Figures and Tables remain placeholders – all subject to revision / update / replacement

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

DRAFT FOR PUBLIC CONSULTATION
by the Government of Indonesia

3 October 2022

Fiscal Policy Agency
Ministry of Finance
Republic of Indonesia

This Investment Plan is a draft for consultation purposes. The projects set out herein are at early conceptual stages 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.

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	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		LUCF	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		$MtCO_2e$	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		NOx	Nitrogen oxides
ETM	Energy Transition Mechanism		PCG	Partial credit guarantee
ETMCP	Energy Transition Mechanism Country Platform		PGE	PT. Pertamina Geothermal Energy
FI	Financial intermediary		PLN	PT. Perusahaan Listrik Negara
G20	Group of Twenty			
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_2e	ton of carbon dioxide equivalent
JET-P	Just Energy Transition Program		UNFCCC	United Nations Framework Convention on Climate Change
JICA	Japanese International Cooperation Agency		WBG	World Bank Group

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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 was 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, while also pro-actively addressing 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 Nationally Determined Contributions (NDC) Indonesia has committed to reducing emissions by 29 per cent relative to a business-as-usual (BAU) baseline of 2.87 GT of carbon emission equivalent by 2030. With sufficient international support, it plans to reduce emissions by 41 per cent 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 decommissioning and/or repurposing 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, 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. However, to achieve Paris Alignment, further international support and concessional capital will be required to accelerate planned retirements by 5-10 years and clear the path for RE capacity replacement.

4. **Institutionalizing the clean energy transition.** Once the accelerated retirement of CFPPs is underway, RE and storage capacity must be ready to meet demand. As such, 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 RE PR creates a broad enabling framework for the clean energy transition and calls for the drafting of detailed roadmaps 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)

[1] GoI NDCs were initially submitted in 2016 and revised and updated in 2021.

(PT SMI), a state-owned enterprise overseen by the Ministry of Finance (MoF). MoF has assigned PT SMI as the Energy Transition Mechanism Country Platform[2] (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, 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 new 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 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.[3]
- Prior to the pandemic, the main factor constraining growth had been a flat 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 Indonesia's workforce.[4]
- As the coal-phase out efforts scale up, coal-producing regions (i.e., Kalimantan) 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 proposes a project pipeline which is broadly split into three key components: (i) Component 1 - Accelerated CFPP retirement, (ii) Component 2 - Just transition, CFPP repurposing and mine closure, and (iii) Component 3 - Scale up of renewable energy (RE) and storage. The IP aims to achieve the following (results discussed in Section 6):

- **Governance:** The adoption or amendment of [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.[5]
- **People:** [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, 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.[6]
- **Infrastructure:** Avoided greenhouse gas emissions of up to [77] million tons carbon dioxide equivalent (CO_2e) and mobilization of [US$2.2 billion] in MDB co-financing and over [US$1.3

[2] The Indonesian ETM program and country platform is distinct from the ADB Energy Transition Mechanism (see footnote 22 and Appendix 6 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.
[3] Data concerning the employment of women across different energy sectors (e.g., RE or conventional) is limited.
[4] 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.
[5] Tracked by ACT Core Indicator 1 and 2. See Section 6 and Appendix 2 for further detail.
[6] Tracked by ACT Core Indicators 3 and 4.

billion] in commercial co-financing. Facilitated accelerated retirement of up to 2 GW of CFPP generation capacity [1,415] million tons of coal diversion, [150] hectares (Ha) of mine area reclaimed, reforested or restored, as well as [3,504] GWh in energy savings per annum from CFPP closure and repurposing. Increased installed RE and energy storage capacity of up to [550MW] and [380MWh], respectively.[7]

Table 1: Indicative Financing Plan ($ Million)

		MDB Sector	ACT	MDB	Other/ Private	GoI[a]	TOTAL	Pillars		
Component 1: Accelerated Retirement of Coal Plants								Governance	People & Communities	Infrastructure
1.1	PLN RBL (early retirement of ~1 GW)	ADB Public	50	600	300	TBD	950	✓	✓	✓
1.2	PT SMI ETMCP - Facility 1 (PLN Sustainability-Linked Loan)	ADB Public	50 1 (grant)	50	100	250	201		✓	✓
1.3	IPP CFPP early retirement	ADB Private	50	250	0	0	300			✓
Component 2: Governance, Just Transition and Repurposing										
2.1	PLN/MEMR Energy Transition P4R	WB Public	30 5 (grant)	400	0	TBD	435	✓		
2.2	Just Transition and Repurposing Investment Project (Phase 1 & 2)	WB Public	180 5 (grant)	415	0	TBD	600		✓	✓
2.3	PRIME STeP	ADB Public	9 (grant)	140	0	TBD	149		✓	
Component 3: Scaling Up Renewable Energy & Storage										
3.1	Accelerating Storage Deployment in Power and Transport	ADB Private	50	150	300	0	500			✓
3.2	Dispatchable Renewables Program	IFC Private	70	140	350	0	560			✓
3.3	PT SMI ETMCP - Facilities 2 & 3 (Standby Facility & RE Loans)	ADB Public	100	100	300		500		✓	✓
	TOTAL		**600**	**2245**	**1350**	**TBD**	**4195**			

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.

[a]Not including broader MoF corporate support for implementing agencies such as PLN and PT SMI.

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, considering 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 opportunities from the energy transition. The proposed investment operations are summarized in Table 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 GoI, PLN, PT SMI and IPPs to accelerate the retirement of the first 1-2 GW of baseload CFPPs 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 CFPPs to close, looking at various replacement technologies such as battery storage, solar PV and 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 CFPP 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 ADB and IFC will simultaneously target pioneering large-scale RE and storage (RE+Storage) projects led by the private sector that will aim to serve demand both in grid-connected and captive power contexts.

[7] Tracked by ACT Core Indicators 5-11.

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 approaches. 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 labor transition. In parallel, the World Bank will engage in energy transition dialogue, involving 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 realizable 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 Transition

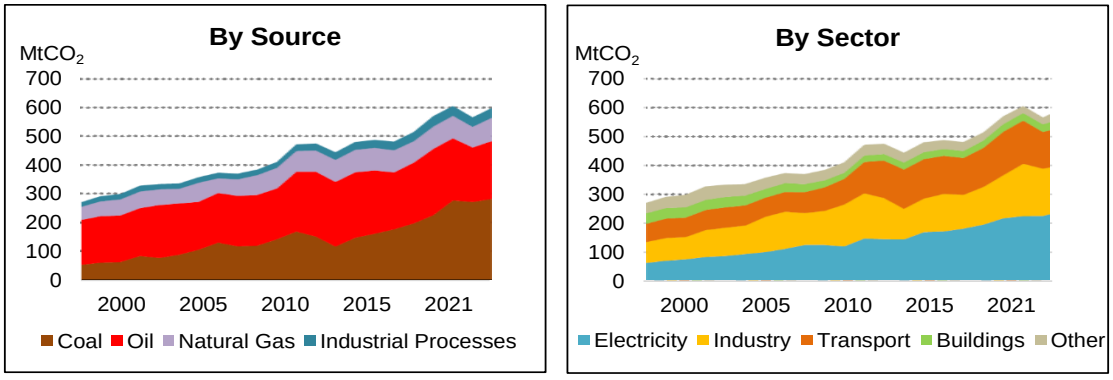
9. **Indonesia's extraordinary development record and ongoing challenges.** Indonesia is the largest economy in Southeast Asia. It is also the world's fourth-most populous country; seventh-largest economy; twelfth-largest energy consumer, and the largest coal exporter.[8] Its solid macroeconomic fundamentals, supported by political stability over the last two decades, 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.[9] 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 double 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. As a result, the energy sector now emits one-third more carbon dioxide (CO_2) than in 2000, per unit of energy consumed. In 2021, energy sector emissions were around 600 million tons of carbon dioxide (Mt CO_2) – making Indonesia the world's ninth-largest emitter from this sector (Figure 1). Total energy sector emissions have grown

Figure 1: Energy sector CO2 emissions in Indonesia, 2000 – 2021



Source: IEA (2022), An Energy Sector Roadmap to Net Zero Emissions in Indonesia

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

[9] World Bank, Indonesia Economic Prospects, June 2022 https://openknowledge.worldbank.org/bitstream/handle/10986/37584/IDU087850cba0b204043f608dea019acef5f2be1.pdf?sequence=5

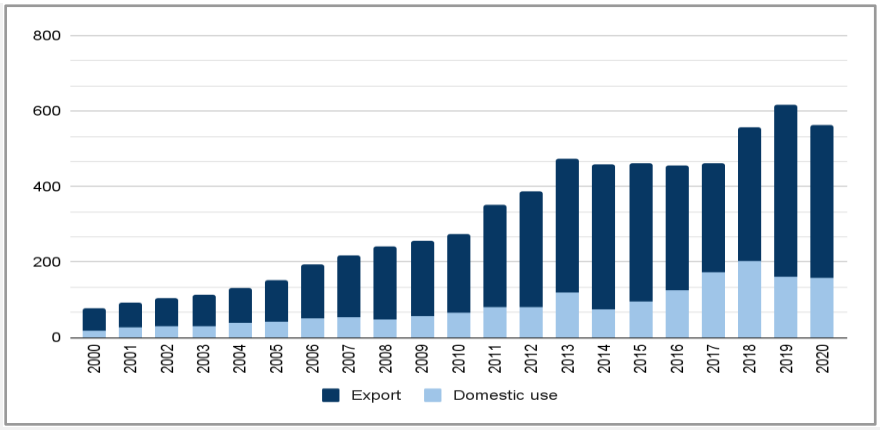
faster than energy demand, more than doubling over the last two decades. Coal is responsible for over 70% of the increase, with the lion's share coming from coal-fired electricity generation (Figure 1). Today, Indonesia has one of the most emissions-intensive electricity sectors in the world at over 750g CO_2 per kilowatt hour (CO_2/kWh). This compares to just under 600g CO_2/kWh in China and 710g CO_2/kWh in India in 2021.[10]

12. **Indonesia's Energy Resources.** The historic emissions pathway is tied closely with Indonesia's role as a net energy exporter given its extensive domestic fossil fuel resources.[11] While the country became a net oil importer in 2004, it soon thereafter 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).

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 560 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 Mt in 2000 to a record-level of 616 Mt in 2020, with the composition between exports and domestic use as shown in Figure 2.

Figure 2: Indonesia Annual Coal Production (2000-2020, Mt)



Source: ESDM, Handbook of Energy and Economic Statistics of Indonesia 2011 and 2020

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 China 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 is used almost exclusively for CFPPs most of which are connected to the Sumatra-Java-Bali grids (which accounts 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 CFPPs. Coal mining, domestic trans-shipment, and exports represent about $80 billion per year in economic activity — nearly 8% of GDP.

[10] IEA (2022). P.67.

[11] 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.

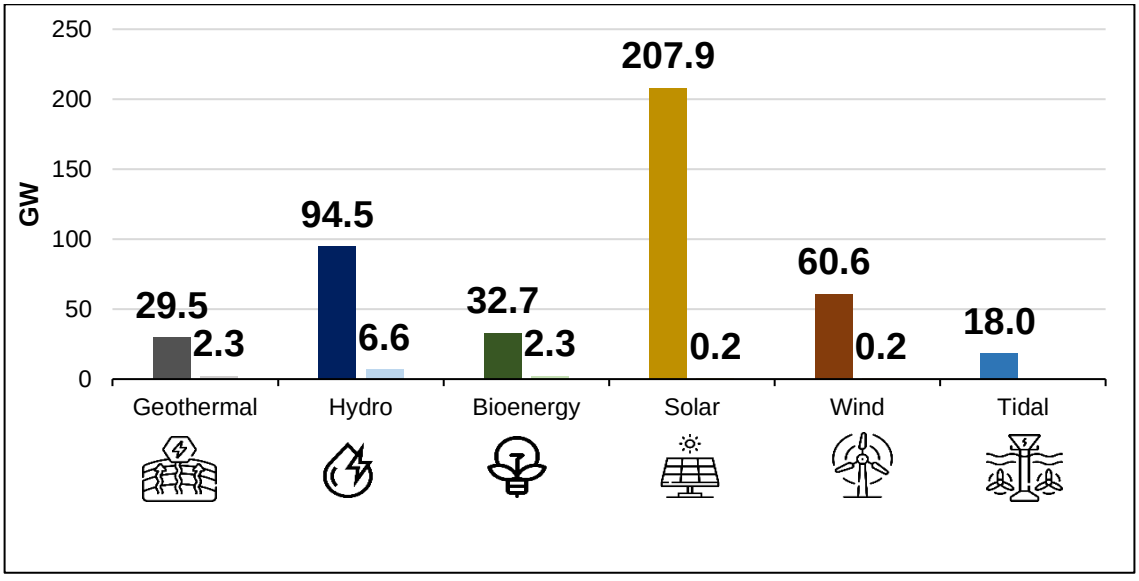
Global coal consumption was disrupted due to the Covid19 pandemic, and in late 2020 most of Indonesia's coal mining companies were incurring losses (IEEFA 2020). By late 2021, global demand had picked up and in early 2022 spot prices spiked above $300/ ton. Global export may be further disrupted in 2022 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 inputs.

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 a number of 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 renewable energy (RE), RE installed capacity only stood at 11.6 GW as of 2021 (see Figure 3).

Figure 3: Indonesia 2019 RE installed capacity (RHS) vs. estimated potential (LHS)



Source: IESR (2021). Beyond 443 GW: Indonesia's infinite renewable energy potentials.

14. The GoI is pursuing its goal on achieving a 23% share of renewable energy in its primary energy mix by 2025 as stipulated in the National Energy Policy 2014.[12] 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[13], while the RE contribution to the electricity generation mix grew from 11% to 18% in the same period.[14] Key challenges to further accelerating RE scale up 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, (v) prohibitive local content requirements for solar development and (vii) lack of reward for self-generation (such as rooftop solar). 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.[15] However, many of these issues have been discussed and addressed in some capacity as the GoI demonstrates further commitment to achieving 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 all of Indonesian society. Taking all sectors into account, Indonesia is the fourth-largest greenhouse gas emitting country in the world and is itself highly exposed to climate change risks and natural disasters.[16] 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.[17] 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.[18] 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):

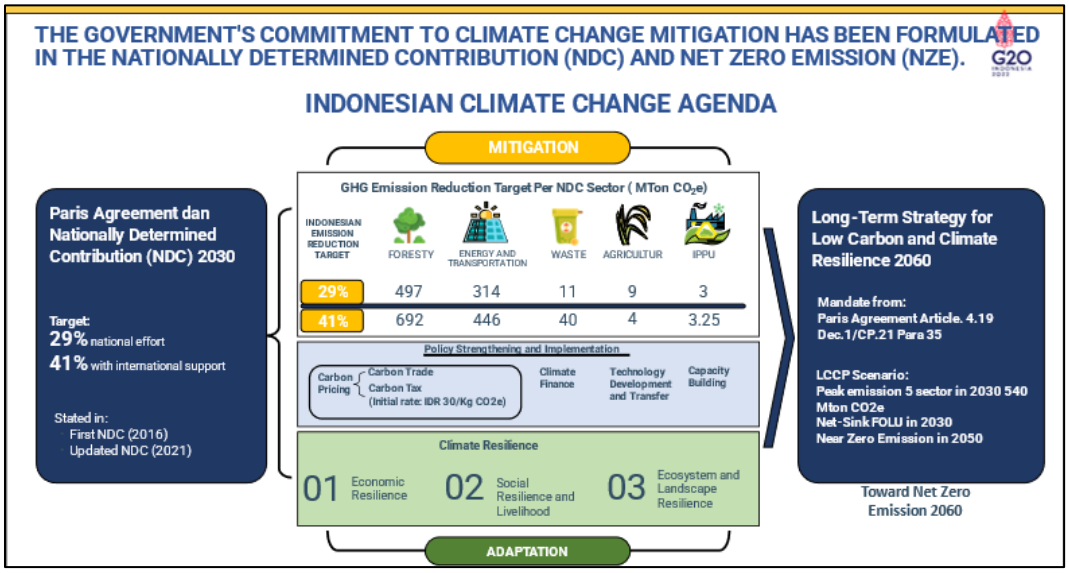
- **Nationally Determined Contributions (NDC) submitted to UNFCCC.** Indonesia's Intended NDC under the Paris Agreement, submitted in 2015, pledged to reduce CO_2 emissions by 29% in 2030 relative to a business-as-usual baseline. Indonesia ratified the Paris Agreement in 2016, reiterated the 29% target and assigned the MEMR responsibility to achieve 11 percentage points of the target emissions reduction from the energy sector.[19] Indonesia's updated NDC, submitted to the UNFCCC in July 2021, reiterated the unconditional target to reduce CO2 emissions by 29% in 2030 relative to a business-as-usual baseline and also

[12] Government of Indonesia, National Energy Council. 2014. National Energy Policy, 2014–2050. Jakarta.
[13] Handbook of Energy & Economic Statistics of Indonesia 2021. (MEMR) Table 1.6
[14] Handbook of Energy & Economic Statistics of Indonesia 2021. (MEMR) Table 6.4.4
[15] 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
[16] World Bank and ADB. 2021. *Climate Risk Country Profile Indonesia*. Washington and Manila.
[17] INFORM. 2021. INFORM Risk Index 2022.
[18] IEA 2022.
[19] 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.

included a reduction target of up to 41% 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



Source: 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.[20] 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 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

[20] Government Regulation 98/2021.

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 IDR 30 000/kg CO2 (~US$2/ton CO_2).[21]

- **Indonesia's G20 Presidency and Energy Transition Goals.** Indonesia has identified "sustainable energy transition" as on 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), and August (FGD #3) 2022. The FGDs brought together an inter-ministerial forum comprising all the relevant governmental 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. The most recent FGD (FGD#3) continued to refine the outcomes of the first and second FGD, focusing on the updated draft short-list of PLN CFPPs that can be retired before 2030 or 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.
- **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 renewable energy 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 Ministry of Energy and Mineral Resources (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).

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). In its planning, PLN is obliged to reflect government policies and initiatives in its operations.[22] As such, this build up reflects previous GoI power supply planning which revolved around the key priority of low-cost expansion of service to serve rapidly growing demand and achieve universal

[21] Kementerian Keuangan, 2021.

[22] 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.

electrification. The use of coal to meet this challenge over the last two decades is clearly reflected in the evolution of the installed capacity over the last few years, as Indonesia was pressed to meet the rising power demands of the fast-growing economy (see Figure 6).

Figure 5: Indonesia Power Sector Stakeholder Map

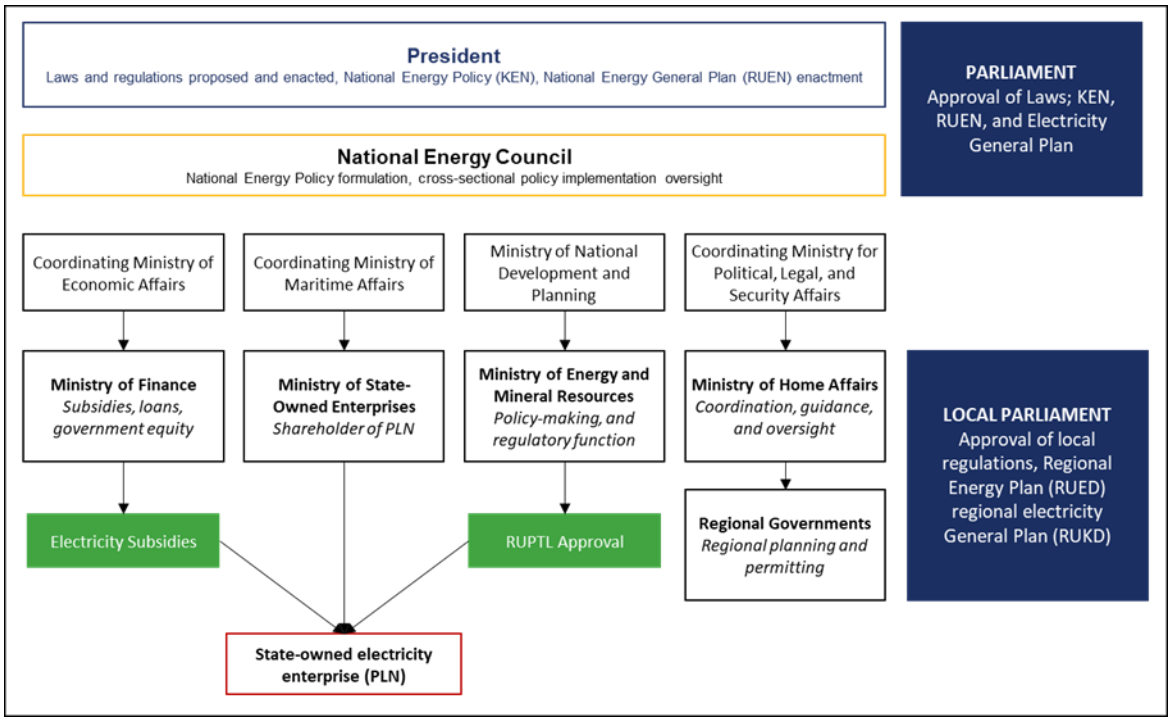
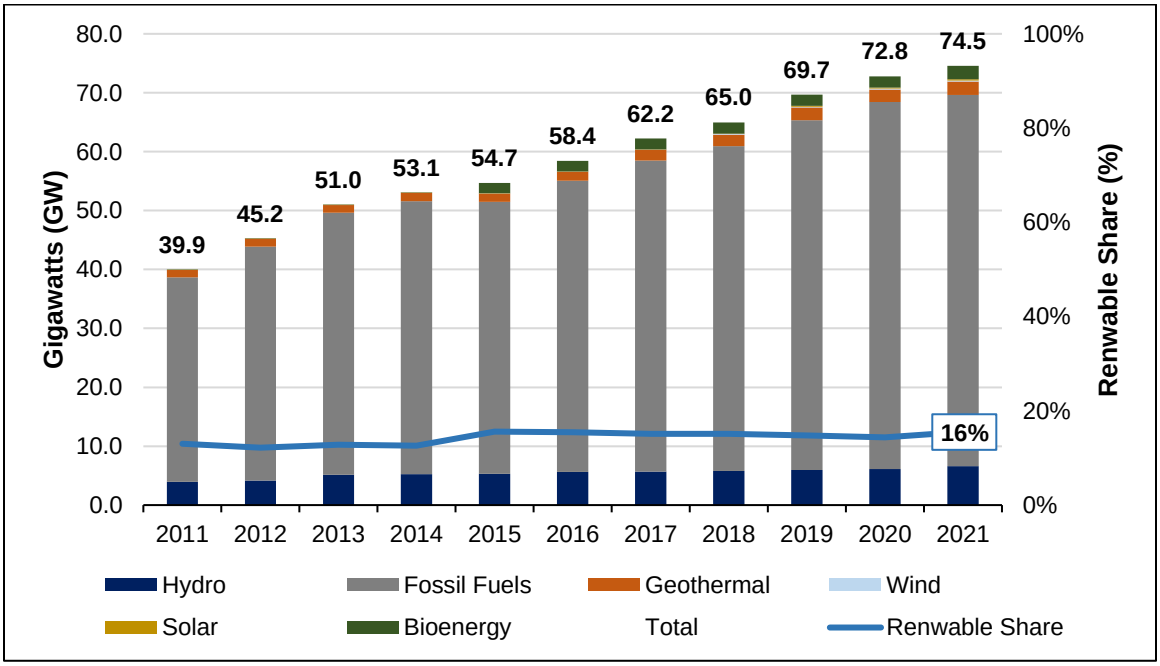


Figure 6: Indonesia Installed Capacity Trend, 2011 – 2021

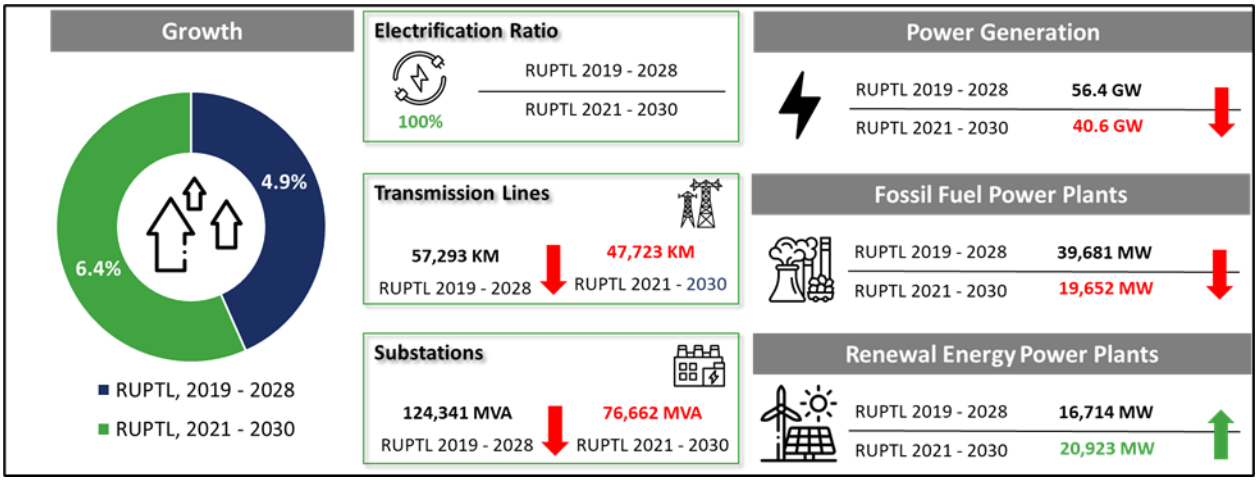


Source: Handbook for Energy and Economic Statistics of Indonesia 2021. (MEMR)

19. Total grid connected power generation capacity increased from 52.8 GW in 2016 to 74 GW in 2021.[23] 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 by oil and gas and only 15% from renewable energy sources. While the predominance of CFPPs 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.

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. Taking into account 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 renewable energy projects, accounting for 51.6% of 40.6 GW of new generation (see Figure 7). PLN plans to increase renewable energy generation from 12.7% of total generation in 2021 to 24.8% by 2030.[24] 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 to the gradual retirement and conversion of CFPPs – reflecting the target output of the upcoming CFPP early retirement plan to be announced at the G20 summit.

Figure 7: Changes planned under RUPTL 2021-2023



Source: Adapted by ADB from HHP Law Firm.

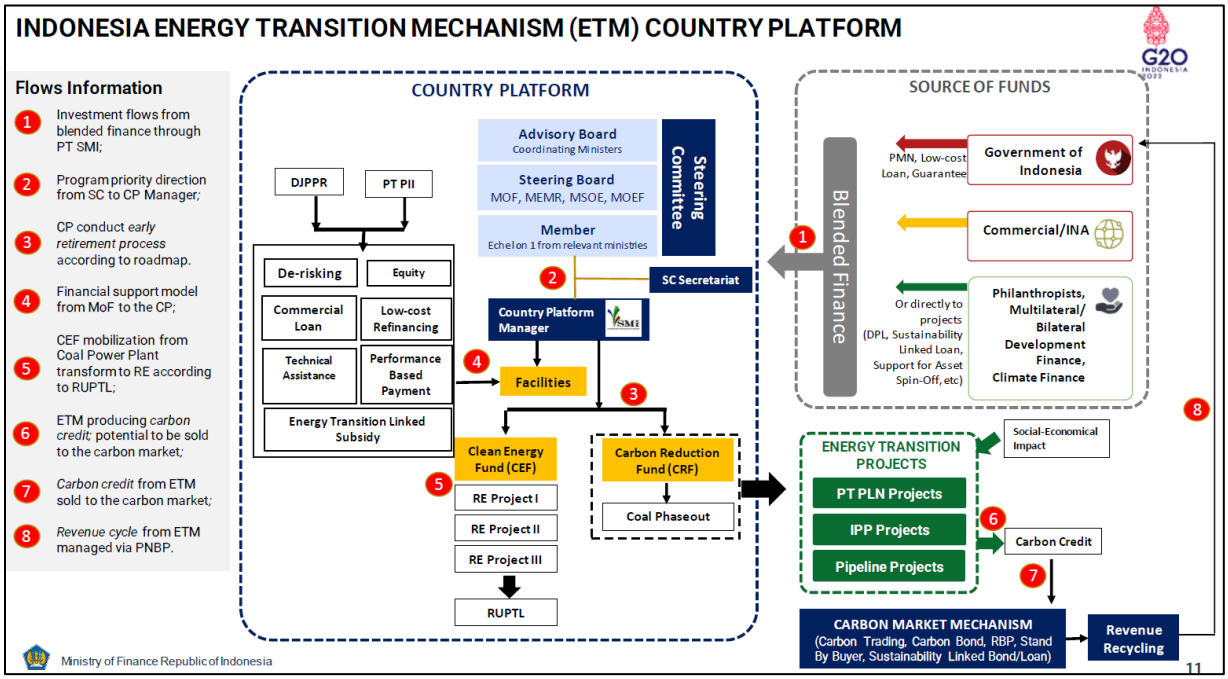
21. **PT Sarana Multi Infrastruktur (Persero) (PT SMI) and ETMCP – critical partners in clean energy transition implementation.** Established in 2009 to catalyze Indonesia's infrastructure development, PT SMI is a state-owned enterprise overseen by the MoF. PT SMI has extensive experience in lending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

[23] Government of Indonesia, Ministry of Energy and Mineral Resources. 2022. *2021 Handbook of Energy and Economic Statistics of Indonesia*. Jakarta.
[24] PLN. 2021. *Electricity Power Supply Business Plan, 2021–2030*. Jakarta.

support its infrastructure lending transactions. PT SMI is currently the only GCF Accredited Entity in Indonesia as a DAE (Direct Accredited Entity).

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.

Figure 8: PT SMI ETM Country Platform



Source: Ministry of Finance

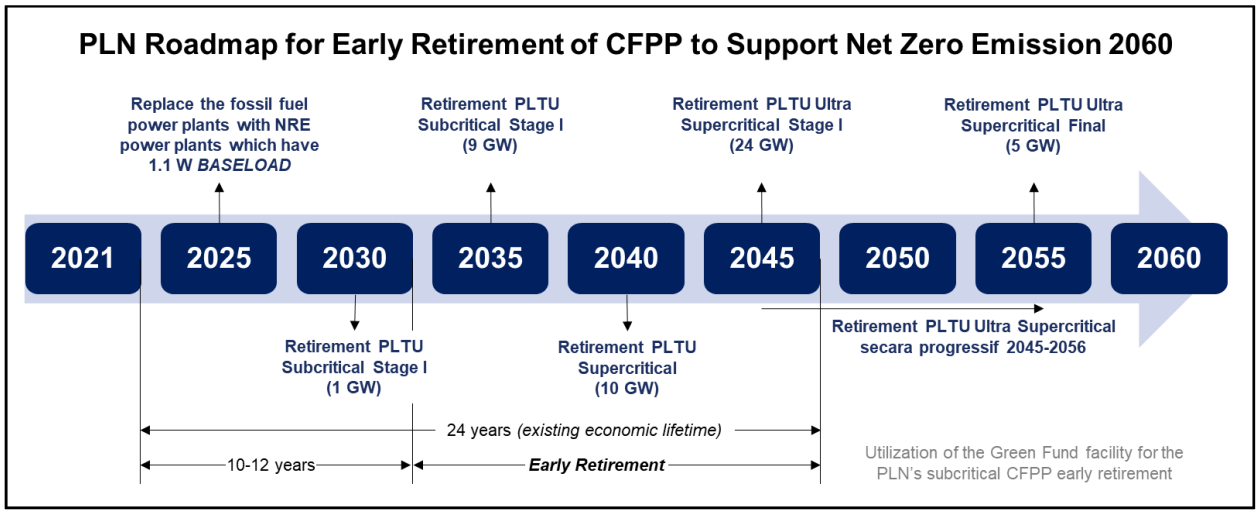
23. **Detailed path for CFPP early retirement.** In 2020, Indonesia had a total of 33.4 GW of operating CFPPs, with an additional 13.8 GW of CFPPs under various stages of construction. The bulk of these operating CFPPs are based in Java-Bali and Sumatra. Given surplus capacity reserves compared to historical 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 sooner for the 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.[25]

[25] CEA report on CFPP flexible operations.

24. As such, it is possible for the country 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 which 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 redevelopment.

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 roadmap would be issued as a regulation as required under the newly issued RE PR in time for the G-20 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 Early Retirement



Source: PLN.

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

27. **Retirements before 2030 – the first 1-2 GW.** The shortlist of nine units totaling nearly 5 GW of capacity and have been prioritized for retirement by 2030 are presented in Table 2 below. All the units are owned by PLN. And 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. PLN and ADB's analysis suggest that Suralaya unit 1 and 2, and Paiton unit 9 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

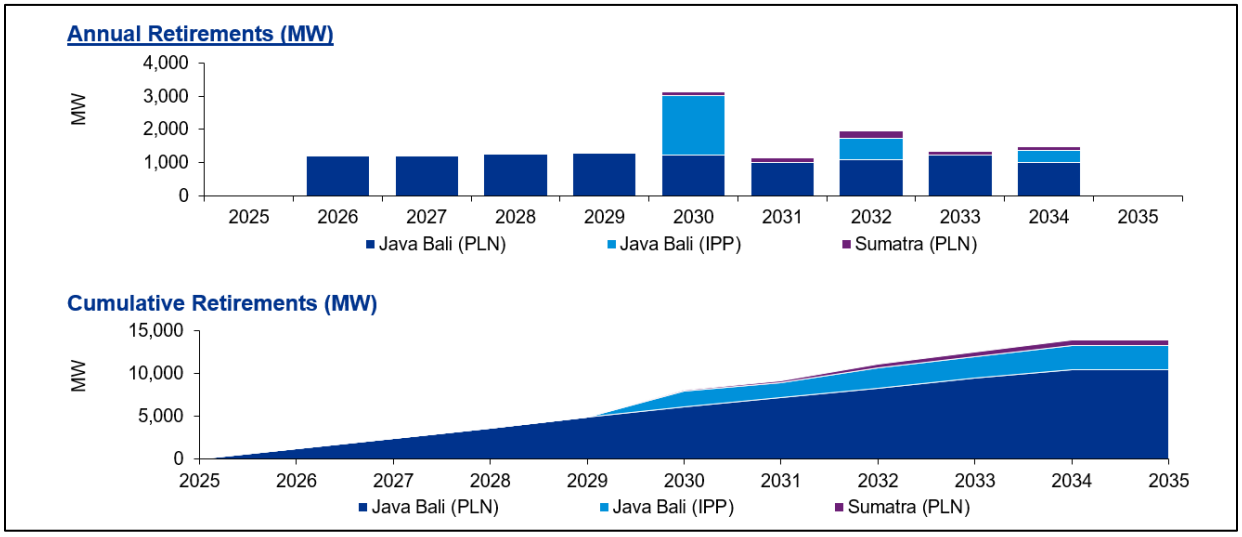
Table 2: Proposed List of CFPPs by PLN for retirement before 2030 (near term)

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	Suralya U1	400	5.85	390	0.49	1985	33	2055	70
2	Suralya U2	400				1986	33	2055	69
3	Suralya U5	600				1996	33	2055	59
4	Suralya U6	600	45.20	3,013	1.67	1997	33	2055	58
5	Suralya U7	600				1997	33	2055	58
6	Suralya 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**					

Source: PLN.

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 below provides a summary presentation from the ADB ETM[26] feasibility analysis (Appendix 1) of a CFPP retirement roadmap 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 in that year.

Figure 10: PLN 2025-2035 Roadmap with ~14GW of early retirement



[26] 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[26] 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 6 for further detail.)

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 in the next decade, implying the need for nearly US$6 billion in commercial financing for new infrastructure.[27] PLN does not generate sufficient cash flow to fund significant investments and remains largely dependent on borrowing to fund investments. [28] 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. **Pending reforms – Local content.** 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 did not address a structural challenge related to local content that has been an ongoing bottleneck for RE development. The National Electricity Law requires the prioritization of domestic products and services when developing generating assets. This local content requirement, together with the nascent domestic renewable energy technology industry results in higher prices and difficulty for project developers to obtain the necessary equipment. Further clarity on local content exemptions (at least in the initial stages of RE scale up) will ensure a viable way forward.

2.4 Just Transition and Safeguards needs across clean energy transition activities

31. **GoI ambitions and intentions for just transition.** The GoI is committed to a just and affordable transition including "(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"[29], all of which align well with the pillars of CIF-ACT: people, governance, and infrastructure. The GoI is engaged with multiple stakeholders to inform decision-making towards achieving its climate commitments and long-term net-zero goal in a just and affordable manner. Achieving a just transition will require planning and preparation not only to identify and manage potential negative impacts, but also to create a strong enabling environment to take advantage of opportunities to improve livelihoods and drive growth and sectoral transformations. This includes green industry diversification opportunities, reskilling and upskilling women and men, with particular focus on groups experiencing additional disadvantages, engagement and leadership in formal/ informal sectors as part of new job creation supporting Indonesia´s social and economic needs and ambitions alongside its climate goals. In addition, robust planning and support towards achieving a just transition can increase public buy-in for climate change programs and increase climate ambition.

[27] HHP Law Firm. *Client Alert - PLN's New 2021 - 2030 Business Plan: High hopes and 'greener' projects.* October 2021.
[28] 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.
[29] 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 2022.

32. The just transition of the coal sector is especially important in Indonesia due to the role coal plays in the country's socio-economic landscape—as a source of employment, source of revenue, and source of power. If the transition is not well-managed, potential adverse impacts are likely to be felt throughout the country. It will not only impact workers but also their families and communities. Women (especially considering intersectional identities of Indonesian women) and other marginalized groups—minority ethnic groups, rural communities, and youth are particularly at risk, vulnerable to shifts and interruptions in the surrounding economies, institutions and infrastructure with regard to accessing and using services and resources. Potential impacts include those associated with any increase in electricity prices, direct and indirect employment impacts – including on formal, informal and contract workers – as well as potential induced impacts on communities and economy due, for example, to reduced spending, and government revenue. A just transition approach needs to look at the entire value chain, including power generation through CFPPs, 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 vendors that supply these facilities (such as street or informal vendors supplying to mine workers, and not ignoring sex-trade work). Coal-dependent subnational government revenue through tax and non-tax revenue may also be affected leading to induced impacts in the economy. However, a managed transformation of the energy sector can also bring about opportunities, by providing quality employment in clean energy, as well as by promoting the development of new and greener industries, new sustainable business models and entrepreneurship, and cleantech innovation. 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. (See Box 2 for further detail on coal mine closure.) 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.

33. **Just transition in Indonesia Policy Documents.** The GoI commitments to a just and affordable transition are embedded across its climate commitments. 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."[30] To do so, Indonesia aims to focus its efforts on tackling challenges in low-carbon development for sectors, cities, and regions, 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)"[31] 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)[32] and local communities.

[30] Government of Indonesia. 2021. Updated Nationally Determined Contribution.
[31] Government of Indonesia. 2021. Long-Term Strategy for Low Carbon and Climate Resilience 2050.
[32] 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.

Box 2: Coal phase down – implications upstream

As domestic use of coal is a key driver of coal production, 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.[1] 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.

A World Bank Study in 2019 found that although legal and regulatory requirements are satisfactory, the implementation of these requirements needs to be improved.[2] A significant finding of the study that included a stakeholder consultation process was that the one area that was a shared priority for government and civil society, was "Environmental and Social Impact and Mine Closure Management", as both groups are concerned about mines that are yet to be reclaimed. The GoI has noted that there is limited funding for monitoring, especially in provinces. CSO respondents voiced their dissatisfaction with a number of issues including: inadequate and incomprehensive institutional skills; limited efforts of mining companies to conduct reclamation activities; and mining companies consult with communities when developing and updating the MCRP. During the dissemination of the MSD results to stakeholders, the Director General of Mineral and Coal requested a deep-dive to strengthen gaps in policy implementation noted in the report.

Sources:
[1] 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.
[2] World Bank, 2019, Indonesia Mining Sector Diagnostic (MSD) Report.

34. **Institutionalization of Just Transition.** Indonesia has made tangible progress in the institutionalization of just transition in the energy sector. MoF has established an energy transition Steering Committee to oversee just transition efforts and as part of PT SMI's appointment as Country Platform Manager they will develop and implement the just transition framework for energy transition. Upfront assessment has been carried out by both ADB and World Bank to understand issues and opportunities related to just transition in Indonesia and inform the preparation of the IP. Moreover, extensive consultation processes have been carried out in the last twelve months with a focus on just transition and the development of the IP (see Section 3.1) and such stakeholder consultative and inclusive processes will continue to be an important part of the implementation of this CIF-ACT Program. Further work will be done to involve non-energy ministries such as labor and education and establish inter-ministerial coordination on just transition.

35. **Gender in Energy and Mining – status quo and scope for support.** A key focus across development activities has been exploring gendered vulnerabilities alongside susceptibilities of the marginalized – a challenge in the wake of any sector development. In 2022, the share of female employment in Indonesia's mining and energy industries is below 10%,[33] concentrated in jobs requiring low STEM (Science, Technology, Engineering and Mathematics) skills which are clearly more vulnerable to a shift to automation.[34] On the other hand, while women only

[33] Indonesia Central Bureau of Statistics. (2022). *Labor Force Situation in Indonesia.* Indonesia Central Bureau of Statistics.
[34] 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*

comprised of 12% from the total STEM graduates in 2018, there was no indication of gender gap in overall educational achievement in recent research, indicating that the later gap in STEM fields was heavily influenced by gender stereotypes, such as the belief that men are a more 'natural fit' in STEM subjects.[35]

36. Furthermore, 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. There are 11 women holding directors' positions out of a total of 55 units (20%) in the Ministry of Energy and Mineral Resources. 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. 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.

37. 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.[36] 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 several gender sensitive regulations that provide equal opportunities, treatment, and remuneration for men and women.

38. In 2021, Indonesia was ranked[37] as 'moderately improving' towards SDG goal number five – gender equality and women's empowerment based on the four indicators upon which the assessment was made with education and labour force participation among being two of the four. The Government of Indonesia's National Mid-Term Development Plan (RPJMN) 2020-2024 aligned with the Sustainable Development Goal 5 reflects country's overall gender mainstreaming agenda, by particularly enlisting gender equality as one of the six aspects that should be mainstreamed into Indonesia's overall development strategy. In line with thist, energy sector institutions also enhanced their corporate gender mainstreaming commitments creating an enabling environment for advancing women in the energy sector. For instance, in 2021, PLN

COVID-19 pandemic. Available at https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_809227.pdf

[35] 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/

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

[37] https://dashboards.sdgindex.org/profiles/indonesia

established the CEO Statement of Support for the Women's Empowerment Business, while also encouraging other business leaders to do the same. In preventing and handling gender-based violence risks in the workplace, PLN issued Board of Directors ("BoD") Directive No. 0015.P/DIR/2020 concerning Protection, Prevention, and Treatment of Sexual Harassment. The regulation also applies to third parties such as outsourcing, consumers, business partners, and consultants. Aligned with the Ministry of State-Owned Enterprises' enhancement program of women empowerment, PLN formed the Srikandi Task Force Team of PT PLN (Persero) under BoD Decree No. 0136.K/DIR/2022. The Srikandi Task Force Team aims to build awareness of all parties regarding competency-based career development and employee performance and to enhance the capacity of women within PLN business activities. To meet PLNs public service obligations, in April 2022 PLN further issued a Statement of Corporate Intent committing to mainstreaming gender.

39. However, more can be done to design and advocate for non-biased gender equality policies and regulations across the energy and extractive sectors. A good starting point for promoting greater gender equity is collecting gender-disaggregated information—social and economic data that measures differences between females and males through national statistics. A good understanding of detailed gender disaggregated data could form the basis for developing targeted gender-sensitive socio-economic assessments that could foster better equality and social inclusion.

40. **MDB Support for environmental and social governance in energy sector.** ADB and the World Bank are providing technical assistance to support the Government of Indonesia's energy reform agenda working in particular 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.

41. ADB and World Bank have also been supporting PLN to establish its corporate Environmental and Social Governance (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 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.

42. There will be a need for new regulatory and governance frameworks and strategies and capacity-building for agencies with designated responsibility for planning and management of environmental and social aspects of CFPP closures, decommissioning and development of new 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 closures, in order 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.

3. PROGRAMS – Description and Financing Proposal

3.1 Overview of process and collaboration across MDBs and Stakeholders

43. **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 GoI has worked diligently in collaboration with the ADB, WBG, key line ministries and CSO stakeholders to establish a strong foundation for IP design and development. The following Table 3 outlines key milestones in the design process and presents where key IP workstreams are today. For detailed review of stakeholder consultations during the design process please see Appendix 4.

Table 3: IP 2022 Design and Development Timeline

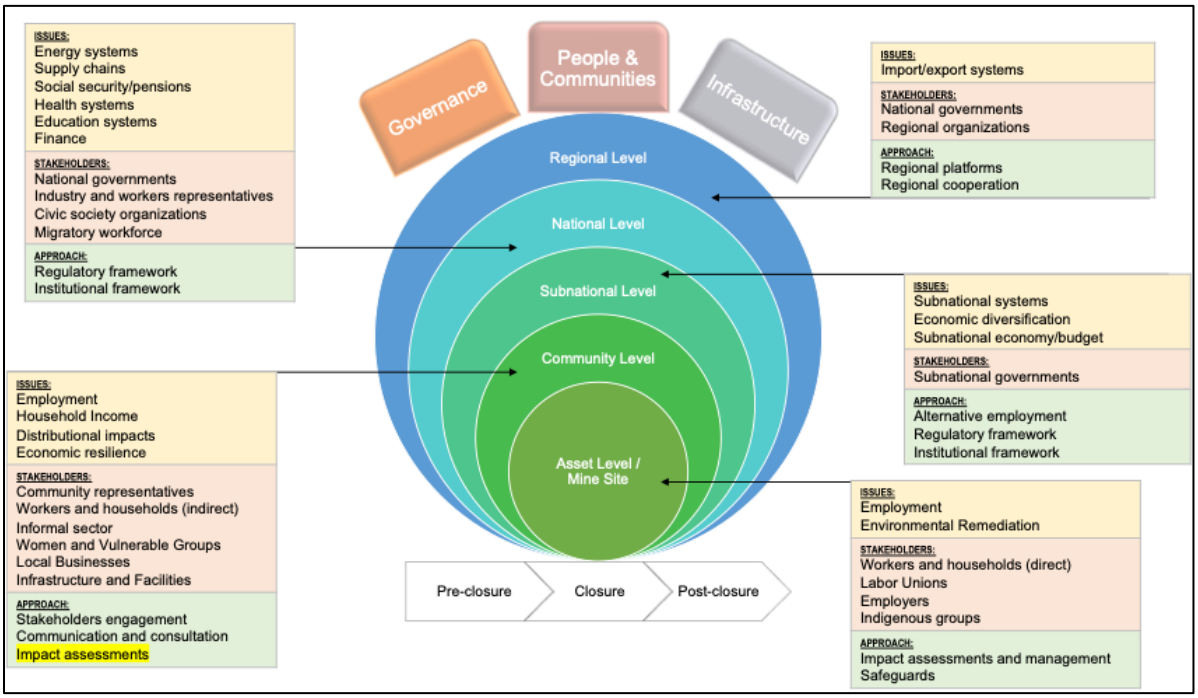
Timeline	GoI, ADB and WBG	Just Transition	SESA
March 2022	Scoping mission		
June 2022	Presentation and discussion of 3-Component approach to investment; Briefing to donors through the FIRE Dialogue post MDB joint mission.	(i) MoF agreed as lead ministry for SESA and Just Transition. [BKF] will be the 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
July 2022	Project early screening	Data collection and in-country consultations	Baseline data collection and in-country consultations
	Stakeholder Consultation on Plans to prepare Investment Plan (1 July 2022)		
August 2022	ADB and WBG ongoing discussions with GoI counterparts to refine project concepts (e.g. repurposing 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)	Members of National SESA Steering Committee and Key Stakeholders agreed with BKF
October 2022	GoI 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

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

3.2 Cross-cutting priorities: Supporting Just Transition and SESA for CIF-ACT IP

44. **Just Transition Framework.** A comprehensive approach to a just transition takes into account 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 take into account, how impacts will potentially change dependent 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, at the national and subnational levels, the 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



45. 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 labor 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 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, please see Appendix 4.

46. **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 which 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.

47. The national level SESA builds on the findings of a regional SESA scoping study undertaken by ADB between January and August 2022[38]. 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.

48. **SESA and Stakeholder Engagement.** Energy transition stakeholders comprise of 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/SOEs, 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 will be 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.

[38] Regional Scoping Report for Strategic Environmental and Social Assessment Applied to the Energy Transition Mechanism in Southeast Asia https://www.adb.org/sites/default/files/project-documents/55124/55124-001-tacr-en.pdf

49. **A focus on stakeholder engagement for gender 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 JT 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 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.

3.3 IP Financial Plan and Instruments

50. 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 (see Appendix # for supporting letters), and
(iv) Project 1.2/3.3, 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 deal mainly in direct infrastructure investment across the three components.

Table 5: Indicative Financing Plan ($ Million)

		MDB Sector	ACT	MDB	Other/ Private	GoI[a]	TOTAL	Pillars		
Component 1: Accelerated Retirement of Coal Plants								Governance	People & Communities	Infrastructure
1.1	PLN RBL (early retirement of ~1 GW)	ADB Public	50	600	300	TBD	950	✓	✓	✓
1.2	PT SMI ETMCP - Facility 1 (PLN Sustainability-Linked Loan)	ADB Public	50 1 (grant)	50	100	250	201		✓	✓
1.3	IPP CFPP early retirement	ADB Private	50	250	0	0	300			✓
Component 2: Governance, Just Transition and Repurposing										
2.1	PLN/MEMR Energy Transition P4R	WB Public	30 5 (grant)	400	0	TBD	435	✓		
2.2	Just Transition and Repurposing Investment Project (Phase 1 & 2)	WB Public	180 5 (grant)	415	0	TBD	600		✓	✓
2.3	PRIME STeP	ADB Public	9 (grant)	140	0	TBD	149		✓	
Component 3: Scaling Up Renewable Energy & Storage										
3.1	Accelerating Storage Deployment in Power and Transport	ADB Private	50	150	300	0	500			✓
3.2	Dispatchable Renewables Program	IFC Private	70	140	350	0	560			✓
3.3	PT SMI ETMCP - Facilities 2 & 3 (Standby Facility & RE Loans)	ADB Public	100	100	300		500		✓	✓
	TOTAL		**600**	**2245**	**1350**	**TBD**	**4195**			

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.

[a]Not including broader MoF corporate support for implementing agencies such as PLN and PT SMI.

51. **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 nearly 33GW CFPP fleet and can continue to operate them 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 and initiate the transformational change required for the transition from coal to clean energy.

52. **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 FY22 Q4 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 project will be determined and fixed at the time of loan agreement.

53. 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 a project-by-project 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.

Figure 12: CIF 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

Source: 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.

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

54. While the GoI is increasingly moving towards cleaner forms of energy, legacy 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.

55. **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 slotted for retirement before 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.

56. **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$550m) 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 roadmap to implement the aforementioned facilities. Funds will also be used to support stakeholder engagement to ensure participatory and transparent process in the framework development.

57. **Project 1.3 – IPP CFPP early retirement.** ADB began canvassing the market by engaging with IPPs which are interested in early retirement of CFPPs. ADB proceeded to sign non-disclosure agreements with IPPs and is pursuing discussions accordingly. The proposed project 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 Project aims to open the pathway for further coal-fired IPP discussions 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

58. 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.

59. **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 PforR will build upon years of analytical work by the World Bank around topics of climate change, decarbonization, sector financial sustainability andbaseline assessments on the Just Transition.

60. **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.

61. **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 World Bank 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.

62. **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.

63. **Project 2.3 – PRIME SteP.** The PRIME STeP project supports the longer-term transition with a focus on higher education and other human resource development as part of supporting a just transition. The ADB project (US$9 million grant) is intended to create opportunities, including for clean energy, by supporting research and development (R&D), innovation facilities, improving the innovation ecosystem, and strengthening the R&D and institutional capability of science and technology parks. The opportunities this endeavor shall create can support a just transition by providing workers with the means to access sustainable and decent livelihoods. 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.

3.6 Component 3: Scaling up renewable energy

64. **Project 3.1 – Accelerating Storage Technology Deployment in Power and Transport.** A key aspect of Indonesia's roadmap for broader clean energy transition is the national development of a battery industry value chain for the mining, refining, processing, manufacturing, application and recycling of batteries used for energy storage and electric mobility. Energy storage is the lynchpin that enhances the impact of a clean energy transition across multiple industries. Under the proposed program, project and corporate financings blending concessional finance will support the first generation of RE and storage (RE+Storage) projects, battery manufacturing plants, nickel smelters using RE+Storage, as well as e-vehicles / charging infrastructure. Most of these battery applications remain nascent in nature in Indonesia, and in many cases, around the world. The use of concessional financing will catalyze more private sector investments as they

can support private sector clients deal with the perceived risks of new technology applications and achieve more adequate returns. Establishing the reliability and applicability of storage will be critical for the scale up and grid integration of RE. The successful demonstration of battery technology across various power and transport applications will allow for a richer proliferation of multiple technologies and establish momentum for scale and replication of utility-scale battery energy storage systems on and off-grid, as well as viable e-transport solutions.

65. **Project 3.2 – Private Sector Dispatchable Renewables Program.** Under the Program, the CIF-ACT funds will be utilized to facilitate private sector financing for a series of RE+Storage projects through project finance structures and sustainability linked loans to private energy companies. Through these projects, the 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 CFPP 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, and rooftop solar projects. 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.

66. **Project 3.3 – PT SMI Indonesia ETM Country Platform – Facilities 2 & 3 (Standby Facility and RE Loan Facility).** Under Facility 2, the Standby Facility for Renewable Energy Projects, 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). 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 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. Under Facility 3, PT SMI would provide for 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 RE+Storage projects.

4. ADDITIONAL DEVELOPMENT ACTIVITIES

3.1 GoI energy sector collaboration across development partners.

67. The GoI'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. With regard to 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	$380.0
	Indonesia Geothermal Resource Risk Mitigation Project	2019–2029	$465.0
	Indonesia's Infrastructure Finance Development	2016–2022	$8.3
	Geothermal Energy Upstream Development	2017–2025	$104.0
	Power Distribution Development Program	2016–2020	$1,450.0
	Indonesia Energy Sector Development Policy Loan	2015–2016	$500.0

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.

68. **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. Taking into account of Indonesia's specific conditions, FIRE will develop plans that support accelerating coal phase out and reaching new renewable energy targets.

69. **Just Energy Transition Program (JET-P).** 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.

70. 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.

71. 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 US and Japan have asked ADB and the World Bank to provide inputs into their positioning on INO-JETP and are seeking advice on how to ensure that there is a practical implementation plan if it is established.

72. Financing mobilized by INO-JETP will be processed by PT SMI's ETMCP (see Figure 8), that is tasked by the MOF to manage energy transition activities with engagement from donors, the private sector and Indonesian government and state-owned actors. ADB's Energy Transition Mechanism (ETM) team is providing inputs into the design of the INO-Platform and will support PT SMI during implementation. The ADB ETM team will continue to support and monitor the development of INO-JETP given its partnership with PT SMI ETMCP, especially with regards to the implementation and coordination of actual projects and policy development in context of clean energy transition, just transition and gender-mainstreaming priorities.

5. IMPLEMENTATION POTENTIAL WITH RISK ASSESSMENT

73. The following Table 6 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 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 affected 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 recovers and stabilizes.[a] A prolonged pandemic and the Russia-Ukraine war 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 [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 are identified by the G20 summit.	Low
Policy and Regulatory Framework: Clarity of policies and implementing regulations related to energy transition.	While the GoI has demonstrated a strong suite of climate regulation in advance of the G20 summit, the ADB and World Bank are working with the various implementing agencies to ensure corresponding implementing regulation help realize the full potential of the policy reforms.	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 the evolving context into account in project design and governance.	Low/Medium
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	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	Medium

RISK	MITIGATION	RESIDUAL RISK
content and supply chain challenges that increase investment cost in an environment where renewables must prove competitive and affordable in the local context.	market expectations and international best practice. Should project sponsors and IPPs be able to resolve initial contractual uncertainties and local content hurdles, there is strong financing interest	
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 RISKS lie in the implementation of climate change policy and processes WITHOUT 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.	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, and environmental rehabilitation and land, asset, infrastructure repurposing. 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.	Medium
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 CFPPs, decommissioning, repurposing and impact assessment of new renewable technologies). CFPP legacy issues may be complex to address.	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. MDB support programs to continue to address institutional and capacity gaps. Comprehensive due diligence, stakeholder engagement and participatory planning of mitigation measures.	Medium

RISK	MITIGATION	RESIDUAL RISK
Limited Scale-up and Replication: Challenge of designing replicable demonstration or pilot projects	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. 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. 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. 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.	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).	CFPP 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 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. 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.	Low

RISK	MITIGATION	RESIDUAL RISK
	IPP CFPP early retirement MOU to be announced at G20. Many near term RE IPP projects under consideration for private sector financing have been tendered, but are pending confirmation of tender award and mandates.	

[Editor to review additions to this] ADB = Asian Development Bank, CFPP = Coal fired power plant, CMMA = Coordinating Ministry for Maritime and Investment Affairs, COVID-19 = coronavirus disease, GDP = gross domestic product, GoI = Government of Indonesia, MEMR = Ministry of Energy and Mineral Resources, MOEF = Ministry of Environment and Forestry, MOF = Ministry of Finance, MSOE = Ministry of State-Owned Enterprises, PLN = Perusahaan Listrik Negara (State Electricity Corporation), 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), D.C. : 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

74. **Indonesia 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 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.

75. As such 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. 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 [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.[39]
- **People:** [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, 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.[40]
- **Infrastructure:** Avoided greenhouse gas emissions of up to [77] million tons carbon dioxide equivalent (CO_2e) through facilitated accelerated retirement of up to 2 GW of CFPP generation capacity [1,415] million tons of coal diversion, [150] hectares (Ha) of mine area reclaimed, reforested or restored, as well as [3,504] GWh in energy savings per annum from CFPP closure and repurposing. Increased installed RE and energy storage capacity of up to [550MW] and [380MWh], respectively.[41]

76. 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 as a result of reduced government revenue. Recognizing this, the ADB and World Bank have undertaken various upfront assessment to understand the potential scale of these impacts examining direct, indirect and induced impacts. The assessments have also gathered 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 have further considered 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 has been overlayed on the results to highlight where

[39] Tracked by ACT Core Indicator 1 and 2.
[40] Tracked by ACT Core Indicators 3 and 4.
[41] Tracked by ACT Core Indicators 5-11.

further attention and detailed assessment is needed. As the concepts presented in the IPs are further developed, detailed situational assessment will be required including on ground data gathering and consultation. Based on this, a consistent and robust approach is needed to developing mitigation plans. These mitigation plans need to consider creation of alternative quality employment opportunities, support for economic diversification e.g. support for MSMEs, and financing arrangements. These considerations will 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 government for a programmatic approach to just transition for all in coal regions. Further research is being undertaken on identifying 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 impact sin the informal sectors.

77. **Integrated Approach to Monitoring, Evaluation and Learning**. 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

78. 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.

79. 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.

80. 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.

81. **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-level 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-level 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-level impacts.** The Indonesia IP currently expects to deliver on all 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 9 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-level 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[42]. 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-level 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 indictor progress, targets, methodologies, and related gaps, lessons, or enhancements, in accordance with the guidance set out by the CIF AU for the ACT program.

82. **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.

83. 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

[42] 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.

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.

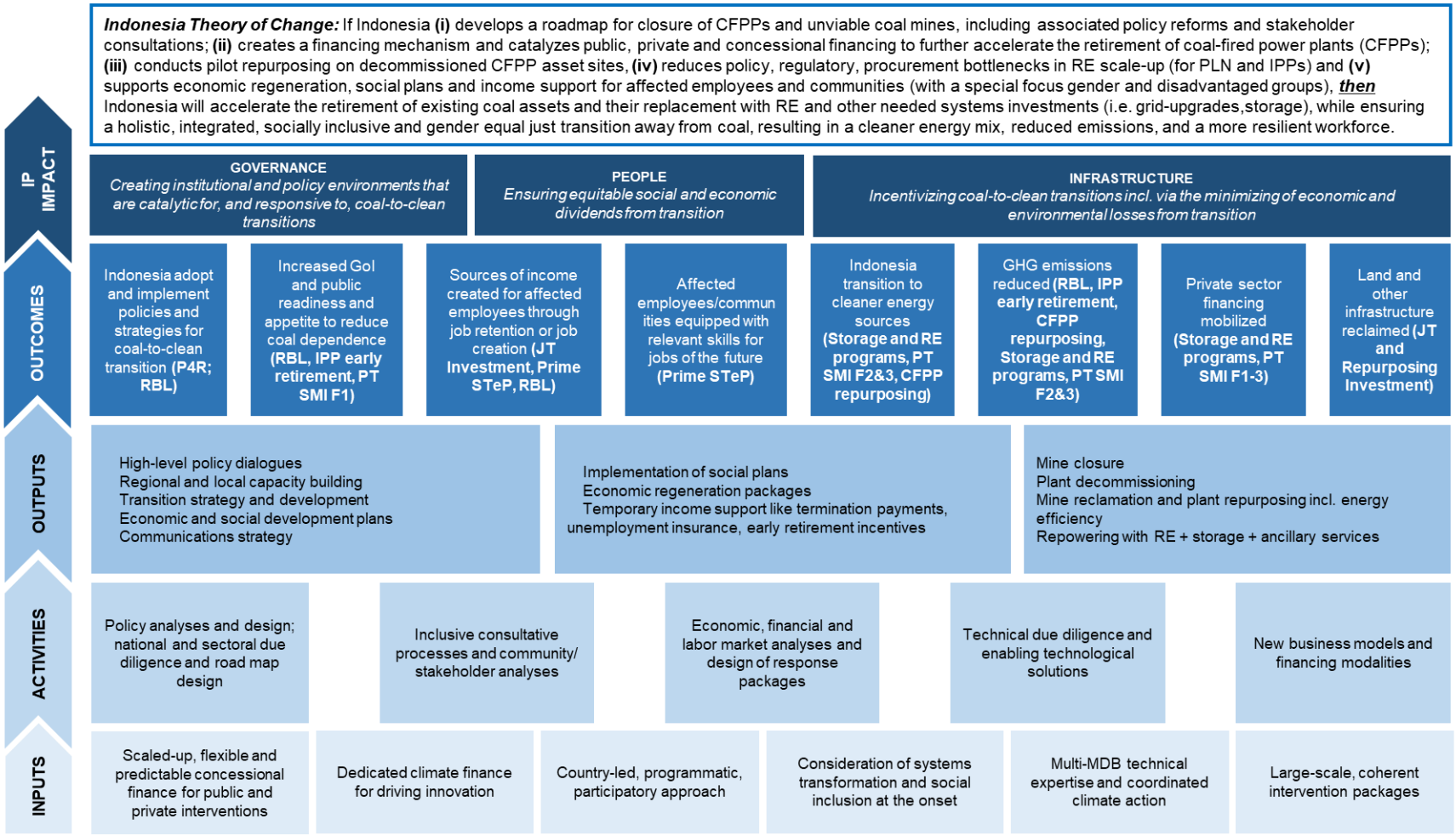
APPENDICES

APPENDIX 1: Assessment of country's capacity for coal assets' retirement and phase-out activities

[To come]

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



ACT IMPACT

Accelerate transition from coal-powered to clean energy while supporting socio-economic goals and 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.*

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
INDONESIA INVESTMENT PLAN-LEVEL IMPACTS					
Accelerating the transition from coal to renewable energy while securing a just, inclusive, affordable and gender-equal future.	**Impact Proxies:** Share of renewable energy in primary energy supply (%) Share of renewable energy in electricity generation mix (%)	12% (2021) 18% (2021)	25% (2025) (TBD) 2029	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 (%)

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
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 (#) - Disaggregation: as relate to energy - Disaggregation: as relate to Just Transitions - Disaggregation: as relate to gender	[0] (2022)	[4 (2026)] TBD TBD TBD	MDB project data/country data	Projects with no policy component should report a target of 0. 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. 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)[43]. **Projects: PLN RBL, PT SMI ETMCP, P4R**
	ACT CORE 2. Readiness. Coal transition strategies finalized (#)	[0] (2022)	[3 (2026)]	MDB project data	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) **Projects: PLN RBL, P4R**

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
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, 88% (2029)]	MDB project financial data	This indicator feeds into **CIF Impact 3 (Beneficiaries)**. Sub-indicators -Coal-sector employees retained or redeployed to new jobs (#, %) - Non-retained and non-redeployed coal sector employees that receive income support (#, %) 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. Disaggregation (as available): - by gender (%) - vulnerable groups (%) - permanent vs. temporary/construction jobs (#) - types of jobs **Projects: PLN RBL, JT and Repurposing Loan (Phase 1&2)**

[43] 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 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.

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
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)	[3,200 (2029)]	MDB project data	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. Targets to include # of persons reached via ADB collaborations with top universities for skills mapping and development and retraining required for the labor transition. For Economic Regeneration, this will measure beneficiaries of programs/packages operationalized that create new sources of income for participants of sunset industries/entities, including regeneration stimulus packages. Targets to include # of coal sector workers/community members reached via repurposed assets and related additional economic activity. Disaggregation: - by gender (%) - vulnerable groups (%) - types of jobs **Projects: PLN RBL, JT and Repurposing Loan (Phase 1&2)**
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)	[up to 77 (2029)]	Annual and lifetime reporting by projects	This indicator feeds into **CIF Impact 1 (Mitigation)** and should be reported as direct vs. indirect reductions (per MDB-approved methodologies) with evidence provided. Emission reductions will be calculated by subtracting projected 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.

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
					Projects: PLN RBL, IPP CFPP, JT and Repurposing Loan (Phase 1&2) and Component 3 projects.
F. Mobilize private sector financing	**ACT CORE 6 (= CIF 4). Co-Finance:** Volume of co-finance leveraged (USD) Disaggregation: Volume of co-finance leveraged, MDB (USD) Disaggregation: Volume of co-finance leveraged, Commercial (USD)	[0] [0] [0]	[3,595 (2029)] [2,245 (2029)] [1,350 (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: Source of co-financing (MDB, Government, Private Sector, Bilateral, and Other)
G. Cleaner energy sources	**ACT CORE 7 Plant decommissioning:** Capacity of existing coal power generation assets accelerated for retirement (MW)	0	[2,100 (2029)]	MDB project financial data	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). **Projects: PLN RBL, PT SMI ETMCP, IPP CFPP, JT and Repurposing Loan (Phase 1&2).**
	ACT CORE 8 Repowering Installed capacity of renewable energy (MW) **GESP 2** Energy rating (MWh)	[0] (2021)	[550 (2030)] [380 (2030)]	MDB project financial data	NCRE capacity (i.e., solar and wind energy) operationalized as a result of ACT interventions Disaggregation: - Renewable energy type (solar, wind, etc.) - Grid-connected vs. off-grid/distributed energy supply Energy storage indicators relevant for projects that include components for storage installation.

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
					This indicator corresponds to GESP-Specific Indicator 1 in the GESP M&R System and should only be reported by ACT projects with energy storage components. Disaggregation: By type of technology (i.e., thermal, mechanical, electrochemical) By location on the energy value chain (generation, transmission, distribution, stationary end use, mobile end use) Distributed storage vs. utility-scale applications **Projects: JT and Repurposing Loan (Phase 1&2) and Component 3 projects.**
	ACT CORE 9 Coal Abatement: Amount of coal diverted (MT)	0	[1,415 (2030)]	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. **Projects: PLN RBL, PT SMI ETMCP, IPP CFPP, JT and Repurposing Loan (Phase 1&2).**
		0	[TBC]	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	[3,504 (2030)]	MDB project financial data	A measure of increased energy efficiency as a result of ACT interventions that include energy savings objectives. **Projects: JT and Repurposing Loan (Phase 1&2).**

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
	ACT CORE 11 Mine closure, reclamation: Mine area reclaimed and reforested/ restored (Ha)	0	[150 (2030)]	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).**

RESULT STATEMENT	INDICATORS	BASELINE (Baseline Date)	TARGET (Target Date)	MEANS OF VERIFICATION	NOTES
INDONESIA INVESTMENT PLAN-LEVEL CO-BENEFITS					
I. Social, Economic, and Environmental Development Co-Benefits	**CO-BENEFIT 1. Pollutants** **Atmospheric Pollution:** Decrease in $PM_{2.5}$ concentration **Terrestrial Pollution:** Reduction in volume of contaminants discharged **Health Benefits** Value of avoided health costs due to reductions in pollutants (USD)	TBD TBD TBD	TBD	Global satellite data or related Project appraisal data National health data	**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.** 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.
	CO-BENEFIT 2. Just Transition: Social Inclusion and Distributional Impacts	0	MDB project data		*[Cascade upward from the indicator below]*
	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

	CO-BENEFIT 4. Gender- and vulnerable groups-specific co-benefits Number of beneficiaries of gender-specific labor transition and skill development programs (#) **Dollar share tracking (amount and %) of stand-alone gender activities withing CIF project.**	0	MDB project data		This would include beneficiaries of, for example: -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 - 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 the guidance provided under the CIF ACT program, the joint MDB team engaged with several stakeholders as part of the joint mission conducted during June 14-17, 2022, including other development partners, non-governmental organizations (NGOs), civil-society organizations (CSOs), think-tanks, and the private sector.

2. **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 on-going CIF exercise and get inputs/feedback on the development of the IP. These included the Agence Française de Développement (AFD), 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 are identified and engage with the joint MDB team as the IP progresses.

3. **Consultations with NGOs and CSOs.** The 1st consultation with NGOs and CSOs was organized virtually on July 1,2022 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 information was well-received and several attendees appreciated to being provided the opportunity to participate in the process.

4. **Next NGO/CSO Consultation.** The next NGO/CSO consultation is being planned as part of the 2-week public disclosure period under the CIF ACT process guidelines and is scheduled for October 3, 2022. It will take place in a virtual format. The joint MDB team will present the key outline of the IP and respond to comments received as part of the agenda.

5. **Launch of SESA funded by the CIF ACT Investment plan (IP) preparation grant**. Effective implementation of social and environmental safeguards is key to ensure a Just Transition. A national SESA is being carried out in Indonesia to understand the opportunities, risks, and impacts (positive and negative) associated with the CIF-ACT Investment Plan (potential road map upto 2030) as Phase-I and the roadmap post-2030 as Phase-II, for:

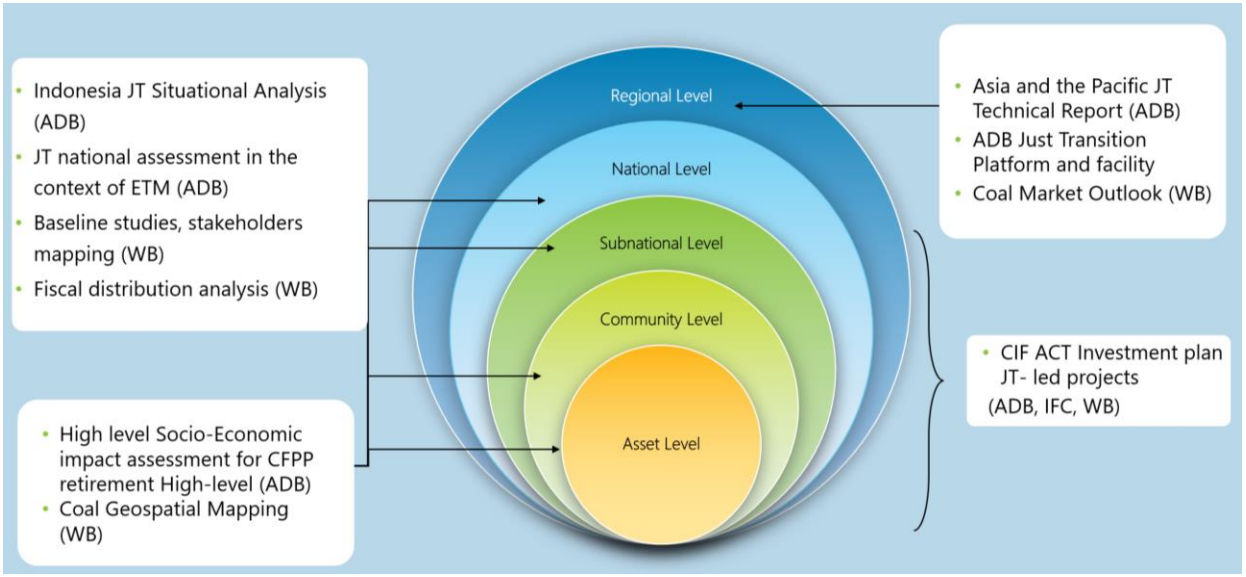
- Retirement of an identified set of existing CFPPs and associated infrastructure (including mine closure) at locations yet to be determined in the Investment Plan and longer-term roadmap;
- Development of identified renewable energy options and associated infrastructure, at locations also yet to be determined.

6. Scoping is inherently the most important aspect of the SESA process and all stakeholders in the SESA process would be 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, a scoping workshop will be be led by MOF and ADB, on October 4, 2022.

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.

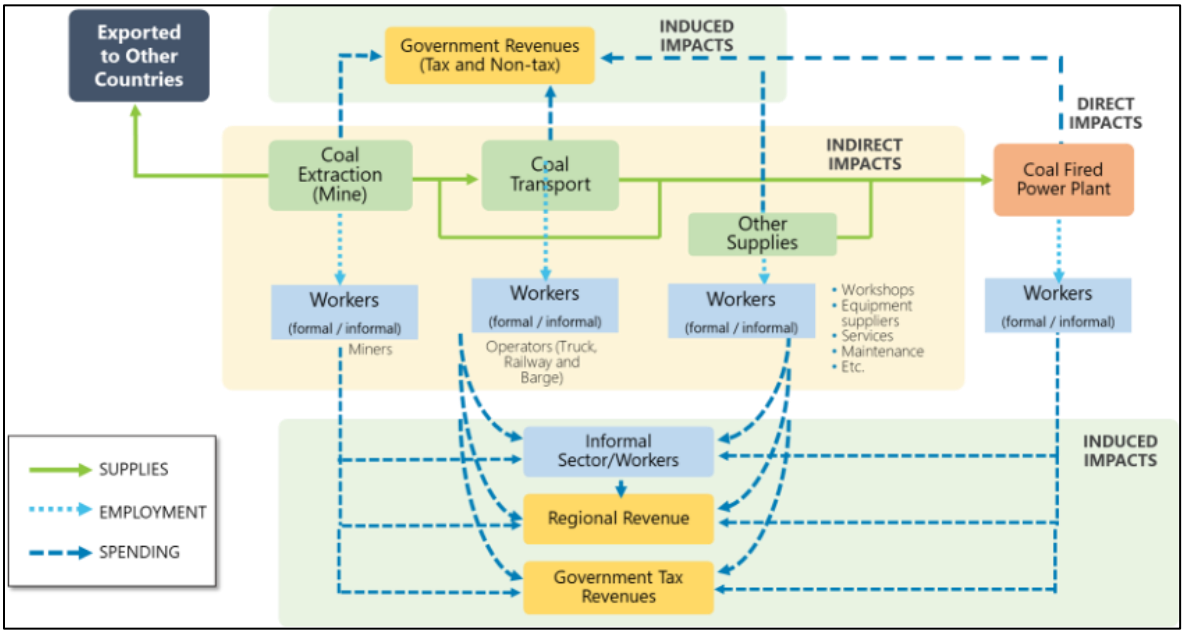
Figure A4.1: Just Transition Ongoing support to Indonesia



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 further more detailed assessments are 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 – CFPP 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
• 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	• 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	• 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.[44] 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, labor 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 plan (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; outmigration; disadvantages for women and vulnerable groups (e.g., indigenous communities); decline in local public services; displacement of people; and weakened community cohesion.

[44] https://www.adb.org/projects/documents/reg-55124-001-tacr

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 CFPPs 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 CFPP 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.

6. **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.

7. **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.

8. 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).

9. **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 the 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 interncoonection 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.

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).

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, Development Assistance Committee. Organization for Economic Cooperation and Development, Paris.

Annex 1: 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	• 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	• Reduction of GHG emissions from retirement of CFPPs • Clean energy supplies from RE projects	H H
Air quality	• 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	• Improved air quality with reduced emissions following CFPP/mine closure	H
Noise	• Construction noise from renewable energy development • Operational noise from RE (particularly wind)	M M	• Reduction in noise levels due to CFPP retirement and mine closure	M
Water quality	• 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	• Improved water quality through reduction of discharges from CFPPs and mines • Remediation of groundwater and surface water polluted by CFPPs and mines	H H

Issue	Risks	Rating	Opportunities	Rating
Water quantity and use	• Water usage by renewables (particularly for onshore wind and solar) • Reduction in environmental flows from hydroelectric facilities	M H	• Reduction in water demand from CFPP retirement and coal mine closure	M
Access to land and water	• Impaired access to land and water resources	H	• Restoration of access to land and water through reclamation of abandoned CFPPs and mine sites	M
Contaminated land and groundwater	• Land contamination following CFPP/mine closure • Contamination during development of RE projects (particularly during construction phase)	H M	• Remediation of contaminated CFPP/mine sites	H
Waste management	• 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	• Remediation of contaminated sites	H
Aesthetics	• Visual footprint of renewables – wind, solar, hydro • Shadow flicker and solar glare from wind and solar projects	H M	• Improved landscape following reclamation and repurposing of CFPP and coal mine sites	H
Land use change	• Abandoned mine sites • Land clearing for renewables – wind, solar, hydro • Inundation by reservoir creation for hydroelectric projects	H M H	• Landscape improvements through remediation and repurposing of CFPPs and coal mines	H

Issue	Risks	Rating	Opportunities	Rating
	• 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	M M H M		
Land degradation	• Legacy contamination from CFPP 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	• Landscape improvements through remediation and repurposing of CFPPs and coal mines	H
Mineral extraction	• Over-extraction of minerals (metals) and other material demands for wind and solar energy development	H		
Terrestrial biodiversity	• 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 CFPPs or coal mines • Increased illegal land clearing and logging due to loss of jobs in CFPPs or coal mines • Introduction of invasive species • Bird/bat collisions with powerlines and wind turbines	H M M M H	• Improved biodiversity following habitat restoration at CFPP sites and coal mines	H

Issue	Risks	Rating	Opportunities	Rating
Aquatic biodiversity	• 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 / CFPPs	H M M M H H M M M M M	• Improvements to quality of aquatic habitats and biodiversity from CFPP and coal mine closures	H
Cultural heritage	• Loss or damage to tangible and intangible cultural heritage from development of renewable energy facilities	H		
Health, Safety and Security	• Exposures to waste and hazardous material from disposal	H M	• Improvements to public health (due to reduced air and noise pollution and reduced	H

Issue	Risks	Rating	Opportunities	Rating
	• 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., hypertensions, CVD)	M M M	occupational hazards following CFPP/mine closure	

Annex 2: 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	• 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	• 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	• 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	• 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	• Increased illegal mining • •	M	• Reduced illegal mining	M
Employment and labor conditions	• 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	• 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	• Reduced livelihood and business development opportunities due to CFPP 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 CFPPs/coal mines, and when people relocated (e.g., due to dam construction)	M M M M H H H	• Opportunities for retraining and skill development in renewable energy • Rehabilitation/ redevelopment of CFPP 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	• Reduced livelihood and business development opportunities due to CFPP 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 • Loss of livelihoods due to relocation • Loss of access and rights to use resources in areas occupied by new renewable development	M M M M H H	• Opportunities for retraining and skill development in renewable energy • Rehabilitation/ redevelopment of CFPP 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
Gender and vulnerability	• 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 CFPPs/mines and competition for jobs in other sectors may well increase • Increased competition from former male workers in CFPPs 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	• 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 CFPP retirement and the transition to renewable energy sectors	H H M
Migration	• 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	• Promotion of migrant small and local business opportunities and skills enhancement programs	M
Public services and infrastructure	• Decline in public services from CFPP 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	• Opportunities for investment in communities by renewable energy developers (e.g., roads and bridges, schools, health centers, and administrative buildings)	M

Issue	Risks	Rating	Opportunities	Rating
Land acquisition	• Displacement due to land acquisition required for renewable energy projects	H		
Indigenous peoples	• Unresolved legacy land take and resource issues related to CFPP 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	• 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 CFPP retirement and the transition to renewable energy sectors	M H M
Social cohesion and engagement	• 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	• Focus on small business opportunities to avoid out-migration after decommissioning • Opportunities for the communities to engage in the decision-making processes	M M
Community and Spiritual Health	• 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	• Opportunities for community organizations and non-profits to engage with non-governmental and government organizations	M

APPENDIX 6: 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.[45] 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.[46] ADB has also delivered several

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.[47] 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 and gas-fired generation. 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.

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;
ii) initiating the establishment of an ETM Fund/Vehicle through the issuance of a request for concepts from the private sector;

[45] Independent Evaluation Department. 2019. *Country Assistance Program Evaluation: Indonesia, 2005–2018.* Manila: ADB.
[46] 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.
[47] ADB. 2020. *Country Partnership Strategy: Indonesia, 2020–2024—Emerging Stronger.* Manila.

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.

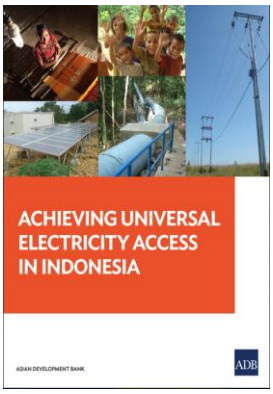
6. Overall, ETM is being designed to be a scalable, collaborative mechanism developed in partnership with developing countries that will leverage a market-based approach to accelerate the transition from fossil fuels to clean energy. It prioritizes a country-specific approach that seeks government buy-in 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.

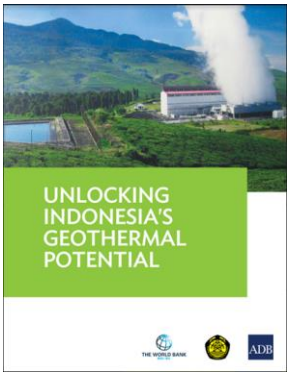
Table #: ADB Major Public and Private Sector Projects Approved in Indonesia since 2012

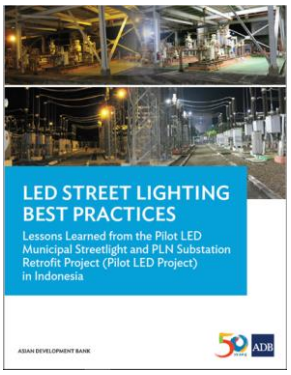
Public Sector Project Name		Amount ($ million)
Java–Bali Electricity Distribution Performance Improvement Project		50
West Kalimantan Power Grid Strengthening Project		50
Java–Bali 500-Kilovolt Power Transmission Crossing		224
Sustainable and Inclusive Energy Program–Subprogram 1 and 2		1,000
Sustainable 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**	**Amount ($ million)**
Riau 275 MW Combined-Cycle Gas-Fired Power Plant	Sumatra	70
Jawa-1 Liquified National Gas-to-Power (1,760 MW)	West Java	185
Eastern Indonesia Renewable Energy Project Phase I Tolo Wind (72 MW)	South Sulawesi	69
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	173
Sarulla Geothermal (321 MW)	Sumatra	250
Muara Laboh Geothermal (80 MW)	Sumatra	70

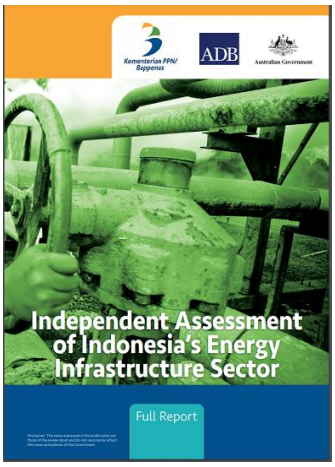
Table #: ADB Major Technical Assistance (Grant) support in Indonesia since 2016

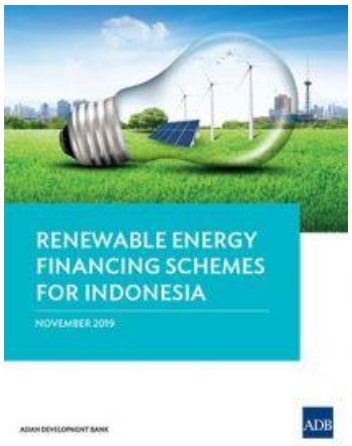
- RPJMN Energy Sector Assessment including analysis on solar rooftop PV, autonomous electricity regulator, least-cost electrification modelling (BAPPENAS / ESDM / PLN)
- RENSTRA Strategic Planning (ESDM)
- Scaling-Up Energy Efficiency (EBTKE)
- Renewable energy tariff reform (PT SMI / MOF),
- Renewable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

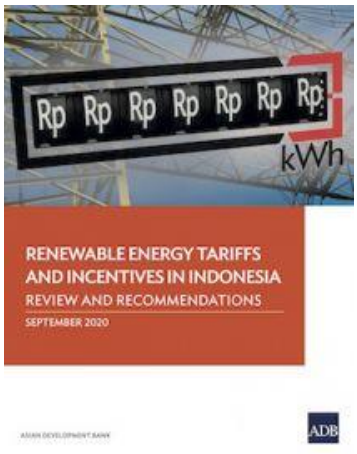


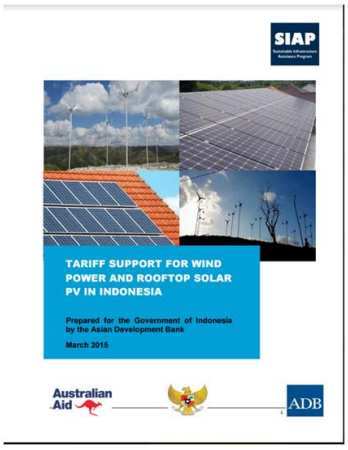












APPENDIX 7: WBG Energy Sector Support Program and Experience in Indonesia

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.[48]

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.[49] 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.[50] 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.[51]

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.[52] 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 innovative risk-sharing mechanism to facilitate exploration drilling by developers in up to 17 geothermal

[48] https://timeline.worldbank.org/event/2241
[49] https://projects.worldbank.org/en/projects-operations/project-detail/P003825
[50] https://projects.worldbank.org/en/projects-operations/project-detail/P003979
[51] https://projects.worldbank.org/en/projects-operations/project-detail/P003910
[52] 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.

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 $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 8: 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 (CFFPPs) 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, while also catalyzing a pilot program of accelerated retirements of PLN-owned CFPPs. The first phase of a series of RBL program will finance activities and expenditures on (i) increasing electricity supply from renewable energy sources, (ii) expanding the smart transmission grid infrastructure, and (iii) strengthening PLN institutional capacity to manage a just energy transition. The accelerating expansion of renewable energy capacity will inevitably require skilled and trained personnel providing an opportunity to increase the number of women in the energy sector and to transition PLN workers impacted by the retirement of CFPPs towards becoming a skilled workforce able to manage the integration of increased variable renewable energy. Under the results-based framework of the RBL, PLN will be required to agree to lowering its emissions from CFPPs through a combination of early retirements and possibly, a lower capacity utilization of its overall fleet. This will lead to measurable reduction in carbon emissions. 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) 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.

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 accelerate the development of renewable energy capacity. 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

Result	Indicator	Baseline [a]	Target [a]	Data Source & Means of verification
Reliable and cleaner electricity supplied contributing to environmental and population health benefits	Carbon dioxide emissions per year	tbd	tbd	PLN operation reports, annual corporate reports, quarterly RBL program progress reports, independent verification reports
	Nitrogen oxides avoided per year	tbd	tbd	
	Sulfur dioxide avoided per year	tbd	tbd	
Transition to renewable clean electricity supply facilitated	The proportion of renewable energy in generation compared to coal increases	tbd	tbd	PLN operation reports, annual corporate reports, quarterly RBL program progress reports, independent verification reports
	Diesel fuel consumption from diesel power plants declines	tbd	tbd	
Increased Financing mobilized for low-carbon development	Leverage factor of CIF funding	n/a	> 1:6	MDB co-financing agreements

Note: Baseline and targets are currently being developed.

Financing Plan

Source	Amount (US $ million)
ADB	600
Other development partners (KfW, AFD) [a]	500
CIF [b]	50
Total	1,150

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

RBL Program Preparation Timetable

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

Source: Asian Development Bank estimates.

APPENDIX 9: 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 29% (or by 41% with international financial support) by 2030.[53]

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).

ADB proposes its financial intermediation lending modality. 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 a financial intermediation (project) loan with 3 components 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)

[53] 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.

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 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**.
- **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	500
Total	800

Note: [a] CIF amount to be confirmed/adjusted based on PTSMI concurrence

Results Indicators – TO COME

FI Loan Preparation Timetable (Indicative)

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

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

APPENDIX 10: Project Concept – IPP CFPP early retirement

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 41% by 2030 (only with 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.[54]

Proposed Transformation. *Pilot transaction under ADB Energy Transition Mechanism (ETM).* As the first project financed under ADB's ETM framework, a key goal of the project 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 it grows, ETM has the potential to become the largest carbon reduction program 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. Identified as a strategic project within ADB's Indonesia pipeline as part of the preliminary concept approval, it 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 CFPP. 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 a shorter PPA term. 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

Result	Indicator	Baseline [a]	Target [a]	Data Source & Means of verification
Reliable and cleaner electricity supplied contributing to environmental and population health benefits	Carbon dioxide emissions per year	tbd	tbd	PLN operation reports, annual corporate reports, quarterly RBL program progress reports, independent verification reports
	Nitrogen oxides avoided per year	tbd	tbd	
	Sulfur dioxide avoided per year	tbd	tbd	
Increased Financing mobilized for low-carbon development	Leverage factor of CIF-ACT funding	n/a	> 1:3	MDB financing agreements

Note: Baseline and targets are currently being developed.

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

Financing Plan

Source	Amount (US $ million)
ADB [a]	250
CIF-ACT	50
Total	300

Note: [a] Financing amount to be confirmed

Project Preparation Timetable

Milestones	Expected Completion Date
MOU signing	November 2022
Mandate and Due Diligence	1st quarter 2023
Loan negotiations and final investment committee consideration	2nd quarter 2023
ADB Board consideration	2nd quarter 2023 end
Loan signing	2nd quarter 2023 end

Source: Asian Development Bank estimates.

APPENDIX 11: 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-AFT 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, CMMAI 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

The results indicators under the PforR are set out as follows:

1. Supporting sector decarbonization and just transition
    a. Number of policies, regulations and laws passed to support decarbonization and just transition
    b. Emissions avoided
    c. Ratio of RE in the energy mix
2. Improve sector governance, efficiency and transparency
    a. Number of staff trained on energy transition
    b. Ratios for PLN financial sustainability met

Finance Plan

The PforR will be funded through $30 million of CIF-ACT loan and $5 million of CIF-ACT grant (particularly for capacity building at PLN), with a contribution of around $400 million of IBRD financing. The World Bank is also in discussions with additional development partners who may co-finance the loan. It is expected that the full financing for the PforR will be around $500 million.

Project preparation timetable

March 2022: Concept approved by WB

November 2022: Roadmap to net zero issued by GoI

February 2023: Scope of the project agreed, including disbursement-linked indicators

September 2023: Board approval by World Bank

November 2023: Project effectiveness

APPENDIX 12: 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, CMMAI and MSOE. PLN is considering 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 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

The final list of indicators will be available during the project preparation stage. Anticipated outcomes of the project include the following:

- avoided annual CO2 emissions.
- RE energy supplied in GWh
- BESS integrated to enhance network flexibility (MWh)
- percentage of directly impacted workers compensated/retrained (disaggregated by gender)
- number of green jobs created (disaggregated by gender)

Finance Plan

The PforR will be funded through $180 million of CIF-ACT loan and $5 million of CIF-ACT grant, with a contribution of around $415 million of IBRD financing.

Project preparation timetable

November 2022: Concept approved by WB June 2023: Prefeasibility studies completed, and scope of the project agreed with Government of Indonesia and PLN

December 2023: Board approval by World Bank

March 2024: Project effectiveness

Appendix 13: 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, 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

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 Performances Pilot Solar Cell Based on Emerging Technology PV. 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 PRIMESTEP 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.

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 CTF fund 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 USD 9,000,00.00.

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
The four universities' research and development administration, partnerships, and startup incubation strengthened	Percentage of startup incubation participants at each science and technology parks (STPs) are female	30-35.5% across STPs	37.5%	MOECRT annual project M&E report and STP annual report MOECRT annual project M&E report or R&D paper published in an international journal or patent filed before project completion
	Strategic research projects and community solutions with social and gender equality, and climatic adaptation thematic areas completed and studies published	0	18	
	Joint research collaborations with international research institutions completed	2	21	
Facilities for research and development and innovation upgraded	Facilities for research and development and innovation upgraded with gender-sensitive and socially inclusive features	0	30	MOECRT annual project M&E report and STP annual report

Note: Baseline and targets are currently being refined.

Financing Plan (Indicative)

Source	Amount (US $ million)
ADB	140
CIF grant	9
Government	21
Total	170

Project preparation timetable

Key Milestones	Timeline
Implementation period	January 2023–December 2027
Estimated completion date	31 December 2027
Estimated loan closing date	30 June 2028

APPENDIX 14: Project Concept – Accelerated Storage Deployment in Power and Transport

Problem Statement - **Supporting energy transition of Indonesia.** A key aspect of Indonesia's roadmap for broader clean energy transition, is the national development of a battery industry value chain for the mining, refining, processing, manufacturing, application and recycling of batteries used for energy storage and electric mobility. Storage is the lynchpin that enhances the impact of a clean energy transition across multiple industries.

Proposed Transformation. Under the proposed program, concessional funds would support renewable and battery storage technology, battery manufacturing capacity, nickel smelters and e-vehicles / charging infrastructure most which are nascent in nature in Indonesia, and in many cases, around the world. ADB is in the process of early-stage market mapping of related client needs and the appropriate financial solutions for the cross section of: (i) renewables energy and battery storage projects, (ii) battery manufacturing, (iii) greening nickel and copper smelters, and (iv) charging stations and electric vehicles. ADB envisages a pipeline of USD 3.5 billion to USD 4 billion in the coming years. Pipeline for RE+ Storage projects for approximately 300-400MW and Emobility are the most near term and most advanced in discussions for financing in 2023-2024.

Market Opportunity

Source	Total Project Costs (US$ m)	Debt Financing
500-1000 MW of renewable plus battery storage project	$750m-1,500m	$525m- 1,050m
E-Vehicles and charging stations	$3,000m	$2,400m
Battery manufacturing plans	$500m	$350m
Nickel and Copper Smelters	$300m	$210 m
Total	$4,550m-5,300m	$3,485m-4,010m

Rationale for ACT Co-financing. The use of concessional financing will catalyze more private sector investments as they can support private sector clients deal with the perceived risks of new technology applications, and achieve more adequate returns. The successful demonstration of battery technology across various power and transport applications creates a demonstration effect for the battery industry at large, allow for a richer proliferation of multiple technologies and establish momentum for scale and replication within the clean energy space.

Results Indicators

Result	Indicator	Baseline [a]	Target [a]	Data Source & Means of verification
Reliable and cleaner electricity supplied contributing to environmental and population health benefits	Carbon dioxide emissions per year	tbd	tbd	Company reports
	Nitrogen oxides avoided per year	tbd	tbd	
	Sulfur dioxide avoided per year	tbd	tbd	
Increased Financing mobilized for low-carbon development	Leverage factor of CIF-ACT funding	n/a	> 1:3	MDB financing agreements
Clean power delivered to the grid increased	Renewable power plant installed	tbd	tbd	Company reports

Note: Baseline and targets are currently being developed.

APPENDIX 15: Project Concept – IFC Dispatchable Renewable Energy 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 First Nationally Determined Contribution (NDC), Indonesia has set an unconditional reduction target of 29% of CO2 emissions against the business-as-usual scenario by 2030 and, with international supports, a conditional reduction target of up to 41%. Also, GoI has just stipulated a new Presidential Decree No 112/2022 on Renewable Energy which also set out the mandate for the phasing out of CFPPs 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 CFPPs 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 CFPPs 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 Decree on RE (Perpes 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.