP. Other regions specialize in natural resource extraction. Moreover, the poor remain the most vulnerable to external shocks such as the COVID-19 pandemic and adverse climate change impacts.

2.1 Coal as a Driving Factor of Emissions Intensity

11. **Emissions intensive growth to date.** Given the importance placed on inclusive growth, the energy sector in Indonesia has the twin challenge of meeting continuous demand growth while ensuring reliable, sustainable, and affordable access to energy. From 2000 to 2021, this challenge was met by a 60% increase in Indonesia's total energy supply fueled by lower-cost coal—an abundant domestic natural resource. Consequently, however, total energy sector emissions have grown faster than energy demand, more than doubling since 2000. Coal is responsible for over 70% of the increase, with the lion's share coming from coal-fired electricity generation (Figure 2). Today, Indonesia has one of the most emissions-intensive electricity sectors in the world at over 750 grams carbon dioxide (CO₂) per kilowatt hour (CO₂/kWh). This compares to under 600 grams CO₂/kWh in the People's Republic of China (PRC) and 710 grams CO₂/kWh in India in 2021.¹¹

12. **Indonesia's Energy Resources.** The historic emissions pathway is tied closely with Indonesia's role as a net energy exporter given its vast domestic fossil fuel resources.¹² While the country became a net oil importer in 2004, it soon rose to be the world's largest thermal coal exporter. As of 2020, coal resources were estimated at 143 billion tons and reserves at 38.8 billion tons, while production totaled 563 million tons, and consumption 131 million tons (see Box 1).

⁹ International Energy Agency (IEA). 2022. *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*. Paris: IEA. [https://www.iea.org/reports/an-energy-sector-roadmap-to-netzero-emissions-in-indonesia](https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia).

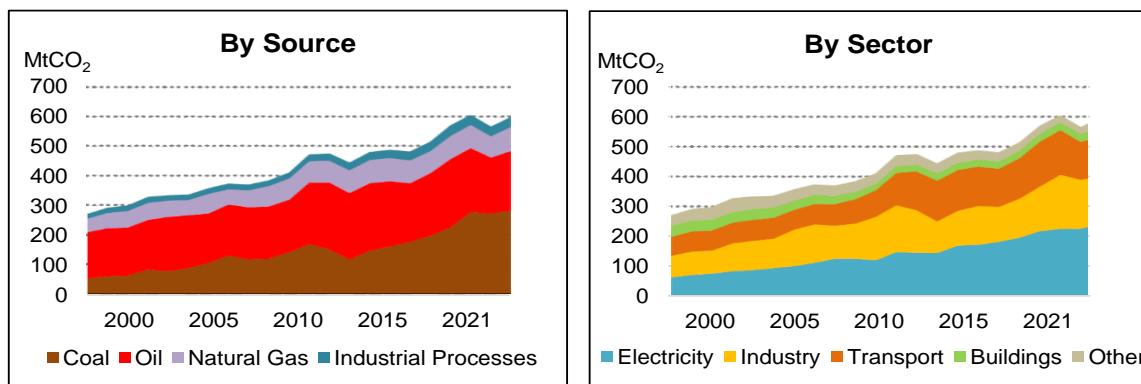
¹⁰ World Bank. 2022. *Indonesia Economic Prospects. Financial Deepening for Stronger Growth and Sustainable Recovery*. Washington, DC.

<https://openknowledge.worldbank.org/bitstream/handle/10986/37584/IDU087850cba0b204043f608dea019acef5f2be1.pdf?sequence=5>

¹¹ IEA. 2022. *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*. Paris: IEA. <https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia>. p.67.

¹² Government of Indonesia, Ministry of Energy and Mineral Resources. 2021. *2020 Handbook of Energy and Economic Statistics of Indonesia*. Jakarta. As of 2021, Indonesia is the seventh largest liquefied natural gas exporter with proved natural gas reserves of 43.57 trillion standard cubic feet, production of nearly 2,442,381 million standard cubic feet, and consumption at 8 million tons. Proved reserves of oil stood at 2.44 billion barrels and production at 259 million barrels, while consumption totaled 258 million barrels.

Figure 2: Energy Sector Carbon Dioxide Emissions in Indonesia, 2000–2021

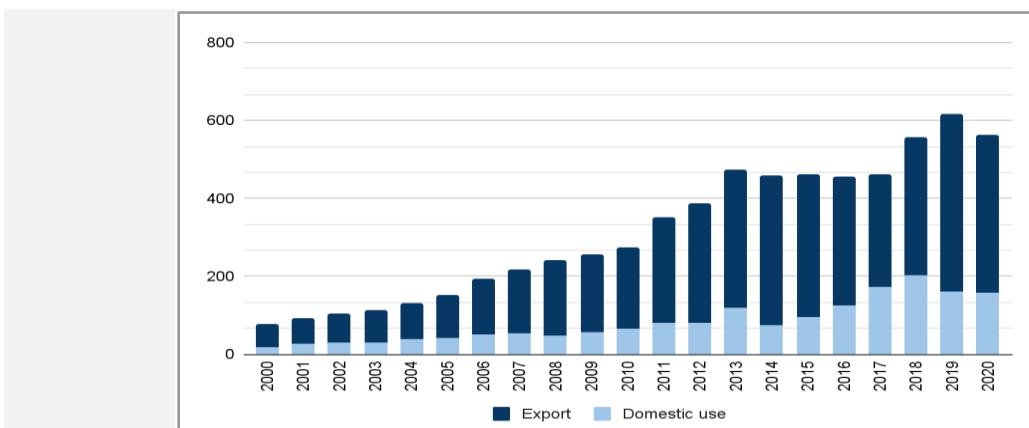


Source: International Energy Agency (IEA). 2022. *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*. Paris: IEA. [https://www.iea.org/reports/an-energy-sector-roadmap-to-netzero-emissions-in-indonesia](https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia).

Box 1: Current State of the Indonesian Coal Sector

Indonesia is one of the world's largest coal producers and the largest coal exporters. Coal mining is dominated by the private sector, with mining areas allocated via a government contract mechanism. Coal mining output was around 563 million tons per year in 2021, which was about 6-7% of total global production. Over the past two decades up to 2022, Indonesia's rate of coal production has increased eight-fold, climbing from 77 million tons (Mt) in 2000 to a record-level of 616 Mt in 2019, with the composition between exports and domestic use as shown below.

Indonesia Annual Coal Production (2000-2020, Mt)



Source: Government of Indonesia, Ministry of Energy and Mineral Resources. *Handbook of Energy and Economic Statistics of Indonesia 2011 and 2020*. Jakarta. <https://www.esdm.go.id/en/publication/handbook-of-energy-economic-statistics-of-indonesia-heesi>

Most of the current coal output is exported, accounting for about 40% of global international coal trade, with a value of around \$40 billion in a typical year. India and the People's Republic of China (PRC) are the biggest destinations for Indonesian coal. Based on the NDCs of India and the PRC, Indonesia's coal exports are expected to remain close to current levels for at least the next 10-15 years. It is estimated that the PRC and India would have to cut coal consumption by at least 100 million tons/year (in aggregate) before Indonesia's exports would be impacted.

The balance of the coal output is used almost exclusively for domestic CFPs, most of which are connected to the Sumatra and Java-Bali grids (which account for 88% of the country's electricity demand). As of late 2018, about 250,000 people were employed directly in mining operations, with a larger number of people employed in the supply chain which is economically linked to and dependent on mining, transport, and end use—specifically CFPs. Coal mining, domestic trans-shipment, and exports represent about \$80 billion per year in economic activity—nearly 8% of GDP.

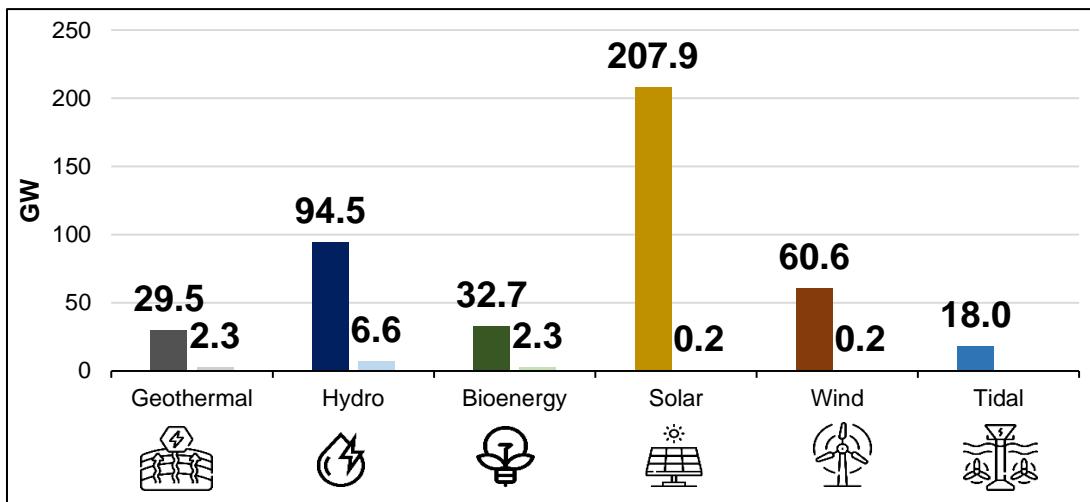
Global coal consumption was disrupted due to the coronavirus disease (COVID-19) pandemic, and in late 2020 most of Indonesia's coal mining companies were incurring losses (IEEFA 2020). By late 2021, global demand had picked up and in early 2022 spot prices spiked above \$300/ ton. Global export may be further disrupted in 2022 due to boycotts on exports from Russia, but the potential effect on Indonesian producers is unknown. A decline in demand for Indonesian coal is likely to be exacerbated by an intensification of competition from other coal exporters, especially Australia. Although Indonesia currently competes in the Asian energy market with large volumes of lower calorific-quality coal, there is strong potential for displacement by Australian high-calorific coal, particularly as tightening environmental regulations nudge importers towards more efficient CFPs.

Cognizant of the longer-term decline in global demand for Indonesian coal, the GoI is planning to increase the share of production going to the domestic market in line with Indonesia's rising energy needs. To secure the affordable supply of coal for domestic needs, the GoI has implemented regulations to control the allocation of production to the domestic market and introduced subsidies that benefit downstream processors and coal-fired power producers, which are aimed at promoting domestic coal consumption. Notwithstanding this, the domestic energy market will ultimately face similar downward pressures on coal prices as those observed in external markets, making it increasingly challenging for coal mining companies, especially the smaller regional concession holders, to sustain viable production operations. Global pressure for coal phase-out coupled with new more efficient technologies (automatization) continue to drive a global coal industry consolidation trend. In alignment with this trend, Indonesia is looking to initiate an earlier coal mine closure of its small- to medium-sized mines in the medium term to improve efficiencies and structure of the domestic coal industry.

Source: World Bank analysis.

13. Renewable Energy Potential. While Indonesia has relied on fossil fuels to date, it has abundant renewable energy resource potential. Indonesia's national energy plan (Rencana Umum Energi Nasional, RUEN) as officiated in Presidential Regulation No. 22/2017, mentions that Indonesia has the potential of 29.5 GW of geothermal power, 75 GW of large hydropower, 19.4 GW of mini and micro hydropower, 32.7 GW of bioenergy, 207 GW of solar power, 60.6 GW of wind power, and 18 GW of tidal power. From this combined RE potential of 443.2 GW from RE, RE installed capacity only stood at 11.6 GW as of 2021 (see Figure 3).

Figure 3: Indonesia 2019 RE Estimated Potential (LHS) vs. Installed Capacity (RHS)



Note: GW = gigawatt. RE = Renewable Energy.

Source: Institute for Essential Services Reform. 2021. 2021. *Beyond 443 GW: Indonesia's infinite renewable energy potentials*. <https://www.scribd.com/document/541766726/IESR-Beyond-443-GW-Indonesia-s-Infinite-Renewable-Energy-Potentials>

14. The GoI is pursuing its goal to achieve a 23% share of renewable energy in its primary energy mix by 2025 as stipulated in the National Energy Policy 2014.¹³ Since the policy was put in place, the RE as a share of primary energy supply increased from 5% in 2014 to 12% in 2021,¹⁴ largely driven by the RE contribution to the electricity generation mix, which grew from 11% to 18% in the same period.¹⁵ Increasing RE contribution to the electricity generation mix remains a pivotal driver to achieve the policy goal. However, key challenges to further accelerating RE generation contributions have included: i) environmental, social and financial challenges in the construction and operation of large- and small- hydro; (ii) high upfront capex and development risks including environmental, social, gender, health and safety risks for geothermal; (iii) higher costs of wind development in more remote Eastern Indonesian islands (location of best wind resource and smaller grids); (iv) complex licensing and permitting processes; (v) lack of transparency on tariffs and procurement; (vi) unbalanced risk allocation in power purchase agreements, (vii) local content requirements for solar development, (viii) lack of reward for self-generation (such as rooftop solar), (ix) limited market mechanisms to incentivize development of smart grid technologies, (x) lack of implementing guidelines for power wheeling, (xi) limited progress connecting demand centers with RE-rich geographies and (xii) lack of transparency for operational data and power system planning. Consequently, Indonesia lags its regional peers both in terms of the extent of deployment of renewables, and in terms of the levelized cost of generation achieved.¹⁶ Many of the issues are being discussed and addressed in some capacity as the GoI demonstrates further commitment to achieve carbon neutrality in the medium term.

2.2 National Ambitions for a Net-Zero Pathway

15. Especially considering the opportunity RE presents in Indonesia, an emissions-intensive path to economic growth remains unsustainable for Indonesia going forward. Impacts of the physical hazards brought about by climate change will be felt across Indonesian society.¹⁷ According to the INFORM Risk Index, Indonesia ranks 5th in the world when it comes to exposure to disasters caused by natural hazards, with high exposure to several weather disasters exacerbated by climate change, including floods, tsunamis, and tropical cyclones. Considering other factors such as vulnerability and lack of coping capacity, Indonesia ranks 57th (out of 191 countries) in terms of risk.¹⁸ The International Energy Agency (IEA) estimates that these impacts could cost up to 7% of the country's GDP, with the poorest bearing the brunt of this burden.¹⁹ In recognition of these risks, the GoI has recently presented a strong series of targets to ensure Indonesia can continue its growth trajectory without outsized contributions to growing climate risks (Figure 4):

- **Nationally Determined Contributions (NDC) submitted to UNFCCC.** Indonesia's Intended NDC under the Paris Agreement, submitted in 2015, pledged to reduce CO₂ emissions by

¹³ Government of Indonesia, National Energy Council. 2014. *National Energy Policy, 2014–2050*. Jakarta.

¹⁴ Ministry of Energy and Mineral Resources. 2022. *Handbook of Energy & Economic Statistics of Indonesia 2021*. Jakarta. Table 1.6. <https://www.esdm.go.id/en/publication/handbook-of-energy-economic-statistics-of-indonesia-heesi>.

¹⁵ Ministry of Energy and Mineral Resources. 2022. *Handbook of Energy & Economic Statistics of Indonesia 2021*. Jakarta. Table 6.4.4. <https://www.esdm.go.id/en/publication/handbook-of-energy-economic-statistics-of-indonesia-heesi>.

¹⁶ Countries with a much smaller grid and lower investment grade such as Cambodia have managed to conduct large reverse auctions that have delivered rapid relative capacity expansions at lower prices.

https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/cif_gdi_case_study_cambodia_national_solar_park.pdf

¹⁷ World Bank and ADB. 2021. *Climate Risk Country Profile Indonesia*. Washington and Manila.

¹⁸ INFORM. 2021. INFORM Risk Index 2022.

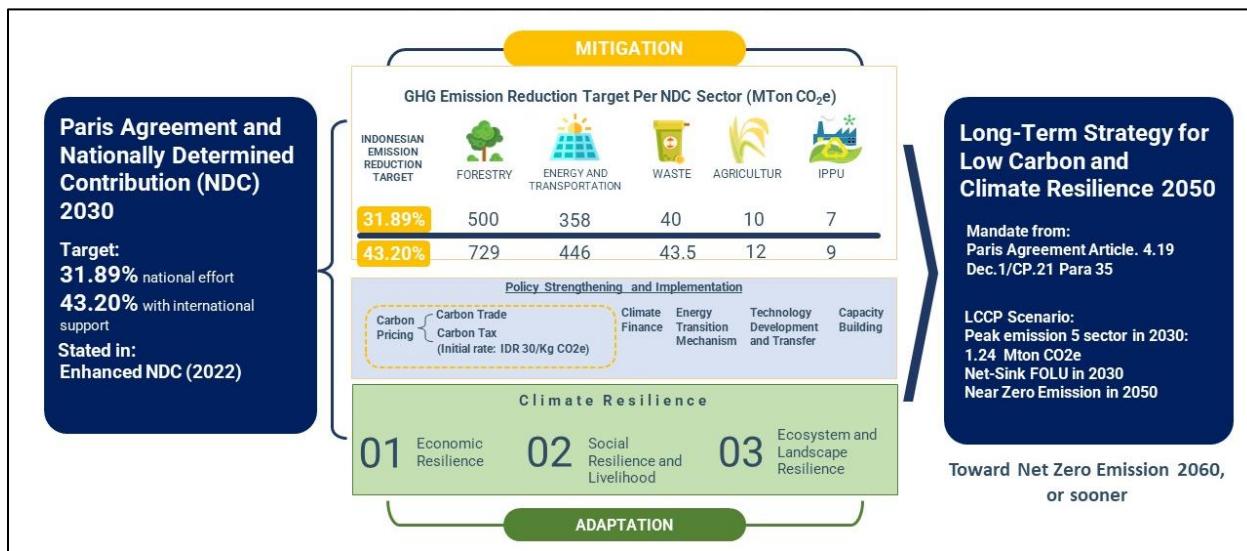
¹⁹ IEA. 2022. *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*. Paris: IEA.

[https://www.iea.org/reports/an-energy-sector-roadmap-to-netzero-emissions-in-indonesia](https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia).

29% in 2030 relative to a business-as-usual baseline. Indonesia ratified the Paris Agreement in 2016, reiterated the 29% target and assigned the Ministry of Energy and Mineral Resources (MEMR) responsibility to achieve 11 percentage points of the target emissions reduction from the energy sector.²⁰ Indonesia's enhanced NDC, submitted to the UNFCCC in September 2022, reiterated the unconditional target to reduce CO₂ emissions by 31.89% in 2030 relative to a BAU baseline and also included a reduction target of up to 43.2% in 2030, conditional on international assistance.

- **Net zero emissions (NZE) by 2060 or earlier.** Indonesia submitted its first Long-Term Low Emissions Strategy (LTS) along with its updated NDC to the UNFCCC in 2021. The LTS sets out three long-term development scenarios. The most aggressive mitigation scenario, the Low Carbon Scenario Compatible with the Paris Agreement (LCCP), envisages total GHG emissions peaking around 2030 and declining thereafter. Under the LCCP, "Indonesia is expected to gain optimistically [the] opportunity for more rapid progress towards net zero emission in 2060 or sooner" (Government of Indonesia, 2021b). This forms the basis for Indonesia's target of reaching net zero emissions by 2060.

Figure 4: Nationally Determined Contributions and Net Zero Emissions



LCCP = Low Carbon and Climate Resilience.

Source: Government of Indonesia, Ministry of Finance.

16. Decarbonization of its power sector represents a cornerstone of Indonesia's efforts to achieve its emissions related goals. Recent regulation and implementation plans include:

- **Emissions Trading System (ETS).** The development and implementation of a domestic ETS for the power and industry sectors is one of the government's key policy mechanisms to help meet its NDC targets and to foster low-carbon sustainable development. A presidential regulation to provide a national framework for carbon pricing instruments, including an ETS, was signed in October 2021.²¹ Building on previous regulation, it was introduced in November 2017 and provides a first mandate for an emissions and/or waste permit trading system to be implemented by 2024. A voluntary and intensity-based pilot ETS for the power sector was

²⁰ Indonesia's Paris Agreement commitments. United Nations Framework Convention on Climate Change. 2016. Indonesia's First NDC (Updated). Paris and Codified in the National Action Plan on GHG Emission Reduction, under Presidential Regulation No. 61/2011.

²¹ Government of Indonesia. Government Regulation 98/2021. Presidential Regulation on Carbon Emission Economic Value.

tested between March and August 2021. Participants traded allowances and offset credits stemming from RE generation. Initially, 84 coal-fired plants, both PLN- and IPP-owned, were invited to participate, with 26 eventually taking part. The pilot program is set to continue with new phases, including the integration of industry, over the coming years before transitioning to a mandatory ETS, which is expected by 2024 in line with the presidential regulation.

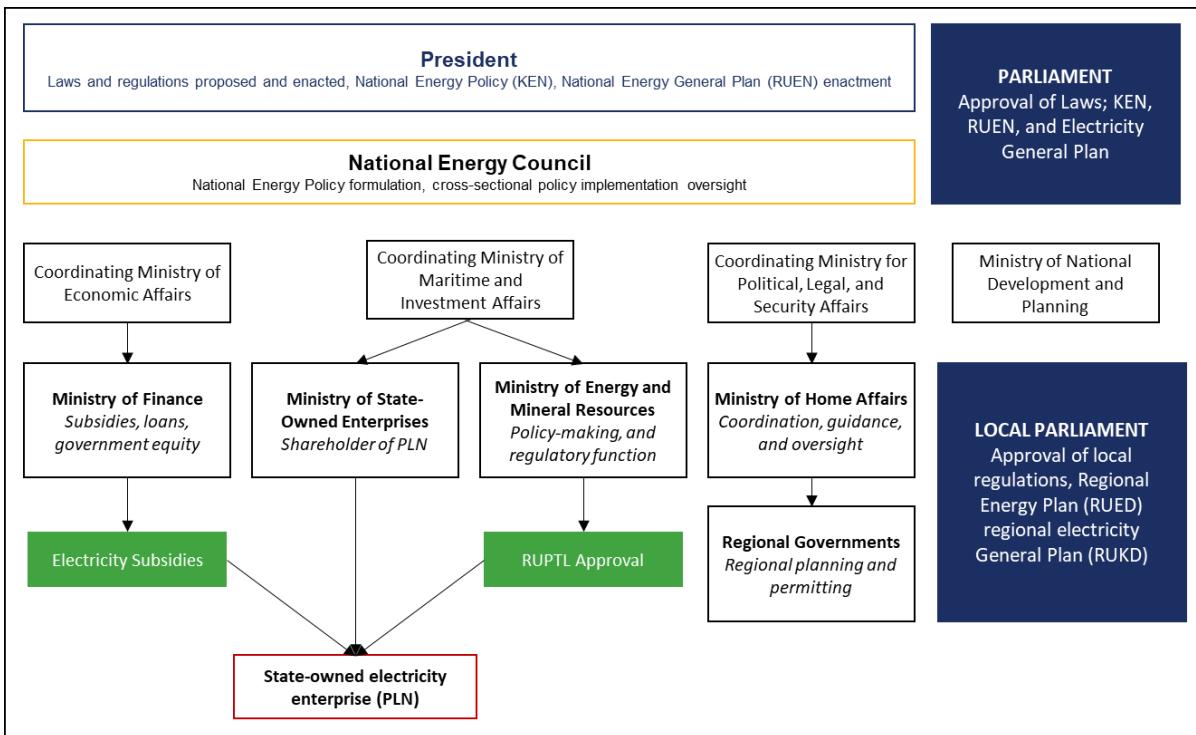
- **Carbon tax.** The ETS will function as a hybrid “cap-trade-and-tax” system alongside a carbon tax that was imposed in April 2022 and be regulated by the broad Law of the Harmonization of Tax Regulations. The carbon taxes will first be implemented in the power sector in 2022, then gradually expanded to other sectors from 2025, depending on sector readiness. Once the mandatory ETS is in place, installations that fail to meet their obligations under the system will be subject to the carbon tax, at a rate linked to the price of the domestic carbon market, but with a minimum price threshold of IDR30,000/kilogram (kg) CO₂ (~US\$2/ton CO₂).²²
- **Indonesia's G20 Presidency and Energy Transition Goals.** Indonesia has identified “sustainable energy transition” as one of the three top priorities under its Presidency of the 17th G20 during 2022. To plan and set some of the key milestones for energy transition leading to the G20 Leaders' Summit (to be held in Bali on 15-16 November 2022), MoF, in partnership with ADB, has been conducting a series of focus group discussions (FGDs) in March (FGD #1), June (FGD #2), August (FGD #3) and October (FGD #4) 2022. The FGDs brought together an inter-ministerial forum comprising all the relevant government stakeholders (including MEMR, PLN, PT SMI) to take stock of ongoing efforts in the country and set goals to be announced at G20 and COP27. FGD #3 refined the outcomes of the first and second FGD, focusing on the updated draft short-list of PLN CFPPs that can be retired before 2030, IPP early-retirement transactions that can be announced immediately, existing pipeline plants that can be cancelled, as well as the preliminary roadmap and updated list of IPP and PLN CFPP retirements beyond 2030. The most recent FGD (FGD #4) was able to derive broad consensus with key government stakeholders and flesh out remaining discussion areas for near term goals on energy transition activities that could be announced at the G20.
- **Renewable Energy and Coal Phase out Presidential Regulation.** The highly anticipated Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for the Supply of Power (RE PR) was signed and enacted by President Joko Widodo on 13 September 2022. The regulation essentially: (i) announced an upcoming [MEMR/PLN] plan for energy transition and the early retirement of coal-fired power plants (CFPPs) (to be announced at the G20 summit in November 2022); (ii) articulated a more viable ceiling pricing regime for the purchase of electricity from RE projects (vs. benchmarking RE against subsidized coal generation); (iii) outlined tendering schemes for the procurement of RE projects by PLN; and (iv) laid out broad incentives for RE projects.

2.3 Implementation Framework for Clean Energy Transition

17. **PLN as a key player in energy sector decarbonization.** Within the energy sector, power generation is implemented by Perusahaan Listrik Negara ((PLN) State Electricity Corporation)—the sole buyer, transmitter, and distributor of electricity in Indonesia. Because Indonesia is an archipelago, PLN infrastructure for electricity generation, transmission, and distribution remains fragmented. The distribution infrastructure consists of eight major grid networks and 600 isolated grid systems. As wholly state-owned utility, its planning and operations are overseen by three main ministries: (i) the MEMR, the primary government body setting energy sector policies and regulation; (ii) the Ministry of State-Owned Enterprises (MSOE), the government body overseeing governance and operations of state-owned enterprises; and (iii) the Ministry of Finance (MoF), involved in all aspects from subsidies to planning (see Figure 5).

²² Government of Indonesia, Ministry of Finance (Kementerian Keuangan). 2021. <https://www.kemenkeu.go.id/home>.

Figure 5: Indonesia Power Sector Stakeholder Map



Source: Asian Development Bank.

18. History of coal's rising share in electricity generation. Currently, Indonesia has an installed power generation capacity of 74 GW. PLN's power supply comes from a mix of its own generation, totaling 44 gigawatt (GW) and purchases from independent power producers (IPPs) totaling 21 GW. A further 8.7 GW are generated and consumed by other parties (e.g., captive). As noted earlier, these captive assets largely operate outside the national power system and medium-term planning. They are mainly developed in response to a single-customer / industrial park demand needs and take into account their location and available alternatives to suit specifications. As such, power demand forecasts for these offgrid locations remain highly uncertain and it is difficult to predict how much of the pipeline will materialize in the coming years. Conversely, in its own planning, PLN is obliged to reflect government policies and initiatives in its operations.²³ As such, the current generation mix reflects historical Gol power supply planning, which revolved around the key priority of low-cost expansion of service to serve rapidly growing demand and achieve universal electrification. The reliance on coal to meet this challenge is clearly reflected in the evolution of the installed capacity since 2010, as Indonesia was pressed to meet the rising power demands of the fast-growing economy (see Figure 6).

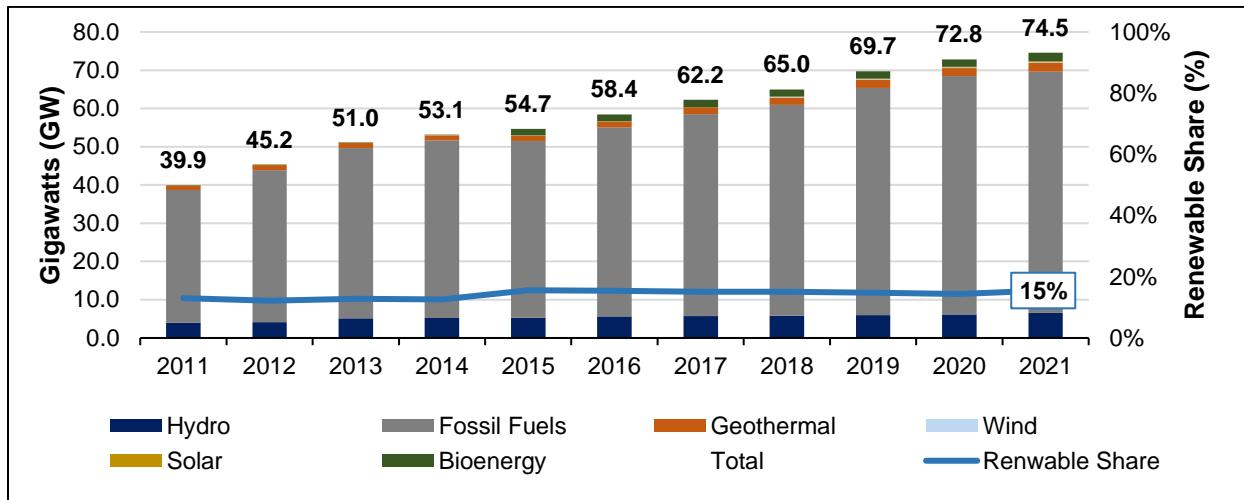
19. Total grid-connected power generation capacity increased from 52.8 GW in 2016 to 74 GW in 2021.²⁴ However, most of the capacity expansion in this period is a result of a series of fast-tracked programs (mostly CFPPs) introduced in 2015 aimed at adding 42.5 GW of capacity by 2024. As a result, coal now makes up 50% of installed capacity, with a further 35% represented

²³ Under the Electricity Law 30/2009 and its subsidiary regulations, PLN is required to obtain government approval for its system expansion plans, as set out in its annual Electricity Power Supply Business Plan (Rencana Usaha Penyediaan Tenaga Listrik [RUPTL]) and for its tariffs.

²⁴ Government of Indonesia, Ministry of Energy and Mineral Resources. 2022. *2021 Handbook of Energy and Economic Statistics of Indonesia*. Jakarta.

by oil and gas and only 15% from renewable energy sources. While the predominance of CFPs has clearly increased emission intensity, the emissions management challenge is coupled with the financial and operational burdens of grid overcapacity as well. In past years, demand forecasts have been consistently above realized demand growth, which explains a high reserve margin of 59.5% in Java-Bali and 34.8% in the Sumatra system where 88% of Indonesia's electricity is consumed.

Figure 6: Indonesia Installed Capacity Trend, 2011 – 2021



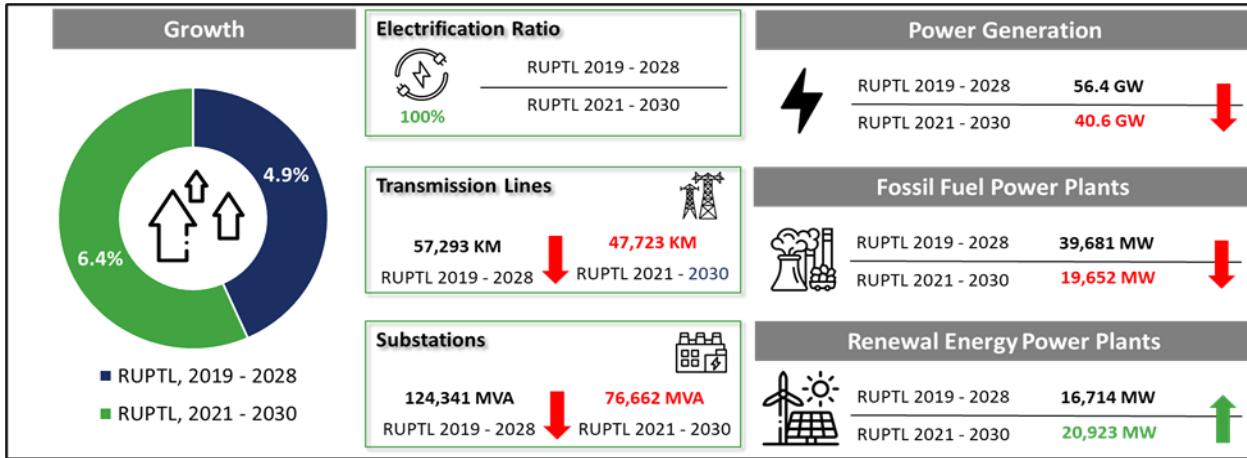
Source: Ministry of Energy and Mineral Resources. 2022. *Handbook of Energy & Economic Statistics of Indonesia 2021*. Jakarta. <https://www.esdm.go.id/en/publication/handbook-of-energy-economic-statistics-of-indonesia-heesi>.

20. PLN launches clean energy transition plans. PLN released its most recently approved Electricity Power Supply Business Plan (RUPTL), 2021–2030, in October 2021. This long-anticipated RUPTL marks a pivotal milestone for PLN. Considering the impacts of the pandemic in terms of reduced growth and electricity demand forecasts, as well as the national climate targets, RUPTL 2021-2030 complements and supports the “reset” initiated across GoI agencies in support of a greener agenda. For the first time, the majority of power generation projects to be developed are RE projects, accounting for 51.6% of 40.6 GW of new generation (see Figure 7). PLN plans to increase renewable energy capacity from 15% of total generation in 2021 to 24.8% by 2030.²⁵ The RUPTL also allocates a bigger share to private sector IPPs in developing new RE generation capacity to catalyze more private sector financing. The share of coal in total generation is targeted to decrease from 67% in 2021 to 59.4% by 2030 due increased RE penetration. It is likely that the next RUPTL will be further amended to reflect a more ambitious target of the upcoming CFP early retirement plan to be announced at the G20 summit.

21. PT Sarana Multi Infrastruktur (Persero) (PT SMI) and ETMCP – other critical partners in clean energy transition implementation. Established in 2009 to catalyze Indonesia's infrastructure development, PT SMI is a state-owned enterprise overseen by the MoF. PT SMI has extensive experience in lending to commercial and public infrastructure projects and has expertise in project development, structuring, financing, risk management, and safeguards, which support its infrastructure lending transactions. PT SMI is currently the only GCF Accredited Entity in Indonesia as a Direct Accredited Entity (DAE).

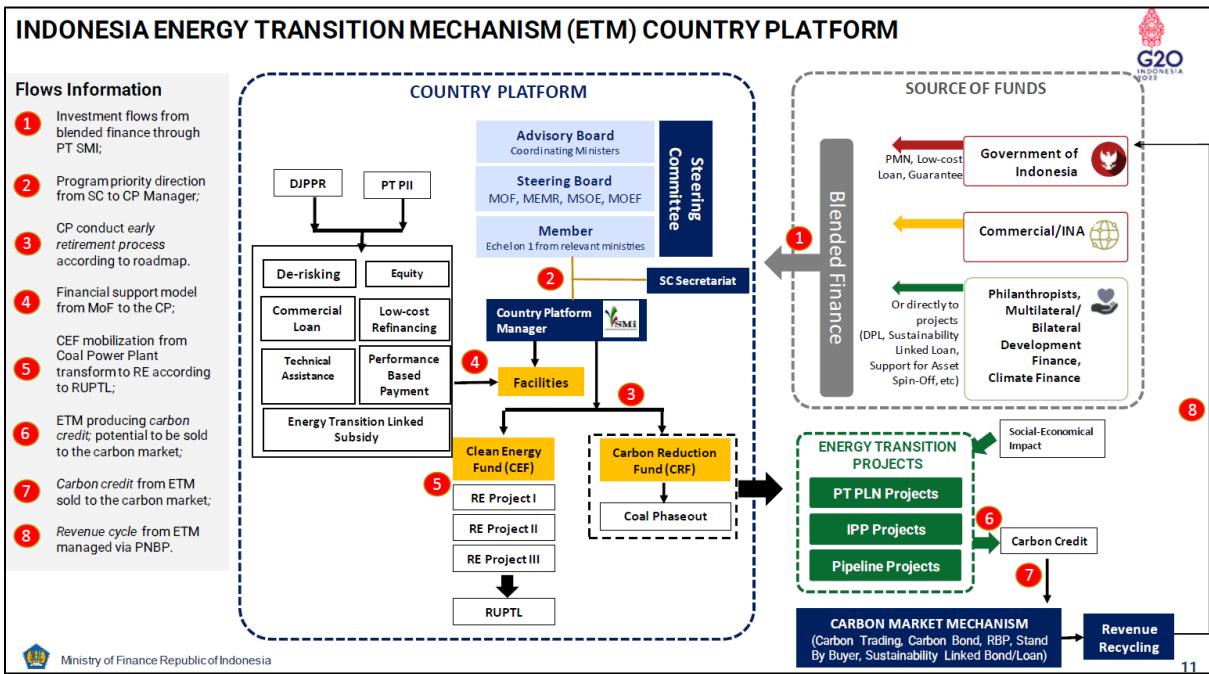
²⁵ PLN. 2021. *Electricity Power Supply Business Plan, 2021–2030*. Jakarta. <https://web.pln.co.id/statics/uploads/2021/10/ruptl-2021-2030.pdf>

Figure 7: Changes Planned under the Electricity Power Supply Business Plan 2021-2023



Source: Adapted by the Asian Development Bank from HHP Law Firm. <https://www.hhp.co.id/en/>

Figure 8: PT SMI Energy Transition Mechanism Country Platform



Source: Government of Indonesia, Ministry of Finance.

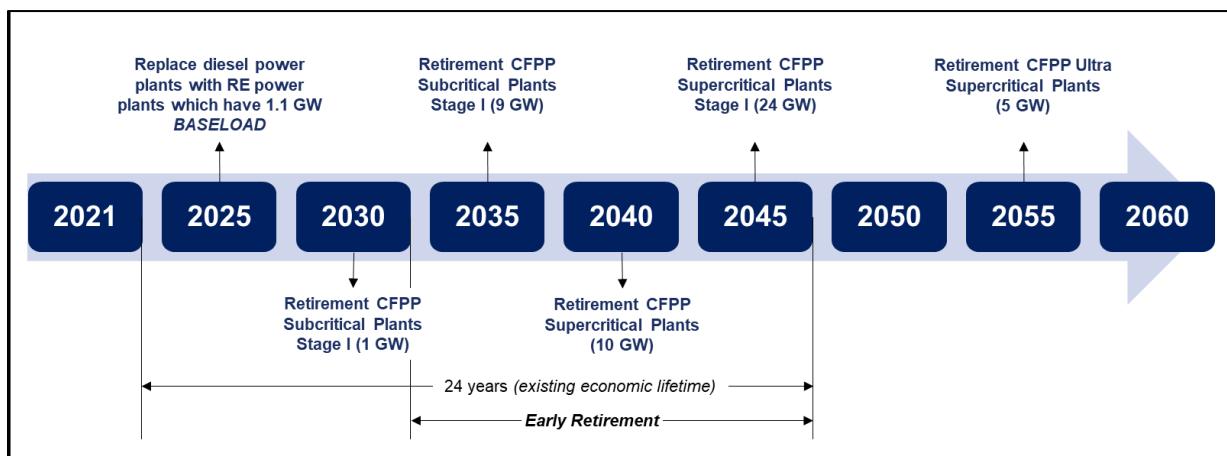
22. Specific to the clean energy transition, the MoF has assigned the SDG Indonesia One platform managed by PT SMI as the ETM Country Platform (ETMCP) secretariat and fund manager (see Figure 8). MoF, joined by ADB and the MSOE, announced the ETMCP at a soft launch event during the G20 Sustainable Finance for Energy Transition Roundtable on 14 July 2022. The ETMCP will play a critical role in coordinating various energy transition activities and channel fiscal support where needed. It has been tasked with deploying a range of traditional and innovative financing instruments such as debt (loans), equity, guarantees, bonds, and carbon finance. PT SMI will also play a critical role in implementing a just transition framework, as a key implementing and coordinating party for clean energy transition.

23. **Detailed path for CFPP early retirement.** In 2020, Indonesia had a total of 33.4 GW of operating CFPPs, with an additional 13.8 GW of CFPPs under various stages of construction. The bulk of these operating CFPPs are based in Java-Bali and Sumatra. Given surplus capacity reserves compared to historical levels and benchmarks, until about 2029-2030, the implication is that a reduction or delay in new generation capacity is appropriate until load growth resumes and catches up with pre-pandemic levels. This allows for the early retirement of less efficient, older power plants, which in turn could pave the way for a sooner scale-up of renewable energy than otherwise. Further, another effective strategy is to convert some of the middle-aged CFPPs to flexible operations for a few years to allow for their overall lower utilization (and concomitant lower emissions), while providing the grid services necessary for greater integration of variable renewable energy, with the eventual goal of retiring these CFPPs.²⁶

24. As such, it is possible for Indonesia to develop a CFPP phase-out plan comprising some pilot early retirements followed by a structured and staged annual phase out of the remaining plants over time. The plants that are being retired would then be taken through a typical coal-fired power decommissioning process, which includes termination of operation followed by retirement, decommissioning, remediation, and repurposing.

25. MEMR and PLN have worked together to devise such staged preliminary retirement plan, as summarized in Figure 9. It is expected that a formal retirement road map would be issued as a regulation as required under the newly issued RE PR in time for the G20 November meeting. Under the existing preliminary plan, PLN aims to retire the first 1 GW of power plants before 2030, and then carry out a series of retirements up until 2055, at which point the last unabated CFPP will be retired. This plan is designed to meet the requirements of the country's NZE 2060 goals.

Figure 9: PLN Pathway for CFPP Retirement to Support Net Zero Emission 2060



Source: Perusahaan Listrik Negara (PLN), Indonesia. <https://portal.pln.co.id/>.

26. Following the inception mission to prepare the ACT IP in March 2022, the GoI requested the ADB and WBG to convene a joint task force comprising the MoF, MEMR, and MSOE, and the Multilateral Development Banks (MDBs, i.e., ADB and WBG) to prepare a list of power plants that would be best suited for retirement before and after 2030. Priority lists prepared by PLN, MSOE and MEMR along with the technical analysis undertaken by ADB under its ongoing ETM feasibility study (see Appendix 1) were all used as inputs to the process. A range of technical, financial,

²⁶ Central Electricity Authority (CEA), Ministry of Power, Government of Indonesia. 2019. *Flexible Operation of Thermal Power Plants for Integration of Renewable Energy*. New Delhi.

environmental, and just transition-related criteria were used to evaluate and rank the power plants to create a “candidate pool” of CFPP assets with suggested dates for the termination of operation.

27. Retirements before 2030 – piloting the first 1-2 GW. The shortlist of nine units (totaling nearly 5 GW of capacity) that have been prioritized for retirement by 2030 are presented in Table 2. All the units are PLN-owned. Since the security of supply is a critical consideration when prioritizing assets to retire in the near-term, these plants are all connected to the 500kV network. The analysis suggests that Suralaya unit 1 and 2, and Paiton unit 1 are best suited within this shortlist, and it may be feasible to terminate their operations as early as 2024. Following this, they may be decommissioned and repurposed starting 2026, with the interim period being used for planning and permitting of the decommission and repurposing project.

Table 2: Proposed List of PLN Coal-Fired Power Plants for Retirement by 2030

No.	Facility / Unit Name	Capacity (MW)	Book Value (TR Rp)	Book Value (USD MN)	Book Value (USD MN/MW)	COD (Year)	Remaining Life	Decommissioning Year	Age at Decommissioning
1	Suralaya U1	400	5.85	390	0.49	1985	33	2055	70
2	Suralaya U2	400				1986	33	2055	69
3	Suralaya U5	600				1996	33	2055	59
4	Suralaya U6	600	45.20	3,013	1.67	1997	33	2055	58
5	Suralaya U7	600				1997	33	2055	58
6	Suralaya U8	625	8.60	573	0.92	2011	23	2045	34
7	Paiton U1	400	5.05	337	0.84	1993	33	2055	62
8	Paiton U9	615	6.50	433	0.70	2012	23	2045	33
9	Adipala	660	12.30	820	1.24	2015	23	2045	30
Total		4,900	83.50	5,567					

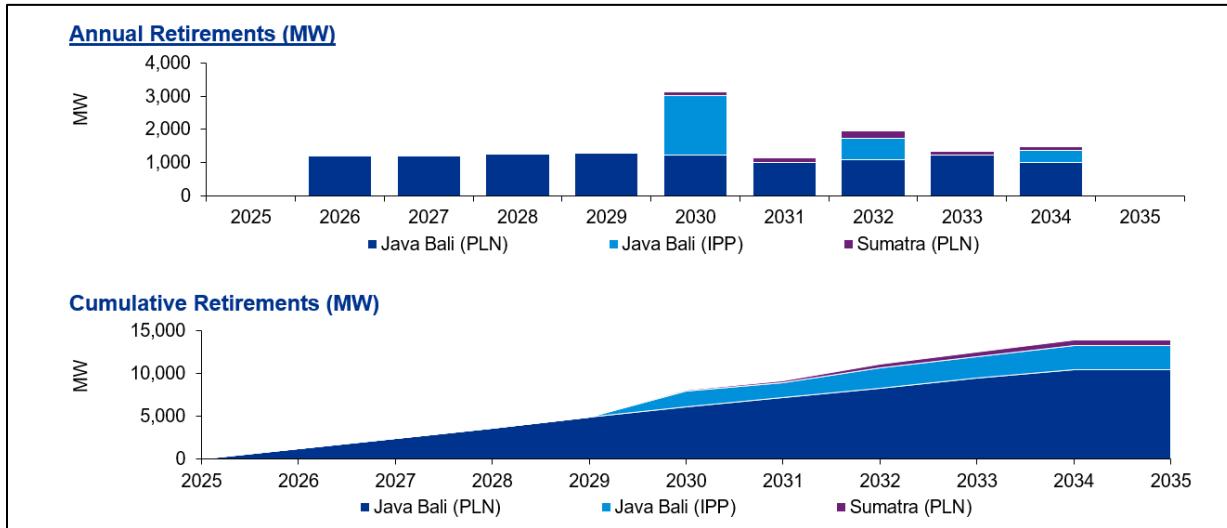
Note: Book values by unit of capacity vary according to numerous factors, which may include initial and maintenance capex, revaluations in line with PLN accounting practices, age and accumulated depreciation.

Source: Perusahaan Listrik Negara (PLN), Indonesia. <https://portal.pln.co.id/>.

28. Post 2030 – medium term. CFPPs suitable for retirement post-2030 include plants owned by PLN and IPPs. While the joint task force has identified power plants suited for retirement post 2030, it is expected that the early retirement plan for CFPPs that is currently under development by MEMR/PLN would provide further details on the sequencing of the retirements, especially of the PLN plants. The early retirement schedule of the IPPs would ultimately depend on the willingness of the private owners. As an illustration, Figure 10 provides a summary presentation from the ADB ETM²⁷ feasibility analysis (Appendix 1) of a CFPP retirement road map out to 2035 for Indonesia with annual targets segregated by grid systems and asset ownership. This roadmap was designed to allow for the retirement by 2035 of approximately half the operating CFPP fleet of the Java-Bali and Sumatra grids in that year.

²⁷ The Government of the Republic of Indonesia, the Government of the Republic of the Philippines, and the Asian Development Bank (ADB) announced a partnership in November 2021 at the 26th UN climate change conference (COP26) to design and launch an Energy Transition Mechanism (ETM) to accelerate the transition from coal to clean energy in Southeast Asia, in a just and affordable manner. Under the partnership with Indonesia, ADB is currently engaged in carrying among other things, identifying through a feasibility study, a pool of candidate coal-fired power plants for early retirement/repurposing; initiating the establishment of an ETM Fund/Vehicle through the issuance of a request for concepts from the private sector; and establishing and operationalizing the ETM Partnership Trust Fund to be administered by ADB; and catalyzing active participation from G-7 countries (Just Energy Transition Partnership or JETP). (See Appendix 7 for further detail.)

Figure 10: Road Map for ~14GW of Early Retirement by 2035



IPP = independent power producer, MW = megawatt, PLN = Perusahaan Listrik Negara.

Source: Asian Development Bank ETM Study.

29. RE scale up – Role of private sector, innovation and leverage of resources. Power generation is open to IPPs, and the government is introducing reforms to expand private sector investments. While some older IPPs will be explored for early retirement, the RUPTL provides opportunities for IPPs to develop 56% of the 20.9 GW of renewable energy capacity to be added before 2030, implying the need for nearly US\$6 billion in commercial debt financing for new infrastructure.²⁸ PLN does not generate sufficient cash flow to fund significant investments and remains largely dependent on borrowing to fund investments.²⁹ To the extent concessional climate finance can support the crowding in of public and private capital to support energy transition works in an inclusive, holistic and gender-balanced manner, while minimizing environmental and social risks associated with capacity expansion, the greater the likelihood of a successful commercial scale up of RE capacity in the medium term. The accelerating expansion of renewable energy capacity will inevitably require skilled and trained workforce providing an opportunity to increase the number of women in the energy sector and to transition workers impacted by the retirement of CFPPs.

30. Future RE sector development considerations. While the RE PR provided strong endorsement for RE scale up (including the important steps of (i) de-linking renewable energy pricing from the average cost of generation of the grid heavily based on subsidized low-cost coal, (ii) supporting competitive procurement for certain renewables technologies, and (iii) codifying the moratorium on coal) it may not directly address a potential structural challenge related to local content that has purportedly been an ongoing bottleneck for RE development. The National Electricity Law requires the prioritization of domestic products and services when developing generating assets. The GoI will continue to review options to support the RE scale up and address these issues alongside sector-wide capacity building, including R&D support.

²⁸ HHP Law Firm. *Client Alert - PLN's New 2021 - 2030 Business Plan: High hopes and 'greener' projects*. October 2021. <https://legalcentric.com/content/view/169264>.

²⁹ PLN has a public service obligation to provide affordable electricity to the people of Indonesia and receives compensation from the government for selling power below the electricity supply cost for certain demographics.

2.4 Just Transition, Gender and Safeguards Status Quo for Clean Energy Transition

31. **Gol commitment to a just transition.** The Gol is strongly committed to a just and affordable transition informed by wide stakeholder consultation that focuses on “(i) stability of the availability of vital essential services such as electricity, (ii) stability of energy prices, food, and public transport, (iii) social protection for the poor and vulnerable, and (iv) the application of sustainable development principles.”³⁰ A just transition of the coal sector is critical due to the role coal plays as a source of employment, public and private revenue, and power in Indonesia. If the transition is not well-managed, potential adverse impacts are likely to be felt throughout the country. This could include direct and indirect impacts on formal, informal and contract workers, their families and communities, as well as induced impacts on communities and the economy due to reduced spending and government revenue, and potential electricity price rises. Women (especially considering intersectional identities of Indonesian women) and other marginalized groups—minority ethnic groups, rural communities, and youth - are particularly at risk. A just transition needs to consider impacts from power generation to coal mining, and related industries up and down the value chain, such as coal transport, manufacturers (including small and medium-sized enterprises (SMEs)) and other formal and informal vendors (including street vendors and sex-workers).

32. Just transition is not only about managing negative impacts, but also taking advantage of opportunities to improve livelihoods and drive growth and sectoral transformations through green industry diversification, promoting new sustainable business models, entrepreneurship, and cleantech innovation, reskilling and upskilling, strengthening social protection, and education reforms. Strong Gol commitment to the just and affordable transition anchors discussions on energy transition in Indonesia, and this can increase public buy-in for climate change action and higher climate ambition. Indonesia’s NDC calls for the “creation of decent work and quality jobs for an effective and inclusive transition to low greenhouse gas emissions and climate resilient development.”³¹ To do so, Indonesia aims to focus its efforts on tackling challenges in low-carbon development, creating decent jobs by promoting economic activities with low GHG emissions, addressing the needs and challenges of disadvantaged groups, and enhancing social participation to improve work standards and conditions, including facilities, services, and equitable wage provided for workers. Just transition is also a strategic matter in the country’s Long-Term Strategy for Low Carbon and Climate Resilience 2050 (LTS-LCCR)³² as it relates to workers’ transition, gender equality and women empowerment, intergenerational equity, and impacts on vulnerable groups, while recognizing the strategic role of Masyarakat Hukum Adat (MHA)³³ and local communities.

33. **Institutionalizing Just Transition.** Achieving a just transition requires upstream analytics and planning, development of a framework for managing just transition during implementation and protocols for monitoring. Further work will be done to involve non-energy ministries such as labor and education and establish inter-ministerial coordination on just transition. MoF has established an energy transition Steering Committee to oversee these coordination and collaboration efforts. Furthermore, as part of PT SMI’s appointment as ETM Country Platform

³⁰ Government of Indonesia. 2022. Indonesia G20 Presidency 2022 Prepares Roadmap, Policies, and Social Impact Mitigation Plan for Just and Affordable Climate Transition. News Release. 14 July.

³¹ Government of Indonesia. 2021. Updated Nationally Determined Contribution.

³² Government of Indonesia. 2021. Long-Term Strategy for Low Carbon and Climate Resilience 2050. <https://unfccc.int/documents/299279>.

³³ Masyarakat Hukum Adat are groups of people who have lived for generations in certain geographical areas in Indonesia because of ties to ancestral origins and strong relations with the land, territory, and natural resources. They have customary government institutions and customary law order in the territory.

Manager they will develop a just transition framework for energy transition – informing the development of a framework at the national level.

34. Gender in Energy and Mining. A key focus across development activities has been exploring gendered vulnerabilities alongside susceptibilities of the marginalized. Indonesia has a strong legal framework and regulations to mainstream gender and promote non-discrimination in the workplace that applies to the energy sector and extractives industry. Indonesia is party to international conventions on gender equality, including the United Nations Convention on the Elimination of All Forms of Discrimination against Women.³⁴ Since the issuing of a Presidential Instruction No. 9 Year 2000 on Gender Mainstreaming in National Development acknowledging the importance of improving the status and roles of women for national development, Indonesia has made significant progress in removing barriers to gender inequality. It has adopted regulations that provide equal opportunities, treatment, and equal pay for men and women. In 2021, Indonesia was ranked³⁵ as ‘moderately improving’ towards Sustainable Development Goal 5 – gender equality and women’s empowerment. The GoI’s National Mid-Term Development Plan (RPJMN) 2020-2024 reflects country’s gender agenda, by enlisting gender equality as one of the six aspects that should be mainstreamed into national development strategy.

35. Energy sector institutions also enhanced their corporate gender mainstreaming commitments by creating the enabling environment for advancing women in the energy sector. In 2021 PLN established the CEO Statement of Support for the Women’s Empowerment Business, while also encouraging other energy sector leaders to do the same. To prevent and address gender-based violence in the workplace, PLN issued a Board of Directors Directive³⁶ concerning Protection, Prevention, and Treatment of Sexual Harassment, which also applies to third parties (e.g. outsourcing, consumers, business partners, and consultants). Aligned with the MSOE enhancement program on women’s empowerment, PLN formed the Srikandi Task Force Team which aims to build awareness of all parties on competency-based career development and employee performance and to enhance the capacity of women within PLN. In April 2022 PLN issued a Statement of Corporate Intent committing to mainstreaming gender. More can be done to design and advocate for non-biased gender equality policies and regulations across the energy and extractive sectors.

36. Multilateral development bank Support for environmental and social governance in the energy sector. ADB and the World Bank are providing technical assistance to support the GoI’s energy reform agenda working with CMMI, MEMR, MOEF, and MOF, as well as energy SoEs. In the geothermal sector, this support included dedicated assistance to close the gaps in the regulatory framework and to develop guidelines on geothermal project selection, design, and implementation and best practice management of environmental and social risks in forest areas. Support has also been provided to GDE to develop a corporate Environmental and Social Governance (ESG) policy and to report progress on commitments in an annual Sustainability Report.

37. ADB and World Bank have also been supporting PLN to establish its corporate ESG strategy and to develop Environmental and Social Management Systems (ESMS) to enable better alignment with investors requirements, improve overall environmental and social risk management, and improved reporting of progress delivering on ESG commitments and

³⁴ Yuli Adiratna, the Indonesian Ministry of Labor, Director of Labor Inspections Norms, on a Women in the Extractives in Indonesia Seminar in 2020.

³⁵ <https://dashboards.sdgindex.org/profiles/indonesia>

³⁶ PLN BOD Directive No. 0015.P/DIR/2020

targets. The ESG strategy under preparation aims to improve PLN's performance across seven key areas: (1) climate change mitigation and adaptation; (2) environmental management with circular innovation; (3) ecological harmony and biodiversity; (4) gender mainstreaming; (5) community engagement and social protection; (6) ESG governance; and (7) ESG reporting and communication. Implementation of the ESG framework will enhance PLN's profile in the sustainable financing market and strengthen investor confidence in PLN's ability to adequately manage environmental and social risks. PLN plans to launch both the ESG Strategy and the ESMS by the end of 2022. The latter will be pilot-tested under the proposed Indonesia Sustainable Least-cost Electrification (ISLE) P4R and under other future World Bank funded projects such as the Green Financing Facility with a view to gradually expanding the application to other foreign-funded projects. The MDBs' plan to provide sustained support to PLN in establishing and operationalizing the ESG and ESMS and developing the capacity of PLN staff. Together, the ESG framework and ESMS will help PLN secure funding to cover the cost of energy transition.

38. On the mining side, a shrinking CFPP fleet will underscore the pressure faced by the coal mining industry across the country. Systematic mine closure is a relatively new concept in Indonesia; reclamation requirements were first introduced in 2010 and continued to be refined through to 2018.³⁷ There are provisions that outline the requirements and guidelines for the preparation of Mine Closure Reclamation Plans (MCRP). There are also legally binding requirements for progressive rehabilitation to be included in the mining plan and for the posting of environmental bonds or similar financial assurance methods, equivalent to the estimated cost of environmental rehabilitation and reclamation post-mining. However, the enforcement of these regulations had never been fully assessed and tested with regards to the effectiveness of the implementation of land rehabilitation requirements across the entire mining operators.

39. A World Bank Study in 2019³⁸ found that although legal and regulatory requirements are satisfactory, the implementation of these requirements needs to be improved. A significant finding of the study was that "Environmental and Social Impact and Mine Closure Management", was a shared priority for government and civil society, as both groups are concerned about mines that are yet to be reclaimed. However, the GoI has noted that there is limited funding for monitoring, especially in provinces. CSO respondents cited a number of issues including: inadequate and incomprehensive institutional skills; limited efforts of mining companies to conduct reclamation activities and to consult with communities when developing and updating the MCRP.

40. Overall, a strengthening of regulatory and governance frameworks and strategies and capacity-building for agencies are needed, with designated responsibility for planning and management of environmental and social aspects of CFPP and mine closures, decommissioning and development of economic diversification including renewable technologies. Local governments will need support to develop their local economic development strategies, building on a sound assessment of risks and opportunities associated with CFPP and mine closures, to create gainful jobs while ameliorating the impact of job losses and reduction in demand especially for vulnerable groups. Targeted efforts would be made to include women and marginalized groups in development of these strategies and ensure inclusion of activities addressing their specific needs.

³⁷ The Government Regulation no. 78/2010 on Reclamation and Post-Mining continues to be updated. The government regulation was implemented with a ministerial regulation in 2014, which was then later revised in 2018 with Ministry for Energy and Mineral Resources (MoEMR) Regulation No. 26/2018 on the Implementation of Good Mining Practices and Supervision of Mineral and Coal Mining.

³⁸ World Bank. 2019. Indonesia Mining Sector Diagnostic (MSD) Report (<https://openknowledge.worldbank.org/handle/10986/33087?show=full>).

3. PROGRAMS – Description and Financing Proposal

3.1 Overview of Process and Collaboration across MDBs and Stakeholders

41. **ADB and WBG engagement with the GoI.** Since October 2021, when Indonesia was selected as an ACT pilot country and was invited to develop its ACT IP, the MoF has worked together with key line ministries to diligently collaborate with the ADB, WBG, and civil society organization (CSO) stakeholders to establish a strong foundation for IP design and development. Table 3 outlines key milestones in the design process and presents where key IP workstreams are today. For a review of stakeholder consultations during the design process, see Appendix 3.

Table 3: IP 2022 Design and Development Timeline

Timeline	Goi, ADB and WBG	Just Transition	SESA
March 2022	Scoping mission		
June 2022	Presentation and discussion of 3-Component approach to investment; Briefing to donors through the Friends of Indonesia Renewable Energy (FIRE) Dialogue post MDB joint mission.	(i) MoF agreed as lead ministry for SESA and Just Transition. BKF (Fiscal Policy Agency within MoF) will be the single-entry point for JT. (ii) MoF to establish steering committees for national SESA and JT.	(i) National SESA workplan agreed with steering committee (ii) Update stakeholder mapping and agree stakeholder engagement plan with steering committee
Stakeholder Consultation on Plans to prepare Investment Plan (1 July 2022)			
August 2022	ADB and WBG discussions with Goi counterparts to refine project concepts (e.g., site selection, CFPP prioritization in roadmap to 2030 accelerated retirement)	Socio-economic impact analysis, research, and stakeholder consultation, to support development of just transition approach.	Workshop with stakeholders, CSOs and NGOs to launch National SESA (9 August 2022).
September 2022	(as above)	(as above)	BKF agrees to members of National SESA Steering Committee and Key Stakeholders
October 2022	MoF review of IP allocation and submission for TFC endorsement	JT approach for IP finalized	National SESA Scoping Workshop (4 October)
Stakeholder Consultation on Draft Investment Plan (3 October 2022)			
November 2022		(i) Initiate JT capacity development with PLN, PT SMI and BKF. (ii) Finalize research to support JT approach roll-out (ii) Finalize plant repurposing and/or mine closure roadmaps through stakeholder consultative process, incl. stakeholder engagement plan and communications strategy	National SESA Scoping Report Workshop (November or December)
Q1 2023			National SESA Workshop on draft SESA Assessment. Draft SESA Assessment for IP (January 2023) to be finalized by March 2023

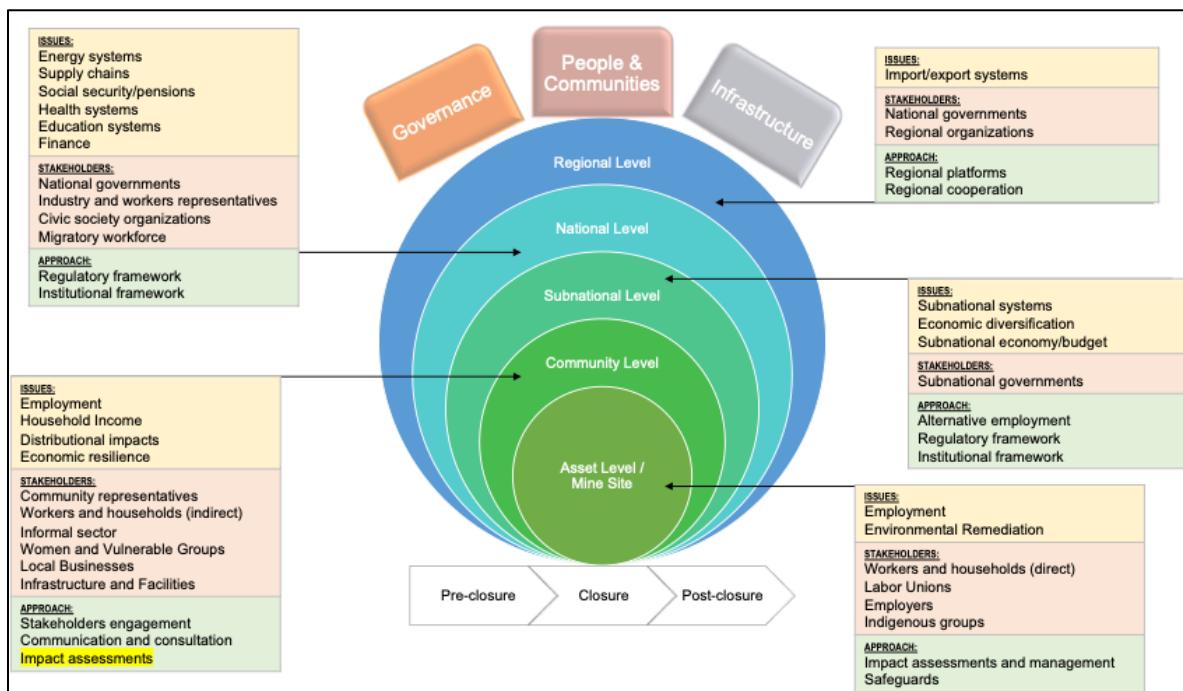
ADB – Asian Development Bank, BKF – Fiscal Policy Agency (within MoF), CFPP – Coal-fired power plant, Goi – Government of Indonesia, WBG – World Bank Group, PLN – national electric utility, MoF – Ministry of Finance, JT – Just Transition, SESA – Strategic Environmental and Social Assessment.

Source: ADB, WBG.

3.2 IP Crosscutting Priorities: Supporting Just Transition, Gender and SESA

42. **Just Transition Framework.** A comprehensive approach to a just transition considers potential socio-economic impacts across all levels, from the direct impacts that will occur at asset, or project level, through to impacts that could occur at a national, or even regional level as illustrated in Figure 11. In addition, it needs to consider how impacts will potentially change depending on the speed and scope of transition, for example, how quickly CFPPs are closed and how geographically close they are; the “multiplier effect”. Asset-level just transition is the most specific, targeting workers (informal, formal, contract) and households directly impacted by the closure of a CFPP or coal mine, as well as the community in the vicinity of the asset. Beyond that, an accelerated energy transition may have impacts at the subnational level, along the coal value chain and through the economy. At higher levels, more strategic issues and approaches need to be considered depending on the scale and timing of impacts as well as the strength of the institutions and policies in place to support the transition. For example, the national and subnational regulatory and institutional frameworks that support a just transition need to be considered to ensure they provide the enabling environment to support just transition in the country.

Figure 11: Just Transition Framework



Source: Asian Development Bank.

43. To achieve a just transition, countries must diversify local economies to compensate for lost revenues and jobs, navigate competing stakeholder interests and expectations, and properly address lasting labour and social impacts (including gender issues) in coal communities, all set against the backdrop of good environmental remediation and land and asset repurposing activities, in alignment with the CIF-ACT mandate. Proper planning across the three pillars of governance, people, and infrastructure well ahead of closure actions, and can help mitigate the negative impacts of a rapid transition and help set the stage for a new economic future. Critical to a just transition approach is understanding how positive early interventions can strengthen the enabling environment for just transition to avoid or manage impacts at the time of asset

closure. ADB and the WB have undertaken various assessments to inform the approach to just transition in the IP. The initial research and analyses underway provide a good understanding of the macro context for just transition in Indonesia, with indicative information on the key issues and potential scale of impacts. They highlight where deeper targeted assessment and analysis is required as the just transition framework is further developed and inform on what needs to be considered to ensure a robust framework. Key priorities going forward include: (i) identifying potential negative impacts and mitigation measures; (ii) identifying enabling interventions to capitalize on opportunities; (iii) ensuring robust policy and institutional arrangements; and (iv) ensuring transparency and inclusivity in the process. For a detailed overview of the ongoing ADB and WBG activities supporting IP just transition, see Appendix 4.

44. Gender mainstreaming in IP design. The proposed IP includes several actions to ensure that women participate equitably and fully in the ongoing energy transition. This includes work on critical policies, regulations, standards, or codes that explicitly include gender and other social factors. All projects will ensure that the mitigation of the coal transition on the majority of men employed in the sector does not ignore potential adverse impacts on women, which can lead to the reproduction of existing inequalities between men and women. The Women-led Coal Transition Mechanism (WOLCOT) resources are required to collect relevant data and increase the current understanding of the impact of coal transition and scaling up renewables on women.³⁹ The research could identify and inform required policy and programmatic interventions and technical assistance to relevant stakeholders in addressing necessary governance and policy-related gaps through a gendered lens. In addition to creating a space for policy dialogue (Component 4 of WOLCOT: Evidence generation and knowledge sharing), the proposed program includes a component that supports women's organizations to work with women affected by coal transition through development of leadership skills, including public speaking, negotiation, etc. to enable them to participate in policy dialogue as well as enhancing the capacity of existing women-led associations and coalitions in the energy sector, including renewables (Component 2: Capacity building). Activities within this IP will also include supporting women at the community level to develop locally led solutions that respond to the impact of the coal transition by empowering them to increase employment and entrepreneurship in green economy through funding and designing of approaches that start up enterprises in the energy sector (micro-finance institutions, early-stage ventures, MSMEs) (Component 3: Designing and piloting access to finance and training programs).

45. Strategic Environmental and Social Assessment (SESA) Approach. Implementing a clean energy transition will provide many environmental and socio-economic benefits and opportunities but may also present risks that could result in significant negative environmental and socio-economic impacts, if not effectively assessed and managed. An initial IP preparation grant is supporting a Strategic Environmental and Social Assessment (SESA) to help ensure environmental and socio-economic considerations are integrated in decision-making processes on energy transition, to make recommendations on improving the legal/regulatory and governance framework and to develop a Strategic Environmental and Social Management Plan (SESMP) outlining required implementation measures to mitigate identified impacts.

³⁹ Women-Led Coal Transition (WOLCOT) is a grant mechanism developed by CIF under the ACT program in FY2022. Its purpose is to enhance women's climate leadership and effective participation in the design, decision-making, and implementation of coal transition strategies and plans in the countries that are eligible for ACT.

46. The national SESA builds on the findings of a regional SESA scoping study undertaken by ADB between January and August 2022.⁴⁰ The national SESA will assess the environmental and socio-economic opportunities, risks, and impacts (positive and negative) associated with the CIF-ACT energy transition investments proposed up to 2030 and investments associated with the MEMR/PLN energy transition plan post 2030. The National SESA involves two phases: Scoping (July-November 2022) and Assessment (December 2022- June 2023). More details are provided in Appendix 5.

47. **SESA and Stakeholder Engagement.** Energy transition stakeholders comprise many groups with diverse interests and objectives. A Steering Committee for the SESA has been established, led by MOF with representatives from key Line Ministries/SOE_s, CSOs/NGOs and academics. Stakeholder consultation is a fundamental principle of SESA to provide a platform to engage on energy transition issues and to identify differing views. Opportunities will be provided throughout the SESA process for stakeholders to present their perspectives on energy transition, to identify and validate key issues, and to comment on draft documents prepared for the SESA. This input will be through workshops, focus groups and key informant interviews undertaken at national to local levels. The SESA will integrate the outputs of stakeholder engagement with the work on just transition. An additional important consideration for the SESA will be the inclusion of a gender lens and evaluation of gender-related risks and impacts of energy transition implementation. Key findings of the regional SESA scoping study were presented at a workshop with key stakeholders during the launch of the national SESA on 9 August 2022 in Jakarta. Initial findings from the national SESA scoping study were discussed and refined with stakeholders in the SESA scoping workshop planned for 4 October 2022. A further workshop is planned before the end of the year to consult on the national SESA scoping report, by March to consult on the objectives, scenarios, and impact assessment and by May to consult on the SESA and SESMP draft report.

48. **A focus on stakeholder engagement to enhance women's participation in the clean energy transition.** Existing groups such as Women in Mining and Energy, Indonesian Women's Coalition, Women in Geothermal (WING) Indonesia Association play important roles in building women coalitions, collective action, and power to strengthen female involvement in the decision-making process of the energy transition. Their participation is critical to advancing the gender agenda in an accelerated coal retirement and RE scale up scenario. These stakeholders will continue to be engaged and invited to the SESA and just transition assessments to better formulate gender-just and inclusive frameworks and approaches planning of options, mitigation measures, and relevant livelihood restoration strategies. They can help guide the individual project level assessments and measures in line with MDBs normal operational processes (i.e., those related to safeguards, gender and just transition due diligence and planning, requirements for monitoring and reporting of outcomes) and broader mandate to engage women's rights and gender equality organizations working on sociocultural and systemic gender inequalities to build capacity on just transition and support equitable outcomes. Support from WOLCOT grant mechanism will help to institutionalize the engagement with stakeholders initiated through SESA and just transition assessments, so that engagement continues throughout the implementation of the IP (WOLCOT Components 3, 4 and 5). This would enable closing feedback loops between inputs provided by community stakeholders, and actions taken in the context of the projects.

⁴⁰ ADB. 2022. *Regional: Accelerating the Clean Energy Transition in Southeast Asia: Regional Scoping Report for Strategic Environmental and Social Assessment Applied to the Energy Transition Mechanism in Southeast Asia. Technical Assistance Consultant's Report.* Manila. <https://www.adb.org/sites/default/files/project-documents/55124/55124-001-tacr-en.pdf>

3.3 IP Financial Plan and Instruments

49. The IP is structured to maximize transformational change by addressing three critical investment pillars: (i) Governance; (ii) People and communities; and (iii) Infrastructure through three parallel investment components as outlined in Table 5. Key enabling environment policy measures and strengthening of governance and institutional capacity are addressed through Project 2.1 led by the WBG in engagement with MEMR and PLN and ADB-led Project 1.1. Critical activities piloting “people-centric” programs are built into:

- (i) Project 1.1, a PLN RBL being designed by ADB, where the accelerating expansion of renewable energy capacity will among others provide an opportunity to increase the number of women in the energy sector and to transition and re-train PLN workers impacted by the retirement of CFPPs;
- (ii) Project 2.2, a multi-year Just Transition and Repurposing investment on the plant and coal mining side by the WBG address transformation of workers, broader community impacts and alternative livelihood needs;
- (iii) Project 2.3 which allows ADB to engage with leading Indonesian universities requesting support to develop and scale clean energy centers of excellence; and
- (iv) Project 1.2/3.2, an ADB TA to provide capacity development support to PT SMI’s ETM Country Platform Just Transition Framework which will, in turn, govern the JT pathways in the deployment of on-lent CIF and ADB funds to support coal-phase out and RE scale up.

The balance of projects deals mainly in direct infrastructure investment across the three components.

Table 5: Indicative Financing Plan (\$ Million)

	MDB Sector	ACT	MDB	Other/ Private	Gol ^a	TOTAL	Pillars		
							Governance	People & Communities	Infrastructure
Component 1: Accelerated Retirement of Coal Plants									
1.1	PLN RBL (early retirement of ~1 GW)	ADB Public	50	600	300	[600]	1550	✓	✓
1.2	PT SMI ETMCP - Facility 1 (PLN Sustainability-Linked Loan)	ADB Public	50 1 (grant)	50	100	[250]	451		✓
1.3	IPP CFPP early retirement program	ADB Private	100	400	300 ^b	N/A	800		✓
Component 2: Governance, Just Transition and Repurposing									
2.1	PLN/MEMR Energy Transition P4R	WB Public	30 5 (grant)	400	0	[100]	535	✓	✓
2.2	Just Transition & Repurposing Investment Project (Phase 1 & 2)	WB Public	180 5 (grant)	415	0	[60]	660		✓
2.3	PRIME STeP	ADB Public	9 (grant)	139	0	[21]	169		✓
Component 3: Scaling Up Renewable Energy & Storage									
3.1	Dispatchable Renewables Program	IFC Private	70	140	350	N/A	560		✓
3.2	PT SMI ETMCP - Facilities 2 & 3 (Standby Facility & RE Loans)	ADB Public	100	100	300	N/A	500	✓	✓
	TOTAL		600	2244	1350	[1031]	5225		

Note: CFPP = Coal-fired Power Plant, ETMCP = Energy Transition Mechanism Country Platform, IPP = Independent Power Producer, P4R = Program For Results, RBL = Results Based Loan, PRIME STeP = Skills Development and Center of Excellence on Energy Transition Program, RE = Renewable Energy.

Source: ADB, Gol (Ministry of Finance, PLN, PT SMI, Ministry of Education, Ministry of Energy and Mineral Resources) and WBG.

^aGol contribution figures subject to further discussion of program or project needs as well as annual budget approvals or endorsements. These numbers do not include broader MoF corporate support for implementing agencies such as PLN and PT SMI.

^bTo be confirmed in future market sounding.

50. **Financial instruments.** Projects benefiting from the public sector lending terms will follow the financial terms and conditions for public sector concessional loans for ACT financing. As of the fourth quarter of fiscal year (FY) 2022, the public sector concessional lending terms for Indonesia are as follows (Figure 12). Lending rates follow International Development Association

(IDA) terms and are determined based on IDA effective service charge rate in the FY quarter. The effective CIF lending rate for public sector projects will be determined and fixed at the time of loan agreement.

51. For private sector projects, MDBs will seek to retain flexibility (in terms of approach, project selection, and application of CIF funds) to most effectively accelerate implementation and maximize impact on both a project-by-project and IP-wide basis. The financial instruments (e.g., concessional senior and subordinated debt), pricing and terms of the concessional funds will be tailored for each individual transaction to address the specific needs of each project, while adhering to the DFI Enhanced Blended Concessional Finance Principles for Private Sector operations.

Figure 12: Climate Investment Fund Public Concessional Loan Lending Terms (FY22 Q4)

	IDA-only Regular Service Charge [A]	Applicable percentage of IDA-only Regular Service Charge [B]	Applicable CIF Lending Rate for Tier 3 countries [C=A*B]	Maturity (years)	Grace period (years)	Principal repayments
TIER 3A (USD)	1.22%	75%	0.92%	up to 20	8	Equal semi-annual installments after grace period
TIER 3B (USD)	1.22%	90%	1.10%	Up to 30	8	Equal semi-annual installments after grace period

FY = fiscal year, Q = quarter.

Source: World Bank. IDA Financial Products. Lending Rates and Fees.

<https://treasury.worldbank.org/en/about/unit/treasury/ida-financial-products/lending-rates-and-fees>

Note: Tiering refers to Indonesia's pricing status for CIF as a lower middle-income country still qualifying for development assistance.

52. **Financial imperative.** The IP is structured to provide concessional financial support to key stakeholders whilst fostering opportunities for crowding in financing from both the public and private sectors to address a unique stalemate situation whereby:

- There is oversupply in the largest demand center of the country till the end of this decade, which makes it hard for new renewable energy capacity to make inroads.
- PLN, as a national utility, has a 16 GW CFPP fleet and can continue to operate its plants under current financial terms unless otherwise incentivized as they are compensated on a cost-plus basis (i.e. the MoF pays a subsidy to PLN to ensure it is fully compensated for its annual operating costs, inclusive of a minimal predetermined return).
- CFPPs owned by IPPs operate with strong, bankable long-term PPAs with fixed tariffs ensuring a fixed return to sponsors, and do not suffer from "stranding" pressure

As such, without an actual financial incentive, no amount of political will would be sufficient to accelerate the first set of CFPP retirements and repurposing projects (from the original 2030 target to 2024-2025) and initiate the transformational change required for the transition from coal to clean energy.

3.4 Component 1: Accelerating Retirement of Coal-fired Power Plants

53. While the GoI is increasingly moving towards cleaner forms of energy, legacy infrastructure development programs and energy access priorities mean that coal-fired power still features prominently in the electricity mix. Positive change is already happening, but not yet at the required scale or pace. In Indonesia especially, the average age of the CFPP fleet is 11.9 years. If not retired from operation, the CFPPs fleet will remain for decades—blocking meaningful pathways to reduce emissions and make space for renewable energy. Furthermore, it is evident if emissions from existing CFPPs are not addressed, Paris Agreement targets will not be met. To

this end, Component 1 Projects are designed to accelerate the retirement or repurposing of qualified CFPPs ~5 years ahead of schedule by using concessional climate finance to support project operators absorb the early termination of revenue flows and repurpose resources for energy transition.

54. Project 1.1 – PLN RBL. The overall objective of the RBL program is to help PLN accelerate the development of renewable energy as an alternative source of electricity supply to reduce electricity supply from CFPPs. The first phase of this RBL program (US\$50m CIF-ACT, US\$600m ADB, US\$300m KfW) will focus on activities and expenditures on (i) increasing the share of electricity supply from renewable energy sources (i.e. main driver being the termination of operations and retirement of ~1-2 GW of CFPP before 2030, ~5 years ahead of schedule), (ii) expanding the smart transmission grid infrastructure, and (iii) strengthening PLN institutional capacity to manage a just energy transition including how to integrate just transition into internal policies and procedures. PLN has already shortlisted 9 candidate CFPPs in Java-Bali grid slotted for retirement by 2030. These 9 plants were included in ADB's socio-economic impact analysis, and the results will be used to support PLN on just transition. While ADB will be supporting just transition activities related to the assets, the RBL is also an opportunity to promote broader institutional change throughout PLN, support activities such as workforce and skills planning and integration of just transition into ESG, paving the way for further accelerated retirements in the coming decade.

55. Project 1.2 – PT SMI Indonesia ETM Country Platform – Facility 1 (PLN Sustainability-Linked Loan). ADB proposes to provide a financial intermediation loan (FIL) (US\$150m CIF ACT, US\$1m CIF ACT grant, US\$150m ADB, commercial financing US\$400m) with three separate facilities from ADB to the GoI, which will be re-lent to PT SMI as the ETMCP Manager to support the acceleration of Indonesia's clean energy transition across the spectrum of activities identified in the CIF-ACT IP for Indonesia. The financial intermediation lending modality is best suited for the proposed project, as it: (i) embeds long-term capacities to develop project pipelines at the national financial intermediary level; (ii) leverages local knowledge and relationships to build confidence among potential subproject sponsors; and (iii) can quickly provide financing to a large number of subprojects. Facility 1 will provide local currency (IDR) commercial co-financing to support PLN in the accelerated retirement of its CFPPs. PT SMI would swap CIF-ACT funds into local currency for its corporate financing facility to PLN. The facility will complement the proposed PLN PBL (Project 1.1) by supporting the mobilization of commercial co-financing. The PLN RBL will serve a dual purpose to provide the monitoring and evaluation required in the Design and Monitoring Framework of the financial intermediary loan to PLN. The grant component of US\$1 million would be used to support the establishment and pilot implementation of the PT SMI Just Transition Framework, and capacity building road map to implement the facilities. Funds will also be used to support stakeholder engagement to ensure participatory and transparent process in the framework development. (See Paragraph 62 for further detail on Facilities 2 and 3.)

56. Project 1.3 – IPP CFPP early retirement program. ADB has been canvassing the market by engaging with IPPs that are interested in early retirement of CFPPs. ADB proceeded to sign non-disclosure agreements with IPPs and is pursuing discussions accordingly. The first proposed project in the program would involve a US\$300 million refinancing (US\$50m CIF ACT, US\$250m ADB) under a commitment to retire the CFPP several years before the end of the PPA (i.e., accelerated retirement). Just transition requirements are integrated into the proposed project, recognizing that the IPP will need to coordinate with government on the issue. CIF-ACT concessional financing terms will be reviewed in accordance with other private sector projects as the project structuring is finalized. Through the proposed refinancing, the first project aims to open

the pathway for further coal-fired IPP early retirements by demonstrating the tangible willingness of PLN and the broader GoI to operationalize the CFPP early retirement roadmap post-announcement.

3.5 Component 2: Governance, Just Transition and Repurposing

57. International best practices for coal mine and plant closure have shown that a phased plan for public concessional resources are needed for these projects as they aim to address structural impediments to the energy transition and coal phase down, and cover costs to decommissioning and repurposing, including just transition costs, that are not able to be recouped through future revenue flows.

58. **Project 2.1 – PLN/MEMR Energy Transition Program for Results (P4R).** Under this activity, the World Bank will support PLN and the Government expenditures (US\$30m CIF ACT, US\$5m CIF ACT grant, US\$400m IBRD) necessary to achieve energy transition and the Government's Net-Zero Roadmap through a results-based loan to provide implementation support on four components (i) accelerating decarbonization (including modeling analytical pathways to decarbonization and associated policy frameworks and reforms needed to achieve a just transition); (ii) scaling up renewable energy through replacement RE, storage capacity and grid enhancements to take the place of fossil fuel generation; and (iii) governance and institutional reform, including capacity building and training programs on different aspects of Energy Transition relevant for government counterparts and improving transparency and efficiency of the sector; and (iv) supporting sector sustainability. The P4R will build upon years of analytical work by the World Bank around topics of climate change, decarbonization, sector financial sustainability and baseline assessments on the Just Transition.

59. **Project 2.2 – Just Transition and CFPP and Coal Mines Repurposing Investment Projects.** The WB aims to support PLN (US\$180m CIF ACT, US\$5m CIF ACT grant, US\$415m IBRD) for projects comprising: (i) decommissioning and closures: demolition, rehabilitation, and reclamation of land from coal mines and CFPPs; (ii) repurposing: development of renewable energy, storage, and ancillary services; and (iii) mitigating economic and social impacts.

60. **Sub-component 1: CFPP Repurposing.** The World Bank, alongside PLN, will together select 2-3 sites for decommissioning and repurposing through a just transition. The decommissioning component includes abatement, removal of regulated materials, structural demolition, remediation, and restoration of a site suitable for beneficial use. This repurposing component will look at different possible technologies, such as solar plant for energy; biomass plants for both energy and capacity; pumped hydropower or battery storage for providing frequency control ancillary services, energy storage, and capacity; and synchronous condensers for delivering reactive power and inertia. The requirements for additional renewable and ancillary services on the existing site will need to be carefully assessed through a planning study, which in turn will also determine the combination of technologies and their sizing best suited for the site. It also includes human resource planning for the workforce transition. The WB has continued dialogue with stakeholders and fielded a technical mission in August 2022 to confirm the sites to be targeted under the project and is currently undertaking the technical studies needed to determine the most suitable sites and repurposing options.

61. **Sub-component 2: Mine Closure.** Through collaboration between the industry and the GoI, two repurposing pilot projects in the mining sector have been identified, which would help kick start the repurposing of coal mines under a Just Transition approach in Indonesia, providing critical learning opportunities and acting as catalysts for further action on mine closure and

repurposing. The following projects have been identified for further probing and investigation of their feasibility:

- Project 1 (Solar Power) - Development of a solar power plant on post-mining lands, as well as complementary investments in community and worker education programs on energy transition and sustainability
- Project 2 (Local Economic Diversification) - Development of post-mining lands into destinations for tourism, education, and other commercial activity, to drive sustainable regional economic development and enhanced community amenity as the region moves away from coal dependency.

62. **Project 2.3 – PRIME SteP.** The PRIME STeP project supports the longer-term energy transition with a focus on higher education and other human resource development as part of a just transition. The ADB project (US\$9 million grant, US\$139m ADB) intends to support R&D, innovation facilities, improving the innovation ecosystem, and strengthening the R&D and institutional capability of science and technology parks operating under the nation's premier higher education institutions. The project directly provides workers with the means to access sustainable and decent livelihoods. The grant component will seek to expand the existing engagement scope through (i) targeted R&D for new energy technologies (i.e. storage systems and photovoltaic cells) commercialization with the involvement of private sector companies and start-ups; (ii) deployment of online and offline solar photovoltaic and battery storage trainings targeted to support labor transitions underway, (iii) a jobs and skills study to assess supply and demand for upskilling/re-skilling in Indonesian labor market with respect to a just energy transition, and (iv) establishing Centers of Excellence for the clean energy transition. The project also serves to demonstrate the importance of mobilizing investment in key non-energy sectors (e.g., education, health) aligned with national energy transition planning to contribute to a just transition. The PRIME STeP project is at an advance stage of processing. The MOU was signed by the GoI in September 2022, loan negotiations held in October 2022, and the board approval and loan signing are tentatively scheduled for December 2022.

3.6 Component 3: Scaling Up Renewable Energy + Storage

63. **Project 3.1 – Dispatchable Renewables Program.** Under the Program, the CIF-ACT funds will be utilized to facilitate private sector financing for a series of RE and storage (RE+Storage) projects through project finance structures and sustainability linked loans to private sector clients. Through these projects, IFC will aim at establishing track record of private sector financing of dispatchable RE capacity in the country. As replacing thermal capacity requires significantly larger installed RE capacity (for equivalence on generated-power basis) that comes at notably higher cost (due to expensive energy storage options), IFC is looking for ways to rapidly scale up the dispatchable RE to drive down the costs and enable coal decommissioning at scale. For that, IFC is engaged with existing utility clients to support the transition with carefully calibrated financing packages that includes a combination of commercial and concessional funds in a phased manner. To address the need for much larger scale of replacement RE capacity, IFC will focus on both repurposing existing CFPF sites as well as supporting RE generation scale up in other areas. Potential RE+Storage that have been identified include ground mounted solar PV, waste-to-energy, floating solar PV, wind, rooftop solar projects, as well as various storage technologies. For the effective utilization of concessional funds and providing targeted support to high impact projects, IFC is exploring various financing structures, including traditional project finance approach and sustainability-linked financing. The latter is designed to incentivize the borrower's achievement of environmental, social, or governance targets through pricing incentives. Sustainability linked finance allows borrowers to highlight sustainability commitments

to their existing investor bases, while attracting a wider pool of investors interested in impact and sustainable investing.

64. Project 3.2 – PT SMI Indonesia ETM Country Platform – Facilities 2 & 3 (Standby Facility and RE Loan Facility). As stated in the latest PERPRES 112/2022, the MoF is charged with supporting the scale-up of RE financing through fiscal incentives (e.g., viability gap financing, credit enhancement facilities, standby facilities). Those fiscal incentives will be made available to the wider market under Facility 2, the Standby Facility for Renewable Energy Projects. As an example, in January 2022, PT SMI closed its first transaction under the newly launched Bond Supporting Financing Facility (CEF), which guaranteed the IDR750 billion (\$52m) Tamaris Hydro Bond I Year 2022 (issued by PT Tamaris Hidro), a facility structure for project bonds supported by an ADB technical assistance project. PT SMI's credit enhancement ensured an upgrade of the bond rating to AAA (local). Similar credit enhancement facilities can support the energy transition and RE scale up while bolstering the local currency bond market. As such, Facility 2 provides a unique opportunity for PT SMI to bolster MoF fiscal support for RE with ADB and CIF-ACT resources to (i) co-share risk in a de-risking instrument; and (ii) facilitate access to the sustainable bond market for RE assets (including future ESG bond issuances). Under Facility 3, PT SMI would provide direct commercial loans for RE infrastructure development, catalyzing other domestic and international co-financing. With the support of CIF-ACT concessional finance, PT SMI would be able to support a wider array of domestic and international developers in first generation RE and storage projects.

4. ADDITIONAL DEVELOPMENT ACTIVITIES

65. **Gol energy sector collaboration across development partners.** The Gol's principal development partners in the energy sector are the ADB, WBG, Japan International Cooperation Agency (JICA), and German development cooperation through KfW. The Governments of New Zealand, the United Kingdom, and the United States also provide support to the government on energy. ADB's policy-based loans for the Sustainable and Inclusive Energy Program have been the key tool for development partner coordination in Indonesia from 2015–2020. This dialogue includes the French Development Agency, JICA, KfW, Korea Exim Bank, and the World Bank. In 2019, the United States Agency for International Development started a wider development partner coordination meeting on energy, which it aims to hold biannually, and which included additional bilateral actors such as Denmark, and the Association of Southeast Asian Nations Centre for Energy. Regarding geothermal energy development, a focused development partner coordination mechanism has been in place since 2015, which brings together the key geothermal development partners, including ADB, French Development Agency, JICA, KfW, New Zealand, the United Kingdom, and the World Bank every 6 months. Key loans, grants, and technical assistance programs by the main energy sector development partners are on Table 6.

Table 6: Summary of Additional Development Activities

Development Partner	Project Name	Duration	Amount (million)
Energy			
ADB	Sustainable and Inclusive Energy Program, Subprogram 3	2018–2022 (pending)	\$500.0
	Sustainable and Reliable Energy Access Program	2021–2025	\$600.0
	Sustainable Energy Access in Eastern Indonesia: Electricity Grid Development Program (Phase 2)	2020–2025	\$600.0
	Geothermal Power Generation Project	2020–2024	\$335.0
	Sustainable and Inclusive Energy Program, Subprogram 2	2015–2017	\$400.0
	Sustainable Energy Access in Eastern Indonesia: Electricity Grid Development Program	2017–2021	\$600.0
AFD	Sustainable and Inclusive Energy Program, Subprogram 1	2015–2017	€140.0
	Sustainable and Inclusive Energy Program, Subprogram 2	2017–2018	€100.0
	Green Credit Line I	2015–2019	\$100.0
	Green Credit Line II	2020–2023	\$150.0
JICA	Hululais Geothermal Power Plant Project	2015–2021	\$6.0
KfW	Result-based Loan Sulawesi Nusa-Tenggara	2020–2024	€255.2
	Sustainable Hydropower II	2018–2026	€225.0
	Sustainable Hydropower I	2017–2025	€85.0
	Sustainable and Inclusive Energy Program, Subprogram 2	2017–2018	\$220.0
	1,000 Islands Renewable Energy for Electrification Program Phase 2	2018–2026	€69.7
	Geothermal 1, Kamojang Rehabilitation	2015–2021	€60
	Geothermal 1, Ulumbu and Mataloko Development	2018–2026	€150
World Bank Group	Development of Pumped Storage Hydropower in Java-Bali	2021–2027	\$610.0
	Indonesia Geothermal Resource Risk Mitigation Project	2019–2029	\$325.0
	Indonesia's Infrastructure Finance Development	2016–2022	\$8.3
	Geothermal Energy Upstream Development	2017–2025	\$50.0
	Power Distribution Development Program	2016–2020	\$920.0
	Indonesia Energy Sector Development Policy Loan	2015–2016	\$500.0
	Indonesia Second Power Transmission Development Project	2013 – 2019	\$138.0
	Geothermal Clean Energy Investment Project	2011 - 2018	\$175.0
	Pumped Storage Technical Assistance Project	2011 - 2021	\$620.0
	Indonesia Power Transition Development Project	2010 - 2019	\$225.0

ADB = Asian Development Bank, AFD = Agence Française de Développement (French Development Agency), JICA = Japan International Cooperation Agency, KfW = Kreditanstalt Für Wiederaufbau (German Development Bank).

Source: Indonesia Country Pipeline Meeting. 2022. Jakarta.

66. FIRE Dialogue. The Friends of Indonesia Renewable Energy (FIRE) Dialogue is a platform launched in 2021 for coordinated international support to the energy transition process in Indonesia, announced by the MEMR at COP26. FIRE is a collection of energy transition dialogues co-chaired by the MEMR of the Republic of Indonesia and the governments of the United Kingdom, Germany, and Denmark. The FIRE Dialogues have been formed to respond to Indonesia's request for greater international assistance in its low-carbon energy transition. Considering Indonesia's specific conditions, FIRE will develop plans that support accelerating coal phase out and reaching new renewable energy targets.

67. Just Energy Transition Partnership (JETP). At the UNFCCC COP26 in November 2021, the governments of South Africa, with France, Germany, UK, US, and EU—together forming the International Partners Group (IPG)—announced JETP to support South Africa's decarbonization effort in the context of domestic climate policy, including transitioning its economy towards cleaner energy sources. Chaired by the United Kingdom, the IPG undertook to mobilize an initial amount of \$8.5 billion over the next 3-5 years.

68. A new IPG/MDB JETP Finance Working Group has been formed, bringing together relevant MDBs and international partners supporting Just Energy Transition Partnerships, focusing on initiatives to mobilise finance for JETPs (both sovereign and non-sovereign). The Working Group will be chaired by Rachel Turner, the FCDO International Finance Director, and meets every six weeks to discuss progress and share lessons across all JETP countries.

69. The G7 countries have proposed to establish a JETP for Indonesia (INO-JETP) by the end of 2022 and specifically under the G20. This will be led by the US and Japan with support from Germany (as the G7 Presidency) and other G7 countries. The IPG holds biweekly meetings co-chaired by US Treasury and Japan MOF with active participation from all IPG members. ADB and the World Bank are invited as observers. The IPG is currently negotiating a joint statement (previously called political declaration) with GoI. In parallel the IPG is collecting inputs from members on a collective financial package that can be announced. The group is mainly in discussions with the Coordinating Ministry for Maritime and Investment Affairs (CMMI) but also in touch with MoF, MEMR and other ministries as well as PLN. Pak Luhut, CMMI Minister is GoI's official counterpart to Alok Sharma (COP26 President), John Kerry (US Special Presidential Envoy for Climate) and other high-level representatives for climate negotiations, while MoF is the focal ministry for climate finance including the CIF and the Green Climate Fund.

5. IMPLEMENTATION POTENTIAL WITH RISK ASSESSMENT

70. Table 7 presents a summary of risk, mitigants and implementation potential assessments for the CIF-ACT Indonesia IP as proposed.

Table 7: Implementation Potential and Risk Summary

RISK	MITIGATION	RESIDUAL RISK
Macroeconomic Instability: Prior to the COVID-19 pandemic, the trend in the value of the rupiah versus the United States dollar, and commodity prices for Indonesia's main exports, with the exception of gold, was downward. Nevertheless, real GDP had been growing at about 5% annually. COVID-19 resulted in a decline in real GDP growth to -2.0% in 2020, followed by an increase to an average of 4.5%–5.3% in 2021 as aggregate demand recovered and stabilized. ^a A prolonged pandemic and the Russia invasion of Ukraine may result in continued low or negative GDP growth and lower domestic and foreign currency revenues, entailing risks to macroeconomic and fiscal stability.	The GoI is instituting structural policy reforms to support growth and to reduce reliance on near-term macroeconomic stimulus. ADB and the World Bank is providing economic and financial advice and analytics as well as sovereign lending to support an inclusive and sustainable pandemic recovery, continued growth and broad fiscal stability.	Low
Institutional: Better coordination across agencies will be pivotal for the smooth implementation of a clean energy transition, especially with respect to the issuance of corresponding implementing regulations by various agencies in line with recent policy reforms as well as collaboration for multifaceted just transition approaches.	Recent RE regulation, together with the RUPTL 2021-2030, provides a clearer mechanism and pathway for MOF, CMMA, MEMR, MSOE and PLN coordination with respect to coal phase-out and renewable energy scale up. Agency coordination will be further enhanced by the extent to which a clear list of retirement assets is identified by the G20 summit. World Bank P4R and upcoming ADB Sustainable and Inclusive Energy Program (SIEP 4 - 2022) and Affordable and Sustainable Energy Transition Program (ASET 1 – 2023) will help build policy cohesion and strengthen implementation capacity.	Low
Policy and Regulatory Framework: Clarity of policies and implementing regulations related to energy transition. In addition, given the ongoing global energy crisis and the war in Ukraine, there is a risk of policy reversal and increased reliance on coal.	While the GoI has advanced a broad suite of climate regulation in advance of the G20 summit, the ADB and World Bank are working with the various implementing agencies to ensure timely finalization of corresponding implementing regulations help realize the full potential and sustainability of the policy reforms (e.g., through upcoming World Bank P4R and ADB SIEP 4 and ASET 1 policy loans).	Medium
Technology: As energy transition plans remain in early implementation stages globally, new technology solutions (cost, design and application) for CFPP repurposing and RE scale up (i.e., integration of storage and hybrid solutions) presents ongoing uncertainty.	There is a growing body of research ^b to support energy transition decision-makers (i.e., PLN, IPPs) with widely accepted methodologies to assess the most efficient, economic, and just options for consideration. While potential technology options continue to evolve, the projects and programs under the IP are taking	Low/Medium

RISK	MITIGATION	RESIDUAL RISK
	the evolving context into account in project design and governance.	
Private Sector Engagement: Active private sector engagement has been hindered by (a) limited tenders with invitations to prequalify issued only periodically; (b) lack of transparency in the tender process with the results often not published; (c) lengthy licensing and permitting procedures; and (d) local content and supply chain challenges that increase investment cost in an environment where renewables must prove competitive and affordable in the local context.	<p>Recent regulation has introduced greater clarity on tendering mechanisms and timelines (with MEMR holding PLN accountable for mandated deadlines) and tariff regimes. Uncertainty remains with respect PPA bankability (especially with implementation of storage and hybrid solutions), but the WBG and ADB continue to provide extensive guidance on market expectations and international best practice.</p> <p>Recent auctions have demonstrated the potential for lower prices for RE and this trend is only expected to continue and lead to improved project financing prospects. Should project sponsors and IPPs be able to resolve initial contractual uncertainties and local content hurdles, there is strong financing interest.</p>	Medium
Livelihood and Community risks from a clean energy transition: A just transition can help countries achieve their climate ambitions while enhancing their ability to manage natural resources sustainably, increase energy efficiency and reduce waste, while also promoting social justice and addressing poverty, inequality, and gender gaps. Just Transition is an approach that is used to avoid and mitigate any risks of implementing climate change efforts that are not well prepared and managed. Therefore, the <u>risks</u> lie in the implementation of climate change policy and processes <u>without</u> the inclusion of a just transition framework. If climate mitigation efforts are not carefully managed through a just transition approach, economic changes could result in increased social inequality, worker disillusionment, strikes or civil unrest and reduced productivity, as well as less competitive businesses, sectors and markets (ILO, 2015). Just transition requires cross government coordination on policies and regulations as well as how to ensure just transition is integrated into implementation of climate policy.	<p>Government of Indonesia (through PTSMI) will be supported to adopt a comprehensive approach to just transition, including development of a just transition framework to anticipate and mitigate key aspects that can pose huge challenges in a transformation process. The framework will be developed by PTSMI to cover the upfront planning pre closure through to long-term transformation aligned with the CIF ACT pillars, and considering institutional capacity and governance, people, workers and communities, environmental rehabilitation and land, asset, infrastructure repurposing.</p> <p>A comprehensive preparatory work to understand the three dimensions of the framework with support by ongoing stakeholder dialogue will deliver: (a) economic restructuring, resulting in the preparation of displacement of workers and possible job losses and job creation attributable to the greening of enterprises and workplaces; (b) increased capacity of enterprises, workplaces and communities to adapt to climate change to avoid loss of assets and livelihoods and involuntary migration; and (c) protection against adverse effects on the incomes of poor households from higher energy and commodity prices.</p>	Medium

RISK	MITIGATION	RESIDUAL RISK
Environmental and Social impacts: Lack of continuity for environmental and social safeguards management, thin domestic market for environmental and social expertise, and inadequate assignment of resources as well as weak integration of environmental and social processes at institutional level may limit capacity to manage complex projects (e.g., closure of CFPs, decommissioning, repurposing and impact assessment of new renewable technologies). CFPP legacy issues may be complex to address.	<p>PLN, PT SMI, MEMR and other key counterparts' commitment to assign sufficient and dedicated resources and integrate environmental and social safeguard processes in project management.</p> <p>MDB support programs to continue to address institutional and capacity gaps.</p> <p>Comprehensive due diligence, stakeholder engagement and participatory planning of mitigation measures.</p>	Medium
Limited Scale-up and Replication: Challenge of designing replicable demonstration or pilot projects	<p>With respect to working with PLN, PT SMI, MEMR and other key counterparties, the IP has factored in strong support for capacity development and knowledge transfer to ensure replicability and scalability within each agency and across agencies.</p> <p>Initial dialogues with counterparts in the mining sector, both government and the industry had signaled strong support for the design of pilot projects that reflect the implementation of the Just Transition approach. This exercise will help build ownership of and better dialogue between national and subnational governments to replicate just transition projects across the nation and better prepare themselves for the oncoming transition.</p> <p>With respect to private sector interventions for coal phase out, the first project will be designed to address "initial viability" concerns. The first project aims to be a pathfinder project, allowing ADB and other institutions to collect practical knowledge about the full suite of considerations in the design and planning of early retirement. Concessionality will be critical to compensate for the additional engagement with PLN, MEMR, MOF, IPP advisors and the like to establish a roadmap for other CFPP IPPs.</p> <p>For RE IPP scale up, private sector financing will be designed in line with prior CIF/ CTF programs, with a view to demonstrate clear pathways to sustainability.</p>	Medium
Project Readiness: Extent to which projects have been approved as part of GoI budget and/or been tendered, awarded, or mandated (for private sector).	CFP early retirement projects to be considered under the PLN RBL and for Repurposing Investment are all to be selected from a shortlist of assets approved by PLN and MEMR directly. Engagement with PLN and MEMR has been underway since May 2022 and processing for related initiatives is slated for 2023. On the mining side, discussions with relevant parties in the government (DG Mineral and Coal of MEMR and Coordinating Ministry of	Low

RISK	MITIGATION	RESIDUAL RISK
	<p>Maritime and Investment) are underway, including propositions for site selection. The approach to tackle closure issues here is understandably delicate in nature considering the still lucrative coal business; nevertheless, there is a forward-looking view to prepare for a coal transition in West Sumatra and East Kalimantan.</p> <p>Implementation of FIL with PT SMI is within the scope of a 2021 MOU for sustainable development. As such, discussions with the counterparties under the selected modality are already underway. Integration into blue book being discussed for 2023.</p> <p>IPP CFP early retirement MOU to be announced at G20.</p> <p>Many near term RE IPP projects under consideration for private sector financing have been tendered but are pending confirmation of tender award and mandates.</p>	

ACT = Accelerating Coal Transition, ADB = Asian Development Bank, CFP = coal fired power plant, CIF = Climate Investment Fund, CMMA = Coordinating Ministry for Maritime and Investment Affairs, COVID-19 = coronavirus disease, DG = Directorate General, FIL = financial intermediation loan, G20 = Group of Twenty, GDP = gross domestic product, GoI = Government of Indonesia, IPP = independent power producer, MEMR = Ministry of Energy and Mineral Resources, MOEF = Ministry of Environment and Forestry, MOF = Ministry of Finance, MOU = memorandum of understanding, MSOE = Ministry of State-Owned Enterprises, PLN = Perusahaan Listrik Negara (State Electricity Corporation), RE = renewable energy, RUPTL = PLN Medium Term Business Plan, TA = technical assistance.

^a World Bank. 2020. *East Asia and the Pacific in the time of COVID-19*. Washington, DC.

^b Shrimali, Gireesh; Jindal, Abhinav. 2021. *Coal Plant Repurposing for Ageing Coal Fleets in Developing Countries: Technical Report (English)*. Energy Sector Management Assistance Program Washington (ESMAP), DC: World Bank Group. Others: <https://initiatives.weforum.org/micee/ctr-toolkit-technology/aJY68000000CaSZGA0>

Other Source: MDB Joint Mission and project teams.

6. MONITORING AND EVALUATION

71. **Indonesia Theory of Change.** If Indonesia (i) develops a road map for closure of CFPPs and unviable coal mines, including associated policy reforms and stakeholder consultations; (ii) creates a financing mechanism and catalyzes public, private and concessional financing to further accelerate the retirement of coal-fired power plants (CFPPs); (iii) conducts pilot repurposing on decommissioned CFPP asset sites, (iv) reduces policy, regulatory, procurement bottlenecks in RE scale-up (for PLN and IPPs) and (v) supports economic regeneration, social plans and income support for affected employees and communities (with a special focus gender and disadvantaged groups), then Indonesia will accelerate the retirement of existing coal assets and their replacement with RE and other needed systems investments (i.e. grid-upgrades and storage), while ensuring a holistic, integrated, socially inclusive and gender equal just transition away from coal, resulting in a cleaner energy mix, reduced carbon emissions, and a more resilient workforce.

72. The IP is designed with clear impact pathways to achieve the transformational change ambition. ADB's RBL project is an important means to (i) discuss and finalize the PLN/MEMR CFPP early retirement roadmap and (ii) enhance PLN's ESG frameworks to ensure a just, gender-balanced and affordable transition with integrated requirements for broad stakeholder consultation. ADB's engagement will also support MEMR/MSOE in preparing the implementing regulation that will practically allow for the early retirement of the CFPPs owned by PLN. Separately, ADB's support for the PT SMI country platform aims to establish a central financing mechanism to sustainably scale up blended finance support for the broader energy transition in Indonesia with CIF-ACT funding and beyond. ADB will further help PT SMI enhance its ESG policies with a robust Just Transition Framework and support pilot implementation across initial clean energy transition investments (i.e. early retirement and transition to RE scale up). These efforts will be bolstered by ADB's direct support for storage and PV-related technology training (with special focus on gender balanced participation) in leading science and technology parks around the country [in acknowledgement of tangible workforce transition needs.]

73. The World Bank P4R will provide energy transition implementation support by identifying and advising on further policy, procurement and regulatory reforms required for accelerated coal transition and RE scale up including (i) to accelerate decarbonization; (ii) scale up replacement renewable energy and (iii) governance and institutional reform to accelerate the coal transition. World Bank pilot project and CFPP decommissioning and repurposing will help reduce the coal overcapacity in the system and create space for development and facilitate the integration of renewable energy. It will also enable the reuse of the existing power transmission infrastructure to support increased low-carbon generation capacity and pilot of new and emerging technologies to improve the system's flexibility to integrate variable renewable energy generation.

74. Specific to how the IP will support economic regeneration, social plans and income support for affected employees and communities (with a special focus gender and disadvantaged groups), just transition principles are woven into every step of project assessment, design and implementation. The IP outcomes will have implications on formal, informal and contract job losses across CFPP value chain including coal mines, CFPPs, transport systems as well as businesses engaged in the support chain. Further job losses could arise due to induced impacts on aggregated income in the economy, particularly because of reduced government revenue. Recognizing this, the ADB and World Bank are undertaking various upfront assessments to understand the potential scale of these impacts examining direct, indirect, and induced impacts. The assessments will gather initial information regarding differentiated impacts in across regions dependent on factors such as current poverty rate, unemployment rate, which will impact availability of new jobs. The assessments will further consider issues around the suitability of

transition from fossil fuel-based employment to clean energy employment such as skills mismatch, geographical separation of opportunities and reskilling required. Induced social issues, such as incidence of gender-based violence will be overlayed on the results to highlight where further attention and detailed assessment is needed. The results of the ADB and World Bank upfront assessments will be available to the GoI early in 2023 and mid-2023, respectively. As the concepts presented in the IP are further developed, detailed situational assessments will be conducted, including on ground data gathering and consultation, to inform a robust design and development of mitigation plans. These mitigation plans will need to consider creation of alternative quality employment opportunities, support for economic diversification e.g., support for MSMEs, and financing arrangements. These considerations will also be integrated into the development of the Just Transition Framework being developed by PT SMI with ADB support and aligned with World Bank's support to the GoI for a programmatic approach to just transition for all coal regions. Further research is also underway to identify programs that could support employment transition towards greener jobs, as well as key activities to mitigate the impacts on gender and social issues, especially in the most vulnerable regions, including impacts in the informal sectors. Target for completion of this additional research is mid- to end-2023.

75. Integrated Approach to Monitoring, Evaluation and Learning. The IP has been structured to deliver on the necessary outcomes to support the broader impact ambition for a sustainable, just and affordable clean energy transition across Indonesia. In summary, through US\$600 million in CIF ACT funding, together with US\$2.2 billion in MDB co-financing and over US\$1.3 billion in commercial co-financing, the IP aims to achieve the following:

- **Governance:** The adoption or amendment of up to 4 policies, regulations, standards or codes and 3 accelerated CFPP retirement roadmaps, including policies and regulations that are explicitly inclusive of gender and other social exclusion factors and/or the gaps/barriers faced by specific social groups and targeted actions to address those gaps.⁴¹
- **People:** Up to 1,160 (i.e., 89% of) employees of retired CFPPs/coal mines with access to sustained income and up to 2,200 direct beneficiaries of social plans and economic regeneration activities, to be disaggregated by gender, and reflecting other social characteristics (age, disability status, formal vs. informal workers etc.) as well as documented information about the quality of the jobs (income, skilled/ non-skilled positions) whenever relevant and possible.⁴²
- **Infrastructure:** Avoided greenhouse gas emissions of up to 50 million tons carbon dioxide equivalent (CO₂e) through the accelerated retirement of up to 2 GW of CFPP generation capacity as well as up to 15 million tons of coal diversion, up to 150 hectares (ha) of mine area reclaimed, reforested or restored, and an increase of up to 400 MW of installed RE and 90MW of energy storage capacity.⁴³

74. The Indonesia IP responds to CIF's integrated approach to results measurement, as presented within the ACT Integrated Results Framework (IRF) in Appendix 2. CIF's integrated approach combines essential monitoring and accountability functions with a holistic multi-level and multi-dimensional approach, including a complex systems orientation, and emergent learning opportunities. Within this integrated approach, measurement of program and project impacts are captured via the multiple dimensions of monitoring, evaluation, learning, gender, and other key cross-cutting approaches, coalesced within the objective of delivering a nuanced and complete understanding of the program's progression, and thematic specificities, in delivering a complex and multifaceted program goal.

⁴¹ Tracked by ACT Core Indicator 1 and 2.

⁴² Tracked by ACT Core Indicators 3 and 4.

⁴³ Tracked by ACT Core Indicators 5, 6, 7, 8, 9 and 11.

75. The left-side columns of the ACT IRF, tracking the key performance indicators of program and project performance, are captured within the Indonesia IRF (Appendix 2), wherein the program's performance is tracked via targeted, core indicators defined within the ACT IRF, in response to the ACT Theory of Change and its constituent objectives. The right-side columns of the ACT IRFs, focused on evaluation of learning approaches (encompassing transformational change signals across dimensions, Just transition studies, co-benefits/development impact evaluations, gender and social inclusion analytics, and other targeted evaluations and learning activities) are captured via CIF, country, and MDB-driven evaluations and studies responsive to the program's evidence needs and priorities, as outlined below. In sum, the approaches allow for a duality between systemized tracking and responsive research and evaluation, designed to complement each other, and leverage mixed methods approaches utilizing different tools, methods, and forms of evidence, but strategically combining them when applicable.

76. The Indonesia IP is therefore also structured to outline the program's results chain—from program-level activities, outputs, outcomes, and impacts (based on the anticipated investment pipeline and the related activities to be funded within the program, the overall program design, and the theory of change) and incorporates elements related to (i) evaluation and learning, (ii) transformational change, (iii) gender and social inclusion, (iv) just transition, (v) SDGs, and (vi) development impacts/co-benefits in addition to the fundamental program results and corresponding indicators.

77. **Monitoring and Reporting.**

- **System-wide Analysis.** The IP's Integrated Results Framework serves as a fundamental instrument that grounds the country program's high-level goal statement on measurable national indicators and targets, and thereafter links the program's theoretical objectives with the measurable outcome-level results anticipated via its constituent project pipeline. As the IP is developed collaboratively amongst the Government, implementing MDB partners and other stakeholders, the process of defining project objectives, and aggregating the related results via the IRF, constitutes a consistent and system-wide approach on the coherence of and between interventions, and on accountability between proposed goal statements and pragmatic results estimations.
- **Anticipated program impacts.** The Indonesia IP currently expects to deliver on 10 of the 11 core objectives of the ACT Investment Program, and the country's IRF therefore tracks core indicators as relate to each of these outcomes, with the expected target values collating the fractional outcomes expected from each of the 8 individual projects within the program pipeline. Each target value delineates the share of results anticipated from each discrete project, allowing for a differentiated analyses of the varying levels of impacts, vis-à-vis investment volumes and targeted approaches. As such, the IRF will be responsive to any changing dynamics within individual projects, and under- or over-achievement of program level results will allow for learning and adaptation based on challenging or opportune investment environments.
- **Protocols for tracking.** The monitoring and reporting of results will be a collaborative process amongst all stakeholders. Country focal points and implementing agencies, with support from the CIF AU Monitoring and Reporting team, will lead on tracking the country IP impact indicators set out at IP approval. Implementing MDBs will monitor, and report annually to the CIF AU, all outcome level core indicators relevant to each approved project, in accordance with the methodologies, reporting requirements and timelines set out within the ACT IRF, and

within the forthcoming ACT M&R Toolkit.⁴⁴ As such, MDBs will be responsible for incorporating these outcome level indicators into the monitoring and reporting frameworks and mechanisms for each implemented project, alongside any optional outcome indicators and at least one co-indicator per project, also in accordance with the ACT IRF and ACT M&R Toolkit. Country IP M&R workshops, anticipated at inception, mid-term, and IP-conclusions along with any, as needed, interim country M&R workshops, will allow for multi-stakeholder cross-sectoral consensus on indicator progress, targets, methodologies, and related gaps, lessons, or enhancements, in accordance with the guidance set out by the CIF AU for the ACT program.

78. Proposed approaches for tracking and evaluating transformational change, just transition, and inclusivity aspects of IP. The IP and associated activities present an important opportunity for learning through an evaluative lens on key themes and goals related to transformational change and just transition. As per the right-hand side of the Integrated Results Framework (IRF), in addition to the MDBs own evaluation processes through their independent evaluation offices or other efforts, the MDB and country counterparts will participate in evaluation activities of the CIF. This includes independent program level mid and end-term evaluations and evaluations on key themes such as transformational change and just transition. Evaluative insights could also relate to diagnostic, design, implementation, economic value, and synthesis evaluations of programmes and projects. Any evaluation effort will not replicate existing country evaluation systems but will aim to reflect them as part of the overall approach, drawing data from all existing, credible sources.

79. Any evaluation on transformational change will use the dimensions of transformational change as identified through the transformational change learning partnership (TCLP) and documented in the program design documents and evaluation guidance provided. Similarly, any evaluation of just transition will consider the CIF just transition framework and its associated dimensions. The guidance and questions provided in the ACT design document related to just transition, transformational change and gender will be used to structure both formative and summative evaluative processes. Key questions to consider include:

- Who is involved and empowered during transition processes? (Procedural Justice)
- Who benefits and who loses in transition processes? (Distributional Justice)
- What is needed, what is planned and are they aligned? (Relevance)
- What systems need to be changed and how? (Systemic Change)
- What is the relationship between urgency and complexity and how is this being managed? (Speed)
- What scaling is required/ was achieved? (Scale)
- What capacity is being built to achieve sustainable development pathways? (Adaptive Sustainability)

A variety of evaluation methodologies may be deployed with a particular emphasis on enhancing participation in evaluation and learning processes as well as ensuring the rapid use of information for learning and course correction where required.⁴⁵

⁴⁴ The ACT M&R Toolkit translates the ACT IRF into a practical and detailed guide which sets out definitions of indicators, measuring methods/approaches and frequency, roles, and responsibilities etc.

⁴⁵ The ACT program's monitoring, evaluation and learning framework is also supplemented and supported by rigorous, independent research via the CIF-DIME Research Program. The program encompasses, among others, bespoke scientific and data-driven research, modelling, and randomized control trial-based analyses of the program's impacts and effectiveness. DIME, and its team of economists and researchers, offers a variety of different research tools, depending on the topic, context, and partnering nation: from, at the front end, computable-general-equilibrium (CGE) macroeconomic modelling and original microdata collection to, on the ground, randomized-controlled trials that leverage local DIME team members providing close, hands-on field support. At the early and IP stages, the CIF-DIME

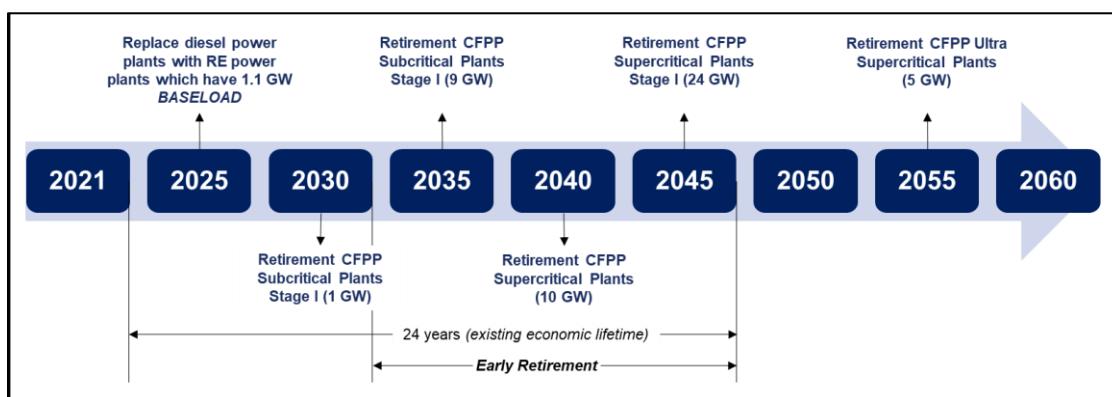
APPENDICES

program provides research capacities to establish baselines, and fill evidence gaps and test lines of impact within the IP's theory of change. At advanced stages of the pipeline, the program can be utilized to conduct diagnostics and establish comparative lines of inquiry that test the effectiveness of varying modes of policy and programming. At project deployment stage, DIME's economists and research teams will deploy rigorous impact evaluations, working closely with project teams on the ground to conduct robust testing and learning, and provide the project, the country and the ACT program with data inputs and real-time analytics that can raise the effectiveness and quality of implementation.

APPENDIX 1: Assessment of Indonesia's capacity for coal asset retirement & phase-out activities

1. An indicative roadmap for accelerated retirement of Coal Fired Power Plant (“CFPP”) assets in Indonesia has been developed by ADB in collaboration with Government of Indonesia, PT Perusahaan Listrik Negara (“PLN”), and other development partners. This was prepared as an input to the government’s ongoing efforts to prepare a CFPP retirement roadmap as required under the newly issued renewable energy regulation (RE PR).
2. Following instruction from the Government of Indonesia, the roadmap focuses on Java-Bali and Sumatra (the two grids with the highest demand in Indonesia) and covers both state-owned assets and Independent Power Plants (“IPPs”). Of the c. 26GW of operating CFPPs in the two grids as of beginning of 2022⁴⁶, the road map that has been developed seeks to accelerate retirement of a cumulative 14GW from the beginning of 2026 to the end of 2034. In rough terms, this represents a 5 to 10 year acceleration in retirement dates of close to a half of the current operating CFPP fleet, relative to the current schedule for retirement of CFPPs prepared by PLN based on the technical lifetime of operational CFPPs in the country.

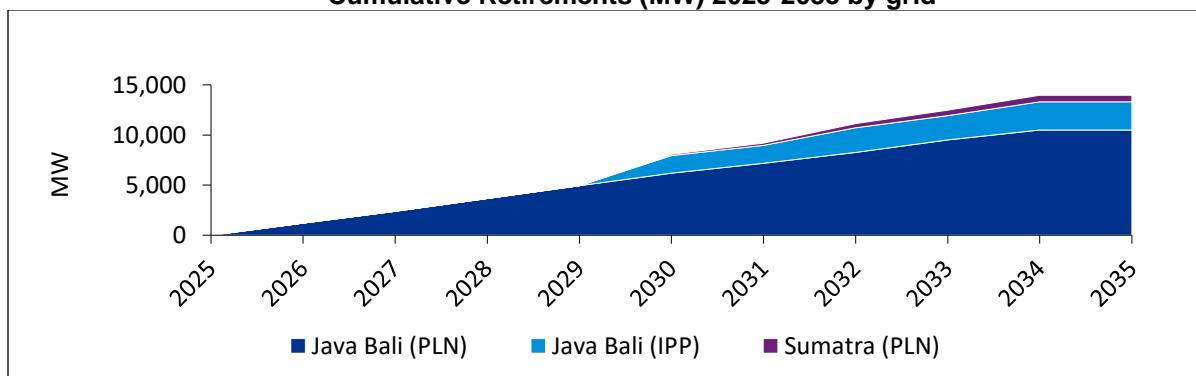
PLN Pathway for CFPP Retirement to Support Net Zero Emission 2060



Source: Perusahaan Listrik Negara (PLN), Indonesia. <https://portal.pln.co.id/>.

3. Retirements before 2030 are expected to focus on PLN assets in the Java-Bali grid which are connected to the 500kV transmission line and are therefore less likely to have significant impacts on security of supply. Post 2030, PLN assets in both Java-Bali (including those outside of the 500kV grid) and Sumatra are included alongside a number of IPPs. The indicative cumulative capacity identified for early retirement is shown in the chart and table below.

Cumulative Retirements (MW) 2025-2035 by grid



Source: ADB ETM Study.

⁴⁶ 23GW in Java-Bali and 3GW in Sumatra

	PLN (Java-Bali)	PLN (Sumatra)	IPP (Java-Bali)	Total (MW)
2026	1,200	-	-	1,200
2027	2,400	-	-	2,400
2028	3,660	-	-	3,660
2029	4,945	-	-	4,945
2030	6,175	115	1,782	8,072
2031	7,190	230	1,782	9,202
2032	8,135	430	2,442	11,007
2033	9,500	540	2,442	12,482
2034	10,490	650	2,817	13,957

Source: ADB ETM Study.

4. The choice of units to retire is based on a unified list of CFPPs that was compiled from independent studies carried out by ADB's Energy Transition Mechanism (ETM) feasibility team⁴⁷, MEMR, and PLN to identify suitable candidate CFPPs for early retirement. The different studies had different approaches:

- **ADB's ETM Feasibility team** used a Multi Criteria Analysis Approach that assigned each plant a score according to several criteria covering Grid Security, Plant Technical and Operational Characteristics, Commercial and Financial, Environmental and Just Transition considerations.
- **MEMR** used a two-step approach to first select candidates based on grid security and then assess cost of early retirement.
- **PLN's** approach focused purely on PLN assets and considered plants viable for their spin-off model (asset divestment model) and then a wider pool of assets where PLN considered Grid Security, Plant Technical and Operational Characteristics, Commercial and Financial, and Environmental considerations as key parameters.

5. While the three studies considered similar factors and often identified many similar plants, the use of different approaches and priorities meant that the lists were not identical. A screening process was therefore undertaken among a taskforce of major stakeholders (with members from MOF, MSOE, MEMR, PLN, ADB, IFC and World Bank) to merge these lists to develop a **single unified list of candidate CFPPs for early retirement**. This work was conducted during May– July 2022. The final unified list reflects the same projects as included in the roadmap.

6. The scheduling of retirement of units within the unified list was developed based on the following key criteria:

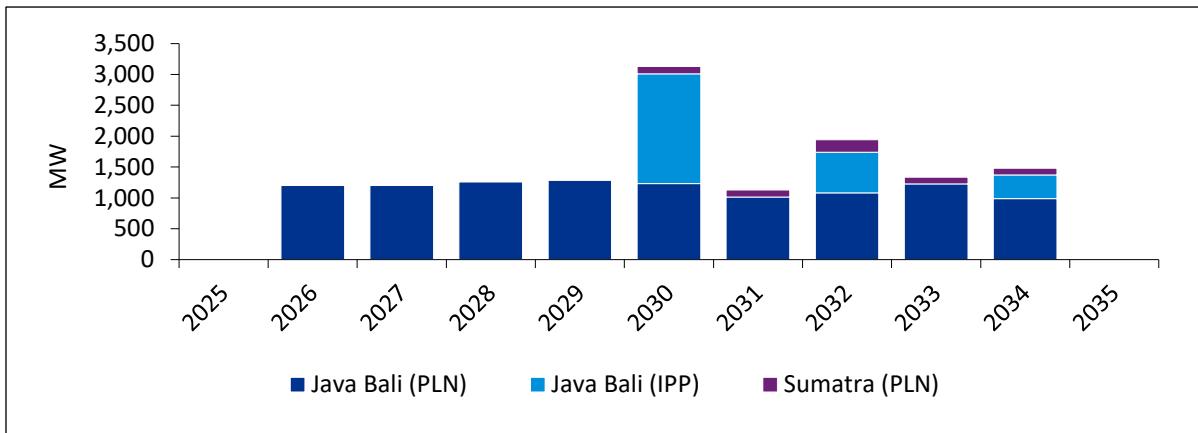
- **Pre 2030:** Nine assets were identified by PLN as being suitable for early retirement. All of these assets were in the Java-Bali grid and connected to the 500kV line.
 - Within these nine plants, assets were ranked such that assets with the lowest operating costs and highest carbon emissions would be prioritised for retirement
 - Retirements were then scheduled to have an approximately equal retirement in each year from 2026-2029
- **Post 2030:** A differentiated approach was applied to PLN assets and IPPs
 - For PLN assets (in both Java-Bali and Sumatra), assets were ranked such that assets with the highest heat rates (lowest efficiency) would be retired first⁴⁸

⁴⁷ The Government of the Republic of Indonesia, the Government of the Republic of the Philippines, and the Asian Development Bank (ADB) announced a partnership in November 2021 at the 26th UN climate change conference (COP26) to design and launch an Energy Transition Mechanism (ETM) to accelerate the transition from coal to clean energy in Southeast Asia, in a just and affordable manner. Under the partnership with Indonesia, ADB is currently, among other things, identifying through a feasibility study a pool of candidate coal-fired power plants for early retirement/repurposing; initiating the establishment of an ETM Fund/Vehicle through the issuance of a request for concepts from the private sector; establishing and operationalizing the ETM Partnership Trust Fund to be administered by ADB; and catalyzing active participation from G-7 countries (Just Energy Transition Partnership or JETP).

⁴⁸ Heat rate used as a proxy for both operating costs (as it will impact fuel costs) and carbon emissions (as it impacts the quantity of coal that needs to be burned)

- For IPPs, assets were assumed to have an operating lifetime of 20 years. This was to reflect the fact that IPP retirements could not be accurately planned as they would be dependent upon the outcome of commercial negotiations with project sponsors. Where shortening of lifetime to 20 years did not result in the plant retiring between 2030-2034, the retirement was adjusted so that it fit in this window.

Annual Retirements (MW) 2025-2035 by grid



Source: ADB ETM Study.

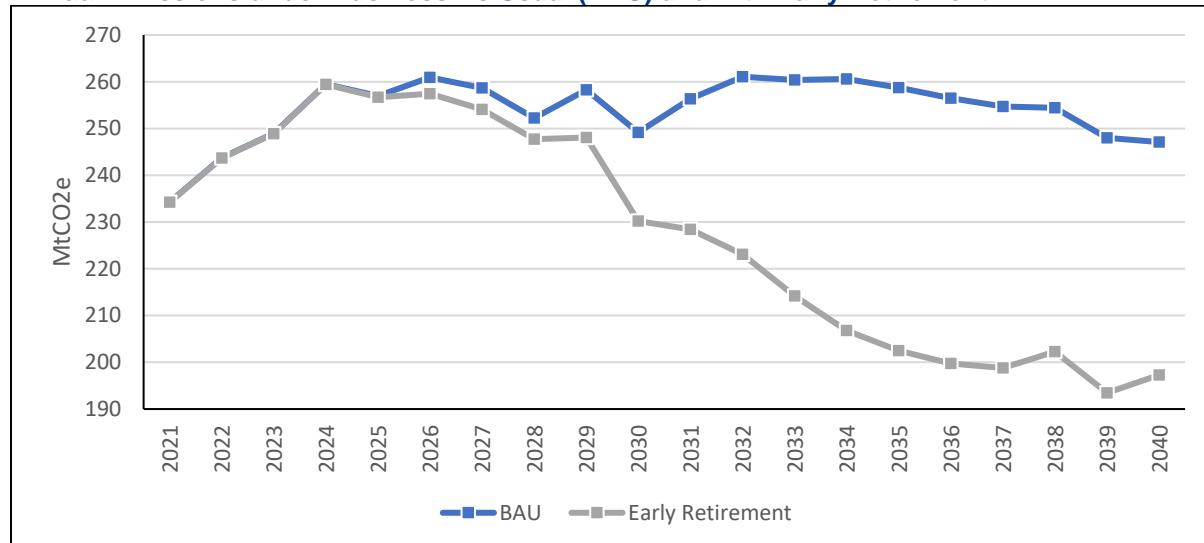
	PLN (Java-Bali)	PLN (Sumatra)	IPP (Java-Bali)	Total (MW)
2026	1,200	-	-	1,200
2027	1,200	-	-	1,200
2028	1,260	-	-	1,260
2029	1,285	-	-	1,285
2030	1,230	115	1,782	3,127
2031	1,015	115	-	1,130
2032	945	200	660	1,805
2033	1,365	110	-	1,475
2034	990	110	375	1,475

Source: ADB ETM Study.

7. The roadmap provided remains indicative. Further changes would likely target a similar quantum and pace of retirement; however, it is expected that the order of PLN assets to retire will be re-assessed and the timing of IPP retirements (and ultimately the selection of plants to retire) will be based on commercial negotiations. Nevertheless, according to initial system modelling analysis, a retirement roadmap similar to the above, combined with a replacement of capacity with clean energy could help to abate over 530MtCO₂ by 2040⁴⁹.

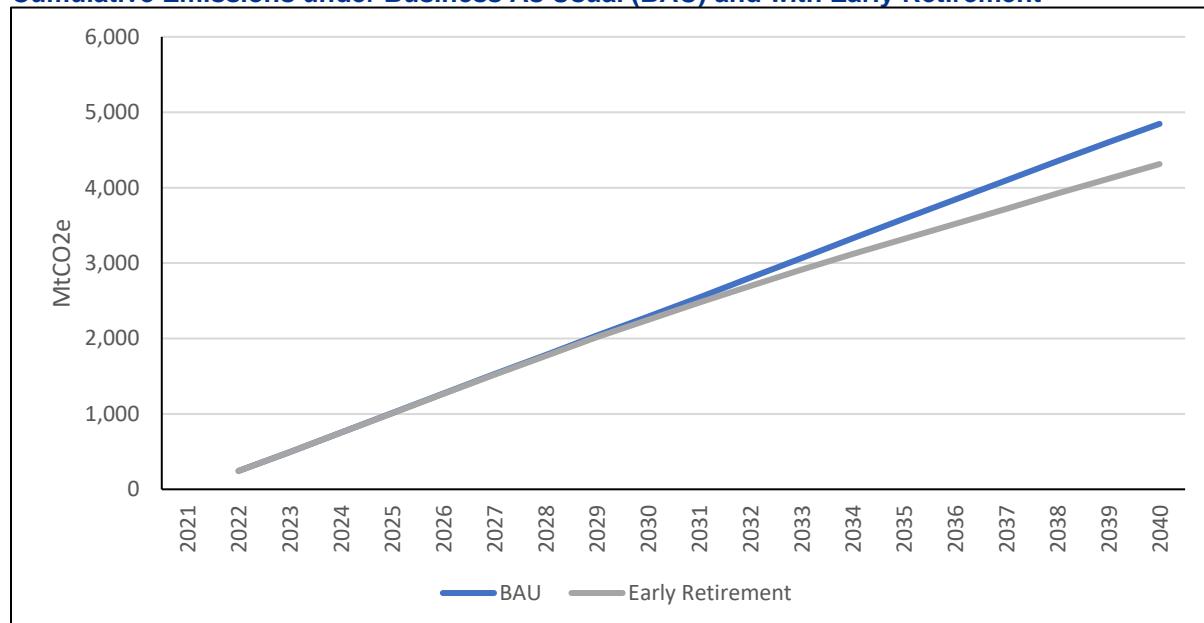
⁴⁹ We note that the below analysis was performed in May 2022 and there have been small refinements to the retirement roadmap since then that raised the total capacity set to undergo accelerated retirement before 2035 from 13GW to 14GW alongside an adjustment in the retirement timeline for some units. An update to this analysis will be completed pending final confirmation on the roadmap from Government of Indonesia by November 2022 but we do not expect a significant change in impact as the total volume of capacity to undergo accelerated retirement is similar and all retirements will continue to be completed by 2035.

Annual Emissions under Business As Usual (BAU) and with Early Retirement



Source: ADB ETM Study.

Cumulative Emissions under Business As Usual (BAU) and with Early Retirement



Source: ADB ETM Study.

Annex 1: Roadmap to 2030

Year	Plant/Unit	Capacity (Installed MW)	Plant Owner and Location
2026	PLTU Suralaya #1	400	PLN (Java-Bali)
	PLTU Suralaya #2	400	PLN (Java-Bali)
	PLTU Paiton #1	400	PLN (Java-Bali)
2027	PLTU Suralaya #5	600	PLN (Java-Bali)
	PLTU Suralaya #6	600	PLN (Java-Bali)

2028	PLTU Suralaya #7	600	PLN (Java-Bali)
	PLTU Paiton #9	660	PLN (Java-Bali)
2029	PLTU Suralaya #8	625	PLN (Java-Bali)
	PLTU Adipala	660	PLN (Java-Bali)
2030	Labuan U1	300	PLN (Java-Bali)
	Labuan U2	300	PLN (Java-Bali)
	Lontar U1	315	PLN (Java-Bali)
	Lontar U2	315	PLN (Java-Bali)
	Labuhan Angin U1	115	PLN (Sumatra)
	Paiton 2 U5	610	IPP (Java-Bali)
	Paiton 2 U6	610	IPP (Java-Bali)
	Cilacap U1	281	IPP (Java-Bali)
	Cilacap U2	281	IPP (Java-Bali)
2031	Lontar U3	315	PLN (Java-Bali)
	Tanjung Awar-Awar U1	350	PLN (Java-Bali)
	Tanjung Awar-Awar U2	350	PLN (Java-Bali)
	Labuhan Angin U2	115	PLN (Sumatra)
2032	Rembang U1	315	PLN (Java-Bali)
	Rembang U2	315	PLN (Java-Bali)
	Pacitan U1	315	PLN (Java-Bali)
	Ombilin U1	100	PLN (Sumatra)
	Ombilin U2	100	PLN (Sumatra)
	Cirebon	660	IPP (Java-Bali)
2033	Pacitan U2	315	PLN (Java-Bali)
	Pelabuhan Ratu U1	350	PLN (Java-Bali)
	Pelabuhan Ratu U2	350	PLN (Java-Bali)
	Pelabuhan Ratu U3	350	PLN (Java-Bali)
	Nagan Raya U1	110	PLN (Sumatra)
2034	Indramayu U1	330	PLN (Java-Bali)
	Indramayu U2	330	PLN (Java-Bali)
	Indramayu U3	330	PLN (Java-Bali)
	Nagan Raya U2	110	PLN (Sumatra)
	Celukan Bawang U1	125	IPP (Java-Bali)
	Celukan Bawang U2	125	IPP (Java-Bali)
	Celukan Bawang U3	125	IPP (Java-Bali)

APPENDIX 2: Theory of Change and Integrated Results Framework (IRF) APPENDIX 2: Theory of Change and Integrated Results Framework (IRF)

Accelerated transition from coal-powered to clean energy while supporting socio-economic goals and environmental remediation

<p>Indonesia Theory of Change: If Indonesia (i) develops a roadmap for closure of CFPs and unviable coal mines, including associated policy reforms and stakeholder consultations; (ii) creates a financing mechanism and catalyzes public, private and concessional financing to further accelerate the retirement of coal-fired power plants (CFPPs); (iii) conducts pilot repurposing on decommissioned CFPP asset sites, (iv) reduces policy, regulatory, procurement bottlenecks in RE scale-up (for PLN and IPPs) and (v) supports economic regeneration, social plans and income support for affected employees and communities (with a special focus gender and vulnerable groups), <i>then</i> Indonesia will accelerate the retirement of existing coal assets and their replacement with RE and other needed systems investments (i.e. grid-upgrades, storage), while ensuring a holistic, integrated, socially inclusive and gender equal just transition away from coal, resulting in a cleaner energy mix, reduced emissions, and a more resilient workforce.</p>							
IP IMPACT	GOVERNANCE <i>Creating institutional and policy environments that are catalytic for, and responsive to, coal-to-clean transitions</i>			PEOPLE	<i>Ensuring equitable social and economic dividends from gender-balanced and just transition</i>		
OUTCOMES	Indonesia adopt and implement policies and strategies for coal-to-clean transition (P4R; RBL)	Increased Gov and public readiness and appetite to reduce coal dependence (RBL, IPP early retirement, PT SMI F1)	Sources of income created for affected employees (inclusive of women) through job retention or job creation (JT & Repurposing Investment, Prime STeP, RBL)	Affected employees/communities (inclusive of women) equipped with relevant skills for jobs of the future (Prime STeP)	Indonesia transition to cleaner energy sources (Dispatchable RE, PT SMI F2&3, CFPP repurposing)	GHG emissions reduced (RBL, IPP early retirement, CFP repurposing, Dispatchable RE, PT SMI F2&3)	Private sector financing mobilized (Dispatchable RE, PT SMI F1-3)
OUTPUTS	High-level policy dialogues Regional and local capacity building Transition strategy and development Economic and social development plans Communications strategy		Implementation of social plans Economic regeneration packages Temporary income support like termination payments, unemployment insurance, early retirement incentives			Mine closure Plant decommissioning Mine reclamation and plant repurposing incl. energy efficiency Repowering with RE + storage + ancillary services	
ACTIVITIES	Policy analyses and design; national and sectoral due diligence and road map design (inclusive of women and vulnerable groups)	Inclusive consultative processes and community/stakeholder analyses (inclusive of women and vulnerable groups)	Economic, financial and labor market analyses and design of response packages (taking into account impacts on women and vulnerable groups)	Technical due diligence and enabling technological solutions	New business models and financing modalities		
INPUTS	Scaled-up, flexible and predictable concessional finance for public and private interventions	Dedicated climate finance for driving innovation	Country-led, programmatic, participatory approach (building capacity for women in RE/IP assoc., labor unions/assoc., NGOs/CSOs)	Consideration of systems transformation and social inclusion at the onset (inclusive of women and vulnerable groups)	Multi-MDB technical expertise and coordinated climate action	Large-scale, coherent intervention packages	

ACT IMPACT - Accelerate transition from coal-powered to clean energy while supporting socio-economic goals & environmental remediation

ACT Program Theory of Change: If CIF addresses funding gaps related to the successful implementation of country-level strategies and associated kick-start projects; builds support at the local and regional levels to reconsider the development of new coal plants; and supports policy and investment activity in economic regeneration, social plans and income support for affected employees and communities, then national governments, public sector utilities and private sector operators will act to accelerate the retirement of existing coal assets and their replacement with new sources of renewable energy while ensuring a holistic, integrated, socially inclusive and gender equal just transition away from coal.

INDONESIA ACT INVESTMENT PLAN IMPACT

Accelerating the transition from coal to renewable energy while securing a just, inclusive, affordable and gender-equal future.

Indonesia IP Theory of Change: If Indonesia (i) develops a roadmap for closure of CFPPs and unviable coal mines, including associated policy reforms and stakeholder consultations; (ii) creates a financing mechanism and catalyzes public, private and concessional financing to further accelerate the retirement of coal-fired power plants (CFPPs); (iii) conducts pilot repurposing on decommissioned CFPP asset sites, (iv) reduces policy, regulatory, procurement bottlenecks in RE scale-up (for PLN and IPPs) and (v) supports economic regeneration, social plans and income support for affected employees and communities (with a special focus gender and disadvantaged groups), then Indonesia will accelerate the retirement of existing coal assets and their replacement with RE and other needed systems investments (i.e. grid-upgrades, storage), while ensuring a holistic, integrated, socially inclusive and gender equal just transition away from coal, resulting in a cleaner energy mix, reduced emissions, and a more resilient workforce.

MONITORING APPROACH					EVALUATION AND LEARNING APPROACH	
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS

INDONESIA INVESTMENT PLAN-LEVEL IMPACTS

<i>Accelerating the transition from coal to renewable energy while securing a just, inclusive, affordable and gender-equal future.</i>	Impact Proxies:					
	Share of renewable energy in primary energy supply (%)	12% (2021)	25% ⁵⁰ (2025)	National statistics (Handbook of Energy and Economic Statistics by MEMR), macro-level indicators, World Bank and MDB country data	IP-level impacts focus on alignment with pre-existing NDCs, national development priorities, and available statistics at the Investment Plan and/or country level. Share of RE may consider both the share of NCRE in total national installed capacity (%) and the share of NCRE in total national consumption over a 12-month reporting period (%)	Signals of transformational change: Signals of transformational change at the program level might focus on more narrowly bounded aspects of energy systems transformation than in the section above (i.e., CIF-level impact). They might cover lower levels of systems transformation and be more closely tied to individual ACT Investments Plans and/or project-level impacts. Specific definitions and methodologies are TBD. Gender and just transition elements: The program impact level allows space for further evaluations, assessments, and other approaches to take place as the program evolves in these areas. These activities may be tailored to specific recipient countries or applied more broadly across the program.
	Share of renewable energy for total installed capacity (%)	15% (2021)	51.6% ⁵¹ (2030)			

⁵⁰ Government of Indonesia, National Energy Council. 2014. *National Energy Policy, 2014–2050*. Jakarta.

⁵¹ PLN. 2021. *Electricity Power Supply Business Plan, 2021–2030*. Jakarta. <https://web.pln.co.id/statics/uploads/2021/10/ruptl-2021-2030.pdf>

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
INDONESIA INVESTMENT PLAN-LEVEL OUTCOMES						
PILLAR 1: GOVERNANCE						
A. Country X adopts and implements policies and strategies for coal-to-clean transition	ACT CORE 1. Policies: Number of policies, regulations, codes, or standards that have been amended or adopted (#) <ul style="list-style-type: none"> - Disaggregation: as relate to energy - Disaggregation: as relate to Just Transitions 	0 (2022)	4 (2029)	TBD	<p>Projects with no policy component should report a target of 0.</p> <p>Given the role of national and sub-national entities in coal transition, policies could be at the national, sub-national or local level depending on the nature of the activities.</p> <p>Policies, regulations, codes, or standards might include policy objectives covering, but not limited to: energy and mining sectors, the financial sector; Just transition, social protection, and jobs; vulnerable groups- and gender- responsive protections and support as relate to transition; and the environment (reclamation)⁵².</p>	<p>Changes in policies, plans, and institutional capabilities may also be incorporated in analyses of signals of transformational change, which contribute toward the fundamental systems change described above. For example, specific policy analysis might help support the overall understanding of coherence across international and national policies (i.e., relevance) and linkages between national policy and institutional capacity (i.e., scale).</p> <p>CIF's targeted evaluations and/or sector studies to fill strategic knowledge gaps: Moving down the results chain, the monitoring function becomes increasingly important to capture program outcomes and outputs. Evaluation and learning function will complement core indicators by filling strategic evidence and knowledge gaps. Evaluation and learning activities will be selected based on overall stakeholder demand, evidence gaps, and cross-learning opportunities.</p>

⁵² Energy sector policies may relate to the development/deployment of NCRE and related markets and coal capacity abatement; financial sector policies, to financing of EE, NCRE and related markets, and products that support transition; Just Transition, social protection, and jobs, to labor market policies, economic regeneration

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
	- Disaggregation: as relate to gender		TBD		Projects: PLN RBL, PT SMI ETMCP, P4R	
	ACT CORE 2. Readiness. Coal transition strategies finalized (#)	0 (2022)	3 (2029)	MDB project data	<p>The indicator would track strategies, action plans, road maps, etc. committed to by stakeholders and covering, but not limited to, strategies as relate to: energy and mining; gender-responsive and socially inclusive strategies to mitigate negative transition impacts and ensure that women and men, and vulnerable groups equally benefit from opportunities (e.g., jobs); and Just transition, social protection, and jobs; environment (reclamation)</p> <p>Projects: PLN RBL, P4R</p>	

policies, labor/livelihood protection policies such as those relating to vocational support and mobility assistance education, training and small business support services; vulnerable groups-responsive policies may relate to younger and older workers, persons with disabilities, labor migrants, racial and ethnic minorities etc.

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
PILLAR 2: PEOPLE						
C. Sources of income created for affected employees through job retention or job creation	ACT CORE 3 Income security for employees of subset industries Number and percentage of employees of retired coal plants/mines that have access to sustained income (#,%)	0 (2022)	1,160, 89% (2029)	MDB project financial data	<p>This indicator feeds into CIF Impact 3 (Beneficiaries).</p> <p><u>Sub-indicators</u></p> <ul style="list-style-type: none"> -Coal-sector employees retained or redeployed to new jobs (#, %) - Non-retained and non-redeployed coal sector employees that receive income support (#, %) <p>For non-retained employees receiving income support, the following instruments may be considered: severance or other forms of termination payments; unemployment insurance; social assistance payments; early retirement incentives; other.</p> <p><u>Disaggregation (as available):</u></p> <ul style="list-style-type: none"> - by gender (%) - vulnerable groups (%) 	<p>Quality and distribution of jobs: Through both just transition and gender-responsive approaches, further evaluative and learning-oriented analyses may center on the types of jobs created (and lost), and which sub-populations are gaining (and losing) employment opportunities. For example, this might include generating evidence on decent jobs created and plans for addressing jobs lost through skills development and economic diversification activities. Alternatively, it might include analyses of women's access to medium- and high skilled green jobs, STEM-education and vocational training, and school-to-work transitions.</p> <p>Modeling: Indirect job creation, such as induced employment along the supply chain, may be estimated using modeling techniques alongside projects' reporting of direct job creation.</p> <p>Gender-responsive aspects can be studied in more detail through targeted research, evaluations, and/or case studies. These will seek to understand the program's impacts in reducing gender imbalances and expanding inclusion, including interventions' relevance and access to the female labor force and the inclusion and viability of female owned enterprises in economic regeneration programs, driven by potential activities such as:</p> <p>a. <u>Coal plant or coal mine retirement/re-purposing phase:</u> Gender and social policy and strategy</p>

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
					<ul style="list-style-type: none"> - permanent vs. temporary/construction jobs (#) - types of jobs <p>Projects: PLN RBL, JT and Repurposing Loan (Phase 1&2)</p>	<p>preparedness assessment; including mapping of: i) institutional linkages through gender focal points in line ministries (including in Social Protection and Labor, and Education ministries, as well as Environment, and Energy); ii) expected poverty impacts of the transition, including social and gender-based care burdens for workers affected directly and indirectly by the energy transition; and iii) policy mandates and measures to ensure gender equality outcomes in skill development and workforce transition.</p> <p>b. Post-coal regional transformation phase: Social protection assessment of readiness and completeness of short and long-term social assistance programs, active labor market programs, and education and reskilling programs targeting jobs of the future including gender assessments of gaps between women and men in education, skills, employment, and participation rates in new or similar jobs-related programs; and measures to reduce gender imbalances in impact of proposed interventions.</p> <p>Just transition-framed analyses:</p> <ul style="list-style-type: none"> • Procedural Justice: may examine the enhancement of social inclusion processes and procedures, such as stakeholder engagement at local and national levels, the extent to which vulnerable groups in impacted areas have been represented, gender inclusion, and the scope of social partners involved, i.e., government, labor, business, civil society, race, etc. • Distributional impacts: may also be further examined along other evaluative lines or with additional focus
D. Equip affected employees/communities with relevant skills for jobs of the future	ACT Core 4. Social Plans and Economic Regeneration Packages: Number of direct beneficiaries of implemented social plans and economic regeneration activities (#)	0 (2022)	2,200 (2029)	MDB project data	<p>For Social Plans, this will measure beneficiaries of implemented plans, including labor retrenchment packages, re-skilling/re-training packages, and gender and local communities action plans.</p> <p>Targets to include # of persons reached via ADB collaborations with top universities for skills mapping and development and retraining required for the labor transition.</p> <p>For Economic Regeneration, this will measure beneficiaries of programs/packages operationalized that create new sources of income for participants of</p>	

Monitoring Approach					Evaluation and Learning Approach	
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
					<p>sunset industries/entities, including regeneration stimulus packages.</p> <p>Targets to include # of coal sector workers/community members reached via repurposed assets and related additional economic activity.</p> <p><u>Disaggregation:</u></p> <ul style="list-style-type: none"> - by gender (%) - vulnerable groups (%) - types of jobs <p>Projects: PLN RBL, JT and Repurposing Loan (Phase 1&2)</p>	<p>on specific sub-populations, such as ethnic, religious, and racial minorities, female headed households, Indigenous People and local communities, migrants, youth, and persons with disabilities.</p>
PILLAR 3: INFRASTRUCTURE						
E. Reduce GHG emissions	ACT CORE 5 (= CIF 1). Mitigation: GHG emissions reduced or avoided (mt CO ₂ eq) – direct/indirect	0 (2022) (reference scenario to be established per project)	up to 50 (starting in 2029)	Annual and lifetime reporting by projects	<p>This indicator feeds into CIF Impact 1 (Mitigation) and should be reported as direct vs. indirect reductions (per MDB-approved methodologies) with evidence provided.</p> <p>Emission reductions will be calculated by subtracting projected</p>	<p>MDBs are encouraged to undertake “whole of energy systems” analyses as baselines during the Investment Plans and project appraisal process and to fully incorporate MEL aspects into such analyses. Integrated, systems-levels analyses can be used to build a theoretical model and reference scenario for how interventions will affect multiple results areas: renewable energy installation, coal retirement/abatement, asset reclamation and reuse, landscapes restoration, etc. Both estimated and real</p>

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
					<p>lifetime emissions of a CIF-financed intervention from the projected lifetime emissions of the business-as-usual program/project that would have otherwise been pursued.</p> <p>Projects: PLN RBL, IPP CFP, JT and Repurposing Loan (Phase 1&2) and Component 3 projects.</p>	operational data can also then be consolidated effectively to report across these multiple indicators.
F. Mobilize private sector financing	ACT CORE 6 (= CIF 4). Co-Finance: Volume of co-finance leveraged (USD)	0	up to 3,595 (2029)	MDB project financial data	Total of non-CIF resources leveraged in ACT projects. Reporting on this indicator feeds directly into CIF Impact 4 (Co-Finance) .	
	Disaggregation: Volume of co-finance leveraged, MDB (USD)	0	2,245 (2029)		<u>Disaggregation:</u> Source of co-financing (MDB, Government, Private Sector, Bilateral, and Other)	
	Disaggregation: Volume of co-finance leveraged, Commercial (USD)	0	1,350 (2029)			

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
G. Cleaner energy sources	ACT CORE 7 Plant decommissioning: Capacity of existing coal power generation assets accelerated for retirement (MW)	0	up to 2,000 (2029)	MDB project financial data	<p>Existing capacity of coal-based generation that was retired ahead of life of asset due to replacement via operationalized NCRE capacity (i.e., solar and wind energy).</p> <p>Projects: PLN RBL, PT SMI ETMCP, IPP CFPP, JT and Repurposing Loan (Phase 1&2).</p>	
	ACT CORE 8 Repowering Installed capacity of renewable energy (MW)	0 (2022)	up to 400 MW new installed capacity (2029)	MDB project financial data	<p>NCRE capacity (i.e., solar and wind energy) operationalized as a result of ACT interventions</p> <p><u>Disaggregation:</u></p> <ul style="list-style-type: none"> - Renewable energy type (solar, wind, etc.) - Grid-connected vs. off-grid/distributed energy supply <p>Energy storage indicators relevant for projects that include components for storage installation.</p>	
	GESP 1 Power rating (MW)		up to 90 (2029)		This indicator corresponds to GESP-Specific Indicator 1 in the GESP M&R System and should only	

Monitoring Approach					Evaluation and Learning Approach	
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
					<p>be reported by ACT projects with energy storage components.</p> <p>Disaggregation: By type of technology (i.e., thermal, mechanical, electrochemical)</p> <p>By location on the energy value chain (generation, transmission, distribution, stationary end use, mobile end use)</p> <p>Distributed storage vs. utility-scale applications</p> <p>Projects: JT and Repurposing Loan (Phase 1&2) and Component 3 projects.</p>	
ACT CORE 9 Coal Abatement: Amount of coal diverted (MT)	0	up to 15 (2029)	MDB project financial data	The measure can spans the entire architecture of the coal industry, including but not limited to power plants, industrial companies, district heating systems, transport companies and residential users.		

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS (Evaluation and Learning)
					Projects: PLN RBL, PT SMI ETMCP, IPP CFPP, JT and Repurposing Loan (Phase 1&2).	
		0	TBD	MDB project financial data	Expected/future capacity additions replaced with NCRE capacity	
H. Reclaim land and other infrastructure	ACT CORE 10 Plant closure, repurposing: Annual energy savings (GWh/yr)	0	0	MDB project financial data	A measure of increased energy efficiency as a result of ACT interventions that include energy savings objectives. <i>Note: The proposed closure or repurposing projects do not currently calculate energy savings.</i>	
	ACT CORE 11 Mine closure, reclamation: Mine area reclaimed and reforested/ restored (Ha)	0	up to 150 (2029)	MDB project financial data	Including: - reforestation/afforestation - restoring the quality of soils / ecosystems to pre-mining level Projects: JT and Repurposing Loan (Phase 1&2).	

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS
INDONESIA INVESTMENT PLAN-LEVEL CO-BENEFITS						
I. Social, Economic, and Environmental Development Co-Benefits	CO-BENEFIT 1. Pollutants				MDBs will only need to report on one co-benefit indicator per ACT project and can select among a range of options or propose another co-benefit.	
	Atmospheric Pollution: Decrease in PM _{2.5} concentration	TBD		Global satellite data or related	This measures reductions in emissions of air pollutants from energy and related activities, including electricity production and transportation, as well as reducing contaminant discharges in liquid effluents from energy systems.	
	Terrestrial Pollution: Reduction in volume of contaminants discharged	TBD	TBD	Project appraisal data		
	Health Benefits Value of avoided health costs due to reductions in pollutants (USD)	TBD		National health data		
	CO-BENEFIT 2. Just Transition: Social Inclusion and Distributional Impacts	0	MDB project data	[Cascade upward from the indicator below]	Just transition-framed analyses: • Procedural Justice: may examine the enhancement of social inclusion processes and procedures, such as stakeholder engagement at local and national levels, the extent to which vulnerable groups in impacted	

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS
						<p>areas have been represented, gender inclusion, and the scope of social partners involved, i.e., government, labor, business, civil society, race, etc.</p> <ul style="list-style-type: none"> • Distributional impacts: with focus on specific subpopulations, such as ethnic, religious, and racial minorities, female-headed households, indigenous People and local communities, migrants, youth, and persons with disabilities.
	CO-BENEFIT 3. Enhanced Energy Access National RISE Scores (ESMAP) National MTF rates (ESMAP) / SE4All Global Tracking Framework (GTF)	TBD	National statistics, macro-level indicators, World Bank and MDB country data		Indicators may measure increased, more affordable and/or more reliable access to clean energy	

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS
	<p>CO-BENEFIT 4. Gender- and vulnerable groups-specific co-benefits</p> <p>Number of beneficiaries of gender-specific labor transition and skill development programs (#)</p> <p>Dollar share tracking (amount and %) of stand-alone gender activities within CIF project.</p>	0	MDB project data		<p>This would include beneficiaries of, for example:</p> <ul style="list-style-type: none"> -Improved renewable energy employment -Science, technology, engineering and math (STEM) skill development - Livelihood and skills development/entrepreneurship training and credit access - Gender-specific financial products, especially for productive-use applications; gender-specific design measures in energy-related services or outreach - Institutional measures, such as policy, planning, and budgeting support, inclusive human resources policies, or other policies targeted at reducing inequality, including in procurement practices, actions against gender-based violence, and measures, such as subsidies, to reduce burden of connection fees for vulnerable groups like female-headed households 	

Monitoring Approach						Evaluation and Learning Approach
RESULT STATEMENT	INDICATORS	BASELINE (Date)	TARGET (Date)	MEANS OF VERIFICATION	NOTES	KEY AREAS
					<ul style="list-style-type: none"> - Other measures designed to reduce gender and inequality gaps in the sector/sub-sector in which the program/project proposed for CIF funding is taking place 	

APPENDIX 3: STAKEHOLDER CONSULTATIONS UNDER CIF-ACT IP

1. As per guidance provided under the CIF ACT program, the joint MDB team has made key efforts to engage with a multitude of stakeholders as part of the joint missions conducted during June and stand-alone consultations to share details on the Indonesia IP. Participants who joined these sessions included other development partners, non-governmental organizations (NGOs), civil-society organizations (CSOs), think-tanks, and the private sector.
2. **Initial Meetings with Development Partners.** As part of the 1st Joint mission during mid-June, the joint MDB team met with several development partners in Jakarta to provide an overview session of the ongoing CIF exercise and get inputs/feedback on the development of the IP. These included the Agence Française de Développement (AFD), Kreditanstalt für Wiederaufbau (KfW) and the several stakeholders as part of the ongoing FIRE Dialogue (FIRE stands for Friends of Indonesia Renewable Energy), which comprises the Governments of UK, Australia, Netherlands and Denmark, United States Agency for International Development (USAID), Climate Works, International Labour Organization (ILO), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), United Nations Operations (UNOPS) and International Energy Agency (IEA) among others. The sessions were well received with key interest to further follow the process, as the CIF projects would be identified and to continue engagement with the joint MDB team as the IP progressed.
3. **Consultations with NGOs and CSOs.** The 1st consultation with NGOs and CSOs was organized virtually on 1 July 2022 and focused on: (i) providing and overview of the CIF ACT program and IP development process; (ii) the strategy and planning for carrying out Just transition assessments and Strategic Environmental and Social Assessment (SESA) under the CIF ACT program to ensure that the environmental and social impacts (including gender), are identified and addressed in the IP; (iii) the importance of stakeholder engagement and plans to ensure an inclusive and transparent feedback mechanism. Over 40 attendees joined the consultation virtually, from an estimated 25+ organizations, which included local NGOs in Indonesia such as Institute for Essential Services Reform (IESR), Trend Asia, Climate Action and Energy Transition Yayasan Indonesia Cerah (CERAH), Association for Ecological Action and People's Emancipation (AEER), and several international think-tanks including Rocky Mountain Institute (RMI), World Wildlife Fund (WWF), and Climate Policy initiative (CPI). The response from the attendees was very positive and several attendees appreciated to being provided the opportunity to participate in the IP development process.
4. **Final Stakeholder Consultation as part of the 2-week disclosure period.** As part of the two-week public disclosure period under the CIF ACT process guidelines, the final consultation took place on October 3, 2022 (two-hour virtual meeting) and was attended by several external stakeholders that had already been engaging through the CIF ACT IP development process such as IESR, CERAH, WWF, AFD, KfW, as well as additional invitees such as the International Trade Union Confederation (ITUC) and its affiliates. The IP draft was jointly presented by ADB and World Bank group, and provided a detailed overview of the proposed IP financing table, the relevant project concepts and updates to the studies carried out as part of the ongoing Just transition and SESA assessments. At the end of the presentation, the public link to the IP posted on the BKF website was shared, with a deadline for comments on 13th October 2022. The attendees welcomed the detailed conceptual information provided on each of the project concepts. A recording of the session and the slides were further shared with the attendees and an extended email list of over 100+ invitees, to ensure that those who couldn't attend were also able to participate as part of the 2-week disclosure process and provide any feedback on the IP. Please see comments received and addressed during the disclosure period in Annex 1.
5. **Stakeholder consultations as part of SESA funded by the CIF ACT (IP) preparation grant.** As part of the national SESA being carried out in Indonesia to understand the opportunities, risks, and impacts (positive and negative) associated with the CIF-ACT IP projects, all stakeholders are provided an opportunity to express their perspectives on and concerns about the energy transition in Indonesia, and to

voice their opinions on key environmental and socio-economic issues to be considered in the SESA. As a first step in this process, ADB and BKF launched the SESA on August 9th, 2022, which invited both governmental and non-governmental stakeholders to understand the concept of SESA, the requirements of SESA which make it a transparent, inclusive and participatory approach, and the importance of the exercise to support Indonesia's goal of a just and affordable energy transition. Post launch, a scoping workshop was held by MOF and ADB, on October 4, 2022. A further workshop is planned before the end of the year to consult on the national SESA scoping report, by March 2023 to consult on the objectives, scenarios, and impact assessment and by May 2023 to consult on the SESA draft reports. The SESA stakeholder consultations complement the CIF ACT consultations and provide direct feedback on the social and environmental aspects of the IP. More details on the SESA approach, strategy and process are explained in Appendix 5.

ANNEX 1: CIF ACT IP – Indonesia – Comments from 2-week public disclosure

Organization	Comment	Response
Government of Canada	<p>Overarching comments: Canada very much appreciate that the IP shows a good commitment to Just Transition, recognizing the potential socio-economic impacts of coal transition and the need of improvement of regulatory and institutional framework to support this transition. However, there are three main overarching points Canada would like to convey after a first read of this draft:</p> <ol style="list-style-type: none"> 1. While the October 12th, 2021, TFC decision on ACT financing stated, "<i>the indicative allocations may range from USD 200.0 – USD 500.0 million per country, based on the assessments made at the time of the investment plan preparation.</i>", this plan is requesting US\$600 million. Canada questions the need to exceed to original allocation per country for this IP. 2. This proposal would benefit from improved structure and clarity. It is difficult to understand the concrete implementation actions to be undertaken through the nine sub-programs/projects. Further, this IP would strongly benefit from having a clearer rationale on how the nine proposed sub-project/programs are intended to be complementary, transformational, and avoid any duplication of effort. Canada would like to understand better how the GoI, along with the MDBs, will coordinate nine sub-projects/programs of this scale. 	<p>Thank you for your comments</p> <p>This is noted. The IP is structured to leverage US\$600 million of CIF-ACT funds (US\$580 million as loans, US\$20 million as just transition grants) given the US\$5 billion required to accelerate the early retirement of 1-2 GW of CFPFs and manage all the related infrastructure (including 300MW+ of replacement/new RE and 90MW+ of storage), social and governance needs affecting over 2,000 people directly impacted by these efforts.</p> <p>As noted in Para 52, the state of Indonesia's power sector is such that both the early retirement of coal and the scale up of RE require financial incentives to kickstart progress and break the status quo. ADB's market sounding for the ADB Energy Transition Mechanism (ETM) corroborates broader market understanding that 10-20% of concessional finance is required to accelerate the coal transition (at the minimum). The IP amount of US\$600 million stands at 11% of the total program cost. The IP also plans to catalyze private finance through Component 1.2 and 1.3, as well as Component 3, tacking a unique and challenging task of harnessing private participation.</p>

	<p>3. Further impacting this coordination challenge (see above), the IP reads as a grouping of projects/programs supported separately by ADB and WB. There is no evidence of project co-financing/co-management from both WB and ADB, as joint MDB efforts.</p>	<p>Please see Figure 1 in the IP which highlights how all institutions are working together to advance the mandate under each of the pillars. Note that, more or less, the CFP asset group being retired early and decommissioned and repurposed will be the same group supported by both the ADB and WBG. (The CFPs must be retired early, before being decommissioned and repurposed.)</p> <p>On the policy front, as seen in the appendices, both ADB and the WBG have sizeable programs in country and work to coordinate policy actions and policy dialogue.</p> <p>We would like to highlight the strength of this diversified approach through 8 projects given the multifaceted nature of the ACT challenge.</p> <p>The MDBs and GoI have engaged in several consultations to address the many interventions required to lay the path for the clean energy transition.</p> <p>Fundamentally, it is the GoI, through key partners such as PT SMI's Energy Transition Mechanism Country Platform (ETMCP), that brings together specific individual regulatory workstreams and public and public sector investment activities.</p>
Financing		
	<p>From Table 5 and the Appendices, it remains unclear how much (or what percentage) of the ACT funding will be dedicated to the People Pillar and the Governance Pillar. This information would be very useful.</p>	<p>As noted in Figure 1 five of the eight projects/programs identified have a people and communities component, while two have a major governance component.</p> <p>Based on the activities within each project/program, it is estimated that approximately US\$1.9 billion will be devoted to People and Communities, and approximately US\$1.5 billion to Governance.</p>
	<p>Table 5 indicated mostly <i>TBD</i> for GoI co-financing. Would it be possible to provide more information on the GoI co-financing, including the capacity of the GoI to co-finance those nine sub-programs, as well as what will be the main drivers to determine that co-financing?</p>	<p>The Table has been amended with GoI estimates that are subject to further discussion with the specific project/program proponents as well as annual budget approvals and endorsements.</p>

	<p>For easiness of referencing, on Table 5 (or in another table), could you please show the breakdown of the ACT loan versus grant amounts, needed under each of the sub programs? The rationale behind the selection of an instrument versus another for each the sub-programs would also be useful.</p>	<p>The IP structures US\$580 million for CIF-ACT loans and US\$20 million for grants that are only used to support just transition:</p> <p><u>Grant requests:</u></p> <ul style="list-style-type: none"> (i) PT SMI ETMCP – Just Transition Framework (US\$1 million) (ii) P4R – Technical assistance and capacity building for PLN around coal phase-down, RE and just transition (US\$5 million) (iii) JT&Repurposing (P1 & 2) – Just transition activities to mitigate community impacts (US\$5 million) (iv) PRIME STeP – Just transition (providing skills for jobs of the future) (US\$9 million)
	<p>For each sub-programs, could you please provide more details on the “Other Private” co-financing partners (e.g., who are they, is this funding confirmed, etc.)? Under Table 5, does that include DFIs as well (e.g., KfW, ADF)?</p>	<p>Other/Private refers to cofinanciers for the various programs or projects as follows (all to be confirmed and are subject to further approval):</p> <ul style="list-style-type: none"> (i) PLN RBL – Development Partners such as KfW and AFD (ii) PT SMI ETMCP Facility 1 – Indonesian domestic banks (iii) IPP CFPP early retirement program – International commercial banks or bilaterals (iv) Dispatchable Renewables Program – International commercial banks or bilaterals (v) PT SMI ETMCP – domestic banks
Implementation		
	<p>Appendix 2, under the Result Framework table, how are the targets calculated, especially for the social-economic ones? Could the plan provide more details on the methodology? Moreover, most of the result targets in each of the sub-programs described from Appendices 8-15 are <i>TBD</i>. Therefore, how were the targets set in the Appendix 2 (while they are still <i>TBD</i> in the Annexes 8-15)? Or it is a different methodology?</p>	<p>ADB and WBG, together with key GoI partners such as PT SMI, have worked together to identify key initiatives contributing to the IP-level indicators and consider approximate level of impacts of communities and potential beneficiaries:</p> <ul style="list-style-type: none"> - 1-2 GW CFPP early retirement - 0.5-1GW CFPP repurposing - 1 coal mine JT/economic development intervention - 400MW of RE and storage investment <p>As many of the projects will be contributing towards the same overall outcomes, we are mindful not to present them at the project level at this stage (when project activities are still being designed) to avoid duplication or double counting.</p> <p>Disaggregation of project- or program-level contributions will be provided when the projects or programs go for CIF TFC</p>

		approval in the coming months/years after an IP is endorsed.
	Appendix 2, under the Result Framework table, all co-benefits baseline and targets are TBD (pp.55-56), with many blank information. Would it be possible to provide any notional estimates, which would help convey a sense of the scale of ambition to the TFC.	Given the early stage of some of the projects or programs, cobenefit estimates are not be available at this time. The scale would be commensurate with the ACT CORE indicator targets specified.
	Appendix 10, under IPP CFPP early retirement sub-program, it is mentioned that “ <i>Concessional funds from the CIF-ACT program would complement debt financing from ADB to maximize the reduction in the Power Purchase Agreement (PPA) tenor and remaining operating life of the CFPP.</i> ” To confirm, this is debt financing, but the ACT funding would not be used to acquire part of the coal power plants?	Correct. The IPP CFPP early retirement program will be supporting a model whereby the original sponsors of the CFPP (the equity investors and CFPP operators) retain control of the asset. ADB’s funds, associated co-financing and CIF-ACT financing would be provided as debt to support the re-leveraging and refinancing of the project.
	It is mentioned on p.41 that under People Pillar, the main objective is: “[1,160 (i.e., 88% of)] employees of retired CFPPs/coal mines with access to sustained income and [3,200] direct beneficiaries of social plans and economic regeneration activities[...].” Out of curiosity, who (in terms of socio-economic characteristics) are the 12% that will not be receiving support?	The social protection packages and re- or up-skilling programs which will be designed and developed together with the government will ultimately target as many workers and communities in need in the most effective and efficient manner. Understanding of the demography of the local communities and labor profiles through the baseline studies will assist in the development and execution of the social and economic support programs. A smaller percentage of the observed groups may not fall into the category of productive workforce and/or in need of support (voluntarily opts to be excluded from the support program for individual reasons, positioned farther away from the perimeters of ‘induced impacts to workers’ - while considering that the directly, indirectly impacted, and those affected through induced impacts of the transition are all being observed in this IP, following a clear definition of the systems boundary of each project).
	The plan mentions briefly on p.35-36 the need for coordination with FIRE (Friend of Renewable Energy), and the newly formed Indonesia Just Energy Transition Partnership (JETP). However, could the plan further detail GoI and MDBs’ plan to ensure coordination and collaboration with those partners/platforms?	The GoI remains a key stakeholder in all climate discussions and plans to continue dialogue with all parties to advance clean energy ambitions. The four focus group discussions convened by MOF (and supported by ADB) to coordinate among the various GOI ministries will continue in 2023 and beyond as the primary avenue for coordination. PT SMI as the country platform

		<p>manager is tasked with designing and organizing these focus group discussions going forward.</p> <p>The MDBs remain participants for the FIRE dialogue and liaise with JETP proponents on a regular basis and will continue to do so.</p>
	<p>Could the plan detail further the co-operation with NGOs for post-closure coal mine rehabilitation? Some Indonesian national or local NGOs have solid experiences in dealing with community development works and post-closure coal mine land rehabilitation. This will support the inclusiveness of the CIF-ACT as part of the governance intervention and will also help smoothen infrastructure projects implementation in dealing with mine closures.</p>	<p>Cooperation with NGOs, CSOs and labor unions will be essential from the start, and are already integrated into pre-closure and baseline assessment discussions. They will most certainly stay involved as the projects and programs proceed to implementation and monitoring and evaluation stages. The local community and civil society organizations on the ground (including women-led organizations) can become valuable partners of the projects during implementation and monitoring and evaluation stages as they are often the stakeholder groups most closely related with project developments taking place in their area. Citizen monitoring has been proven to be an effective tool to enhance transparency and accountability in the management and governance of the natural resources sector. Through the development of social accountability approaches with CSOs and NGOs, the project can build stronger safeguard mechanisms towards achieving the desired objectives and outcomes.</p>
	<p>On p.29, it is indicated that “<i>Support from WOLCOT grant mechanism could be sought to institutionalize the engagement with stakeholders initiated through SESA and JT assessments, so that engagement continues throughout the implementation of the IP. This would enable closing feedback loops between inputs provided by community stakeholders, and actions taken in the context of the projects.</i>” While we strongly encourage GoI to work along with the WOLCOT in the implementation of the ACT program, it is critical that this Investment Plan demonstrates as well continuous engagement with stakeholders throughout the implementation of the ACT program outside of the support from the WOLCOT.</p>	<p>That is noted. The full spectrum of efforts is outlined in the IP and where there is alignment with the WOLCOT mechanism the IP identifies relevant components. The MDBs will proceed to implement gender activities to the fullest extent of their own policies and procedures.</p>

	<p>It would be important that the proposal address the aspect of the forced labour in the solar supply chain and how this will be managed, knowing that both solar and wind supply chains are of concern related to the question of forced labor.</p>	<p>The conversation around forced labor in the space of renewables, in particular solar PV, supply chain is acknowledged as one of the considerations within the social dimension of the Just Transition approach. Decommissioning and repurposing projects on both sides of the value chain (coal plant and mine site) present an array of potential social hazard and labor issues mingling with the possibility of people and worker migration, as is many times the case following a transition. A collaborative and inclusive approach coupled by the MDB's stringent safeguards guidelines will ensure that a comprehensive Stakeholder Engagement Plan and Risk and Mitigation Plan be developed at the preparation stage of the project design. Such effort will necessarily provide early identification and warning systems during project implementation should any indication of adverse impacts to workers and local communities especially marginalized groups be detected. Guaranteeing a sustained socio-economic welfare of the local communities and workers during and post-transition will constantly be a shared challenge to be faced by all stakeholders involved, hence the imperative of a continuous stakeholder consultation process as the underlying foundation of a Just Transition.</p>
Gender		
	<p>If applicable, could this Investment Plan demonstrate further the interrelations between this IP and the WOLCOT mechanism? How will women influence the implementation of the IP (beyond being consulted)?</p>	<p>Please see para 44 and 46 in IP submission. In addition to consulting women throughout the project lifecycle (Component 4 of WOLCOT: Evidence generation and knowledge sharing), this IP will support women organizations in providing necessary training programs to women in communities with regards to leadership skills, negotiations etc. that will enhance their participation during the policy dialogue (Component 2: Capacity building). Women empowerment programs will also include assistance to increase women's share in STEM employment and entrepreneurship in the clean energy future whether in the forms of funding or technical assistance to design and start up the business (Component 3: Designing and piloting access to finance and training programs). Women can constitute an important part of a citizen monitoring process during implementation of the IP. Under a strong citizen engagement and monitoring mechanism women, as part of</p>

		the local community, can take on a larger role and demonstrate ownership through agreed mechanisms set up during project design to proactively support the implementation of projects while enhancing transparency and accountability of activities and deliveries.
	The gender mainstreaming approach seems missing from Inputs-Activities-Outputs-Outcomes-Impact of the Theory of Change (Appendix 2), although some gender-disaggregated indicators have been mentioned (without target) in the Integrated Results Framework (p. 48-56). This Investment Plan would benefit from a reconciliation of the gender objectives between the ToC and the IRF	The Theory of Change has been amended accordingly. In practice, gender disaggregation will be provided for nearly all projects and programs (wherever feasible) in line with current MDB gender policies.
	The gender equality analysis considers well the gaps in women's employment and in leadership positions. However, just transition could also consider socials and economic challenges such as land displacement and their impact on women. Considerations of the impact of coal transition on households could take account of how women and men are affected differently.	This has been considered as part of just transition assessments with respect to closures of CFPs and coal mines. An elaborative discussion on the use of gender intersectionality approach builds the mainframe of all of the social and economic impact-related studies. This approach points out the importance of first understanding the so-called DNA or 'sections' that make up the day-to-day interrelation between men and women and how the social structure functions today as a result thereof. The knowledge gleaned from this type of social research is based on in-depth study of the historical and socio-cultural influences that have developed the community now potentially facing an oncoming transition. The knowledge will also be shaped by assessments on how changes experienced by the community affect men and women differently; this includes investigations on land displacement issues and their differentiated impacts on men and women. Findings through the applied gender intersectionality approach help to understand why and how gender inequalities were developed and find solutions on how to tackle these inequalities before they are transferred beyond the transition.
Environmental Considerations		
	The proposal identifies a number of risks to terrestrial and aquatic biodiversity from the development of renewable energy initiatives (Annex 1 of Appendix 5). The annex also identifies the risk of over-extraction of minerals. However, extraction of the materials necessary for	ADB is supporting GOI to prepare the national SESA to ensure that key environmental and social risks and opportunities of energy transition, both coal asset closure and scaling-up of renewables are considered. In Indonesia, biodiversity is a key consideration. The SESA will include

	<p>the development and storage of renewable energy can also impact on biodiversity and could be taken into consideration under this Investment Plan. There are a number of certification schemes which aim to provide developers with assurance that the minerals they buy are mined responsibly.</p>	a SESA management plan which will set out recommendations in respect of key risks and opportunities, including mineral extraction for renewables and the need for assurance on responsible supply chains, such as certification schemes.
	<p>The proposal could mention issues related to the end of the operational life of a solar plant. There are generally three options: i) extend the operational life of the existing assets; ii) repower the site; or iii) fully decommission the site. Both repowering and decommissioning provide opportunities to undertake appropriate mitigation measures for biodiversity.</p>	The national SESA will look at life-cycle impacts of renewable options, such as end of life reuse, recycling, disposal of equipment and site decommissioning and development options. There will also be transaction-specific environmental and social impact assessments that will be prepared to support the due diligence when the projects and programs are prepared.
	<p>Coal-plant repurposing: it would be good to know more specifics about what parts of the coal power plants will be repurposed (e.g., boilers, materials, etc.). Is land decontamination adequately considered as well?</p>	What parts of the plant will be repurposed will be dependent on the results of the ongoing technical studies on the needs of both the site as well as the system, and therefore what subsequent technology will be used to repurpose the plant.
RMI	<p><u>Page 5; Para 2</u> Indonesia has updated its NDC target to 31.89% for its own efforts and 43.2% with international assistance</p>	Thanks for highlighting this. As the IP was being drafted before the NDC was published online, it included the 2021 numbers. We have now updated the IP to ensure that it reflects the numbers based on the latest NDC submitted at end of September 2022.
	<p><u>Page 7; Table 1</u> Not sure if the calculation is right - this should be 450</p>	This has been corrected.
	<p><u>Page 7; Para 7</u> Language use here: "Explore options to support" seems non-committal. Rather, sentence should be revised to reflect more detail on pilot mine closures as outlined in Para 62: "two repurposing pilot projects in the mining sector have been identified, which would help kick start the repurposing of coal mines under a Just Transition approach in Indonesia, providing "</p>	The WBG repurposing project will also support pilot coal mine closure and repurposing activities in pre-identified sites to develop economic diversification on post-mining lands that would provide alternative livelihood options for the workers and communities and catalyse new economic drivers to sustain regional growth. Such initiative will be propped against the three pillars of the Just Transition approach, ensuring that social, economic, and environmental dimensions are safeguarded. The WBG's Just Transition and coal repurposing component attempts to enable a holistic view encompassing the

		downstream and upstream side of coal supply transformation.
	<u>Page 7; Para 7</u> (RE+storage) can be interpreted as co-located capacities with the intention of making RE dispatchable, an expensive and inefficient approach to addition of storage to the grid. Might be worth looking at the two separately, including highlighting various alternatives for how and where storage can be incorporated to add maximum value to grid management and balancing	Noted and agreed. The opportunities have been disaggregated when broadly referenced in the IP, outside of the Dispatchable RE program (Component 3.1). As part of the coal repurposing project, the World Bank is also undertaking a grid study which will exactly address the question of where storage can be incorporated to add maximum value to grid management and balancing.
	<u>Page 8; Para 8</u> Are Universities the only institutions to be targeted for energy transition workforce development and retraining? There are a number of energy transition institutions outside of academia. RMI's Energy Transition Academy and the South East Asia Clean Power Hub are already established bodies who can support skills development, knowledge sharing and develop communities of practice for energy transition.	The reference in Paragraph 8 is limited to ADB's specific PRIME STeP loan (Component 2.3) to the Ministry of Education. This may also involve the engagement and participation of PLN University. The broader just transition workstreams for both the ADB (i.e. support for PLN and PT SMI and national framework) and WBG (i.e. community development and coal regional economic transitions) will involve the engagement of other partners to advance skills development, knowledge sharing and develop communities of practice for energy transition.
	<u>Page 10; Box 1</u> Remove hyphen after "Sumatra". Comes across as a single grid as it is.	Corrected.
	<u>Page 12; Para 14</u> Para 14 could also mention lack of grid access and market mechanisms to incentivize development of smart grid technologies; lack of implementation guidelines for power wheeling; lack of grid interconnections to connect demand centers with RE-rich geographies; opaque operational data (thus limiting opportunity assessment); opaque power system planning process and documentation (also limiting opportunity assessment)	The paragraph was supplemented with the items identified. Thank you for this input.
	<u>Page 12; Para 15</u> NDC has been revised recently. New NDC target is 31.89% with its own efforts and 43.2% with international assistance	Noted and updated as per the latest NDC dated Sep 2022.
	<u>Page 13; Fig 3</u> Might want to update this	As noted in comment above
	<u>Page 15; Fig 5</u>	Noted and updated.

	I believe MEMR is under Coordinating Ministry of Maritime Affairs and Investment	
	<u>Page 20; Para 30</u> Para 30 - the last sentence could note the opportunity to link local content reform with sector-level capacity building, including R&D support	Changes made accordingly.
	<u>Page 26; Table 3</u> It would be nice to see a flow chart and full timeline, including the design and development stages, but also how some of the dependent pieces fit together. For example, will the SESA and baseline studies, and projects with policy changes/ new governance structures be completed in time to support implementation of RE and coal phase out projects?	With respect to the cross-cutting priorities (just transition, gender and SESA work), most of the results are expected to be made available to the GoI by early- to mid-2023 (additional analysis on programs that could support employment transition towards greener jobs, as well as key activities to mitigate the impacts on gender and social issues, especially in the most vulnerable regions, including impacts in the informal sectors will only be available to the GoI by the end of 2023). The above studies are overarching and will inform the design approach of almost all the components, as most of the projects will only be moved to ADB/WBG board consideration mid 2023 onwards. The projects that are most advanced include the PRIME STeP grant and the IPP CFPP early retirement program (project #1), both of which are likely to move forward in the first half of 2023. ADB just transition, gender and safeguards teams are actively engaged in these specific initiatives to ensure the projects benefit from a more iterative approach to their mitigation and transition plans, taking into account the latest developments and analyses. Furthermore, the World Bank P4R bolsters the enabling environment with targeted effectiveness by end-2023, ahead of planned decommissioning and subsequent RE scale up.
	<u>Page 29; Para 50</u> Para 50 is somewhat confusing in terms of its location. It doesn't clearly relate to "IP Financial Plan and Instruments."	Noted and agreed. It has been moved to the end of the section as a transition paragraph to denote the need for concessional finance in the Indonesian ACT context.
	<u>Page 30; Para 52</u> Could blended finance or bonds be used to finance project implementation?	MDB deployment of CIF-ACT funds alongside MDB funds is the broader blended finance approach contemplated. MDBs are providing support to implementing agencies to support their access to the bond market, but given the nature of MDB financing (with sovereign loans being guaranteed by the

		Ministry of Finance), support is usually provided through direct lending or two-step loans. For the private sector projects, MDBs can consider supporting sustainable bond issuances (e.g. as anchor investors or through credit enhancement) benefiting RE project development (as noted for PT SMI ETMCP Facility 2).
	<p><u>Page 31; Section 3.4</u></p> <p>This section would benefit from additional details at the sub-component level to help understand the proposed sub-components (here called projects). Activities should at least be listed as bullet points.</p> <p>Furthermore, if a full budget breakdown is not available for review, additional information at the activity level breakdown should include the associated budget.</p>	Noted. However, please note that many of the projects contemplated are at a very early stage of development (at the concept or pre-concept stage). As such, the full breadth of activities have not been confirmed at this time and are subject to further discussion with the respective implementing agencies. The activity-level breakdown will be available when each individual project proceeds for CIF-TFC approval after an IP endorsement.
	<p><u>Page 31; Section 3.4</u></p> <p>There is insufficient explanation given why Component 1 only involves MDB/DFI financed transactions (concessional (CIF-ACT) and subordinated debt (ADB) positions plus commercial (KfW lending). It appears no private finance will be used to re-finance CFPP assets. Private finance will only be leveraged by MDB concessional finance for RE and RE+Storage projects. While there are IPP pilots, this is also 100% MDB/CIF grants/debt.</p> <p>This appears to be a complete missed opportunity to pilot blended finance approaches involving local financial institutions/investors. For example, the Philippines has already started a pilot early retirement transaction of an IPP CFPP through a local pension fund. Can this much larger ACT proposal support some pilot private sector refinancing approaches? RMI's recent research on Managed Phaseout commissioned by GFANZ for banks and the financial sector not only shows that this is possible and pilots in emerging markets will be critical</p>	<p>Component 1 involves 3 projects:</p> <p>Component 1.1 is the PLN RBL with is MDB financing (with development partner cofinancing) alongside CIF-ACT concessional finance. Sovereign loans are to the government and do not integrate commercial financing directly. (ADB sovereign loan is not subordinated.)</p> <p>Component 1.2 will support the same coal phase out and RE scale up goals of 1.1 through PT SMI. Here it is envisioned that the ADB and PT SMI contributions will be provided alongside domestic commercial financing.</p> <p>Component 1.3 is the IPP CFPP early retirement program (pipeline of up to 3 projects). These would be commercial refinancings leveraging CIF-ACT concessional funds to reduce PPA tenors and retire the IPPs several years ahead of schedule. The financing table and program concept has been amended to integrate the participation of private commercial financiers, but the ultimate cofinancing amounts will depend on market sounding results in the coming months.</p>
	<p><u>Page 31; Para 56</u></p> <p>The funding pool for Facility 1, laid out in Table 5, and in the narrative here do not</p>	This was an error and has been corrected. Commercial cofinancing for the whole FIL

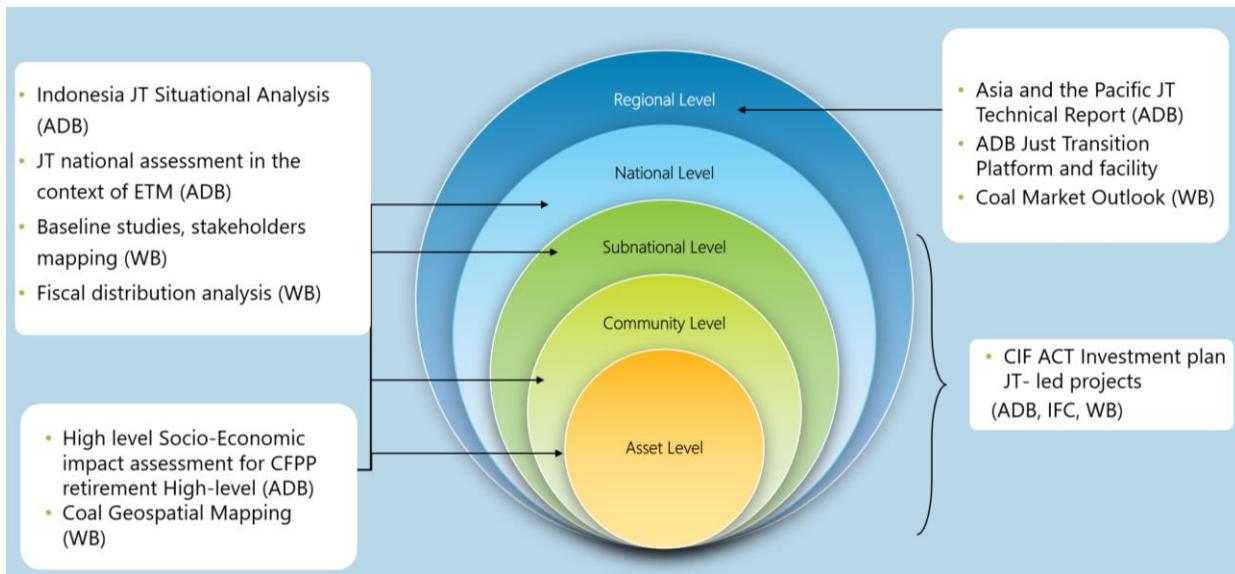
	<p>seem to match... is there a staging element to the the commercial financing proposed here that's not reflected in the table yet?</p>	from ADB to PT SMI is expected to be US\$400 million (US\$100m for Facility 1 and US\$300m for Facilities 2 and 3).
	<p><u>Page 37; Table 7</u> Is there risk associated with not just the clarity of implementing regulations but also the timing, as policy reform could be a slow process? Perhaps the mitigation section could emphasize coordination between implementing agencies to ensure timely progress.</p>	Noted and amended accordingly.
	<p><u>Page 37; Table 7</u> It might be beneficial to include informing/educating energy transition decision-makers of all the tools and resources available for effective power sector decision making, especially for less mature technologies</p>	Noted this will be taken into account in the design and development of the PLN RBL, World Bank P4R and PT SMI ETMCP projects and associated technical assistance programs. The World Bank P4R includes a component on capacity training for exactly these types of issues.
	<p><u>Page 39; Table 7 contd.</u> Is financing for the RE scale up decoupled from financing for the coal transition?</p>	The IP is designed to take advantage of both RE scale up opportunities that arise from broader capacity needs (with private sector programs in Component 3) as well as RE scale up in relation to repurposing opportunities (i.e. Component 2.2).
	<p><u>Page 41; Para 75</u> Over what timeframe are these emissions and energy savings realized?</p>	As per the IRF table, target dates for the emission reduction and other indicators is 2029, providing a 5-6 year horizon for project development and initial implementation before results are assessed.
	<p><u>Page 48</u> It would be good to see an indicator tied to private sector funds being crowded in, perhaps related to project 9/ETM Country Platform</p>	Noted and agreed. The financing will be reported on a disaggregated basis (i.e. MDB and "Other/Private") for each project, so the information will be provided during implementation. The target assumption is currently as stipulated in Table 1 under "Other/Private."
	<p><u>Page 48</u> Something like the grid's emissions intensity would probably be a better metric than % of primary energy supply</p>	Given the guidance of CIF-ACT on this level of indicator, it is best if the target is regularly provided by the government and established as part of a policy target. As such we have also included RE % of generation mix and incorporated the target from the RUPTL 2021-2030 to move towards a similar concept.

	<p><u>Page 83</u></p> <p>It would be nice to see a “Results Indicator” tied to amount of private capital attracted in the results framework in appendix 2.</p>	<p>Noted and agreed. As above, the financing will be reported on a disaggregated basis (i.e. MDB and “Other/Private”) for each project, so the information will be provided during implementation. The target assumption is currently as stipulated in Table 1 under “Other/Private” but the private capital raised will be disaggregated during monitoring and evaluation.</p>
--	--	---

APPENDIX 4: Overview of Just Transition Activities supporting CIF-ACT IP

1. The Figure A4.1 below describes ongoing engagement on just transition in Indonesia by ADB and WBG across all aspects of the agenda, that informs CIF-ACT IP programming. Activities being undertaken by ADB and the WBG are complementary, and parties are working together to ensure consistency and to maximize the utility of the work through research, analysis, and consultation.

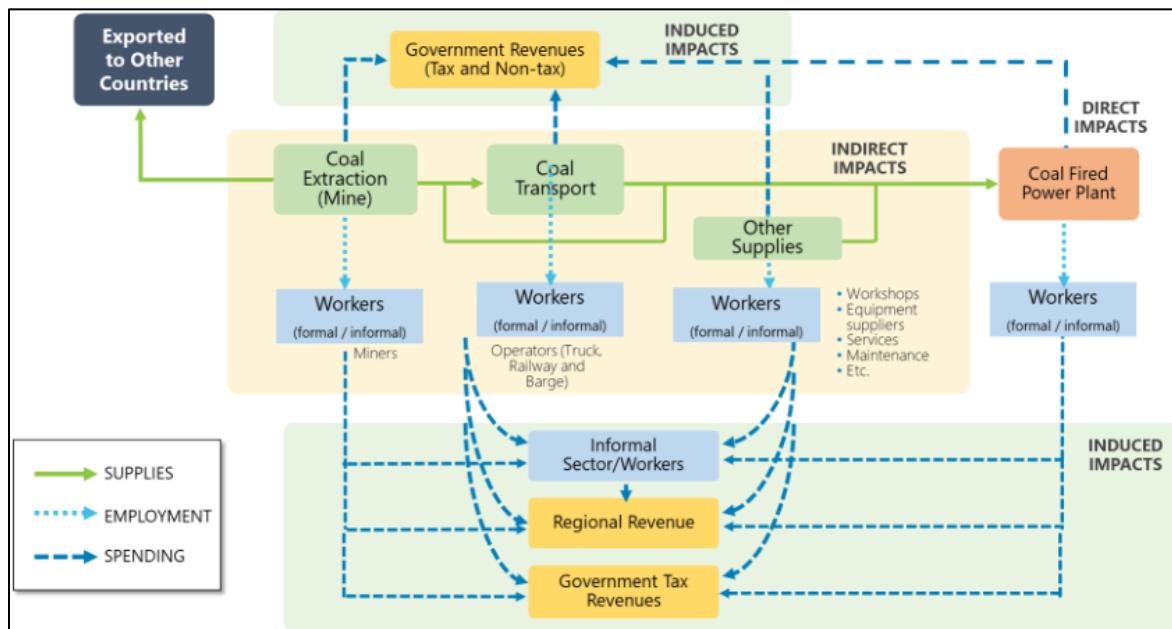
Figure A4.1: Just Transition Ongoing support to Indonesia



2. **ADB assessments underway.** In 2021-2022, in collaboration with MOF, ADB undertook a series of consultations across government ministries, and with other stakeholders, to inform the development of an economy-wide situational analysis, that assesses the presence of an enabling environment for a just transition in Indonesia. The analysis included a high-level assessment of aspects such as social protection; gender equality; informal sector employment; state-owned enterprises (SOEs); micro, small, and medium-sized enterprises (MSMEs); and just transition governance, among others. Based on the work undertaken ADB provided recommendations to the GoI on key steps to move forward with developing a national approach to just transition including the creation of a just transition roadmap, appointment of coordinating entity and active integration of just transition into government, private sector and labor dialogues.

3. In parallel, ADB is undertaking further work as part of developing its comprehensive approach to just transition in the Energy Transition Mechanism (ETM). A high-level socio-economic impact assessment is being conducted for the early CFPP retirement (Figure A4.2). This assessment provides an initial, high-level quantification of the potential impacts of CFPP retirement for a group of CFPP plants and units located in Java-Bali and Sumatra including direct, indirect, and induced impacts in local businesses and regional revenue and government revenue, as well as multiplier effects due to closure of more than one CFPP. The outputs of the assessment will provide indicative impacts on employment, poverty rates, income loss, gender issues such as employment disparity and domestic violence, and government revenue and its potential effect on local government expenditure on public services. The results of the assessment will allow GoI and ADB to better understand the nature and scale of potential impacts, thus informing the design of appropriate mitigation measures, and identifying whether more detailed assessments are further required (e.g., of individual assets). Based on this assessment, and other just transition work ongoing, a just transition framework will be developed that considers impacts, potential mitigation measures, outlines a consultation approach, and identifies responsible parties, on three levels (i) Just Transition Framework for Energy Transition in Indonesia (to be developed by PT SMI) (ii) Just Transition Framework for ADB's ETM (iii) proposed approach for asset level Just Transition planning for specific CFPPs.

Figure A4.2: Just Transition Stakeholders and Impacts – CFP focus



4. To complement the socio-economic impact assessment, ADB is undertaking further research into the Indonesian national context, as relevant to just transition, to identify and assess areas that need strengthening and potential investment to facilitate a just transition. This research will also identify opportunities for further support to Indonesia, including informing the detailed design and implementation of the IP projects (see Table A4.1).

Table A4.1: Assessment to Inform Future JT Programs and Initiatives

Reskilling and retraining	Education	Informal sector participation
<ul style="list-style-type: none"> Map Indonesia's current reskilling and retraining schemes Identify relevant skills in emerging and green sectors Undertake gap analysis of reskilling and retraining programs Identify opportunities for policy reform to strengthen Indonesia's reskilling and retraining programs 	<ul style="list-style-type: none"> Identify relevant skills and tertiary education programs that will be useful in fulfilling Indonesia's climate goals based on national climate policy documents Determine availability of such programs in Indonesia's top academic institutions Consider existing ADB-led education projects Analyze the state of cross-cutting issues such as gender, rural access, research and development, digitalization, and collaboration Identify opportunities for policy reform to improve Indonesia's educational system 	<ul style="list-style-type: none"> Identify the types of informal occupations that support the sectors along the fossil fuel value chain, both directly and indirectly Analyze qualitatively the impacts that the transition away from fossil fuels will have on informal workers, with special focus on women. Identify opportunities for the informal sector, e.g., in the development of MSMEs Identify opportunities for policy reform.

5. Each of these lines of research shall be framed around the state of industry diversification in Indonesia. They shall consider options that have been highlighted in the country's various national strategy and policy documents, especially those outlined in Indonesia's NDC and LTS, as well as those identified in the country's long-term development plans. Other considerations include the state of MSME development

in the country and other cross-cutting issues, including research and development, digitalization, and technology transfer.

6. World Bank baseline studies, stakeholder mapping, and a fiscal distribution analysis. The socio-economic impact and environmental remediation baseline studies, stakeholder mapping and fiscal distribution analysis are prioritized activities under the World Bank's Global Standardized Baseline Assessments for building the foundation of the Just Transition Roadmap are underway. With regards to specific priority issues in the energy and mining sector, the World Bank Team are collaborating closely with government counterparts to secure alignment between activities planned under the CIF-ACT assessments and the government's own program. This will ensure that findings from the studies will inform decision-making for policy action and pave the way towards an enabling policy and regulatory ecosystem conducive for the design and implementation of the Just Transition Roadmap. The outputs of the analytics will be available in draft and final form on Q4 this year and Q2 2023. They include:

(a) Geospatial database: It will provide a detailed baseline of Indonesian coal operations from which to conduct further analysis and an asset-by-asset total cash cost and margin analysis, facilitating the identification of marginal producers.

(b) Map fiscal revenues distribution: The mapping exercise seeks to understand the coal production revenue and distribution scheme across regions and at subnational level as well as other fiscal mechanisms in place within the coal sector including subsidies

(c) Existing labor profiles demographic survey: Mapping of existing labor profiles including direct/indirect workforce, informal labor (incl. age, income, and skill dimensions), coal transport, and SMEs along the coal value chain.

(d) Baseline assessment of socio-economic conditions: Also accompanied by a social cost analysis of a transition, this baseline assessment of socio-economic conditions and linkages at the granular community level and across coal regions uses stakeholder perception surveys. A critical component of the assessment involves a mapping of Community Driven Development (CDD) Framework to needs under Just Transition.

(e) Impacts to gender and vulnerable groups and gender skill gaps assessment: Conduct gender-sensitive impacts of the transition and gender skill gaps assessment in the coal mining industry, based on case studies/ existing coal mines to provide insights how women and men can be affected differently using an intersectionality lens and relate this with existing and projected skill gaps in the (new) industry.

(f) Assessment of technical closure standards: As part of the Environmental Aspects Mapping: Reclamation & Land Repurposing Assessment under the JT standardized Global Baseline Assessment, the review and strengthening of Technical Closure Standards & regulations includes the packaging of surface/ subsurface data with regards to abatement of methane. A fundamental part of the work will be informed by the Global JT working in partnership with UN ECE.

(g) Baseline assessments of land & assets: Also part of the Mapping of Environmental Aspects, this baseline assessment serves the purpose of environmental reclamation and land repurposing. Some World Bank environmental assessment tools developed by the Global JT which will be put to use here are: (a) Remediation Costs and (b) Land-Use Repurposing Assessment.

7. Distributional Impacts of Coal Transition and link to Institutional Support. The baseline analytics presented in the IP will generate better understanding of the distributional impacts of a coal transition across the dimensions of social, economic, and environment. The studies will include investigation of such effects of a transformation on typically marginalized and disadvantaged groups that may further exacerbate gender-inequalities. The findings will be translated into response measures and inform decision-making that strives to reduce inequalities, boost social inclusivity, and close the gaps between winners and losers; to ensure that nobody is left behind.

8. The results of the distributional impact assessments will also be able to inform design of reskilling, job placement, and unemployment social support packages, in particular for those underrepresented groups in the sector – and men and women are equally provided opportunities and benefits to mitigate the adverse effects of the transition. The studies will also provide inputs to the optimization of potential new economic diversification in the formerly coal-dependent regions, therefore, enabling sustainable regional economic growth.

9. A transition towards a low-carbon future clearly requires policy responses that match the scale of transformations taking place in the coal sector. Here is where the analytics link closely with the institutional support envisioned by the IP. Strengthened capacity of decision-makers propped by a strong basis of a more nuanced understanding of the distributional impacts of mine downscaling across society result in increased effectiveness of low-carbon transition policy-making and implementation of climate-resilient action plans. This way policy responses and subsequent measures can ensure that the impacts brought about on workers, affected communities, and the environment are thoroughly and equally addressed.

APPENDIX 5: Overview of National Strategic Environmental and Social Assessment (SESA)

1. **Approach to assessment.** The Strategic Environmental and Social Assessment (SESA) for the ETM in Indonesia builds on the findings of a regional scoping exercise undertaken by ADB which identified key environmental and socio-economic issues, risks and opportunities likely to be associated with ETM implementation in southeast Asia.⁵³ These issues will be reviewed and adapted throughout the SESA process, and modified where required, to accord with the Indonesian context and relevant domestic key environmental and social concerns identified through stakeholder engagement and the scoping process.
2. The SESA will adopt best international practice as set out in the OECD DAC Guidance for Strategic Environmental Assessment (SEA) (2006) (equivalent to SESA) which includes international principles for conducting SEA.
3. **Stakeholder engagement.** A fundamental principle of SESA is to involve key stakeholders and encourage public involvement throughout the SESA process. A stakeholder engagement plan is being developed based on initial stakeholder mapping which has identified key stakeholders including government organisations (national, local, municipal), relevant parastatals, concerned groups (e.g., CSOs, NGOs, labour organizations, religious groups), local communities, marginalised groups (e.g., indigenous peoples, women), technical experts, etc.
4. Opportunities will be provided throughout the entire SESA process for all stakeholders to present their perspectives on the ETM, to identify and validate key issues, and to comment on draft documents prepared for the SESA. This input will be through workshops, focus groups and key informant interviews undertaken at national to local levels. The SESA will integrate the outputs of stakeholder engagement with the work to further Just Transition (JT). An additional important consideration for the SESA will be the inclusion of a gender lens and evaluation of gender related risks and impacts of ETM implementation.
5. Workshops have been held with key stakeholders in August (national SESA launch event) and October (national SESA scoping of issues). A further workshop is planned before the end of the year to consult on the national SESA scoping report, by March to consult on the objectives, scenarios, and impact assessment and by May to consult on the SESA and SESMP draft reports.
6. **Assessment - Phase 1.** The SESA involves two phases. It is currently mid-way through the Phase 1 scoping phase and complete analyses are not yet available. Initial risks and opportunities have been identified as follows:

Impacts and Risks. Expert judgement by the SESA team has found that the key environmental and socio-economic issues that will need to be addressed by the national SESA are closely aligned with those identified during the regional scoping exercise (see Annex 1). Assessment of likely impacts will not be undertaken until Phase 2. But preliminary analysis identifies a range of environmental and socio-economic risks summarized as follows:

- *Environmental risks:* whilst coal fired power plant (CFPP) retirement will eliminate GHG emissions from those plants, there remains a risk that the coal formerly supplied to them may be exported and burned elsewhere, resulting in no net reduction in emissions. Other risks include: ongoing GHG emissions (from CFPPs/coal mines and some RE developments); reduced air and water quality, land and water (surface and groundwater) contamination by toxic substances and other materials, noise and disruption to communities; damage to ecosystems and loss of terrestrial and aquatic biodiversity; impacts to important ecosystem services; impaired community access to land and water resources; accumulation of wastes; land use change; land degradation; visual, landscape and cultural heritage impacts; and health, occupational and community safety and security risks.
- *Socio-economic risks:* Legacy issues from CFPP and coal mine development; adverse effects on regional and local economies and livelihoods; loss of jobs from CFPP retirement/mine closure;

⁵³ ADB. 2022. *Accelerating the Clean Energy Transition in Southeast Asia: Regional Scoping Report for Strategic Environmental and Social Assessment Applied to the Energy Transition Mechanism in Southeast Asia. Consultant's Report.* Manila. <https://www.adb.org/projects/documents/reg-55124-001-tacr>

outmigration; disadvantages for women and vulnerable groups (e.g., indigenous communities); decline in local public services; displacement of people; and weakened community cohesion.

Opportunities. The scoping of key issues identifies a range of opportunities that ETM will provide including the following (see Annex 1 for further detail):

- *Environmental opportunities:* Many of the opportunities of ETM relate to the restoration of environmental quality associated with retirement of CFPFs including remediation of contaminated soil, surface and groundwater, removal of waste, including hazardous waste, restoration of landscapes and changes in land use, restoration of terrestrial and aquatic biodiversity values and ecosystem services and improvements to public health. Opportunities with the replacement of renewable energy sources include clean, no or low carbon energy generation with no or few greenhouse gas emissions (depending on renewable energy source), the potential for rational planning of new energy projects on a regional basis, rather than a project-by-project basis.
- *Socio-economic opportunities:* Similarly, there are a number of social opportunities associated with CFPF retirement and coal mine closure including compensation for legacy contamination and land reclamation and restoration, job opportunities in site remediation and land reclamation and opportunities for retraining and skill development, potential in renewable energy development. There will also be economic diversification opportunities for renewable energy project construction and operation, business opportunities for small scale renewable energy development with microfinance services and opportunities for women and indigenous ownership of renewable energy projects.

7. These risks and opportunities (see below) of key SESA issues will be discussed in the October scoping workshop and compiled into a preliminary SESA scoping report by end of November 2022. The next steps in the SESA process to mark the end of Phase 1 are as follows:

- Define final scope of SESA with BKF
- Complete environmental and social baseline
- Complete review of legal/regulatory and institutional frameworks
- Finalize screening of policies, programs and plans
- Convene a stakeholder scoping workshop in the first week of October 2022
- Compile findings of the above into a preliminary scoping report by November 30, 2022 with a high level summary available for the G20 meeting on November 15-16 2022.

8. **Institutional framework and capacity.** An assessment is underway of the institutional structure and capacity of the various government organizations that will be involved in ETM implementation in Indonesia. This will include an assessment of responsibilities in relation to the identified PPPs, organizational structure and program delivery, capacity, and functionality across the national, provincial, district and local levels. It will also include an assessment of redundancy and/or conflict in terms of overlapping inter-institutional delivery and responsibility.

9. **Gap / barrier analysis and needs assessment.** As part of the legal and regulatory analysis, relevant policies, programs, and plans are being screened as to how they will be impacted positively or negatively because of ETM implementation. As mentioned, the national environmental and social baseline is currently in preparation as is the review of the legal/regulatory and institutional framework. This information will be assessed along with screening of relevant PPPs during the scoping phase of the SESA and gaps will be identified. Recommended actions will be developed to address these gaps including a) additional data collection; b) formulation of new policies and regulations, and c) improved governance structures and institutional functionality.

10. Based on the key issues identified during Phase 1 scoping, the results of the gap analysis and identification of objectives already set out in PPPs covering such issues, a suite of environmental and socio-economic objectives (ESQOs) will be developed in Phase 2 and prioritized. Ideally no more than 25-30 ESQOs (for reasons of manageability) will be selected against which the performance and risks/impacts of developments likely to arise due to ETM implementation in Indonesia can be measured. The ESQOs will

be designed either to (a) avoid, reduce/minimise the scale of the issue (mainly for environmental concerns), or (b) to enhance/promote measures to address the issue (mainly for socio-economic issues).

11. **Assessment - Phase 2.** The main assessment in Phase 2 will begin with a final scoping workshop to review the findings of the preliminary scoping report. The assessment itself will be conducted considering two timelines as follows.

- Stage 1: 2022 – 2030 – initial retirement of up to three coal fired power plants (CFPPs) representing 1-2 GW of baseload, closure of two coal mines, initial scale up of replacement renewable energy project, planning for grid expansion and interconnection and initiation of other RE projects not associated with CFPP retirement.
- Stage 2: 2030 – 2050 – additional retirement of CFPPs and closure of coal mines, accelerated scale up replacement RE projects, build-out of power grid and interconnections and build out of other RE projects not financed by MDBs.

12. Based on the key issues identified during Phase 1 scoping, the results of the gap analysis and identification of objectives already set out in PPPs covering such issues, a suite of environmental and socio-economic objectives (ESQOs) will be developed and prioritized. Ideally no more than 25-30 ESQOs (for reasons of manageability) will be selected against which the performance and risks/impacts of developments likely to arise due to ETM implementation in Indonesia can be measured. The ESQOs will be designed either to (a) avoid, reduce/minimise the scale of the issue (mainly for environmental concerns), or (b) to enhance/promote measures to address the issue (mainly for socio-economic issues).

13. An assessment will then be made of the likely risks and impacts of implementing ETM proposals followed by preparation of a strategic environmental and social management plan (SESMP). Phase 2 will start in December 2022 and conclude in July 2023.

References

OECD/DAC. 2006. Applying Strategic Environmental Assessment: Good Practice Guidance for Development Cooperation. *DAC Guidelines and Reference Series*. Paris: Development Assistance Committee. Organization for Economic Cooperation and Development.

Key Environmental Risks and Opportunities of ETM in Indonesia

The following table presents a ranking of key environmental risks and opportunities that have been identified for CFPP retirement, coal mine closure and renewable energy replacement in Indonesia. Ranking of the risks and opportunities are presented in three categories: High, moderate and low. The ranking has been determined using the results of the regional SESA scoping report and professional judgment of the SESA team. This evaluation is subject to further modification from the results of public consultation and further analysis by the SESA team.

Issue	Risks	Rating	Opportunities	Rating
GHG emissions	<ul style="list-style-type: none"> GHG emissions may occur in other locations from sale of coal to other markets Emissions from uncontrolled mine abandonment Emissions from dams, machinery and vehicles 	M H M	<ul style="list-style-type: none"> Reduction of GHG emissions from retirement of CFPPs Clean energy supplies from RE projects 	H H
Air quality	<ul style="list-style-type: none"> Particulates released by fires in uncontrolled abandoned mines Dust from construction of renewables, land clearing and vehicular movements) Air pollution from machinery and vehicles Emissions from bioenergy and geothermal facilities 	M M L L	<ul style="list-style-type: none"> Improved air quality with reduced emissions following CFPP/mine closure 	H
Noise	<ul style="list-style-type: none"> Construction noise from renewable energy development Operational noise from RE (particularly wind) 	M M	<ul style="list-style-type: none"> Reduction in noise levels due to CFPP retirement and mine closure 	M
Water quality	<ul style="list-style-type: none"> Groundwater and surface water contamination from mines and abandoned CFPPs Water quality issues from renewable projects – different for each type Pollution from development and operation of renewables 	H H M	<ul style="list-style-type: none"> Improved water quality through reduction of discharges from CFPPs and mines Remediation of groundwater and surface water polluted by CFPPs and mines 	H H
Water quantity and use	<ul style="list-style-type: none"> Water usage by renewables (particularly for onshore wind and solar) Reduction in environmental flows from hydroelectric facilities 	M H	<ul style="list-style-type: none"> Reduction in water demand from CFPP retirement and coal mine closure 	M

Issue	Risks	Rating	Opportunities	Rating
Access to land and water	<ul style="list-style-type: none"> Impaired access to land and water resources 	H	<ul style="list-style-type: none"> Restoration of access to land and water through reclamation of abandoned CFPPs and mine sites 	M
Contaminated land and groundwater	<ul style="list-style-type: none"> Land contamination following CFPP/mine closure Contamination during development of RE projects (particularly during construction phase) 	H M	<ul style="list-style-type: none"> Remediation of contaminated CFPP/mine sites 	H
Waste management	<ul style="list-style-type: none"> Residual hazardous waste and toxic impoundments following closure of CFPPs/mines – can cause pollution Spoil from construction of renewables Hazardous decommissioning and replacement component waste from wind and solar plants Crop waste from biofuel production 	H M H L	<ul style="list-style-type: none"> Remediation of contaminated sites 	H
Aesthetics	<ul style="list-style-type: none"> Visual footprint of renewables – wind, solar, hydro Shadow flicker and solar glare from wind and solar projects 	H M	<ul style="list-style-type: none"> Improved landscape following reclamation and repurposing of CFPP and coal mine sites 	H
Land use change	<ul style="list-style-type: none"> Abandoned mine sites Land clearing for renewables – wind, solar, hydro Inundation by reservoir creation for hydroelectric projects Loss of production land and reduced access to land taken for renewables Biofuels displace food crops Geotechnical stability and safety issues of abandoned coal mines Impacts to tourism 	H M H M M H M	<ul style="list-style-type: none"> Landscape improvements through remediation and repurposing of CFPPs and coal mines 	H

Issue	Risks	Rating	Opportunities	Rating
Land degradation	<ul style="list-style-type: none"> • Legacy contamination from CFPs and coal mines • Slumpage from collapse of underground mine works • Failure of tailings dams, and stockpiles • Soil erosion from construction of RE projects and associated infrastructure such as road and transmission line construction • Waterlogging caused by artificial land contours and drainage patterns 	H H H M M	<ul style="list-style-type: none"> • Landscape improvements through remediation and repurposing of CFPs and coal mines 	H
Mineral extraction	<ul style="list-style-type: none"> • Over-extraction of minerals (metals) and other material demands for wind and solar energy development 	H		
Terrestrial biodiversity	<ul style="list-style-type: none"> • Loss of and fragmentation of habitats and loss of biodiversity due to renewable energy development (land clearing, road construction, plantations from biofuels) • Increased poaching and hunting due to increased access and/or loss of jobs in CFPs or coal mines • Increased illegal land clearing and logging due to loss of jobs in CFPs or coal mines • Introduction of invasive species • Bird/bat collisions with powerlines and wind turbines 	H M M M H	<ul style="list-style-type: none"> • Improved biodiversity following habitat restoration at CFP sites and coal mines 	H

Issue	Risks	Rating	Opportunities	Rating
Aquatic biodiversity	<ul style="list-style-type: none"> Loss of riparian habitats, fragmentation and alteration of aquatic habitats, and changed sediment/nutrient flows in rivers due to hydroelectric development Loss of aquatic organisms due to deoxygenation of dams Eutrophication in river systems due to hydropower reservoirs Changes in water quality and ecology in lakes and reservoirs caused by floating solar installations (e.g., shading, reduced mixing, reduced wind exposure) Dams and barriers in river systems can prevent fish migration Mercury liberation from hydroelectric development Introduction of invasive species Underwater vibration and noise (from offshore windfarms) can change behavior of marine biodiversity Marine fauna can be killed by vessels during construction of offshore wind farms Increased fishing pressure in marine and freshwater systems due to reduced income / loss of jobs from coal mines / CFPs 	H M M M H H M M M M	<ul style="list-style-type: none"> Improvements to quality of aquatic habitats and biodiversity from CFP and coal mine closures 	H
Cultural heritage	<ul style="list-style-type: none"> Loss or damage to tangible and intangible cultural heritage from development of renewable energy facilities 	H		
Health, Safety and Security	<ul style="list-style-type: none"> Exposures to waste and hazardous material from disposal 	H M	<ul style="list-style-type: none"> Improvements to public health (due to reduced air and noise pollution and reduced occupational 	H

Issue	Risks	Rating	Opportunities	Rating
	<ul style="list-style-type: none"> • Loss of community health services on closure of CFPPs/mines • Safety impacts from hydroelectric reservoirs • Community health and safety risks during construction of renewable projects, e.g.: communicable disease transmission with influx of migrant workers, injury and morbidity due to increased industrial traffic, vector-borne disease risks, mental health and stress-mediated health outcomes due to resettlement • Occupational health and safety risks associated with both development (injury, exposures and death) and retrenchment (mental health and stress mediated health outcomes e.g., hypertension, CVD) 	M M M	hazards following CFPP/mine closure	

Key Social Risks and Opportunities of ETM in Indonesia

The following table presents a ranking of key social risks and opportunities that have been identified for CFPP retirement, coal mine closure and renewable energy replacement in Indonesia. Ranking of the risks and opportunities are presented in three categories: High, moderate and low. The ranking has been determined using the results of the regional SESA scoping report and professional judgment of the SESA team. This evaluation is subject to further modification from the results of public consultation and further analysis by the SESA team.

Issue	Risks	Rating	Opportunities	Rating
Legacy socio-economic issues	<ul style="list-style-type: none"> • Legacy issues from CFPP and coal mine development • Unresolved socio-economic issues (e.g., lack of compensation for land and property loss, lost livelihoods and income) linked to CFPPs 	H H	<ul style="list-style-type: none"> • Reclamation of disturbed and contaminated sites may address legacy issues • Revisit and seek to improve upon CFPP livelihood compensation, community development agreements, and restoration plans 	H M
Regional economy	<ul style="list-style-type: none"> • Reduced tax revenue • Reduced reliability of energy supply and higher energy costs • Sale of coal to other markets • Change in coal supply chains and disruption of associated businesses 	M H M M	<ul style="list-style-type: none"> • Diversification of economy as a result of renewable energy development • More collaboration between all levels of government and in partnership with relevant non-governmental partners 	H H
Illegal mining	<ul style="list-style-type: none"> • Increased illegal mining 	M	<ul style="list-style-type: none"> • Reduced illegal mining 	M
Employment and labor conditions	<ul style="list-style-type: none"> • Loss of jobs (direct and indirect) in CFPPs/coal mines, and when people relocated (e.g., due to dam construction) • Increased pressure on welfare/social protection • Use of forced labor and child labor 	H H L	<ul style="list-style-type: none"> • Long-term opportunities for employment, improved labor standards and working conditions in CFPPs and supply chains during retirement period • New job opportunities and improved working conditions in renewable energy development • Potential for retraining and learning new skills 	M M H

Issue	Risks	Rating	Opportunities	Rating
Local economy and livelihoods	<ul style="list-style-type: none"> Reduced livelihood and business development opportunities due to CFP retirement and mine closure Increased households' indebtedness and vulnerability to poverty related to individuals and businesses unable to repay their loans Reduced revenues from renting properties and values of properties as a result of outmigration Loss of income from agriculture/fishing due to land/marine area take for renewables Land acquisition for renewable energy projects Loss of livelihoods due to relocation Loss of jobs (direct and indirect) in CFPs/coal mines, and when people relocated (e.g., due to dam construction) 	M M M M H H	<ul style="list-style-type: none"> Opportunities for retraining and skill development in renewable energy Rehabilitation/ redevelopment of CFP sites will create income generation activities Communities can gain from benefit-sharing schemes Opportunities for small business associated with renewable energy developments. 	H L L H
Local economy and livelihoods	<ul style="list-style-type: none"> Reduced livelihood and business development opportunities due to CFP retirement and mine closure Increased households' indebtedness and vulnerability to poverty related to individuals and businesses unable to repay their loans Reduced revenues from renting properties and values of properties as a result of outmigration Loss of income from agriculture/fishing due to land/marine area take for renewables 	M M M M H H	<ul style="list-style-type: none"> Opportunities for retraining and skill development in renewable energy Rehabilitation/ redevelopment of CFP sites will create income generation activities Communities can gain from benefit-sharing schemes Opportunities for small business associated with renewable energy developments. 	H L L H

Issue	Risks	Rating	Opportunities	Rating
	<ul style="list-style-type: none"> • Loss of livelihoods due to relocation • Loss of access and rights to use resources in areas occupied by new renewable development 			
Gender and vulnerability	<ul style="list-style-type: none"> • Women and vulnerable groups, such as the poor, persons with disabilities, children, the elderly, and Indigenous communities may be disadvantaged and at particular risk • Incomes will be lost following closure of CFPs/mines and competition for jobs in other sectors may well increase • Increased competition from former male workers in CFPs may arise in women-dominated industries (such as manufacturing and garment industries) following closure • Increased domestic and gender-based-violence due to loss of income and influx of migrant workers 	H M M H	<ul style="list-style-type: none"> • Provisions for capacity building, training plans, and loan programs including micro-finance • Opportunities for women and vulnerable groups to acquire new skills and learn new technologies • Opportunities for vulnerable groups to engage in the decision-making process and in inclusive dialogue for CFP retirement and the transition to renewable energy sectors 	H H M
Migration	<ul style="list-style-type: none"> • Outmigration due to job loss • Increased vulnerability of abandoned household members whose income depends on skilled migrants • Tension between immigrants and local workers • Pressure on preexisting health services and infrastructure 	H M M M	<ul style="list-style-type: none"> • Promotion of migrant small and local business opportunities and skills enhancement programs 	M

Issue	Risks	Rating	Opportunities	Rating
Public services and infrastructure	<ul style="list-style-type: none"> • Decline in public services from CFP retirement and mine closure • Decreased public services due to less local government tax revenues • Heavy vehicles and transportation damage existing roads and bridges 	M M L	<ul style="list-style-type: none"> • Opportunities for investment in communities by renewable energy developers (e.g., roads and bridges, schools, health centers, and administrative buildings) 	M
Land acquisition	<ul style="list-style-type: none"> • Displacement due to land acquisition required for renewable energy projects 	H		
Indigenous peoples	<ul style="list-style-type: none"> • Unresolved legacy land take and resource issues related to CFP and coal mine development • Impacts to land and access to resources from renewable energy development • Impacts to ecosystem services and natural resource use from renewable energy development • Impacts to cultural, spiritual, and hereditary values from renewable energy development 	H H H H	<ul style="list-style-type: none"> • Restoration of land following reclamation of abandoned CFPPs and coal mines • Promotion of Indigenous small and local business opportunities and skills enhancement programs • Opportunities for Indigenous peoples to engage in the decision-making process and in inclusive dialogue for CFP retirement and the transition to renewable energy sectors 	M H M
Social cohesion and engagement	<ul style="list-style-type: none"> • Weakened community cohesion from outmigration and relocation • Risk of internal social friction due to increased stress as income lost • Tension/conflict between communities, NGOs, activists and renewable energy developers 	M H M	<ul style="list-style-type: none"> • Focus on small business opportunities to avoid out-migration after decommissioning • Opportunities for the communities to engage in the decision-making processes 	M M

Issue	Risks	Rating	Opportunities	Rating
Community and Spiritual Health	<ul style="list-style-type: none"> • Loss of tax revenue into non-governmental, public health services and infrastructure • Poor timing of opportunities for retrenchment, livelihood reconstruction, etc. could further weaken spiritual, physical and mental - familial, individual and community dynamics • Increasing pressure on community service organizations in focus areas such as addictions treatment and counselling, violence against women and girls, human trafficking, sex work, suicide, aids prevention, etc. 	M H M	<ul style="list-style-type: none"> • Opportunities for community organizations and non-profits to engage with non-governmental and government organizations 	M

APPENDIX 6: Overview of Gender Mainstreaming Activities supporting CIF-ACT IP

1. **Women's representation in Indonesia's energy sector.** In 2022, the share of female employment in Indonesia's mining and energy industries is below 10%,⁵⁴ concentrated in jobs requiring low STEM (Science, Technology, Engineering and Mathematics) skills which are more vulnerable to a shift to automation.⁵⁵ While women only comprised 12% of total STEM graduates in 2018, there was no gender gap in overall educational achievement in recent research, indicating that the gap in STEM fields was heavily influenced by gender stereotypes, such as the belief that men are a more 'natural fit' in STEM subjects.⁵⁶

2. With respect to the workforce itself, there are 11 women holding directors' positions out of a total of 55 units (20%) in MEMR. There has been an increase in women's participation in decision-making roles since 2011, when MEMR only had 6 women in director positions out of 47 units in total (12.7%). Meanwhile, overall participation of women in MEMR as employees has also increased from 22.8% in 2011 to 27.5% in 2021. Women are underrepresented in Geo Dipa Energy (Persero, GDE) a state-owned geothermal holding company. Women made only 5% of the total number of employees at its Dieng office, 13% in Patuha, and 29% of the total employees in its headquarters in Jakarta in 2018. In Pertamina, the national energy company, 100% owned by the Government of Indonesia with the Minister of State-Owned Enterprise (SOE) as the Shareholder Proxy, two of the six Board of Directors and around 16% of senior management level are women. In the past, some of the energy sector job vacancies (e.g., for operator positions) explicitly referenced the need for male applicants, a practice that was not aligned with Act No. 3 of 2003 on Manpower (Law No. 13/2003) and Equal Employment Opportunity. Further, community consultations were rarely carried out, including with women residing in the affected communities. Even smaller numbers of women occupy high level management positions in mining and energy companies. A lack of gender-sensitive policies can contribute to low representation of women in the sector. Without efforts to include women in the decision-making process, community-led RE efforts may replicate or further entrench existing inequalities and keep women in their traditional domestic roles.

3. **ADB approach and tentative gender categorization of the proposed projects under CIF-ACT IP.** The ADB gender categorization system is a 4-tier system to measure, count, and report on the extent to which gender equality issues are integrated into project design. It is a mechanism for reporting ADB's "at entry" gender mainstreaming commitments and for monitoring performance against the corporate results targets under Strategy 2030's Operational Priority 2: Accelerating Progress in Gender Equality (OP2).⁵⁷ All sovereign and nonsovereign projects of the ADB are assigned one of four gender mainstreaming categories: (i) Category I: gender equity theme (GEN); ii) Category II: effective gender mainstreaming (EGM); (iii) Category III: some gender elements (SGE); and (iv) Category IV: no gender elements (NGE). The initial gender categorization for the proposed investments under the Indonesia CIF ACT-IP is summarized below. Gender Action Plans will be prepared for projects that are categorized GEN, EGM based on the poverty, social and gender analysis at the project preparatory stage. For RBL type program specific gender program action plans will be developed and implemented.

Proposed ADB Projects	Initial Gender Categorization	Remark
PLN RBL	Effective Gender Mainstreaming (EGM) at the concept stage	Category will be confirmed at project approval stage.
PT SMI ETM Country Platform	To be assigned at the stage of concept review and approval	Category will be confirmed at project approval stage.

⁵⁴ Indonesia Central Bureau of Statistics. (2022). *Labor Force Situation in Indonesia*. Indonesia Central Bureau of Statistics.

⁵⁵ International Labour Organization. (2021). *Women in STEM Programme in Indonesia: Promoting and demonstrating STEM-related hard and soft-skills through adaptive, creative and innovative approaches in the midst of COVID-19 pandemic*. Available at https://www.ilo.org/wcmsp5/groups/public/-/asia/-/ro-bangkok/-/ilo-jakarta/documents/publication/wcms_809227.pdf

⁵⁶ Marshan J. and Nikijuluw, R. (2020, November 16). *Will Indonesia's 4.0 Revolution leave women behind? Indonesia at Melbourne*. <https://indonesiaatmelbourne.unimelb.edu.au/will-indonesias-4-0-revolution-leave-women-behind/>

⁵⁷ ADB, 2019. Strategy 2030. Operational Plan for Priority 2. Accelerating Progress in Gender Equality 2019-2024.

IPP CFP early retirement program	Some Gender Elements (SGE) based on preliminary concept review	Category will be confirmed at project approval stage.
Prime STeP: Supporting research & development and application of viable renewal energy in Indonesia	Effective Gender Mainstreaming (EGM) at concept stage.	Category will be confirmed at project approval stage.

4. World Bank approach and tentative gender categorization of the proposed projects under CIF-ACT IP. The World Bank uses a 'Gender Tag' system to assess whether a project integrates gender aspect in its development and implementation. To meet the criteria for a gender tag, projects should include the following components:

- Gender Analysis: Identify and substantiate that the gaps between or among females and males in a given sector or project context, especially those identified through the systematic country diagnostic (SCD) and the country partnership framework (CPF), are relevant to the project development objective (PDO) and the four pillars of the WBG's gender strategy;
- Gender Actions: Aim to address identified gender gaps by designing specific actions that are supported by the project; and
- Gender Indicators: Link these actions to indicators included in the RF to measure the progress of the proposed actions.

A gender tagged project will cover the gender gaps analyzed during its initial stage (Gender Analysis component), particularly those potential inequalities pre-identified through the Systematic Country Diagnostic (SCD) and the Country Partnership Framework (CPF). Actions are then developed to close the identified gender gaps (Gender Actions component). Gender Indicators are then included in the Results Framework to assess the actions' progress. The Bank's 'gender-tagging' system focuses on the quality and depth of the project's outcomes, rather than on processes and quantitative measurements alone. For the proposed projects under this CIF-ACT IP, the initial gender categorization can be seen in the table below.

Proposed World Bank Projects	Initial Gender Categorization	Remark
PLN/MEMR Energy Transition P4R	To be assigned at the stage of concept review and approval, may include gender-sensitive capacity building and empowerment	Category will be confirmed at project approval stage
Just Transition and Repurposing Investment Project (Phase 1 &2)	Gender-tagged at the concept stage, with potential activities including gender disaggregated data collection in the labour and community profiling	Category will be confirmed at project approval stage

5. Further considerations for IP implementation. A good starting point for promoting greater gender equality is collecting sex-disaggregated information—social and economic data that measures differences between females and males through national statistics. Understanding of detailed sex disaggregated data could form the basis for developing targeted gender-sensitive socio-economic assessments that could foster better equality and social inclusion. Special focus on gender equality and inclusion of disadvantaged groups could be achieved through provision of legal services, inclusive education, reproductive health care and broader health services, and addressing the threat of sexual and gender-based violence perpetrated on women, girls and gender/sexual minorities particularly in construction/new development and heavy industries. This should include survivor-centered supportive systems through government and in partnership with mining companies delivered through CSOs working closely with local communities. Engaging community and religious leaders working through community dialogue to dispel notion that gender equality is only for women, developing a narrative of mutual respect with men and boys.

APPENDIX 7: ADB Energy Sector Support Program and Experience in Indonesia

1. Since 1970, ADB has financed 39 energy projects and programs with total lending of \$6.8 billion in Indonesia. With few exceptions, completed loan projects have delivered their expected outputs and achieved their immediate objectives. The Independent Evaluation Department of the ADB rated the country energy program *successful* in 2019.⁵⁸ ADB sovereign investments during 1999–2021 totaled \$3.9 billion and included (i) the Power Sector Restructuring Program (\$380 million), (ii) the Renewable Energy Development Sector Program (\$161 million), (iii) the West Kalimantan Power Grid Strengthening Project (\$49.5 million), (iv) the Sustainable and Inclusive Energy Program, Subprograms 1 and 2 (\$1 billion), (v) the Electricity Grid Strengthening–Sumatra Program (\$600 million), (vi) the Sustainable Energy Access Program Electricity Grid Strengthening in Sulawesi and Nusa Tenggara (\$600 million), (vii) the Sustainable Energy Access Program Electricity Grid Strengthening in Kalimantan, Maluku, and Papua (\$600 million), (viii) Geothermal Power Generation Project (\$335 million), and (ix) Sustainable and Reliable Energy Access Program–Western and Central Java (\$600 million). Private sector operations in Indonesia have had a strong focus on renewable energy, funding Wind and Solar Power South Sulawesi (\$133.5 million) and three geothermal projects: Sarulla (\$250 million), Muara Laboh (\$70 million), and Rantau Dedap (\$173 million).
2. ADB is also supporting the government in its reform efforts through a range of technical assistance activities focused on (i) reduced subsidies in favor of cost-reflective tariffs for fuels and electricity; (ii) price incentives for geothermal, wind, and solar energy; (iii) energy efficiency-related policies and programs, including support for energy service companies and appliance standards; (iv) gas sector reform; (v) least-cost electrification planning to support the national electrification program; and (vi) pilot testing of carbon capture and storage. In 2019, ADB prepared a White Paper helping the government in setting energy-related RPJMN priorities and targets.⁵⁹
3. Overall, ADB's energy sector plans in Indonesia are designed to support boosting competitiveness by improving infrastructure connectivity, which is one of three strategic pillars in the Indonesia country partnership strategy 2020–2024.⁶⁰ ADB's engagement in the sector is centered on three areas: (i) knowledge and awareness; (ii) improved policy and mainstreaming of best practices; and (iii) the financing of energy infrastructure to increase renewable energy, grid reliability, and energy sector innovation. ADB's policy support helps the government realize sustainable and gender-equal policy reforms to promote renewable generation, full electricity access, affordable pricing, and energy security. ADB's private sector operations will continue to support renewable energy. Given the synergies between sector policies and project outcomes, ADB's energy sector strategy, as elaborated in the country partnership strategy, aims to deploy policy-based lending, project financing, and results-based lending in a mutually reinforcing way. For example, programs for 2023–2025 currently under development and addressing these key engagement areas include the Accelerating Indonesia's Clean Energy Transition Program (results based loans or RBLs) and Affordable and Sustainable Energy Transition Program (policy based loans or PBLs).
4. **ADB Energy Transition Mechanism.** The Government of the Republic of Indonesia, the Government of the Republic of the Philippines, and the Asian Development Bank (ADB) announced a partnership in November 2021 at the 26th UN climate change conference (COP26) to design and launch an Energy Transition Mechanism (ETM) to accelerate the transition from coal to clean energy in Southeast Asia, in a just and affordable manner. Under the partnership with Indonesia and the Philippines, ADB has made significant progress and has moved from concept to an operational program. ADB is currently engaged in the following:
 - i) identifying through a feasibility study, a pool of candidate coal-fired power plants for early retirement/repurposing;

⁵⁸ Independent Evaluation Department. 2019. *Country Assistance Program Evaluation: Indonesia, 2005–2018*. Manila: ADB.

⁵⁹ Government of Indonesia, Ministry of National Development Planning; Asian Development Bank; and Government of Australia, Department of Foreign Affairs and Trade. 2020. *Independent Assessment of Indonesia's Energy Infrastructure Sector*. Jakarta.

⁶⁰ ADB. 2020. *Country Partnership Strategy: Indonesia, 2020–2024—Emerging Stronger*. Manila.

- ii) initiating the establishment of an ETM Fund/Vehicle through the issuance of a request for concepts from the private sector;
- iii) establishing and operationalizing the ETM Partnership Trust Fund to be administered by ADB;
- iv) catalyzing active participation from G-7 countries (Just Energy Transition Partnership or JETP).
- v) initiating Strategic Environment and Social Assessment (SESA) and Just Transition assessments to identify impacts of the energy transition as it unfolds and related mitigation measures; and
- vi) collaborating with additional developing member countries in Asia, which are embarking on their own energy transition strategies and exploring early retirement of coal fired power plants within such strategies.

5. ETM has evolved to include a suite of financial models to support the coal to clean energy transition in a way that is flexible, replicable, and scalable. For coal retirement or repurposing, three transaction models are currently being developed including: (i) the acquisition model; (ii) synthetic model that uses debt only and (iii) portfolio/ corporate model.

6. Overall, ETM is being designed to be a scalable, collaborative mechanism developed in partnership with developing countries that will leverage a market-based approach to accelerate the transition from fossil fuels to clean energy. It prioritizes a country-specific approach that seeks government buy-in and seeks to apply innovative finance approaches to leverage public, private, and concessional capital to accelerate coal retirement, develop renewable replacement capacity, and fund a just transition. Multilateral bank involvement ensures appropriate governance and legal structure to ensure monitoring and follow-through.

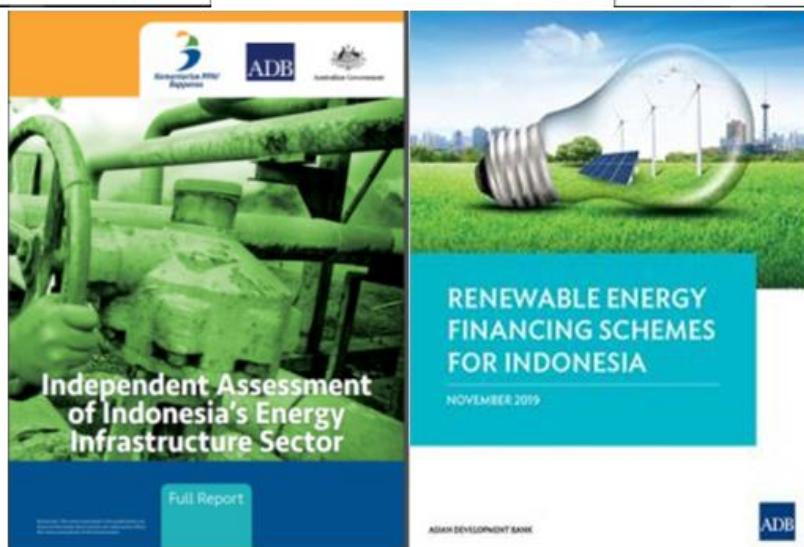
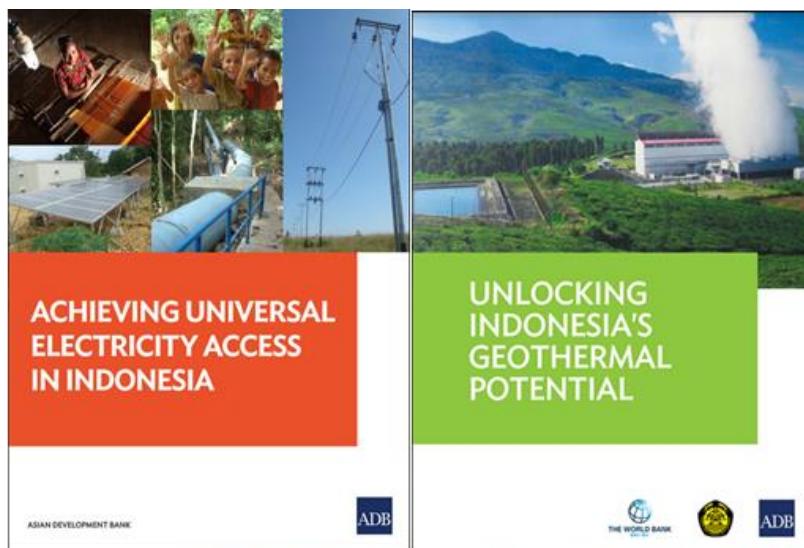
ADB Major Public and Private Sector Projects Approved in Indonesia since 2012

Public Sector Project Name	Amount (\$ million)
Java-Bali Electricity Distribution Performance Improvement Project	50
West Kalimantan Power Grid Strengthening Project	50
Java-Bali 500-Kilovolt Power Transmission Crossing	224
Sustainable and Inclusive Energy Program—Subprogram 1 and 2	1,000
Sustainable Energy Access in Eastern Indonesia: Electricity Grid Development Program Results Based Loan	600
Electricity Grid Strengthening—Sumatra Program	600
Sustainable Energy Access Program Electricity Grid Strengthening in Sulawesi and Nusa Tenggara	600
Sustainable Energy Access Program Electricity Grid Strengthening in Kalimantan, Maluku, and Papua	600
Geothermal Power Generation Project	335
Sustainable and Reliable Energy Access Program—Western and Central Java	600
Private Sector Project Name	Location
Riau 275 MW Combined-Cycle Gas-Fired Power Plant	Sumatra
Jawa-1 Liquified National Gas-to-Power (1,760 MW)	West Java
Eastern Indonesia Renewable Energy Project Phase I Tolo Wind (72 MW)	South Sulawesi
Eastern Indonesia Renewable Energy Project Phase II One 21 MW Solar (21 MW)	Sulawesi
Eastern Indonesia Renewable Energy Project Phase II-three 7 MW Solar (21 MW)	West Nusa Tenggara
Rantau Dedap Geothermal (90 MW)	South Sumatra
Sarulla Geothermal (321 MW)	Sumatra
Muara Laboh Geothermal (80 MW)	Sumatra

ADB Major Technical Assistance (Grant) support in Indonesia since 2016

- RPJMN Energy Sector Assessment including analysis on solar rooftop PV, autonomous electricity regulator, least-cost electrification modelling (BAPPENAS / MEMR / PLN)
- RENSTRA Strategic Planning (MEMR)
- Scaling-Up Energy Efficiency (DG EBTKE MEMR)
- Renewable energy tariff reform (PT SMI / MOF),
- Renewable energy and energy efficiency financing (MEMR/MOF),
- Electric transport (MEMR / PLN / Trans Jakarta)
- Preparation of ADB financed energy projects (MEMR / PLN / Geodipa)

Select Energy Sector Analytical Reports Produced by ADB (2014-2022)



APPENDIX 8: WBG Energy Sector Support Program and Experience in Indonesia

1. History of World Bank Group (WBG) support for the development of Indonesia's energy sector. The WBG's work with the Government of Indonesia on developing its energy sector began in 1969, not long after WBG established its resident mission in Jakarta in 1968. At the time, Indonesia's power supply was inadequate and electric power facilities were in need of significant investment, as a result of years of difficult political and economic conditions. WBG's first funding to the energy sector, a \$15 million IDA credit, aimed to expand the electricity distribution system in and around the capital city of Jakarta and improve the organization and efficiency of the entire power sector by providing assistance and training in operations, engineering, finance, and management.⁶¹

2. In the 1970s and 80s, WBG proceeded to support dozens of projects in the power sector to develop and diversify Indonesia's sources of electricity production, mainly through the use of geothermal, hydro and coal, to improve the operational efficiency of the state utility PT Perusahaan Listrik Negara's (PLN) distribution networks, reduce PLN's system losses and provide technical assistance for the continued institutional development of PLN.⁶² Examples of projects included support for the construction of the 200 MW Muara Karang thermal station; developing the hydroelectric potential of the Citarum River (through construction of a storage dam, water conductor system and 700 MW power station); construction of two 400 MW coal-fired units at the Suralaya steam power plant in West Java, and expansion of the distribution facilities in East and Central Java and in the Jakarta area, targeting 400,000 residential consumers in urban and rural areas.

3. Through the 1990s to 2010s, WBG continued to support the development of electricity supply, with a particular focus on efficient rural electrification. Loans were provided to support the construction of facilities to electrify several thousands of villages and bring down the unit cost of distribution in rural areas.⁶³ In addition to financing the development of physical infrastructure components of the energy sector, WBG was also supporting the GoI on several policy issues, such as establishing a policy framework for private sector participation, the restructuring of PLN and establishing its commercial operations as a limited liability company, and other regulatory and market mechanisms to enhance the oversight and efficiency of the sector.⁶⁴

4. Working towards the greening of Indonesia's energy system and accelerating action on climate change. Over the past two decades, WBG has increased its support for the development of sustainable energy in Indonesia. The importance of this priority was reflected in the Country Partnership Framework (CPF) for Indonesia for FY2016 to 2021, which had the goal of increasing sustainable energy production as one of its six areas of engagement with the Indonesian government. The latest CPF covering FY2021 to 2025 builds on this area of engagement, highlighting that improving energy infrastructure, through transitioning to low-carbon energy and attaining universal access to electricity, will be a key enabler of Indonesia's long-term economic growth.

5. Geothermal power is a sub-sector that WBG has had a particular focus on, given the significant gap between Indonesia's geothermal potential, the largest of any country in the world, and the development of these resources.⁶⁵ In 2011, the World Bank supported the Geothermal Clean Energy Investment Project, which financed the construction of the Steamfield Above-Ground System (SAGS) and the Ulubelu and Lahendong (Tompaso) geothermal fields. WBG continues to support the scale up of investment in geothermal energy development and is currently contributing to two first-of-its-kind geothermal programs. Firstly, the Geothermal Energy Upstream Development Project (GEUDP) which supports government-sponsored exploration drilling, to enable the development of 65 MW of geothermal energy across Indonesia. Secondly, the Geothermal Resource Risk Mitigation (GREM) Project which supports the deployment of an

⁶¹ World Bank. World Bank Group Timeline. <https://timeline.worldbank.org/event/2241>.

⁶² World Bank. Power Project. <https://projects.worldbank.org/en/projects-operations/project-detail/P003825>.

⁶³ World Bank. Rural Electrification Project. <https://projects.worldbank.org/en/projects-operations/project-detail/P003979>.

⁶⁴ World Bank. Sumatera and Kalimantan Power Project. <https://projects.worldbank.org/en/projects-operations/project-detail/P003910>

⁶⁵ With about 27,000 MW of geothermal power potential, Indonesia has roughly 40% of the world's geothermal potential, the largest of any country in the world.

innovative risk-sharing mechanism to facilitate exploration drilling by developers in up to 17 geothermal greenfield sites. GREM is expected to enable the development of 1,000 MW of geothermal energy and estimated GHG emission reduction of 187 million MtCO₂e by 2029. The two Projects have been widely referenced as strategic government initiatives in the geothermal sector.

6. WBG, alongside the Asian Infrastructure Development Bank (AIIB), is also financing Indonesia's first highly complex pumped storage hydropower project (the Upper Cisokan). The project will be the first of other pumped storage schemes that can be developed, especially on Java-Bali, that can support the integration of variable renewable energy and ultimately reduce over-reliance on coal.

7. To reach the universal electricity access goal, Indonesia has been working with WBG on preparing a least-cost electrification project, which seeks to electrify Indonesia's Eastern Islands while displacing fossil fuels with solar and hybrid as part of the least-cost generation and improving grid reliability. At the same time, WBG has been supporting PLN on accessing commercial financing for "green" projects. Also under preparation are the two projects proposed under this IP: an Energy Transition Program for Results and a Just Transition and Coal Repurposing project.

8. Over this time, the IFC has also been engaging with private sectors in the energy space in Indonesia both in investment and advisory sides with focus on the development of Renewable Energy. Selected IFC's investments in the energy sector include hydro power and gas IPP. In 2014, IFC provided a US\$280 million loan facility with tenors of 13- and 15-year and acquired a minority stake in Asahan 1, a 180MW run-of-river hydro plant in North Sumatra. In 2020, IFC refinanced the Asahan-1 facility and provided US\$230 million debt facility for Asahan-1, mobilized institutional investors to have direct exposure to de-risked Infrastructure assets for the first time and also extended the tenor of the loan facility to 17 years and improved the pricing. In addition, in 2018, IFC provided US\$50 million long-term project finance for up to 20 years to Riau Gas IPP owned by Medco Power and Ratchaburi. IFC will continue to support the private sector on RE projects such as wind power and battery storage, floating solar project, hydro power plant, and waste-to-energy projects. IFC has also been advising the first Waste-to-Energy PPP project in Indonesia.

9. **Ongoing technical assistance to support energy sector reforms.** The Government of Indonesia is currently developing a roadmap to Net Zero by 2060, to be unveiled at COP27 and at the G20 Summit in November 2022. Government entities are contributing sector-specific inputs to the roadmap, including MEMR, who with WBG support is developing a Power Sector Action Plan of reforms. Many of the recommendations under the Action Plan are informed by two analytical works prepared by the World Bank over the last 12 months: 1) a White Paper on energy sector reform, and 2) the Indonesia Climate Change for Development Report. This analysis in turn was underpinned years of dialogue and engagement on PLN's financial sustainability, including review of their revenue model, tariff structure and corporate financial strategy. The key recommendations from all of these works will underpin WBG operations going forward, as part of a comprehensive energy sector reform program covering pricing, planning, and regulatory improvements that will help Indonesia accelerate energy transition and private investments and put PLN on a more sustainable financial footing.

WB Major Energy Sector Investment Projects since 2010

Investment Project Name	Period	Commitment Amount (US\$m)
Development of Pumped Storage Hydropower in Java Bali System Project	September 2021 - Present	610
Indonesia Geothermal Resource Risk Mitigation Project (GREM)	September 2019 - Present	325

Geothermal Energy Upstream Development	February 2017 - Present	50
Power Distribution Development Program-for-Results	April 2016 - April 2020	920
Indonesia Energy Sector Development Policy Loan	December 2015 - July 2016	500
Indonesia Second Power Transmission Development Project	July 2013 - December 2019	138
Geothermal Clean Energy Investment Project	July 2011 - December 2018	175
Pumped Storage Technical Assistance Project	May 2011 - December 2021	620
Indonesia Power Transition Development Project	July 2010 - October 2019	225
Indonesia Climate Change Development Policy Project	May 2010 - December 2010	200

APPENDIX 9: Project Concept – PLN Results-based Loan

Problem Statement

In its most recently approved Electricity Power Supply Business Plan (RUPTL), 2021–2030, Perusahaan Listrik Negara (State Electricity Corporation) [PLN] plans to add 20.9 GW of renewable energy capacity of which 56% should be developed by independent power producers (IPP). PLN estimates that this would contribute to avoiding 336 million tons carbon dioxide equivalent (MtCO₂e). The accelerated development of renewable energy will facilitate reducing the electricity supply from coal, for example through early retirement of coal-fired power plants (CFPPs) which would further contribute to avoiding CO₂e emissions of potentially 900 MtCO₂e as per PLN estimates. The plan also includes the conversion of diesel power plants, spread across 2,130 locations, through renewable energy hybrid systems further contributing to avoiding 10 MtCO₂e.

The plan is faced with two challenges. First, overcapacity and high reserve margins on Java-Bali, which is the major load center which is expected to last till about 2030, means that operational CFPPs will continue to be the main stay, threatening the success of this planned expansion of renewables. The first set of CFPP retirements in PLN's schedule of retirements do not begin until 2030. Second, the financing needed to expand renewable energy capacity is estimated at over \$5 billion per year, and PLN does not generate sufficient cash flow to fund significant investments. The utility is largely dependent on borrowing to fund investments.

Proposed Transformation

The Asian Development Bank (ADB) is preparing a results-based lending (RBL) program to support PLN in accelerating Indonesia's clean energy transition. The overall objective of the RBL program is to help PLN accelerate the development of renewable energy as an alternative source of electricity supply to reduce electricity supply from CFPPs. The first phase of this RBL program will focus on activities and expenditures on (i) increasing the share of electricity supply from renewable energy sources (i.e. main driver being a combination of the termination of operations and retirement of ~1-2 GW of CFPP before 2030, ~5 years ahead of schedule, and lower utilization of its overall CFPP fleet), (ii) expanding the smart transmission grid infrastructure, and (iii) strengthening PLN institutional capacity to manage a just energy transition including how to integrate just transition into internal policies and procedures. PLN has already shortlisted 9 candidate CFPPs in Java-Bali grid slotted for retirement by 2030. These 9 plants were included in ADB's socio-economic impact analysis, and the results will be used to support PLN on just transition. While ADB will be supporting just transition activities related to the assets, the RBL is also an opportunity to promote broader institutional change throughout PLN, support activities such as workforce and skills planning and integration of just transition into ESG, paving the way for further accelerated retirements in the coming decade. Satisfactory performance on this and indicators will form the basis for periodic loan disbursements. Further, it is also likely that national commercial lenders and PT SMI (see PT SMI concept note, Appendix 10) may also come alongside the ADB operation as a "commercial tranche" and adopt the same results-based framework as the basis for their lending.

Implementation Readiness

The proposed activities are backed by strong political will and commitment. Commitments have been made in Indonesia's National Energy Policy to expand the use of renewable energy to meet 23% of primary energy supply by 2025 and 31% by 2050. In its RUPTL, 2021–2030, PLN plans to increase renewable energy generation from 12.7% of total generation in 2021 to 24.8% by 2030. The RBL program is currently being prepared by ADB with fact-finding mission considered by December 2022 and approval of the RBL program by ADB's Board of Directors pursued by Q3 2023. ADB and PLN have previously implemented four RBLs satisfactorily, so the modality is well understood.

Rationale for ACT Co-financing

Concessional funds from the Accelerating Coal Transition (ACT) program would complement financing from ADB and other development partners to assist PLN to increase the share of renewable energy generation and incentivize the accelerated retirement of CFPPs to before 2030. With the ability of the government and capability of domestic and international financing institutions to lend to PLN limited, assistance from major

development partners has become all the more important in securing a healthy economic recovery and the continued development of clean and efficient energy.

ADB's RBL modality is the most appropriate sovereign lending modality. Defining financing objectives in terms of not only inputs, but also in terms of delivering targeted and measurable results, as required by the RBL modality, will incentivize PLN to focus its activities on delivering financially, environmentally, and socially beneficial impacts, not just building more infrastructure. Concessional funds from CIF will contribute to incentivizing PLN to achieve its delivery commitments to accelerate its transition to renewable clean electricity supply both, PLN owned capacity and power purchase from IPPs. It will contribute to a change in mindsets, elevating the importance and priority attached to renewable energy within PLN. It complements ADB's energy transition mechanism which focuses on a variety of transaction options to retire IPP and public utility owned CFPPs early and replace them with clean, renewable energy sources.

Results Indicators (to be finalized)

Result	Indicator	Baseline ^a	Target ^a	Data Source & Means of verification
Policies	Number of policies, regulations, codes, or standards that have been amended or adopted (#)	n/a	TBD	MDB Public disclosures; Implementing Agency reporting
Readiness	Coal transition strategies finalized (#)	n/a	TBD	MDB and Government Public disclosures
Income security for employees in subset industries	Number and percentage of employees of retired coal plants/mines that have access to sustained income	n/a	TBD	MDB results reporting
Social Plans and Economic Regeneration Packages	Number of direct beneficiaries of implemented social plans and economic regeneration activities (#)	n/a	TBD	MDB results reporting
Reduce GHG emissions	GHG emissions reduced or avoided (mt CO2 eq) – direct/indirect	n/a	TBD	MDB results reporting
Mobilized co-financing	Volume of co-financing leveraged	n/a	900	MDB Public disclosures
Plant decommissioning	Capacity of existing coal power generation assets accelerated for retirement (MW)	n/a	TBD	MDB results reporting
Coal abatement	Amount of coal diverted (MT)	n/a	TBD	MDB results reporting

Note: Baseline and targets are currently being developed.

Financing Plan

Source	Amount (US \$ million)
ADB	600
Other development partners (KfW, AFD) ^a	300
CIF ^b	50
Government	600
Total	1550

Note: ^a Financing amount to be confirmed/adjusted based on PLN concurrence. ^b CIF amount to be confirmed.

RBL Program Preparation Timetable

Milestones	Expected Completion Date
ADB Fact-finding	1 st quarter 2023
ADB Management review meeting	1 st quarter 2023
Loan negotiations	2 nd /3 rd quarter 2023
ADB Board consideration	3 rd /4 th quarter 2023
Loan signing	4 th quarter 2023

Source: Asian Development Bank estimates.

APPENDIX 10: Project Concept – Indonesia ETM Country Platform

Problem Statement

The Government of Indonesia (the government) has identified a just and affordable transition from coal to clean energy as a national priority and has included energy transition driven by a sustainable financing mechanism as a key priority for its Presidency of the G20 in 2022. Indonesia has committed, through the Paris Agreement, to reduce its GHG emissions by 31.89% (or by 43.2% with international financial support) by 2030.⁶⁶

In 2019, electricity generation accounted for 43% of energy sector emissions or 15% of Indonesia's total greenhouse gas emissions. Around 67% of Indonesia's electricity comes from coal, and in spite of abundant resources, the contribution of solar and wind to the energy mix has remained minimal. The electricity sector therefore has a key role in helping the country reduce its greenhouse gas emissions through accelerated Coal Fired Power Plants (CFPPs) retirement and increasing the share of renewable energy, in line with the government's commitments in Presidential Regulation 112/2022 and its energy transition roadmap.

Summary of Intervention

The Ministry of Finance (MOF) assigned the SDG Indonesia One platform managed by PT Sarana Multi Infrastruktur (PT SMI) as the ETM Country Platform (ETMCP) secretariat and fund manager. Established in 2009 to catalyze Indonesia's infrastructure development, PT SMI is a state-owned enterprise overseen by the MOF. PT SMI has extensive experience in lending to commercial and public infrastructure projects and has expertise in project development, structuring, financing, risk management, and safeguards which support its infrastructure lending transactions.

ETMCP will play a critical role in coordinating various energy transition activities and channel fiscal support where needed. It has been tasked with deploying a range of traditional and innovative financing instruments such as debt (loans), equity, guarantees, bonds, and carbon finance. As ETMCP Manager, PT SMI has a good track record in project development, structuring, and financing across multiple sectors. PT SMI's international credit rating is BBB/Stable and domestic credit rating is AAA/Stable (Fitch) as of April 2022. PT SMI reported total assets of IDR74.8 trillion (2021) and issued the first green bond in Indonesia in 2018. PT SMI is currently the only GCF Accredited Entity in Indonesia as a DAE (Direct Accredited Entity).

A financial intermediation loan (FIL) from ADB to the government will be re-lent to PT SMI as ETMCP Manager to support the acceleration of Indonesia's clean energy transition across the spectrum of activities identified in the Climate Investment Fund Accelerating Coal Transition Investment Plan (CIF ACT IP) for Indonesia. The financial intermediation lending modality is best suited for the proposed project, as it: (i) embeds long-term capacities to develop project pipelines at the national financial intermediary level; (ii) leverages local knowledge and relationships to build confidence among potential subproject sponsors; and (iii) can quickly provide financing to a large number of subprojects.

ADB proposes an FIL with three objectives, each supported by a dedicated facility:

- **Facility 1: Accelerating Coal Retirement Facility.** This facility will provide local currency (IDR) commercial co-financing to support PLN in the accelerated retirement of its CFPPs. PT SMI would swap CIF-ACT funds into local currency for its corporate financing facility to PLN. The facility will complement the proposed PLN Results Based Lending (RBL) by supporting the mobilization of commercial cofinancing. The RBL will serve a dual purpose to provide the monitoring and evaluation required in the Design and Monitoring Framework of the FIL to PLN.
- **Facility 2: Standby Facility for Renewable Energy Projects.** As stated in the latest PERPRES 112/2022, the Ministry of Finance is charged with supporting the scale-up of renewable energy (RE) financing through fiscal incentives (e.g. viability gap financing, credit enhancement facilities, standby facilities). In January 2022, PT SMI closed its first transaction under the newly launched Bond Supporting Financing Facility (CEF), which guaranteed the IDR 750 billion (\$52m) Tamaris Hydro Bond

⁶⁶ Gt NDCs were initially submitted in 2016 and revised and updated in 2021. The enhanced NDC was submitted and published in September 2022.

I Year 2022 (issued by PT Tamaris Hidro), a facility structure for project bonds supported by an ADB technical assistance project. PT SMI's credit enhancement ensured an upgrade of the bond rating to AAA (local). A credit enhancement facility will support energy transition while bolstering the local currency bond market, and Facility 2 is in line with and provides a solution to PT SMI's plans to scale up its support to RE projects. This continued collaboration between PT SMI and ADB, transitioning from previous TA support to loan, will provide a crucial opportunity to: (i) co-share risk in a de-risking instrument; and (ii) facilitate access to the bond market.

- **Facility 3: Commercial loans for RE infrastructure development:** PT SMI would provide direct commercial loans for RE infrastructure development, catalyzing other domestic and international co-financing. With the support of CIF-ACT concessional finance, PT SMI would be able to support a wider array of domestic and international developers in first generation RE and storage projects.
- **Grant component:** US\$1 million to support the establishment and pilot implementation of PT SMI platform level and asset level Just Transition Framework, and capacity building roadmap to implement the aforementioned facilities 1-3.

Implementation Readiness

As ETMCP Manager, PT SMI has a good track record in project development, structuring, and financing across multiple sectors. PT SMI's international credit rating is BBB/Stable and domestic credit rating is AAA/Stable (Fitch) as of April 2022. PT SMI reported total assets of IDR74.8 trillion (2021) and issued the first green bond in Indonesia in 2018. PT SMI is currently the only GCF Accredited Entity in Indonesia as a DAE (Direct Accredited Entity). In February 2022, ADB approved a \$150 million financial intermediation loan for the SDG Indonesia One Green Finance Facility (SIO-GFF), with PT SMI as the implementing agency. This loan is proposed to be under SIO-GFF Phase 2, which is in ADB's Indonesia Indicative Country Pipeline and Monitoring for \$250 million (OCR) targeted for a 2024 approval (firm). In 2018, ADB signed a memorandum of understanding with the government to consider requests by the government for phased support to SIO through TA and indicative sovereign financing of up to \$600 million in aggregate. Ministry of Finance Decree No. 275/KMK.010/2022 underscores PT SMI's adequate capacity as ETMCP Manager, given its role as the implementing agency for SIO-GFF.

Rationale for ACT Co-Financing

Concessional funds from CIF-ACT would complement financing from ADB to assist PT SMI as it builds capacity to fulfill its central role as the ETMCP Manager in accelerating Indonesia's clean energy transition. Concessional funds from CIF will contribute to expanding PT SMI's lending capacity in local currency to support accelerating coal transition, in conjunction with developing financing instruments to support accelerated development of renewable energy and crowding in private sector RE investments.

Financing Plan (Indicative)

Source	Amount (US \$ million)
ADB	150
CIF ^a	150
Other / Private	400
Government of Indonesia ^b	250
Total	950

Note: ^a CIF amount to be confirmed/adjusted based on PTSMI concurrence; ^b Earmarked for Facility 1 and subject to the concurrence of MoF and PLN.

Results Indicators – To be finalized to align with the PLN RBL (Appendix 9)

FI Loan Preparation Timetable (Indicative)

Milestones	Expected Completion Date
ADB Fact-finding	December 2023
ADB Management review meeting	1 st quarter 2024
Loan negotiations	2 nd /3 rd quarter 2024
ADB Board consideration	3 rd /4 th quarter 2024
Loan signing	4 th quarter 2024

Source: Asian Development Bank estimates from INO ICPM 2023-2025.

APPENDIX 11: Program Concept – IPP CFP early retirement program

Problem Statement - Supporting energy transition of Indonesia. The installed electricity generation capacity of Indonesia as of 2020 was 63GW, 62% of which came from coal-fired power plants (CFPPs) and 6% of which came from renewable energy sources. The Government of Indonesia (GoI) aims to phase out CFPPs to lower greenhouse gas emissions by 43.2% by 2030 (conditional upon international support) and to achieve carbon neutrality by 2060. Shortening the life of CFPPs will not only support the GoI on these goals but also opens the door for further investments in cost-effective renewables to meet the country's electric power demand, lowering overall energy generation costs in the long run.⁶⁷

Proposed Transformation. *Developing a pipeline of IPP CFPP early retirement opportunities through a pilot transaction under ADB Energy Transition Mechanism (ETM).* A key goal of the first project under ADB's ETM framework and CIF ACT IP IPP CFPP early retirement program is to provide a “proof of concept” among the IPP asset class of CFPPs. Structuring a successful financing will be the first step to establishing a viable early retirement financing model for IPP CFPP assets, not only in Asia but also in other regions of the world. As the pipeline of IPP CFPPs open to early retirement grows, CIF-ACT funds support replication and the broader expansion of ETM as one of the largest carbon reduction programs in the world. Working with the governments in ETM's 3 pilot countries, Indonesia, the Philippines and Viet Nam, ADB and the governments are aiming to retire 50% of CFPPs in the countries, which is approximately 30GW, over the next 10-15 years would reduce CO₂ emissions by 200 million tons annually.

Implementation Readiness. ADB is in detailed discussions with the project stakeholders, as well as the IPP counterparties in PLN. The qualified IPPs are identified as strategic projects within ADB's Indonesia pipeline, and the first project has obtained preliminary concept approval. The opportunity is receiving the highest level of consideration from within ADB, as well as across affiliated parties in PLN, MEMR and MOF. Just Transition plans, particularly to safeguard the job security of the employees of the Project, will also be developed and the associated costs will be reflected in the revised model during due diligence.

Rationale for ACT Co-financing. Concessional funds from the CIF-ACT program would complement debt financing from ADB to maximize the reduction in the Power Purchase Agreement (PPA) tenor and remaining operating life of the CFPPs. Without access to the CIF's toolbox of flexible cost and risk-bearing instruments, it would be impossible to adequately account for the loss of revenue from shorter PPA terms. Furthermore, until an IPP demonstrates a reliable collaboration with PLN and other GoI counterparties through the successful financing, other IPPs are unlikely to consider early retirement in the near term.

Results Indicators (to be finalized)

Result	Indicator	Baseline ^a	Target ^a	Data Source & Means of verification
Reduce GHG emissions	GHG emissions reduced or avoided (mt CO ₂ eq) – direct/indirect	n/a	TBD	MDB results reporting
Mobilized co-financing	Volume of CIF co-financing leveraged	n/a	700	MDB Public disclosures
Plant decommissioning	Capacity of existing coal power generation assets accelerated for retirement (MW)	n/a	TBD	MDB results reporting
Coal abatement	Amount of coal diverted (MT)	n/a	TBD	MDB results reporting

Note: Baseline and targets are currently being developed.

⁶⁷ ADB. 2022. *Establishment of the Energy Transition Mechanism Partnership Trust Fund under the Clean Energy Financing Partnership Facility*. Manila.

Financing Plan for Program

Source	Amount (US \$ million)
ADB ^a	400
CIF-ACT	100
Commercial Cofinancing ^b	300
Total	800

Note: ^aFinancing amount to be confirmed. ^bTo be confirmed at a later stage, based on market sounding.

Program Preparation Timetable

Milestones	Expected Completion Date
MOU signing for Project 1	November 2022
Mandate and Due Diligence for Project 1	1 st quarter 2023
CIF Trust Fund Committee Consideration of Proposed Program	2 nd quarter 2023
Project 1 loan negotiations & final investment committee consideration	2 nd quarter 2023
ADB Board consideration for Project 1	2 nd quarter 2023 end
Loan signing for Project 1	2 nd quarter 2023 end
Processing for future projects under program	TBD

Source: Asian Development Bank estimates.

APPENDIX 12: Project Concept – PLN P4R Transitioning to Sustainable, Clean and Efficient Energy Program for Results

Problem Statement

The GoI and PLN's ability to achieve their decarbonization targets will require a comprehensive approach to the energy transition that depends on multiple interventions. First, policy incentives for scaling up renewable energy and grid integration solutions will be required. Second, careful planning and analysis of different pathways to coal phase-down, and capacity building at government and PLN to help build knowledge and skills necessary to manage the transition, are also needed. Third, systemic governance issues, including relating to planning and regulation, and financial sustainability of the sector, must be addressed. Fourth, advance preparation on the social and environmental impacts of the coal-phase down will be required to ensure a just transition, as socio-economic impacts will be both heavy and widely distributed along a complex value-chain encompassing public and private enterprises, investors, direct/indirect workers, SME suppliers of goods & services, dedicated infrastructure, and coal-dependent communities. Finally, investments will be needed in new renewable generation and storage as well as investments in the grid, metering and distribution systems to allow for variable renewable energy, net metering for solar rooftop, and new smart grid solutions.

Proposed Contribution to Initiating Transformation

The proposed PforR is intended to support the Government of Indonesia and PLN on actions to meet the stated objectives under the RUPTL and the Roadmap to Net Zero. Based on these documents, the PforR will support a subset of key policy reforms, trainings, analytical work and expenditures to enable the energy transition for the medium to long term.

The PforR will have components around (i) accelerating decarbonization and just transition, (ii) scaling up renewable energy (including public sector investments such as grid upgrades and advanced metering systems), (iii) governance and institutional reform, and (iv) sector financial sustainability (including tariff and subsidy reforms). Areas (i), (ii), and (iii) fit well into the CIF-ACT program. It will complement other proposals under the CIF-ACT IP by ensuring the sustainability of the early achievements on coal plant decommissioning and repurposing, to allow for lessons learned to be incorporated into a future pipeline of coal plant retirement and supporting policies.

The PforR is a results-based instrument that will disburse upon the achievement of key milestones along the decarbonization pathway, such as: (i) issuance of key policies; (ii) reduction of carbon emissions; (ii) increasing renewables in the energy mix; and (iv) indicators showing improvement of PLN's financial viability; and (v) staff trained on energy transition.

Implementation Readiness

The PforR has been discussed with stakeholders including PLN, MOF, MEMR, CMMI and MSOE. It passed concept review in March 2022 and is currently undertaking preparation. Technical assessments are also underway. It is expected that, pending agreement on the scope and disbursement-linked indicators, the project can be approved by the World Bank board by early FY24.

Rationale for ACT financing

The PforR addresses the “Governance” aspect of the CIF-ACT program by focusing on supporting PLN and GoI capacity to prepare for the energy transition through capacity building of staff, analysis of decarbonization scenarios and pathways, and development of new policies needed to support the transition (such as those around pricing of renewables, local content and competitive procurement) and investments in network infrastructure. These are all pre-requisites to ensuring sustainability and continuity of the energy transition in Indonesia beyond the initial pilots, and to ensure that the institutions and people affected by the transition- at all levels- have the analytical work, policies, and skills and training needed to implement the transition. The PforR is intended to be an ongoing, multi-year support by the World Bank to PLN and

GOI, and flexible enough to allow for adjustments along the way to meet given disbursement-linked indicators.

Results Indicators (to be finalized)

Result	Indicator	Baseline^a	Target^a	Data Source & Means of verification
Policies	Number of policies, regulations, codes, or standards that have been amended or adopted (#)	n/a	TBD	MDB Public disclosures; Implementing Agency reporting
Readiness	Coal transition strategies finalized (#)	n/a	TBD	MDB and Government Public disclosures

Note: Baseline and targets are currently being developed.

Financing Plan

Source	Amount (US \$ million)
CIF-ACT Loan	30
CIF-ACT Grant (particularly for PLN Capacity building)	5
IBRD financing	400
Government	100
Total	535

Project preparation timetable

Milestones	Expected completion date
Concept approved by WB	March 2022
Roadmap to net zero issued by GoI	November 2022
Scope of the project agreed, including disbursement-linked indicators	February 2023
Board approval by World Bank	September 2023
Project effectiveness	November 2023

APPENDIX 13: Project Concept: Indonesia Just Transition and Coal Repurposing Project

Problem Statement. Excess coal generation capacity is constraining Indonesia's decarbonization efforts. The installed capacity of coal-based power plants has almost tripled in a decade from 13GW in 2010 to 37GW in 2020 and additional coal plants (around 13.8GW) are under development. The capacity margin in Indonesia, particularly in the Java-Bali system, is around 57% in 2022, about three to four times higher than international benchmarks.

Despite falling costs, the contribution of solar and wind to the energy mix has remained low. From 2010 to now, the share of renewable energy in the generation mix has increased from 12.0 to 13.0 percent. Significant efforts will be required to reach the country's National Energy Policy target of 23 percent renewable energy capacity by 2025.

Early decommissioning of old and inefficient coal plants in Indonesia would help reduce the coal overcapacity in the system and create space for development and facilitate the integration of renewable energy. Similarly, repurposing of closed power plants and coal mine sites would enable the reuse of the existing power transmission infrastructure to support increased low-carbon generation capacity and pilot of new and emerging technologies to improve the system's flexibility to integrate variable renewable energy generation.

Proposed Contribution to Initiating Transformation. The proposed project development objective is to repurpose coal fired power plants and mines in Indonesia while creating economic opportunities for workers and communities during the transition process. The project is expected to consist of three components:

Component 1: Decommissioning of Coal Fired Power Plants (US\$30 million CIF Loan). This component will support the decommissioning of one or more PLN owned CFPPs units. Decommissioning will include abatement, removal of materials, structural demolition, environmental remediation, and restoration to make sites suitable for repurposing.

Component 2: Repurposing of Coal Fired Power Plants and Coal Mines (US\$415 million IBRD and US\$130 million CIF Loan). The component will support the repurposing of PLN's coal plant assets into network flexibility centers through investments such as Battery Energy Storage Systems (BESS) and Synchronous Condensers (SYNCON). Repurposing investments would also include low-carbon electricity generation such as solar PV and Biomass. Options to repurpose of closed mine sites owned by state and privately-owned mining companies for the implementation of renewable energy generation through public private partnership arrangements will also be explored.

Component 3: Mitigation of socio-economic impacts of coal plant and coal mine closure (US\$ 20 million CIF Loan and US\$ 5 million CIF Grant). This component will support activities to minimize the social, economic, and environmental risks and impacts associated with decommissioning and repurposing of coal plants and coal mines, while enhancing the opportunities of this transition.

Both CFPP and coal mine repurposing would serve as pilots to help accelerate the coal transition. Project activities will be scoped to address key impacts and challenges such as labor transition, reskilling, retraining and outplacement, social risks and gender. The project will consider public private partnership arrangements to develop Solar PV in post mined areas.

Implementation Readiness. The proposed project has been discussed with stakeholders including PLN, MOF, MEMR, CMMI and MSOE. PLN provided the World Bank with a preliminary list of sixteen CFPP units across seven power plants located in *Suralaya, Paiton, Bukit Asam, Ombilin, Labuhan Angin, Nagan Raya, and Adipala*, with a total capacity of 5.6GW, which it is considering for early retirement before 2030. The World Bank is undertaking an initial screening of these plants and carry out planning and technical studies with PLN to inform PLN and Government decision on decommissioning and repurposing.

Rationale for ACT financing. ACT financing, along with IBRD co-financing, will support Indonesia to catalyze and build momentum on the implementation of its program to accelerate transition from coal. The

coal power stations decommissioned and repurposed under this project, will be the first to decommission as part of Indonesia's plan to phase out coal by the 2040's. CIF ACT financing will help (i) PLN gather knowledge and experience to accelerate the decommissioning and repurposing of coal plants; (ii) build PLN expertise in technologies such as storage, synchronous condensers, biomass and other low-carbon technologies; (iii) overcome first-mover cost and, build confidence among local stakeholders and communities and (iv) lower costs of the coal transition for PLN. This project will build on efforts of the ADB under CIF-ACT to facilitate the early retirement of coal plants.

Results Indicators (to be finalized)

Result	Indicator	Baseline ^a	Target ^a	Data Source & Means of verification
Income security for employees in subset industries	Number and percentage of employees of retired coal plants/mines that have access to sustained income	n/a	TBD	MDB results reporting
Social Plans and Economic Regeneration Packages	Number of direct beneficiaries of implemented social plans and economic regeneration activities (#)	n/a	TBD	MDB results reporting
Mobilized co-financing	Volume of CIF co-financing leveraged	n/a	415	MDB Public disclosures
Plant decommissioning	Capacity of existing coal power generation assets accelerated for retirement (MW)	n/a	TBD	MDB results reporting
Coal abatement	Amount of coal diverted (MT)	n/a	TBD	MDB results reporting
Mine closure	Mine area reclaimed and reforested/restored (Ha)	n/a	TBD	MDB results reporting
Cleaner energy sources	Installed capacity of renewable energy	n/a	TBD	MDB Public disclosures
	Power rating (MW)	n/a	TBD	MDB Public disclosures

Note: Baseline and targets are currently being developed.

Financing Plan

Source	Amount (US \$ million)
CIT ACT Loan	180
CIF ACT Grant	5
IBRD Financing	415
Government	60
Total	660

Project preparation timetable

Milestones	Expected completion date
Concept approved by WB	November 2022
Pre-feasibility studies completed, and scope of the project agreed with Government of Indonesia and PLN	June 2023
Board approval by World Bank	December 2023
Project effectiveness	March 2024

APPENDIX 14: Project Concept – Prime STeP: Supporting research & development and application of viable renewal energy in Indonesia

Problem Statement. To achieve its commitments to United Nations Framework Convention on Climate Change and Paris agreement, Indonesia needs to scale up its knowledge base on renewal energy by building its capacity and capability to conduct research & development (R&D) and downstream R&D outputs in collaboration with the private sector. ADB is currently processing a pipeline project (Promoting research and innovation through modern and efficient science and technology park – PRIME STeP) in Indonesia on R&D and innovation. Under the project, ADB will support four top-ranked universities (University of Indonesia, Gadjah Mada University, IPB University, and Institute of Technology Bandung) by financing advance R&D facilities, establishing a Center of Excellence for the clean energy transition, provide grants for applied research and startup incubation, and strengthening researchers capacity thought post doctorate programs. Several proposed R&D and innovation topics under the project are related to renewal energy development and applications.

Proposed Transformation – Key Subprojects

Proposal 1: Energy Storage System Batteries. One of the key technologies to realize carbon-neutral future is alternative energy storage system through development of batteries. The battery market is expected to expand the market for on-board batteries with the rapid expansion of the electrical vehicle (EV) markets. This project aims to develop either of the followings: (1) suitable high energy density secondary battery for battery industry in Indonesia including Ni-rich cathode, Li-rich cathode, and metal-air battery; (2) high-power battery (LNMO cathode); (3) all solid-state battery cell (polymer-based electrolyte and inorganic solid electrolyte); and (4) anode-free battery using current collector modification. The proposal's output will be: (1) High-energy density and/or solid-state battery prototypes; (2) Effective technology research studies in Indonesia through patent and reputable scientific journals; (3) Doctoral and Master students involved in development of battery material, including attending training courses; and (4) Ready for production high-energy density and/or solid-state energy storage system batteries.

Proposal 2: Development of High Performance Solar Cell based on Emerging PV Technology. Solar energy is one of Indonesia's key strategies to move away from fossil fuels and rely more on renewable energy. Indonesia has the potential to generate 207 gigawatts (GW) of solar power, but only around 0.09 GW or less than 0.1 percent has been tapped. The slow growth is a combination of several inhibiting factors: lack of consistent and supportive policies, the absence of attractive tariff and incentives, as well as concerns on grid readiness. The National Energy Policy (KEN) aims to increase solar power generation to 6.5 GW in 2025 and 45 GW in 2050. This proposal aims to develop high performance solar cell based on emerging PV technologies. The project will be carried out in several phases, which include designing and modelling of PV, architecture development of perovskite and perovskite-silicon tandem foil PV, prototyping, testing, scaling up, and developing and implementing of training courses. The proposed output will be a high-performance pilot scale industrial module prototype with ready technology and methodologies for future up-scaling.

Implementation Readiness

The proposals will be aligned with the implementation of the PRIME STeP Project, which support the government's strategy to downstream R&D and improve the success rate of startup incubation of four science and technology parks (STPs) in four top-ranked project universities. This is aligned with the government's National Medium-Term Development Plan (RPJMN) 2020–2024. PRIME STeP project is at an advance stage of processing. The MOU has been signed by the Government in September 2022, loan negotiation is tentatively scheduled in October 2022, and the board approval and loan signing are tentative in December 2022. The grant will be processed as additional financing the Prime STeP loan.

Rationale for ACT Co-Financing

Efforts to scale up renewable energy use in Indonesia are constrained by implementation challenges, lack of technological and innovation capacity, limited funding, and concerns with supply sustainability. Concessional CIF ACT funding would assist Indonesia to pave the way for the transition to green energy

by helping to cover some of the financing of these key projects that have higher technology and deployment costs. Total project cost is estimated to be \$9 million.

Concessional funds are intended to mobilize and scale up development of bankable projects through R&D to familiarize market actors (private sector, banks, insurers) with potential scaling-up of above technologies applicable in Indonesia context. Initial seed funding from concessional funds will result in mobilizing capital to grow the renewal energy technologies and application resulting in the long-term demonstration effect. The proposed investment below is expected to crowd-in private sector players by offering sufficient incentives to lower the overall cost of financing and help attract a critical mass of investment in first-mover projects.

Results Indicators

Result	Indicator	Baseline ^a	Target ^a	Data Source & Means of verification
Pilot production facility for at least one identified advance energy storage system established and operational	Production of energy storage products	TBD	1	Production of energy storage products
Training courses (online and offline) to impart skillsets to develop talent in manufacturing or production facilities for energy storage system developed and implemented in at least one higher education institution (university or polytechnic)	Students' enrolment on training course on energy storage technology production in higher education institution (with gender disaggregation)	TBD	TBD	Enrollment records
High performance solar cell production facility based on emerging PV technologies established and operational	Production of advance PV cell	TBD	TBD	Third party laboratory test on product performance
Training courses (online and offline) to impart skillsets to develop talent in manufacturing or production facilities for emerging PV technologies developed and implemented in at least one higher education institution (university or polytechnic)	Students' enrolment on training courses on PV technologies in higher education institution (with gender disaggregation)	TBD	TBD	Enrolment records
At least one startup company related to energy storage system and advance PV cell technologies incubated	Company registration	TBD	TBD	Company Registry Agency

Note: Baseline and targets are currently being refined.

Financing Plan (Indicative)

Source	Amount (US \$ million)
ADB	138
CIF grant	9
Government	21
Total	168

Grant preparation timetable

Key Milestones	Timeline
Prime STeP loan signing	December 2023
CIF ACT Trust Fund Committee consideration of grant application	1 st quarter 2023
ADB Board consideration of additional financing	2 nd quarter 2023

APPENDIX 15: Project Concept – IFC Dispatchable Renewables Program

Problem Statement

Indonesia has committed to energy transition which is reflected in its ratification of the Paris Agreement under United Nations Framework Convention on Climate Change through Law No 16 of 2016 on Paris Agreement. In its Enhanced Nationally Determined Contribution (NDC), Indonesia has set an unconditional reduction target of 31.89% of CO₂ emissions against the business-as-usual scenario by 2030 and, with international supports, a conditional reduction target of up to 43.2%. Also, GoI has just stipulated a new Presidential Regulation No 112/2022 on Renewable Energy which also set out the mandate for the phasing out of CFPs and the replacement of this retired generation capacity with renewables (Article 2 – 4). To support the Government of Indonesia's agenda and target above, IFC will propose the IFC Dispatchable Renewable Energy Program. The program will aim at establishing track record of financing private sector RE capacity in the country. An ability of the country to quickly and substantially scale up the private sector financing towards RE generation is likely critical in accelerating coal transition and ensuring that the pilot decommissioning of CFPs translate into a full-scale effort.

Proposed Transformation

Proposal 1: Developing RE+Storage projects that are capable of providing dispatchable or firm energy. Replacing thermal capacity will require significantly more renewable power capacity (for equivalence on a per MWh basis) plus expensive energy storage options (for peak shifting use cases). IFC is supporting establishing replacement RE-based dispatchable capacity. This capacity might be located outside of the boundaries of the CFPs that are being decommissioned. While replacing thermal capacity will require significantly more renewable power capacity (for equivalence on a per MWh basis) plus expensive energy storage options (for peak shifting use cases), IFC is engaging with existing utility clients on how these asset transitions can be appropriately financed through a combination of commercial and concessional financing in a phased manner. IFC will not necessarily limit its focus on repurposing existing power station assets with renewables, but also supporting the RE generation scale up in new sites. The proposal output will be private sector financing in renewable energy and storage projects (RE+storage) including ground mounted solar PV, waste-to-energy, floating solar PV, and rooftop solar projects.

Proposal 2: Supporting sustainability linked loan to private energy companies. Sustainability-linked finance is designed to incentivize the borrower's achievement of environmental, social, or governance targets through pricing incentives. So far, emerging markets have accounted for just 5 percent of total sustainability-linked financing issuances. The rapid market growth of sustainability-linked financing across industries reflects the strong interest in these instruments by borrowers, investors, and regulators. Firstly, sustainability linked finance allows borrowers to highlight sustainability commitments to their existing investor bases, while attracting a wider pool of investors interested in impact and sustainable investing. By doing so, companies may achieve a lower cost of capital, as well as an expanded and diversified investor base. These instruments also allow borrowers to better align their financial, operational, and sustainability objectives at a time when sustainability has become a strategic imperative for most companies, given broader climate and societal concerns. Secondly, investors can leverage sustainability-linked finance to adopt a "profit-with-purpose" business model.

As the largest development institution focused on the private sector in developing countries, IFC is well positioned to support the scale-up of sustainability linked financing in emerging markets. Driven by increasing private sector demand, and in support of the 2030 Agenda of its client countries, IFC has rolled out a comprehensive offering for sustainability linked financing. Activities covered under this Proposal can vary depending on the project, but they generally include: (i) identifying corporate- or project-level metrics that are material to the borrower's business strategy; (ii) benchmarking proposed targets for each metric against the borrower's historical performance and industry peers to ensure ambitiousness; (iii) defining relevant reporting methodologies and external verification mechanisms for target compliance; (iv) structuring financial incentives that are commensurate with the target's ambition, drafting sustainability-linked financing frameworks whenever needed, and incorporating legal language in the documentation; and (v) assisting in the SPO of the sustainability-linked financing framework, if required.

Implementation Readiness

IFC (together with other relevant DFIs) closely follow the developments on the market driven by the regulatory and policy regime set by the Government of Indonesia. With the continued developments across the country, particularly with anticipated push in CFPP retirement in the Indonesia, acceleration of RE penetration across the country, and the issuance of new Presidential Regulation on RE (Perpres 112/2022) it is expected that the sub-projects will start gaining traction in late 2023 and will advance to the Board approval stage in 12-18 months from that.

Rationale for ACT Co-Financing

With the expected transition away from large quantities of baseload power from coal, Indonesia will need to close the gap between energy supply and demand. This will unavoidably include the need to attract large investment to transform the economy to a new green future; most of this investment volume will have to come from private sector. No sizeable or sustainable coal transition process can be designed without rapid growth of investment in the replacement firm power generation infrastructure. The sector requires further strengthening in order to reduce the reliance on national government guarantee and, more significantly, the sector requires definitive and careful support to stimulate the growth of the firm load RE power generation. This creates a case for the ACT support to private sector activities to demonstrate areas for further investment and together to catalyze new economic opportunities. Once the precedents are set, established models and approaches can be scaled up.

Results Indicators

Result	Indicator	Baseline ^a	Target ^a	Data Source & Means of verification
Mobilize private sector financing	Volume of co-finance leveraged	n/a	490	MDB Public disclosures
Reduce GHG emissions	GHG emissions reduced or avoided (mt CO2 eq) – direct/indirect	n/a	0*	MDB results reporting
Cleaner energy sources	Installed capacity of renewable energy	n/a	TBD	MDB Public disclosures
	Power rating (MW)	n/a	TBD	MDB Public disclosures

*GHG emission reductions associated with individual sub-projects will be collected and aggregated at this Program level. However, as the proposed dispatchable RE projects aim at creating conditions enabling the ramp up of the CFPP retirement process, the system-wide effect of the associated GHG emission reductions will be realized and accounted for through the CFPP retirement. In other words, supply of dispatchable RE power into the grid will allow reduction of supply of power from CFPPs, enabling their retirement, leading to associated GHG emission reduction. Therefore, to avoid double counting, the GHG emission reductions will be reported only for direct CFPP retirement projects under this IP.

Financing Plan (Indicative)

Source	Amount (US \$ million)
IFC	140
CIF	70
Private Sector	350
Total	560



THE CLIMATE INVESTMENT FUNDS

c/o The World Bank Group
1818 H Street NW, Washington, D.C. 20433 USA

Telephone: +1 (202) 458-1801
Internet: www.climateinvestmentfunds.org

The Climate Investment Funds

The Climate Investment Funds (CIF) were established in 2008 to mobilize resources and trigger investments for low carbon, climate resilient development in select middle and low income countries. To date, 14 contributor countries have pledged funds to CIF that have been channeled for mitigation and adaptation interventions at an unprecedented scale in 72 recipient countries. The CIF is the largest active climate finance mechanism in the world.



@CIF_action



CIFaction



CIFaction



CIFaction



CIFaction



@CIF_action