



CTF - ACT

PROJECT TITLE: PRIVATE CFPP EARLY RETIREMENT PROGRAM

COUNTRY: INDONESIA

MDB: ASIAN DEVELOPMENT BANK (ADB)

| Cover Page for CTF Project/Program Approval Request ^[a] (ACT) | | | |
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| Country/Region | Indonesia | CIF Project ID# | Auto Generated by CIF AU |
| Project/Program Title (same as in CCH) | Component 1.2 Private CFPP Early Retirement Program | | |
| Type of CIF Investment: | <input type="checkbox"/> Public | <input checked="" type="checkbox"/> Private | |
| Is this a private sector program composed of sub-projects? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| Sector/Pillar | <input type="checkbox"/> Governance <input type="checkbox"/> People/Governance <input type="checkbox"/> Governance/Infrastructure | <input type="checkbox"/> People <input checked="" type="checkbox"/> People/Infrastructure <input type="checkbox"/> People/Governance/Infrastructure | <input type="checkbox"/> Infrastructure |
| Technology/Area | <input checked="" type="checkbox"/> Policy dialogue <input checked="" type="checkbox"/> Transition strategy <input type="checkbox"/> Communications strategy <input type="checkbox"/> Economic regeneration <input type="checkbox"/> Mine closure <input type="checkbox"/> Reclamation & Repurposing - Repowering with renewable energy + storage <input type="checkbox"/> Reclamation & Repurposing - Ancillary services <input type="checkbox"/> Reclamation & Repurposing - Biodiversity protection/restoration <input type="checkbox"/> Reclamation & Repurposing - Energy efficiency <input type="checkbox"/> Other (manual input) <input type="text"/> | | |
| Project Lifetime | N/A | | |
| Financial Products, Terms and Amounts (same as CCH) | | | |
| Financial Product | USD (million) | EUR (million) ^[b] | |
| MPIS | TBD | | |
| Senior loan | 100.0 ¹ | | |
| Total | 100.0 | | |
| Implementing MDB(s) | Asian Development Bank (ADB) | | |
| MDB Headquarters-Focal Point: | Christian Ellermann, Senior Climate Change Specialist Climate Change, Resilience and Environment Cluster | | |
| MDB Task Team Leader (TTL) | Yuichiro Yoi Unit Head for Indonesia Infrastructure Finance Division 2 Private Sector Operations Department Lazeena Rahman Senior Climate Finance Specialist Energy Transition Mechanism & Partnerships Team | | |

¹ Including MPIS: An estimated MPIS amount, as per [Operational Modalities for CIF New Programs](#) (2020)/ MPIS section 7.2 para 56, for private sector program will be submitted separately.

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| | Energy Sector Group |
| National Implementing Agency: | |
| Country Focal Point/s | N/A |
| Brief Description of Project/Program (including objectives and expected outcomes) ^[c] | |
| <p>The proposed program represents Private coal-fired power plant (CFPP) early retirement program (ADB Private) outlined under Component 1.2 of the Indonesia Climate Investment Fund (CIF) Accelerating Coal Transition (ACT) Investment Plan (Revised) (“CIF ACT IP”) approved on 16 June 2023 (“the Program”). The Program aims to facilitate private sector participation in the early retirement of CFPPs in Indonesia by using senior or subordinated concessional debt to shorten Power Purchase Agreements (PPAs) of Independent Power Producers (IPPs) while maintaining net present value (NPV) neutrality (i.e. ensuring that the early retirement does not result in any loss or gain for the related IPPs). At the end of the shortened PPAs, the CFPP private owners and operators would then be contractually-obligated to permanently terminate coal-fired operations, and decommission or repurpose the assets in favor of low carbon power generation (excluding natural gas). The Program benefits from extensive private sector and Government of Indonesia (GOI) engagement by the ADB Energy Transition Mechanism (ETM) launched in 2021, as well as ADB’s support and participation for the Indonesia Just Energy Transition Partnership (I-JETP) and related Comprehensive Investment and Policy Plan (CIPP).</p> <p>Program Objective: Facilitate the early retirement of up to 1 GW of private CFPP assets. These would be the first pilots for private early retired coal-fired assets, demonstrating critical characteristics of a new transition asset class required to mobilize capital for an accelerated coal transition.</p> <p>Program Outcomes: Through the demonstration of IPP early retirement structures, inclusive of programs that (i) promote a just and gender-equal energy transition, and (ii) reflect additionality over and above national energy sector and climate strategies that contemplate early retirement conditional upon international support, the Program aims to support:</p> <ol style="list-style-type: none"> Indonesia’s adoption and implementation of policies and strategies for coal-to-clean transition; Increased GOI and public readiness and appetite to reduce coal dependence; Private sector financing mobilization for the energy transition; and GHG emission abatement of up to 20 million tons CO₂ equivalent. <p><u>See attached Private CFPP Early Retirement Program Proposal (“the Proposal”) for specific references.</u></p> | |

| Consistency with CTF investment criteria | |
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| a. Potential for transformational change | <p>Country context. Indonesia is the world’s fourth-most populous country (276 million people) and the Southeast Asia’s largest economy (nominal GDP of more than \$1 trillion). Despite achieving sustained economic growth and reduction of the poverty rate to single digits, Indonesia is still developing to become a more advanced economy and striving to address imbalanced regional development.</p> <p>To achieve inclusive growth, the energy sector in Indonesia has a twin task of meeting an anticipated continuous demand growth while ensuring reliable, sustainable, and affordable access to energy. Historic power sector development focused on thermal baseload expansion of power generation to serve consistent growing demand and achieve universal electrification, leading to Indonesia becoming heavily dependent on coal – an abundant domestic resource. Over the past decade, Indonesia invested significantly in coal-fired generation to keep up with anticipated demand growth, with 20 gigawatts (GW) of new capacity additions.²</p> <p>The need to address Independent Power Producer-owned coal-fired power plants. In 2021, Indonesia’s total grid-connected power capacity totaled 74 GW, of which 37 GW comprised operating on-grid coal-fired power plants (CFPPs). Over 60% of Indonesia’s electricity is supplied by this young fleet of CFPPs with an average age of ~12 years. Approximately 16GW of these CFPPs are owned and operated by PT Perusahaan Listrik Negara (PLN), the national, vertically-integrated electricity utility. However, the balance are owned and operated by independent power producers (IPPs) that have invested in the development of coal assets based on long-term power purchase agreements (PPAs) with PLN. The capital investments made have been enabled by strong, bankable long-term PPAs with fixed tariffs ensuring a fixed return to sponsors, and do not suffer from “stranding” pressure. The capacity payments embedded in the PPAs also provide for system services and adequacy, and given the strength of the PPAs, the PPAs have limited the opportunity for renewable energy sources to get dispatched as part of the generation mix and slowed the coal-to-clean grid transition.³ As such, without an actual financial mechanism including the support of concessional finance for refinancing and restructuring, no amount of political will would be sufficient to accelerate the first set of IPP CFPP retirements and repurposing projects and initiate the transition from coal-to-clean energy. Indonesia can only advance its renewable energy and climate ambitions in a timely manner by initiating the early decommissioning and/or repurposing of CFPPs.</p> |
| Relevance (strategic alignment) | <p>Indonesia’s climate ambitions. Under its Enhanced Nationally Determined Contribution (NDC) under the Paris Agreement, Indonesia pledged an unconditional emissions reduction target of 31.9% relative to a business-as-usual (BAU) baseline of 2.87 gigatons (GT) of carbon emission equivalent by 2030, and a conditional target of 43.2% by 2030 (with international support) against a BAU scenario.⁴ The Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for the Supply of Power (RE PR), enacted on September 2022, creates a broad framework to initiate implementation of these climate ambitions within the power sector and enable a clean energy transition.</p> |

² Ministry of Energy and Mineral Resources. 2022. [Handbook of Energy & Economic Statistics of Indonesia 2021](#). Jakarta.

³ This is presently exacerbated by overly optimistic demand projections under previous Electricity Supply Business Plans (Rencana Umum Penyediaan Tenaga Listrik, RUPTLs) which resulted in a substantial over-build of CFPPs and an overcapacity issue, with reserve margins exceeding 30% on main power grids until 2029-2030.

⁴ GOI NDCs were initially submitted in 2016 and revised and updated in 2021. The enhanced NDC was submitted and published in September 2022.

Indonesia Just Energy Transition Partnership. The development of even broader ambitions were announced on 16 November 2022, when the GOI and the International Partners Group (IPG) launched the Just Energy Transition Partnership Indonesia (I-JETP) on the sidelines of the G20 Summit in Bali, Indonesia. The partnership was outlined through the Joint Statement.⁵ The IPG comprises the governments of Japan and the United States, who are co-leaders of the partnership, and Canada, Denmark, the European Union, the Federal Republic of Germany, the French Republic, Norway, the Republic of Italy, and the United Kingdom of Great Britain and Northern Ireland. I-JETP comprises an initial commitment of US\$20 billion, of which US\$10 billion in IPG funding was pledged to catalyze US\$10 billion of private financing from Glasgow Financial Alliance for Net Zero (GFANZ).⁶ The first objective of the partnership was to develop a [Comprehensive Investment and Policy Plan \(CIPP\)](#), which was subsequently published in November 2023. Key on-grid CIPP targets include peaking power sector emissions in 2030 at an absolute limit of 250 metric tons of carbon dioxide (MT CO₂); achieving net zero emissions in the power sector by 2050; and, accelerating the deployment of renewable energy so that renewable energy comprises at least 44% of all power generation by 2030.

The CIPP is intended to be a "living document" that is regularly evaluated and updated to reflect recent market developments and policy priorities. Under "Investment Focus Area #2 – Early coal-fired power plant retirement and managed coal phase-out," the CIPP captures the programming anticipated under Indonesia's CIF ACT IP Component 1, and notes that "early retirement and repurposing of assets is a comprehensive solution for managed coal phase-out when technically, economically, financially, and legally feasible." While it is not the only strategy being explored across the Indonesian power sector to meet I-JETP goals (Chapter 5.5 outlines other options for CFPP phase down), early retirement of IPPs is deemed one of the critical tools to demonstrate and advance the consideration of relevant governance, social, just transition, sustainable development, economic and technological impacts and analysis required to implement a successful managed coal-to-clean transition.

Alignment with CIF ACT strategic objectives and development impacts. The introduction of CIF ACT and I-JETP initiatives in 2022-2023 spurred energy transition momentum by prompting interagency discussion within the Indonesian government and across development partners. However, only in the process of (i) documenting commitments in legal contracts, (ii) finalizing technical and financial analysis and (iii) designing compliance reporting, have the practical specifics of early retirement (i.e. human capital investment needs, power system investment implications, practical monitoring and reporting protocols) come to light.

In particular, the lionshare of developments have occurred in relation to the announced potential Cirebon 1 CFPP IPP early retirement ("[the Cirebon 1 pilot transaction](#)") – which is the first project under this Program.⁷

⁵ Ministry of Finance, Japan. [Joint Statement and joint Press Release of Just Energy Transition Partnership \(JETP\) for Indonesia](#). Tokyo.

⁶ GFANZ, the world's largest coalition of financial institutions with ambitious science-based commitments to net-zero transition. The initial Working Group members – Bank of America, Citi, Deutsche Bank, HSBC, Macquarie, MUFG, and Standard Chartered – have been working with the IPG in support of the I-JETP.

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

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| | <p>Through the pilot ETM transaction, the following work is already underway that references ACT governance, social, economic, technological, and environmental goals and impacts such as equity and inclusion, just transitions, sustainable development, and ecological integrity:</p> <ul style="list-style-type: none"> • Framework agreement between ADB and PLN (supported by the Ministry of Finance (MOF) and Ministry of Energy and Mineral Resources (MEMR), and Ministry of State Owned Enterprise (MSOE)) and other related parties to underscore the collaboration on technical and economic analysis in relation to early retirement targets and power system reliability and affordability. • Memorandum of Understanding with MEMR for a bilateral agreement to support pilot early retirement transactions financed with ADB and maintain a productive policy dialogue to maintain a conducive policy and regulatory environment for CFPP decommissioning and repurposing. • Ongoing stakeholder consultations to discuss high-level analysis for just and affordable energy transition environmental and social implications as part of the ADB Energy Transition Mechanism (ETM) Strategic Environment and Social Assessment (SESA). • Asset level environmental and social compliance audit and action plan (inclusive of gender targets) being finalized for disclosure and consultation. • Preliminary just transition assessment being finalized for disclosure and consultation. • Participation in I-JETP just transition working group and pursuing direct government engagement with 14+ government agencies and National Energy Transition Task Force to establish programming goals in relation to asset-level early retirement/repurposing impacts and needs. • Terms of reference for preparatory Women-Led Coal Transition Mechanism (WOLCOT) works is being finalized and works expected to commence early 2024. <p>Asset-specific analyses, discussions and engagements will only broaden after the Cirebon 1 pilot transaction is underway. Overall, through the financing of 2-3 pilots, the goal of the Component 1.2 Program is (i) to support the creation of a new transition asset class; (ii) to pioneer implementation of just transition and environmental and social safeguard principles in early retirement assets; and (iii) to provide a tangible example of what coal phase out entails in developing Asia, reducing uncertainty in the prospects for future scale-up of early retirement in years to come.</p> |
| Systemic change | <p>Grid stability and budget impact analysis. As part of the Cirebon 1 pilot transaction development under the Program, ADB is working together with PLN and experienced domestic and international technical consultants to conduct a grid impact study that analyzes potential replacement options and cost impacts for the early retirement of the pilot projects identified under the Program. Grid strengthening / network upgrades are being considered to enable replacement by other technologies together with lifecycle cost benchmarking of replacement technologies for updated levelized cost of generation estimates. Additionally, further modeling is being used to identify the mix of replacement technologies that could provide a cost optimal route to transition. The study will be going through a multiparty review within the GOI and PLN and aims to be completed in February 2024. Identifying the system stability needs 2035 and onwards, as well as the likely costs of grid upgrades and clean replacement power is paramount for early retirement projects to be endorsed at the national level. ADB’s support for this specific asset-level PLN study offers the first tangible analysis of early retirement implications for energy security and energy transition from a technical and government budget standpoint. Learnings from this initial study will directly shape policy development and energy transition strategy, especially with respect to early retirement of IPPs as a tool in PLN’s coal phase down strategy.</p> |

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| <p>Systemic change (continued)</p> | <p>Elevating the influence of beneficiaries and other stakeholders, including marginalized and vulnerable groups. <i>As in Paragraph 22 of the Proposal:</i> Stakeholder consultation will be a critical component for the production and implementation of the following documents for each underlying project in the Program: (i) Environmental and Social Audit and Action Plan; and (ii) Preliminary Just Transition Assessment.</p> <p>As per ADB Safeguards procedure, stakeholder mapping is underway for the Cirebon 1 pilot transaction (identifying communities, workers, NGOs/CSOs, local and national government and marginalized and vulnerable groups to be represented). Stakeholder consultation is being scheduled to ensure input of beneficiaries, impacted parties and other stakeholders, including marginalized and vulnerable groups, is incorporated into drafts of safeguard documents to be disclosed and discussed with the project developers. Similar procedures are being put in place for the preliminary just transition assessment.</p> <p>A critical aspect of the Cirebon 1 pilot transaction is that the just transition plans will lay out the timing, scope and participation related to stakeholder consultation between financial close and the 10+ years leading up to the decommissioning/repurposing of the CFPP assets. This is broadly in line with the Just Transition Framework and process established in the I-JETP CIPP. In fact, the stakeholder consultations planned for the first half of 2024 will provide critical feedback as to how ADB and the project developers can best secure tangible inputs from all stakeholders to ensure opportunity for just transition is maximized in the years leading up to CFPP decommissioning/repurposing. Separately, ADB is engaging with 14+ GOI agencies to outline opportunity and accountability for the implementation of broader just transition programming at the national level to address needs that may emerge beyond individual asset interventions. GOI focals and implementing agencies will be identified as part of completing the more programmatic ADB just transition engagement in parallel to the Program development, consistent with the related recommendation in the Just Transition Framework identified in the I-JETP CIPP.</p> |
| <p>Speed</p> | <p>CIF ACT supported early retirement projects outlined in the CIF ACT IP are the <u>initial projects</u> (i.e. decommissioning and/or repurposing) projects being considered under any of Indonesia’s current relevant power sector scenarios. They remain a critical tool in the I-JETP power sector on-grid scenario outlined in the Table below (see I-JETP CIPP Summary Scenario Table). The I-JETP scenario inclusive of CIF ACT IP programming is the <u>only</u> scenario that allows for Indonesia’s power sector to achieve net zero emissions by 2050. Except for the CIF ACT early retirements, coal power plants are retired, based on the RUKN assumptions of when they reach natural retirement age (i.e., when their book value is zero), which roughly corresponds to 30 years for PLN-owned plants and 25–30 years for IPPs (at the end of their power purchase agreement [PPA]) – implying a net zero target closer to 2060, a decade later.</p> <p>ADB’s work to address complex technical, financial and governance issues raised (see section above) as well as our commitment to ensure an inclusive and robust stakeholder engagement process is accelerating interagency discussion within the GOI and improving understanding of all stakeholders as to what myriad opportunities arise from the accelerated implementation of CFPP emission abatement and the relative costs of maintaining business as usual. In Indonesia especially, the average age of the CFPP fleet is approximately 12 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.</p> |

For more context on the evolving power sector emissions targets in Indonesia, please see the discussion excerpted from the I-JETP CIPP. “The original I-JETP targets in the joint statement were strongly informed by the International Energy Agency’s (IEA) Announced Pledges Scenario in its Energy Sector Roadmap to Net-Zero Emissions in Indonesia 2022.⁸ That scenario modeled the energy balance available from Indonesia, using all reported sources of electricity supply and demand, including on- and off-grid sources of power. Based on that starting point, the IEA assessed that Indonesia’s power sector CO2 emissions could peak at just over 290 Mt by the early 2030s and reach near net zero by 2050, supported by an increased role for energy efficiency, the rollout of renewable power generation (to a 34% share in 2030) and measures to phase-out coal-fired power.

Over the past year, the starting baseline for Indonesia’s power sector has shifted, as evidenced by MEMR’s own change in baseline for projected emissions. In the I-JETP joint statement that baseline was 357 Mt for 2030, now in the draft National Electricity Master Plan (RUKN) (July 2023) it is projected at 478 Mt. The upward shift is influenced in large part by the emergence of new plans for offgrid captive coal generation to power heavy industrial facilities, most for critical minerals processing, in support of Indonesia’s industrial down streaming strategy (see subchapter 5.5 of the CIPP for more discussion on planned captive coal power).

An important objective for the I-JETP is for Indonesia to produce a credible and ambitious pathway for clean energy transitions in the power sector, with strong local buy-in. The development of I-JETP scenario aims to fulfill that objective, but with the added complexity of managing a growing new source of emissions from the off-grid power sector.

Given this context, the GOI and IPG agreed that the 2023 version of the CIPP would only have an on-grid emissions target and pathway. Consequently, the I-JETP has developed a new scenario for the on-grid power system. This pathway incorporates and builds upon many of the features of the IEA, MEMR, and PLN scenarios, including a strong role for new transmission interconnections, policy reforms to accelerate deployment of renewables (as in MEMR and IEA scenarios) and measures to reduce the role of coal in the power mix.”⁹

⁸ IEA (2022), [An Energy Sector Roadmap to Net Zero Emissions in Indonesia](#), IEA, Paris. License: CC BY 4.0.

⁹ Indonesia Just Energy Transition Partnership Secretariat (2023), [Comprehensive Investment and Policy Plan](#).

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| <p>Scale</p> | <p>While the Program implies the early retirement of 2-3 IPP CFPPs, the work being done at the foundational level to set up the Cirebon 1 pilot transaction is already developing the governance, technical, financial and stakeholder engagement infrastructure that will serve as a template and starting point for future early retirement projects for private or public assets in Indonesia and across Southeast Asia. Key platforms for dissemination of knowledge gained include I-JETP Secretariat, ADB ETM and the involvement of GOI focal institutions such as Sarana Multi Infrastruktur (Persero) (PT SMI).</p> <p>Developing policy and implementation procedures and addressing potential roadblocks to scale – deepening understanding of and support for an accelerated coal transition. Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for the Supply of Power (RE PR), signed and enacted by President Joko Widodo on 13 September 2022, created a broad framework for the clean energy transition including the identification of three key ministries in the implementation of the early retirement of CFPPs (i.e. MEMR, MOF and MSOE). However, the precise nature of the interaction between the ministries (i.e. the relative ownership, accountability, financial and personnel resourcing), is all being put in place in real time given questions being posed by the IPP developer, PLN and financiers of the Cirebon 1 pilot transaction. Furthermore, the Cirebon 1 pilot transaction is leading to a clearer articulation of the technical, financial and legal risks pertaining to each ministry and PLN with respect to early retirement. The issue of state loss (i.e. potential criminal penalties) due to the early cessation of coal-fired operation is being addressed in real time using the Cirebon 1 pilot transaction as a case study. The transaction is playing a pivotal role in unraveling preconceived notions of energy transition as a cost-centric initiative and advancing support for viewing energy transition (and accelerated coal transition) as a national opportunity to be more competitive and sustainable in the long run.</p> <p>Expanding the participants in the accelerated coal transition. (1) In parallel, ADB is also convening multiple ministries (11+ agencies) beyond the three key ministries identified in RE PR to discuss the pilot transaction, related just transition assessments and mapping and scheduling of engagement, design and implementation in the coming decade. GOI discussions will then help inform civil society and non-governmental organization discussions, as well as engagement with the related labor force and communities most directly affected by the pilot Component 1.2 transaction. (2) ADB will be launching a commercial syndication process in the first half of 2024 to open up the Cirebon 1 pilot transaction to GFANZ banks and other financial institutions that have expressed interest. This allows for a broader dialogue in relation to financial structuring, just transition implementation and taxonomy to parties that have not been party to ongoing discussions in related projects.</p> |
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| <p>Adaptive sustainability</p> | <p>With respect to the capacity for adaptive sustainability, please see above discussion systemic change as well as on scaling (vertical, horizontal and depth scaling) and overall development of support for accelerated coal transition.</p> <p>Flexibility in design and implementation built into project structuring. The very nature of the Program transactions being considered is that ADB is leading the refinancing and re-leveraging of the IPP CFPP asset today (with the benefit of CIF ACT concessional finance) to bring forward the emission abatement from the asset by a set number of years (for the Cirebon 1 pilot transaction, it will be approximately 7 years). The transaction commitment centers on emission reduction post PPA termination with post PPA termination plans only confirmed 2 years before PPA termination. For the Cirebon 1 pilot transaction this provides ten-years to: (i) update and optimize replacement power investment plans (benefiting from lower future costs of renewable energy and storage); (ii) design human capital investment to take into account broader energy transition needs; (iii) engage a wide variety of stakeholders for input and (iv) ensure that the transaction benefits from any lessons learned during the interim period.</p> <p>Resilience despite energy sector needs. Specifically for assets benefiting from CIF-ACT and other donor funds, ADB is working towards an ETM Alignment Agreement whereby we get additional reassurance from MEMR that any ETM assets will not operate unabated after the PPA termination. Emission abatement is the cornerstone of credibility for the CFPP early retirement transition asset class.</p> |
| <p>b. Potential for GHG emissions reduction/avoidance</p> | <p><i>As per Paragraph 7 of the Proposal:</i> With ~US\$100 million of CIF ACT funding, the GHG emission abatement over the duration of the Program is estimated at 10,000,000 tCO₂e. This would imply a US\$10 per tCO₂e. As noted in the CIF ACT IP, ADB is working with the GOI on a “whole of energy systems analysis” to model energy needs (see Paragraph 9) triggered by the early retirement and will update the GHG abatement estimates and monitoring and evaluation protocols at the project implementation stage.</p> |
| <p>c. Potential to significantly contribute to the principles of just transition</p> | <p><i>As per Paragraph 8 of the Proposal:</i> The Program represents the initial asset-level investment projects in Indonesia to design implement just transition principles in investment documentation, disclosed assessment materials, and stakeholder consultations; all in parallel with ADB public sector government engagement for programmatic human capital development. Given the nascency of current inter- and intra-agency coordination on such a multifaceted pillar of the energy transition such as just transition, ADB’s work under the Program will establish a strong foundation for dialogue, engagement and documentation that endeavors to reflect the guidance from MDB High Level Just Transition Principles and the I-JETP Just Transition Framework in a manner that is consistent with ADB policy and procedure, project scope, and evolving stakeholder needs.</p> |
| <p>d. Financial effectiveness</p> | <p>See below</p> |

Value for Money

a. A detailed analysis of the financial effectiveness of replacing coal by clean energy or other alternatives while integrating the socio-economic cost of carbon. *As per Paragraph 9 of the Proposal:* ADB ETM is supporting PLN in a system-wide analysis of early retirement grid impacts of early retired CFPPs. While that study remains ongoing, and dialogue on assumptions continues between the GOI, ADB and third-party consultants, the Figures 1 and 2 in the Proposal present a summary of early analysis demonstrating the range of energy transition costs, assuming a zero cost of carbon at the outset (given the need for GOI agreement on related assumptions). Though it appears that the energy transition costs could be significant, the top end of the range would face a tangible reduction if it accounted for the public health gains as well as tax and subsidy implications in relation to the existing carbon-intensive system. Other benefits of a clean energy transition would include (i) increased access to finance, (ii) access to younger CFPP assets that would be in better condition for any low carbon repurposing, and (iii) increased access to trade and the global economy.

b. A detailed assessment of the need for concessionality and how the program/project meets the principles for using concessional resources (with evidence and calculations as appropriate). *As per Paragraph 10 of the Proposal:* When deploying CTF resources, ADB will adhere to the DFI agreed Blended Concessional Finance Principles for Private Sector Projects.¹⁰ With respect to minimum concessionality, ADB will work to size the concessional financing for each transaction to strike a balance between the availability of concessional financing (how much concessional financing is necessary to achieve meaningful PPA reduction) and the related sponsors' willingness to shorten a project's life. In plain terms, the more concessional the funding is the greater the impact in terms of GHG reduction – there is a direct correlation. As such, the concessional funds would likely be priced at the price floor to achieve a target maximum PPA/ CFPP operational life reduction. As noted in the CIF ACT IP Appendix 12: "Concessional funds from the CIF-ACT program would complement debt financing from ADB to maximize the reduction in the PPA tenor and remaining operating life of the CFPPs. Without access to the CIF's toolbox of flexible cost and risk-bearing instruments, it would be impossible to adequately account for the loss of revenue from shorter PPA terms." A sample application of concessionality to reduce CFPP operational life is illustrated in the Figure 3 in the Proposal.

c. An assessment of the cost-benefit ratio and/or other relevant indicators of cost effectiveness. *Please see Section (i) below.*

d. An analysis of the expected reduction in the cost of the technology due to technological progress and scale effect at the country, regional, or global level or through organizational learning and scale effects at the country level, where applicable.

N/A

¹⁰ African Development Bank; Asian Development Bank; Asian Infrastructure Investment Bank; European Bank for Reconstruction and Development; European Development Finance Institutions; European Investment Bank; Inter-American Development Bank Group; Islamic Corporation for the Development of the Private Sector; and International Finance Corporation. 2017. *DFI Working Group on Blended Concessional Finance for Private Sector Projects: Summary Report*, October 2017. Note: "DFI" refers to Development Finance Institution.
http://www.ifc.org/wps/wcm/connect/corp_ext_content/ifc_external_corporate_site/solutions/products+and+services/blended-finance/blended-finance-principles

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| <p>Mobilization Potential</p> | <p><i>As per Paragraph 12 of the Proposal:</i> As noted in the CIF ACT IP, with ~US\$100 million of CIF ACT funding, the Program would mobilize an estimated US\$400 million in ADB financing and US\$300 million of co-financing from bilaterals and commercial banks over the Program lifetime – i.e. ~US\$7 of mobilization per concessional dollar spent, or ~7x leverage. Overall, ADB will seek to mobilize financing from other financial institutions as much as possible, to the extent they can provide terms and conditions to support PPA reduction. A number of financial institutions, including GFANZ and non-GFANZ commercial banks, have shown interest in participating in the pilot ETM transaction given the opportunity and financing need of managed coal phase out.</p> |
| <p>e. Implementation potential</p> | <p><i>As per Paragraph 13 of the Proposal:</i> Based on the Memorandum of Understanding signed between ADB, PLN, Cirebon Electric Power (CEP) and the Indonesia Investment Authority (INA) in November 2022 (further expanded and renewed in December 2023 at COP28), ADB has achieved concept approval for the Cirebon 1 pilot transaction. Due diligence and environmental & social and just transition analysis for the pilot should be complete within H1 2024 and ADB is targeting Board approval within 2024. GOI, PLN and CEP engagement remains high as the pilot ETM transaction will inform and help design the broader accelerated coal transition envisioned by the GOI National Energy Transition Taskforce established after the launch of I-JETP. Two additional IPP financing opportunities remain in the pipeline (many discussions remain pending until GOI discussions on the pilot conclude) and are slated to go to concept in 2025 (after the pilot ETM transaction achieves financial close).</p> |
| <p>f. Gender equality and social inclusion impact</p> | <p><i>As per Paragraph 14 of the Proposal:</i> Please see: (i) Paragraph 25 for an excerpt of ADB analysis applying a gender lens to Indonesia’s energy transition, which informs ADB’s stakeholder engagement planning for the Program; and (ii) Appendix 7 of the CIF ACT IP for an overview of broader gender mainstreaming activities supporting the CIF ACT projects. ADB undertakes a gender assessment to systematically assess the potential opportunities and impacts of its programs/projects on gender relations. ADB will assess each sub-project for gender and development impacts including key gender issues and potential gender equality actions for the sub-project. To the extent possible, gender measures that empower women and/or advance gender equality will be included in the sub-projects’ Development Monitoring Frameworks. As an example, the Cirebon 1 pilot transaction is seeking to include gender measures that apply to the ongoing CFPP operations (e.g., disseminating information on gender-based violence and related awareness raising) as well as gender equality measures related to the decommission and repurposing planning (e.g., targeting female beneficiaries in reskilling or upskilling support).</p> |

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| <p>g. Development impact potential</p> | <p><i>As per Paragraph 15 of the Proposal and Relevance section above:</i> The introduction of CIF ACT and I-JETP initiatives in 2022-2023 spurred energy transition momentum through interagency discussion within the GOI and across development partners. However, it has been in the process of documenting commitments in legal contracts, finalizing technical and financial analysis and concluding compliance reporting, that the realities of early retirement really come to light (i.e. human capital investment needs, power system investment implications, practical monitoring and reporting protocols). Through the Cirebon 1 pilot transaction, the following work is already underway that references ACT governance, social, economic, technological, and environmental goals and impacts such as equity and inclusion, just transitions, sustainable development, and ecological integrity:</p> <ul style="list-style-type: none"> • Framework agreement between ADB and PLN, the national electric utility and power offtaker (supported by the Ministry of Finance (MOF) and Ministry of Energy and Mineral Resources (MEMR), and Ministry of State Owned Enterprise (MSOE)) and other related parties to underscore the collaboration on technical and economic analysis in relation to early retirement targets and power system integrity and affordability. • Memorandum of Understanding with MEMR for a bilateral agreement to support ETM transactions financed with ADB and maintain a productive policy dialogue regarding policy and regulatory environment needs for CFPP decommissioning and repurposing. • Ongoing stakeholder consultations to discuss high-level analysis for just and affordable energy transition environmental and social implications as part of the ADB Energy Transition Mechanism (ETM) Strategic Environment and Social Assessment (SESA). • Asset level environmental and social compliance audit and action plan (inclusive of gender targets) being finalized for disclosure and consultation. • Preliminary just transition assessment being finalized for disclosure and consultation. • Participation in I-JETP just transition working group and pursuing direct government engagement with 14+ government agencies and National Energy Transition Task Force to establish programming goals in relation to asset-level early retirement impacts and needs. • Terms of reference for preparatory WOLCOT works is being finalized and works expected to commence early 2024. <p>Asset-specific analyses, discussions and engagements will only broaden after the Cirebon 1 pilot transaction is underway. Overall, through the financing of 2-3 pilots, the goal of the Program is (i) to support the creation of a new transition asset class; (ii) to pioneer implementation of just transition and environmental and social safeguard principles in early retirement assets; and (iii) to provide a tangible example of what coal phase out entails in developing Asia, reducing uncertainty in the prospects for future scale-up of early retirement in years to come.</p> |
| <p>h. Demonstration potential at scale</p> | <p><i>As per Paragraph 16 in the Proposal:</i> Given the broader policy preparation that needs to be done to prepare public sector assets for actions such as early retirement and repurposing (i.e. issuance of Implementing Regulation on the Indonesia (public asset) Early Retirement Roadmap, related legal and audit opinions and clearances) the Program presents some of the first CFPP assets for early retirement for GOI consideration. Once all the requisite analysis is in place for technical, financial, legal, just transition and E&S, the Program provides a strong guideline for how Indonesian CFPPs can be early retired and decommissioned/repurposed, whether they are public or private. It will also further inform the GOI and financiers about key considerations in broader energy transition planning as other coal phase down strategies enter more detailed planning discussions (as highlighted in the I-JETP CIPP). Beyond Indonesia however, the Program also includes one of the first projects under ADB's ETM. ADB is advancing a strong pipeline of projects across the Asia Pacific region, even beyond the initial ETM partner countries of Indonesia, Vietnam and the Philippines. Lessons learned within the standard-setting exercise of the Program in Indonesia will translate across the region and provide tangible baseline for CFPP transition asset class development.</p> |

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| <p>i. Cost-effectiveness</p> | <p><i>As per Paragraph 11 in the Proposal:</i> With total CIF-ACT funds of ~US\$100 million and estimated GHG emission reductions of 10 million tCO₂e over the Program life, the cost effectiveness of CTF funds is US\$10 per tCO₂e. Funding the first accelerated coal transition projects (which are the first under the I-JETP and Indonesia’s National Energy Transition Task Force as well), the Program will richly inform policy dialogue and accelerated coal transition strategies and help reconcile the various existing energy transition roadmaps in a manner that is more conducive to an accelerated net zero future. The pilots will be pivotal as part of the standard setting exercise for the new transition asset class being developed across the ASEAN region. IPPs comprise the majority of coal power assets in Indonesia and 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.</p> |
| <p>j. Additional costs and risk premium</p> | <p><i>While this section often relates to the risk premiums faced by first movers in normal Clean Technology Fund investments, under ACT, the additional cost pertains to an active market failure correction (see Section m: Mitigation of market distortions) required to inform policy development.</i></p> <p><i>As per Paragraph 17 in the Proposal:</i> As noted in Paragraph 60 of the CIF ACT IP, transactions are being structured to provide “concessional financial support to key stakeholders while fostering opportunities for crowding-in financing from both the public and private sectors to address a unique stalemate situation whereby:</p> <ul style="list-style-type: none"> • There is oversupply in the largest demand center of the country till the end of this decade, which makes it hard for new renewable energy capacity to make inroads. • PLN, as a national utility, has a 16 GW CFPP fleet and can continue to operate its plants under current financial terms unless otherwise incentivized as they are compensated on a cost-plus basis (i.e., the MoF pays a subsidy to PLN to ensure it is fully compensated for its annual operating costs, inclusive of a minimal predetermined return). • CFPPs owned by IPPs operate with strong, bankable long-term PPAs with fixed tariffs ensuring a fixed return to sponsors, and do not suffer from “stranding” pressure. • Furthermore, carbon markets are not yet established and available to monetize the emission reductions from early closure of CFPPs. <p>As such, without financial support from the likes of CIF-ACT, 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.</p> |
| <p>Additional CTF investment criteria for private sector projects/ programs</p> | |
| <p>k. Financial sustainability</p> | <p>Overall, by shortening the PPA tenor, thereby reducing future coal-based power supply and PLN’s payment obligations, ADB expects the Program to reduce coal’s incumbency advantage and lower the barriers for renewables to scale up commercially, therefore contributing to the commercial sustainability of Indonesia’s energy transition. The I-JETP CIPP reiterates that the decarbonization efforts must also consider long-term financial sustainability of PLN, IPPs and the broader sector and reflects on reforms needed across the power and financial sector to support the implementation of the energy transition (see Chapters 7 and 8 of the CIPP).</p> <p><i>As per Paragraph 18 in the Proposal:</i> More specifically, the Program investments at the project level will involve refinancing and leveraging assets that have demonstrated strong operational track records. CIF ACT funds will benefit from alignment of incentives with ADB and commercial/bilateral cofinanciers that will have to extend debt financing to the assets between financial close and the date of early retirement of coal-fired operations (in some cases implying exposure to 10+ year of CFPP operations). Given existing commercial credit requirements within ADB and across cofinanciers, the assets will have to demonstrate creditworthiness commensurate to the debt exposure across all technical, contractual and compliance matters.</p> |

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| <p>l. Effective utilization of concessional finance (including a detailed analysis on how the proposal meets the minimum concessionality principles, and on how it is aligned with the blended concessional finance principles)</p> | <p><i>As per Paragraphs 19-20 in the Proposal:</i> As noted in Paragraph 10 of the Proposal, the concessionality of the CIF ACT funds is structured to directly contribute to shortening of the PPA contractual period for the CFPP IPP. The logic is such that with cheaper debt and upfront compensation for tail-end returns, IPP developers can operate their CFPP investments for a shorter period of time in a commercially-sustainable manner. If proven, the return-neutral model would provide encouragement for voluntary CFPP early retirements by IPPs.</p> <p>[REDACTED] Key takeaways from project level analysis are as follows:</p> <ul style="list-style-type: none"> • The impact of concessional financing at reducing the PPA period degrades exponentially the more the PPA is shortened. This arises because the ETM debt needs to compensate for each additional lost year of free cash flow to equity upfront, but each additional lost equity cashflow is being discounted less and less the closer the PPA shortening moves to present day. • Naturally, the impacts of grant funding remain larger than those of concessional loan as the borrower does not repay principal or interest on the grant. However, scalability of a grant-heavy financial structure restricts excess application of grant funds, even for pilot transactions. |
| <p>m. Mitigation of market distortions</p> | <p><i>As per Paragraph 21 of the Proposal:</i> The Program seeks to address a market failure where the lack of accounting for carbon costs has given rise to a carbon-intensive, oversupplied Indonesian power sector with an average CFPP age of ~12 years. To break the lock-in of emissions for decades to come, the Program establishes a framework by which to structure the removal of carbon assets in a reliable and accelerated manner and allow the increasingly commercially sustainable renewable energy market to develop and meet growing power demand. By demonstrating the emission reductions for such transactions, it is possible that future transactions could be supported through carbon markets rather than concessional funds. Since these markets do not yet exist, there is no market distortion.</p> |

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| n. Risks | <p><i>As per Paragraph 22 of the Proposal:</i> CIF ACT funds mostly face similar commercial and repayment risks to ADB and commercial cofinanciers. Overall, the transactions will only advance if the operational track records of the projects (i.e. PPA bankability, plant availability, O&M, and supply risk mitigation) prove reliable during ADB PSOD due diligence. The more unusual risks of the Program have to do with: (i) risk of project non-decommissioning; (ii) implementation of safeguards and just transition post loan repayment; and (iii) the public-private nature of the transaction structuring.</p> <p><i>(i) Ensuring no continued coal-fired operations beyond shortened PPA termination date.</i> Upon full loan repayment and expiry of the shortened PPA life, the Sponsors or PLN (in case PPA termination scenarios) could potentially continue to operate the power plant, which could weaken the decarbonization story of the proposed loan. <i>Mitigants:</i> Robust project-level legal provisions will be required vis-à-vis the borrower, the sponsors, PLN, and GOI as relevant to ensure that asset level decommissioning or repurposing plans and Just Transition commitments are agreed and implemented beyond full loan repayment. This would be supported by project financing incentives and tools (i.e. cash traps, step-in rights) as well as separate sponsor agreements to undertake and commit to the same objectives. This would be complimented by further commitments from PLN to ensure ADB ETM assets would never be subject to PPA extensions or refired for national strategic purposes.</p> <p><i>(ii) Untested safeguards and just transition implementation for early coal retirement.</i> This will be a new exposure to coal operations and the Program will be setting the standards on the management of safeguards for ETM coal operations as well as on on just transition processing and implementation for transition assets. <i>Mitigants:</i> Lack of precedent is leading to more active engagement with the NGOs/CSOs, workforce, local communities, and local governments on all fronts. Independent and qualified E&S consultants are undertaking an audit of existing facilities to assess whether operations are in accordance with applicable national laws and regulations. The audit can feed into action plans and inform stakeholder consultations. The Program benefits from initial information from various stakeholders conducted as part of ADB ETM SESA workshops as well as I-JETP CIPP Just Transition working group stakeholder engagement discussions. Feedback has been incorporated into the pilot transaction stakeholder engagement planning.</p> <p><i>(iii) Coal transition projects involving high level of public-private engagement:</i> ADB-PSOD early scoping and conversations with IPPs suggests there is enough interest to apply our ongoing lessons learned in the Cirebon 1 pilot transaction and begin work in H1 2025 on subsequent sub-projects under this Program. However, the early discussions depend on the GOI endorsement of early retirement through the Cirebon 1 pilot transaction. Government endorsement of how the transactions fit within the broader energy sector roadmap is critical to ensure system stability and financial sustainability. ADB-PSOD expects interest and activity in the workstream to increase over the Program implementation period as the Indonesia’s energy transition strategy discussions mature. Overall, ADB-PSOD believes there is a sufficient pipeline and further sector engagement with project developers will be undertaken to mitigate this risk. Approval of CIF ACT funding for the Program will be a necessary pre-requisite to further engagement.</p> |
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| Investment Criteria and/or national energy policy and strategy | |
| <i>Please see above discussions. For further detail, please refer to the CIF ACT IP for how Component 1 projects support the ACT objectives.</i> | |
| Stakeholder Engagement | |
| <i>Please see Paragraph 23 of the Proposal.</i> | |
| Gender Considerations | |
| Gender Analysis (Please insert the text from the project document on the analysis of gaps in access to services, markets and jobs by women in relation to the project sectors) | <i>Please see Paragraph 25 of the Proposal.</i> |
| Gender Activities (Please insert the text describing gender-specific activities included in the project) | <i>Please see Paragraph 14 of the Proposal.</i> |
| Gender Indicators (Please insert the text on selected gender specific indicators, including annual targets. from the Project Log Frame that the project is committing to report on) | <i>Please see Paragraph 14 of the Proposal for what is being considered at this time.</i> |
| For projects/programs with activities in countries assessed as being at moderate or high risk of debt distress, macro-economic analysis to evaluate the potential for the CTF project or program to impact the country's debt sustainability | |
| N/A | |
| For public sector projects/programs, analysis of how the project/program facilitates private sector investment | |
| N/A | |

| Indicators and Targets | |
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| Project/Program Timeline | |
| Expected start date of implementation ^[d] | February 2024 |
| Expected end date of implementation ^[d] | February 2027 |
| Expected investment lifetime in years (for estimating lifetime targets) | [20 years] (inclusive of monitoring and evaluation) |
| Core Indicators | Targets |
| <i>Please identify which of the below indicators are relevant to your project proposal, list the corresponding project-defined indicator(s), and report all targets (including disaggregated targets).</i> | |
| ACT 1: Number of policies, regulations, codes, or standards that have been amended or adopted | N/A for private sector program. |
| ACT 2: Coal transition strategies adopted (#) | 2 or more just transition assessments (inclusive of outlines for just transition plans to be implemented by the GoI and relevant private IPPs) developed to execute just transition commitments. |
| ACT 3: Number and percentage of employees of retired coal plants/mines that have access to sustained income (#,%) | More than 340 employees of retired coal plants provided access to sustained income. |
| <i>Men</i> | <i>300, 100% (estimate)</i> |
| <i>Women</i> | <i>40, 100% (estimate)</i> |
| <i>TOTAL</i> | <i>340, 100% (estimate)</i> |
| ACT 5: Mitigation: GHG emissions reduced or avoided (t CO ₂ eq) – direct/indirect | 10 million tCO ₂ eq |
| <i>Direct</i> | <i>10 million tCO₂eq</i> [REDACTED] |
| <i>Indirect</i> | N/A |
| <i>TOTAL</i> | |
| ACT 6: Volume of co-finance leveraged | <i>Indicator listed in the co-financing section below</i> |
| ACT 7: Plant decommissioning: Capacity of existing coal power/heat generation assets accelerated for retirement (MW GJ) | 1,000 MW of CFPP capacity |
| ACT 9: Coal Abatement: Amount of coal diverted (MT) | [11 million tons] |
| ACT Co-Benefit Indicators | Project-Defined Indicators/Targets |
| <i>Please identify one or more co-benefit indicators that the project will track and report.</i> | |
| ACT Co-Benefit 1: Pollutants | [TBD] |
| ACT Co-Benefit 2: Just Transition | N/A |

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| ACT Co-Benefit 3: Enhanced Energy Access | N/A |
| ACT Co-Benefit 4: Gender-and vulnerable groups-specific co-benefits | [40] participants in professional development training targeting skills required for technical and management roles. Further indicators will be added once the project level commitments are further designed. |
| Other ACT Co-Benefit: <i>(Please specify)</i> | |

| ACT Optional Indicators | Project-Defined Indicators/Targets | |
|---|--|-------------------------|
| <i>Please specify any optional ACT indicators that the project will track (see the ACT M&R Toolkit for more information).</i> | To be determined and considered during project final processing. | |
| <i>Please also submit the full project results framework to the CIF AU upon MDB Board approval of project.</i> | Noted. | |
| Co-financing | | |
| | Please specify as appropriate | Amount (million USD) |
| MDB 1 | Asian Development Bank | 400 |
| MDB 2 (if any) | | |
| Government | | |
| Private Sector | TBD | 300 |
| Bilateral | TBD | |
| Others (please specify) | | |
| Total Co-financing | | 700 |
| Funding | | 100 |
| Total (Co-financing + Funding) | | 800 |
| Proportion of Financing for Adaptation | | |
| Proportion of Financing for Mitigation ^[f] | | 800 |
| Expected Date of MDB Approval | | TBD |

NOTES:

[a] This cover page is to be completed and submitted together with the MDB project/program proposal when requesting CTF funding approval by the Trust Fund Committee.

[b] For products denominated in EUR, please also provide USD equivalent in the column to the left

[c] Please provide the information in the cover page or indicate page/section numbers in the accompanying project/program proposal where such information can be found.

[d] Insert “not applicable” (N/A) if dates cannot be determined at the time of submission (e.g., private sector programs)

[e] Insert value N/A if indicator is not applicable to the project/program.

[f] Per MDBs’ own Paris alignment climate finance tracking methodologies

PROGRAM PROPOSAL

A. OVERVIEW OF THE PROPOSED PROGRAM

1. **Private CFPP early retirement program.** The proposed program represents Private CFPP early retirement program (ADB Private) outlined under Component 1.2 of the Indonesia Climate Investment Fund (CIF) Accelerating Coal Transition (ACT) Investment Plan (Revised) (“[CIF ACT IP](#)”) approved on 16 June 2023 (“the Program”). The Program aims to facilitate private sector participation in the early retirement of private coal-fired power plants (CFPPs) in Indonesia by using senior or subordinated concessional debt to shorten Power Purchase Agreements (PPAs) of Independent Power Producers (IPPs) while maintaining net present value (NPV) neutrality (i.e. ensuring that the early retirement does not result in any loss or gain for the related IPPs). At the end of the shortened PPAs, the CFPP private owners and operators would then be contractually-obligated to permanently terminate coal-fired operations, and decommission or repurpose the assets in favor of low carbon power generation (excluding natural gas). The Program benefits from extensive private sector and Government of Indonesia (GOI) engagement by the ADB Energy Transition Mechanism ([ETM](#)) launched in 2021, as well as ADB’s support and participation for the Indonesia Just Energy Transition Partnership ([I-JETP](#)) and related Comprehensive Investment and Policy Plan ([CIPP](#)).

Program Objective: Facilitate the early retirement of up to 1 GW of private CFPP assets. These would be the first generation of private early retired coal-fired assets, demonstrating critical characteristics of a new transition asset class required to mobilize capital for an accelerated coal transition.

Program Outcomes: Through the demonstration of IPP early retirement structures, inclusive of programs that (i) promote a just and gender-equal energy transition, and (ii) reflect additionality over and above national energy sector and climate strategies that contemplate early retirement conditional upon international support, the Program aims to support:

- a. Indonesia’s adoption and implementation of policies and strategies for coal-to-clean transition;
- b. Increased GOI and public readiness and appetite to reduce coal dependence;
- c. Private sector financing mobilization for the energy transition; and
- d. GHG emission abatement of up to 10 million tons CO₂ equivalent.

2. As per the 2012 Clean Technology Fund (CTF) Private Sector Operational Guidelines, potential investments or projects supported by the proposed Program would be subject to comprehensive due diligence as part of the internal ADB private sector approval process. The Program would aim to deploy CIF ACT funds into up to three transactions over an investment period of three years.

3. **Investment will occur on concessional terms alongside other sources of capital.** The Program would include ~US\$100 million of CIF ACT funds to be invested in the form of debt alongside co-financing from public and private sources totaling an estimated US\$700 million. CIF ACT funds would be invested into IPP CFPP early retirement projects in which ADB Ordinary Capital Reserves (“OCR”) are also expected to be deployed. Concessional CIF-ACT funds would be deployed to maximize the early retirement of private coal assets.

3. **Investment modality and structuring will be determined by the needs of each transaction.** Financing instruments will include senior or subordinated debt. The concessionality of the CIF ACT funds will go towards maximizing early termination of existing PPAs on an NPV neutral basis. Project or corporate finance structures could be used depending on the nature of the project and sponsor. It is important that this Program has the flexibility to adapt to market needs over the implementation period, especially given the rapidly evolving trends in transition finance.

B. FINANCIAL INSTRUMENTS AND PROCEDURES

4. **The Program uses debt instruments in cases where concessional debt has a tangible impact on CFPP operational or contractual life reduction.** Given the nature of ADB ETM (please see CIF ACT IP Appendix 8 or [ADB ETM website](#) for more detail), emission abatement from the early cessation of coal-fired operations for private operators requires a refinancing of existing debt with cheaper financing (often to be provided in some combination of blended finance and grants). As such, regarding minimum concessionality, any proposed transaction will attempt to maximize reduction in the PPA term, project life and GHG emissions whilst maintaining NPV neutrality for sponsors. For each project, ADB will work to size the concessional financing to strike a balance between the availability of concessional financing (how much concessional financing is necessary to achieve meaningful PPA reduction) and the related sponsors' willingness to shorten a project's life. The Program would seek to identify transactions for which project economics are conducive to substantial reduction in operations, asset retirement before 2040 and maximum operating life of 35 years. Any investment would be subject to ADB's internal due diligence and approval process including environmental and social safeguards and Know Your Customer assessments.

5. **Prospective pipeline.** Initial identification of projects potentially suitable for CIF ACT funding is being undertaken by ADB's Private Sector Operations Department (see Paragraph 23). The lionshare of developments have occurred in relation to the announced potential Cirebon 1 CFPP IPP early retirement ("[the Cirebon 1 pilot transaction](#)") – which is the first project under this Program.¹¹ A separate team would then be assigned to the concessional finance investment to assess its merits based on the ADB ETM objectives above. CIF ACT investments may be on different terms or even timing to ADB's OCR investment, depending on the characteristics of each project or transaction.

[REDACTED]

C. **Fit with CIF ACT IP investment criteria**

6. **Consistency with CIF ACT IP approval terms.** Component 1.2 is the private sector component of Component 1 of the CIF ACT IP, establishing the foundation of early CFPP closures that will create space for accelerated CFPP repurposing and renewable energy deployment in the future. As noted, the Program would benefit from the pipeline development being conducted by the ADB ETM, inclusive of the Cirebon 1 pilot transaction in Indonesia identified by the GOI and ADB ("[the Cirebon 1 pilot transaction](#)"). A key goal of the Program is to provide a "proof of concept" among the IPP asset class of CFPPs. Structuring a successful CFPP early retirement financing will be the first step to establishing a viable transition finance model for IPP CFPP assets, not only in Asia but also in other regions of the world.

7. **Potential for GHG emissions reduction/avoidance.** With ~US\$100 million of CIF ACT funding, the GHG emission abatement over the duration of the Program is estimated at 10,000,000 tCO₂e. This would imply a US\$10 per tCO₂e. As noted in the CIF ACT IP, ADB is working with the GOI on a "whole of energy systems analysis" to model energy needs (see Paragraph 9) triggered by the early retirement and will update the GHG abatement estimates and monitoring and evaluation protocols at the project implementation stage.

8. **Potential to significantly contribute to the principles of just transition.** The Program represents the initial asset-level investment projects in Indonesia to design implement just transition principles in investment documentation, disclosed assessment materials, and stakeholder consultations; all in parallel with ADB public sector government engagement for programmatic human capital development. Given the nascency of current

¹¹ The Government of the Republic of Indonesia, the Government of the Republic of the Philippines, and the Asian Development Bank (ADB) announced a partnership in November 2021 at the 26th UN climate change conference (COP26) to design and launch an Energy Transition Mechanism (ETM) to accelerate the transition from coal to clean energy in Southeast Asia, in a just and affordable manner. Under the partnership with Indonesia, ADB is currently engaged in carrying among other things, identifying through a feasibility study, a pool of candidate coal-fired power plants for early retirement/repurposing; initiating the establishment of an ETM Fund/Vehicle through the issuance of a request for concepts from the private sector; and establishing and operationalizing the ETM Partnership Trust Fund to be administered by ADB; and catalyzing active participation from G-7 countries (I-JETP).

inter- and intra-agency coordination on such a multifaceted pillar of the energy transition such as just transition, ADB’s work under the Program will establish a strong foundation for dialogue, engagement and documentation that endeavors to reflect the guidance from MDB High Level Just Transition Principles and the I-JETP Just Transition Framework in a manner that is consistent with ADB policy and procedure, project scope, and evolving stakeholder needs.

9. **Financial Effectiveness – replacement of coal by clean energy.** ADB ETM is supporting PLN in a system-wide analysis of early retirement grid impacts of early retired CFPPs. While that study remains ongoing, and dialogue on assumptions continues between the GOI, ADB and third-party consultants, the Figures 1 and 2 in the Proposal present a summary of early analysis demonstrating the range of energy transition costs, assuming a zero cost of carbon at the outset (given the need for GOI agreement on related assumptions). Though it appears that the energy transition costs could be significant, the top end of the range would face a tangible reduction if it accounted for the public health gains as well as tax and subsidy implications in relation to the existing carbon-intensive system. Other benefits of a clean energy transition would include (i) increased access to finance, (ii) access to younger CFPP assets that would be in better condition for any low carbon repurposing, and (iii) increased access to trade and the global economy.

Figure 1: Range of Energy Transition Cost for Indonesia – Simple Estimate

[REDACTED]

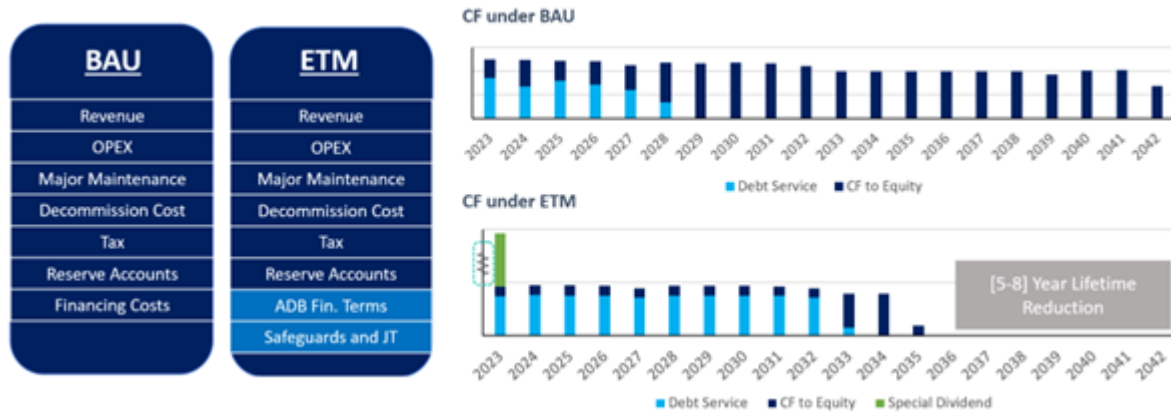
Figure 2: Highlighting key benefits for the clean energy transition

[REDACTED]

10. **Financial Effectiveness – need for concessionality, minimum concessionality, alignment with blended concessional finance principles.** When deploying CTF resources, ADB will adhere to the DFI agreed Blended Concessional Finance Principles for Private Sector Projects.¹² With respect to minimum concessionality, ADB will work to size the concessional financing for each transaction to strike a balance between the availability of concessional financing (how much concessional financing is necessary to achieve meaningful PPA reduction) and the related sponsors’ willingness to shorten a project’s life. In plain terms, the more concessional the funding is the greater the impact in terms of GHG reduction – there is a direct correlation. As such, the concessional funds would likely be priced at the price floor to achieve a target maximum PPA/CFPP operational life reduction. As noted in the CIF ACT IP Appendix 12: “Concessional funds from the CIF-ACT program would complement debt financing from ADB to maximize the reduction in the PPA tenor and remaining operating life of the CFPPs. Without access to the CIF’s toolbox of flexible cost and risk-bearing instruments, it would be impossible to adequately account for the loss of revenue from shorter PPA terms.” A sample application of concessionality to reduce CFPP operational life is illustrated in the Figure 3 below.

¹² African Development Bank; Asian Development Bank; Asian Infrastructure Investment Bank; European Bank for Reconstruction and Development; European Development Finance Institutions; European Investment Bank; Inter-American Development Bank Group; Islamic Corporation for the Development of the Private Sector; and International Finance Corporation. 2017. *DFI Working Group on Blended Concessional Finance for Private Sector Projects: Summary Report*, October 2017. Note: “DFI” refers to Development Finance Institution.
http://www.ifc.org/wps/wcm/connect/corp_ext_content/ifc_external_corporate_site/solutions/products+and+services/blended-finance/blended-finance-principles

Figure 3: Comparative analysis illustrating reduction in PPA tenor whilst preserving NPV neutrality



NOTE: BAU = business as usual scenario; CF = project cash flows; ETM = energy transition mechanism blended financing scenario; NPV = net present value; PPA = power purchase agreement.

11. **Cost effectiveness.** With total CIF-ACT funds of ~US\$100 million and estimated GHG emission reductions of 10 million tCO₂e over the Program life, the cost effectiveness of CTF funds is US\$10 per tCO₂e. Funding the first generation pilot ETM projects (which are the first ETM projects under the I-JETP and Indonesia’s National Energy Transition Task Force as well), the Program will richly inform policy dialogue and accelerated coal transition strategies and help reconcile the various existing energy transition roadmaps in a manner that is more conducive to an accelerated net zero future. The pilots will be pivotal as part of the standard setting exercise for the [new transition asset class](#) being developed across the ASEAN region. IPPs comprise the majority of coal power assets in Indonesia and 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.

12. **Mobilization potential.** As noted in the CIF ACT IP, with ~US\$100 million of CIF ACT funding, the Program would mobilize an estimated US\$400 million in ADB financing and US\$300 million of co-financing from bilaterals and commercial banks over the Program lifetime – i.e. ~US\$7 of mobilization per concessional dollar spent, or ~7x leverage. Overall, ADB will seek to mobilize financing from other financial institutions as much as possible, to the extent they can provide terms and conditions to support PPA reduction. A number of financial institutions, including GFANZ and non-GFANZ commercial banks, have shown interest in participating in the pilot ETM transaction given the opportunity and financing need of managed coal phase out.

13. **Implementation potential.** Based on the Memorandum of Understanding signed between ADB, PLN, Cirebon Electric Power (CEP) and the Indonesia Investment Authority (INA) in November 2022 (further [expanded and renewed](#) in December 2023 at COP28), ADB has achieved concept approval for the Cirebon 1 pilot transaction. Due diligence and environmental & social and just transition analysis for the pilot should be complete within H1 2024 and ADB is targeting Board approval within 2024. GOI, PLN and CEP engagement remains high as the pilot ETM transaction will inform and help design the broader accelerated coal transition envisioned by the GOI National Energy Transition Taskforce established after the launch of I-JETP. Two additional IPP financing opportunities remain in the pipeline (many discussions remain pending until GOI discussions on the pilot conclude) and are slated to go to concept in 2025 (after the pilot ETM transaction achieves financial close).

14. **Gender equality and social inclusion impact considerations (gender analysis, activities and indicators).** Please see: (i) Paragraph 25 for an excerpt of ADB analysis applying a gender lens to Indonesia’s energy transition, which informs ADB’s stakeholder engagement planning for the Program; and (ii) Appendix 7

of the CIF ACT IP for an overview of broader gender mainstreaming activities supporting the CIF ACT projects. ADB undertakes a gender assessment to systematically assess the potential opportunities and impacts of its programs/projects on gender relations. ADB will assess each sub-project for gender and development impacts including key gender issues and potential gender equality actions for the sub-project. To the extent possible, gender measures that empower women and/or advance gender equality will be included in the sub-projects' Development Monitoring Frameworks. As an example, the Cirebon 1 pilot transaction is seeking to include gender measures that apply to the ongoing CFPP operations (e.g., disseminating information on gender-based violence and related awareness raising) as well as gender equality measures related to the decommission and repurposing planning (e.g., targeting female beneficiaries in reskilling or upskilling support).

15. Development impact potential. Alignment with CIF ACT strategic objectives and development impacts. The introduction of CIF ACT and I-JETP initiatives in 2022-2023 spurred energy transition momentum by prompting interagency discussion within the Indonesian government and across development partners. However, only in the process of (i) documenting commitments in legal contracts, (ii) finalizing technical and financial analysis and (iii) designing compliance reporting, have the practical specifics of early retirement (i.e. human capital investment needs, power system investment implications, practical monitoring and reporting protocols) come to light. Through the pilot ETM transaction, the following work is already underway that references ACT governance, social, economic, technological, and environmental goals and impacts such as equity and inclusion, just transitions, sustainable development, and ecological integrity:

- Framework agreement between ADB and PLN (supported by the Ministry of Finance (MOF) and Ministry of Energy and Mineral Resources (MEMR), and Ministry of State Owned Enterprise (MSOE)) and other related parties to underscore the collaboration on technical and economic analysis in relation to early retirement targets and power system reliability and affordability.
- Memorandum of Understanding with MEMR for a bilateral agreement to support pilot early retirement transactions financed with ADB and maintain a productive policy dialogue to maintain a conducive policy and regulatory environment for CFPP decommissioning and repurposing.
- Ongoing stakeholder consultations to discuss high-level analysis for just and affordable energy transition environmental and social implications as part of the ADB Energy Transition Mechanism (ETM) Strategic Environment and Social Assessment ([SESA](#)).
- Asset level environmental and social compliance audit and action plan (inclusive of gender targets) being finalized for disclosure and consultation.
- Preliminary just transition assessment being finalized for disclosure and consultation.
- Participation in I-JETP just transition working group and pursuing direct government engagement with 14+ government agencies and National Energy Transition Task Force to establish programming goals in relation to asset-level early retirement/repurposing impacts and needs.
- Terms of reference for preparatory Women-Led Coal Transition Mechanism (WOLCOT) works is being finalized and works expected to commence early 2024.

Asset-specific analyses, discussions and engagements will only broaden after the Cirebon 1 pilot transaction is underway. Overall, through the financing of 2-3 pilots, the goal of the Component 1.2 Program is (i) to support the creation of a new transition asset class; (ii) to pioneer implementation of just transition and environmental and social safeguard principles in early retirement assets; and (iii) to provide a tangible example of what coal phase out entails in developing Asia, reducing uncertainty in the prospects for future scale-up of early retirement in years to come.

16. Demonstration potential at scale. Given the broader policy preparation that needs to be done to prepare public sector assets for actions such as early retirement and repurposing (i.e. issuance of Implementing Regulation on the Indonesia (public asset) Early Retirement Roadmap, related legal and audit opinions and clearances) the Program presents some of the first CFPP assets for early retirement for GOI consideration. Once all the requisite analysis is in place for technical, financial, legal, just transition and E&S, the Program provides a strong guideline for how Indonesian CFPPs can be early retired and decommissioned/repurposed, whether they are public or private. It will also further inform the GOI and financiers about key considerations in broader energy transition planning as other coal phase down strategies enter more detailed planning discussions (as highlighted in the I-JETP CIPP). Beyond Indonesia however, the Program also includes one of the first projects

under ADB’s ETM. ADB is advancing a strong pipeline of projects across the Asia Pacific region, even beyond the initial ETM partner countries of Indonesia, Vietnam and the Philippines. Lessons learned within the standard-setting exercise of the Program in Indonesia will translate across the region and provide tangible baseline for CFPP transition asset class development.

17. **Additional costs and premiums.** While this section often relates to the risk premiums faced by first movers in normal Clean Technology Fund investments, under ACT, the additional cost pertains to an active market failure correction (see Section m: Mitigation of market distortions) required to inform policy development. As noted in Paragraph 60 of the CIF ACT IP, transactions are being structured to provide “concessional financial support to key stakeholders while fostering opportunities for crowding-in financing from both the public and private sectors to address a unique stalemate situation whereby:

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

As such, without financial support from the likes of CIF-ACT, 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.

18. **Financial sustainability.** Overall, by shortening the PPA tenor, thereby reducing future coal-based power supply and PLN’s payment obligations, ADB expects the Program to reduce coal’s incumbency advantage and lower the barriers for renewables to scale up commercially, therefore contributing to the commercial sustainability of Indonesia’s energy transition. More specifically, the Program investments at the project level will involve refinancing and releveraging assets that have demonstrated strong operational track records. CIF ACT funds will benefit from alignment of incentives with ADB and commercial/bilateral cofinanciers that will have to extend debt financing to the assets between financial close and the date of early retirement of coal-fired operations (in some cases implying exposure to 10+ year of CFPP operations). Given existing commercial credit requirements within ADB and across cofinanciers, the assets will have to demonstrate creditworthiness commensurate to the debt exposure across all technical, contractual and compliance matters.

19. **Effective utilization of concessional finance (financial analysis).** As noted in Paragraph 10 of the Proposal, the concessionality of the CIF ACT funds is structured to directly contribute to shortening of the PPA contractual period for the CFPP IPP. The logic is such that with cheaper debt and upfront compensation for tail-end returns, IPP developers can operate their CFPP investments for a shorter period of time in a commercially-sustainable manner. If proven, the return-neutral model would provide encouragement for voluntary CFPP early retirements by IPPs.

20. **[REDACTED]** Key takeaways from project level analysis are as follows:

- The impact of concessional financing at reducing the PPA period degrades exponentially the more the PPA is shortened. This arises because the ETM debt needs to compensate for each additional lost year of free cash flow to equity upfront, but each additional lost equity cashflow is being discounted less and less the closer the PPA shortening moves to present day.
- Naturally, the impacts of grant funding remain larger than those of concessional loan as the borrower does not repay principal or interest on the grant. However, scalability of a grant-heavy financial structure restricts excess application of grant funds, even for pilot transactions.

21. **Mitigation of market distortions.** The Program seeks to address a market failure where the lack of accounting for carbon costs has given rise to a carbon-intensive, oversupplied Indonesian power sector with an average CFPP age of ~12 years. To break the lock-in of emissions for decades to come, the Program establishes a framework by which to structure the removal of carbon assets in a reliable and accelerated manner and allow the increasingly commercially sustainable renewable energy market to develop and meet growing power demand. By demonstrating the emission reductions for such transactions, it is possible that future transactions could be supported through carbon markets rather than concessional funds. Since these markets do not yet exist, there is no market distortion.

22. **Risks.** CIF ACT funds mostly face similar commercial and repayment risks to ADB and commercial cofinanciers. Overall, the transactions will only advance if the operational track records of the projects (i.e. PPA bankability, plant availability, O&M, and supply risk mitigation) prove reliable during ADB PSOD due diligence. The more unusual risks of the Program have to do with: (i) risk of project non-decommissioning; (ii) implementation of safeguards and just transition post loan repayment; and (iii) the public-private nature of the transaction structuring.

(i) Ensuring no continued coal-fired operations beyond shortened PPA termination date. Upon full loan repayment and expiry of the shortened PPA life, the Sponsors or PLN (in case PPA termination scenarios) could potentially continue to operate the power plant, which could weaken the decarbonization story of the proposed loan. *Mitigants:* Robust project-level legal provisions will be required vis-à-vis the borrower, the sponsors, PLN, and GOI as relevant to ensure that asset level decommissioning or repurposing plans and Just Transition commitments are agreed and implemented beyond full loan repayment. This would be supported by project financing incentives and tools (i.e. cash traps, step-in rights) as well as separate sponsor agreements to undertake and commit to the same objectives. This would be complimented by further commitments from PLN to ensure ADB ETM assets would never be subject to PPA extensions or refired for national strategic purposes.

(ii) Untested safeguards and just transition implementation for early coal retirement. This will be a new exposure to coal operations and the Program will be setting the standards on the management of safeguards for ETM coal operations as well as on just transition processing and implementation for transition assets. *Mitigants:* Lack of precedent is leading to more active engagement with the NGOs/CSOs, workforce, local communities, and local governments on all fronts. Independent and qualified E&S consultants are undertaking an audit of existing facilities to assess whether operations are in accordance with applicable national laws and regulations. The audit can feed into action plans and inform stakeholder consultations. The Program benefits from initial information from various stakeholders conducted as part of ADB ETM SESA workshops as well as I-JETP CIPP Just Transition working group stakeholder engagement discussions. Feedback has been incorporated into the pilot transaction stakeholder engagement planning.

(iii) Coal transition projects involving high level of public-private engagement: ADB-PSOD early scoping and conversations with IPPs suggests there is enough interest to apply our ongoing lessons learned in the Cirebon 1 pilot transaction and begin work in H1 2025 on subsequent sub-projects under this Program. However, the early discussions depend on the GOI endorsement of early retirement through the Cirebon 1 pilot transaction. Government endorsement of how the transactions fit within the broader energy sector roadmap is critical to ensure system stability and financial sustainability. ADB-PSOD expects interest and activity in the workstream to increase over the Program implementation period as the Indonesia's energy transition strategy discussions mature.

23. **Stakeholder engagement.** Stakeholder consultation will be a critical component for the production and implementation of the following documents for each underlying project in the Program: (i) Environmental and Social Audit and Action Plan; and (ii) Preliminary Just Transition Assessment. As per ADB Safeguards procedure, stakeholder mapping is underway (identifying communities, workers, NGOs/CSOs, local and national government and marginalized and vulnerable groups to be represented). Stakeholder consultation is being scheduled to ensure input of beneficiaries, impacted parties and other stakeholders, including marginalized and vulnerable groups, is incorporated into drafts of safeguard documents to be disclosed and discussed with the

project developers. Similar procedures are being put in place for the preliminary just transition assessment. The critical difference between the upcoming process and standard procedure is that the just transition plans will lay out the timing, scope and participation related to stakeholder consultation between financial close and the 10+ years leading up to the decommissioning/repurposing of the CFPP assets. This is broadly in line with the Just Transition Framework and process established in the I-JETP CIPP. In fact, the stakeholder consultations planned for the first half of 2024 will provide critical feedback as to how ADB and the project developers can best secure tangible inputs from all stakeholders to ensure opportunity for just transition is maximized in the years leading up to CFPP decommissioning/repurposing. Separately, ADB is engaging with 14+ GOI agencies to outline opportunity and accountability for the implementation of broader just transition programming at the national level to address needs that may emerge beyond individual asset interventions. GOI focals and implementing agencies will be identified as part of completing the more programmatic ADB just transition engagement in parallel to the Program development, consistent with the related recommendation in the Just Transition Framework identified in the I-JETP CIPP.

24. **Potential Project Pipeline.**

REDACTED

25. **Excerpt from ADB - Preparatory qualitative study to inform the formulation of the WOLCOT Proposal for Indonesia.** “Considering the high share of GDP from coal sector and the discrepancy between coal and other sectors’ development, coal transition will likely have considerable impact on economy, social, and political environment.

- *Women are more likely to bear the disproportionate impacts of coal to clean energy transition.* Based on the study on previous practices of coal transition in other countries, coal-phase out processes do not affect men and women equally, with women bearing more adverse impacts.¹³ Processes for coal transition are often concentrated on formal worker streams,¹⁴ which consequently means concentrating mostly on male employees. Coal miners and their communities would immediately suffer negative economic, social, and cultural effects due to transitions, including job losses, the upheaval of gender roles and relationships, and status loss.¹⁵ Men represent the majority of formal coal workers, whereas women’s roles in the coal-based economy are largely informal, invisible, and unpaid,¹⁶ such as coal miners’ spouses, providers of auxiliary services along the supply chains, workers in the informal, artisanal, and small-scale mining sector. Reduced household incomes have driven women to take up more paid jobs, in order to compensate for the loss of income.¹⁷ When men lose their jobs in the coal sector, they shift to manufacturing and service industries, forcing women to shift to agriculture or other lower incomes livelihoods with limited social security.¹⁸ Changes in household dynamics due to unemployment could also increase the risks of domestic violence.
- *Women’s participation in the energy sector in Indonesia is low.* National female labor force participation rate is only 53.31% compared to 82.41% of men in Indonesia.¹⁹ Only 0.09% of all female employees work in electricity and gas procurement, compared to 0.4% of men²⁰ wherein female employees are concentrated in non-management and non-leadership position where access to the decision-making processes is limited. Lack of women’s participation and representation in the workforce and decision-making positions in the energy sector is also seen both in its ministry and state-owned electricity companies.

¹³ P. Walk, *et al.* 2021. Strengthening Gender Justice in a Just Transition: A Research Agenda Based on a Systemic Map of Gender in Coal Transitions.

¹⁴ G. Piggot. 2019. Realizing a just and equitable transition away from fossil fuels.

¹⁵ World Bank. 2022. Just Transition for All: A Feminist Approach for the Coal Sector.

¹⁶ *Ibid.*

¹⁷ C. Beatty. 2016. Two Become One: The Integration of Male and Female Labour Markets in the English and Welsh Coalfields.

¹⁸ *Ibid.*

¹⁹ Government of Indonesia, Ministry of Women Empowerment and Child Protection. Profil Perempuan Indonesia 2021.

²⁰ *Ibid.*

- *Women and Girls are Underrepresented in Science, Technology, Engineering, and Mathematics (STEM)*. In Indonesia, high female education in technical subjects does not appear to translate into equal female representation in associated professions. For instance, women make up 88% of pharmacy students in Indonesia, and the percentages in biology, medicine, chemistry, mathematics, and physics are 80.7%, 73%, 66.8%, 57.5%, and 38.9%, respectively.²¹ Yet, when women enter the labor force, only 2 in 10 stay as STEM professionals, and only 3 in 10 become STEM researchers.²² According to 2021 Indonesia Statistics Body data, the proportion of women in high-skilled STEM occupations (professionals, technicians, leadership, and others) is only 15.13%, compared to 84.87% of men.²³ Indonesia currently has a high demand for technical talent, but only produces 0.8 STEM graduates per 1,000 people, far less than the proportions of China (3.4) and India (2.0). Furthermore, according to 75% of technology firm leaders, it is challenging to find qualified tech workers locally.²⁴ At the same time, according to a UNESCO survey, 61% of women consider gender stereotypes when looking for work, 50% of women are less interested in STEM careers due to strong male-dominated sentiments, and 45% of women believe STEM jobs are not suitable for women.²⁵ As a result, women are underrepresented in advanced STEM positions that require high skill levels and pay well.”

The above insights are driving WOLCOT related grant preparation work, as well as informing stakeholder consultation design for the Program.

²¹ Katadata. 2018. Partisipasi Perempuan dalam STEM Merosot Saat Masuk Dunia Kerja.

²² Bappenas Presentation in International Women's Day 2022 Webinar at BPSDMI Ministry of Industry

²³ M. Imaduddin. 2020. “Is It Possible to Prevent Radicalism Through Women’s Participation in STEM.” *Jurnal Studi Gender* Vol. 13 No. 1.

²⁴ McKinsey, 2018. *The Digital Archipelago: How Online Commerce is Driving Indonesia’s Economic Development*.

²⁵ UNESCO cited from Bappenas Presentation in International Women's Day 2022 Webinar at BPSDMI Ministry of Industry