T20 Policy Brief

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Task Force 02

SUSTAINABLE CLIMATE ACTION AND INCLUSIVE JUST ENERGY TRANSITIONS

Public Development Bank Support for Early Coal Retirement

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Abstract

To mitigate the worst impacts of the climate crisis, most coal power plants must retire before the end of their lifetime. Firm government commitments are needed to stop future coal investments and phase out existing coal power generation. Public development banks (PDBs), mainly multilateral development banks (MDBs) and bilateral development finance institutions, are key in addressing barriers to coal phase-out. However, they must avoid setting perverse incentives that would keep coal plants online, and ensure transition finance does not undermine climate objectives by locking in business-as-usual pathways.

As their shareholders, G20 governments must ensure PDBs have the mandate and resources to:

- Assist countries in defining Paris-aligned long-term low-emissions development strategies and energy planning;
- Provide technical assistance to governments to build the capacity to plan and implement early retirement;
- Provide financial support (e.g. policy-based lending) and technical assistance to support ambitious energy policy and institutional reforms;
- Provide technical assistance to support the issuance of sovereign bonds that contribute to transforming economies towards low-emissions and climate-resilient systems.

They should also encourage PDBs to engage with power producers as follows:

Utilities

- Not pursue the buyout of utility-owned coal plants but instead support utilities in changing their business model to enable them to attract private capital to finance renewable energy;

- Help utilities address financial barriers like cost recovery and restructuring balance sheets;
- Support utilities with improved integrated resource planning and scenario modelling.

Independent power producers (IPPs)

- Only consider buying out IPPs under limited circumstances (i.e., when there is a government phase-out commitment);
- Facilitate legal review of power purchase agreements (PPAs) and support competitive and transparent market mechanisms to terminate, replace, and restructure PPAs.

Diagnosis of the Issue

Limiting global average temperature rise to 1.5°C requires stopping the construction of new coal power plants, and the early retirement of a large number of existing plants before the end of their technical lifetimes. This presents a major challenge as coal supplied more than one-third of global electricity generation in 2023, with Southeast Asia, China, and India accounting for the largest share of current coal capacity in operation (Global Energy Monitor, 2023). Early retirement of coal assets, coupled with the expansion of renewable energy, is crucial to advance the decarbonisation of the global power sector. Early retirement can facilitate significant emission reductions and holds economic and sustainable development advantages.

Given the diminishing cost of renewables and energy storage and the potential for public health benefits, there is an overwhelming case for swiftly phasing out coal in line with long-term decarbonisation pathways. However, several barriers to the phase-out of existing plants prevent market forces in favour of renewables and limit sustainable development gains. A growing number of policymakers and PDBs are actively exploring strategies to accelerate the retirement of existing coal plants, extending beyond the exclusion of coal from direct financial support. These strategies include MDB-led initiatives, such as the Accelerating Coal Transition (ACT) investment programme and the Energy Transition Mechanism (ETM). Just Energy Transition Partnerships (JETPs), supported by the International Partners Group, also emerged to provide developing countries with financial and technical resources to support raising decarbonisation ambition in the energy sector, with an initial focus on countries with coal-dependent electricity sectors. These partnerships have been slow to materialise and lack effectiveness to date, as financial resources have not flowed as quickly as needed or at

the promised scale (Curtin et al., 2024). With the support PDBs can provide, from advisory services and technical assistance to different forms of financing, they are uniquely positioned to help address barriers and support countries with the transition to decarbonised electricity systems. However, PDBs must navigate the inadvertent risks of engaging stakeholders in coal phase-out, including indirectly supporting new natural gas capacity. Forms of engagement, such as transition finance and compensation payments, pose unique risks, including moral hazard, inefficient use of public funds, and the creation of perverse incentives, all of which could impede coal phase-out.

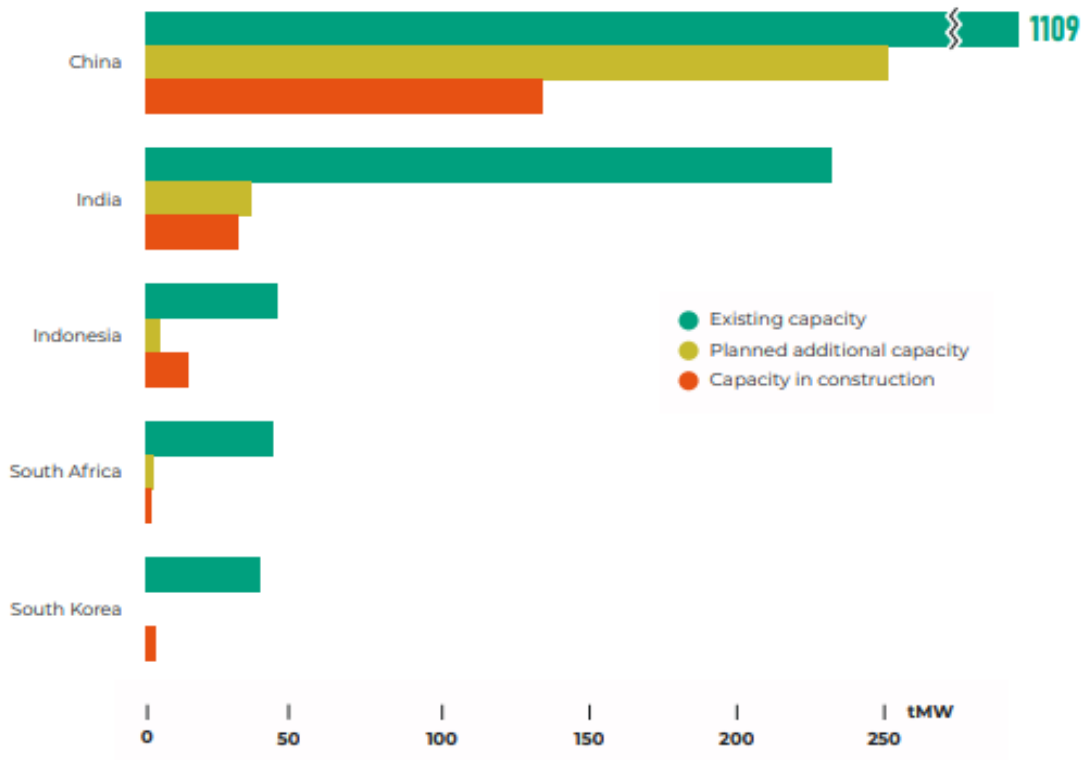
Based on a review of the instruments that PDBs have at their disposal to help address barriers, and an analysis of their associated challenges and risks, this policy brief outlines PDBs' role in the early retirement of coal plants through their engagement with three key power sector stakeholders: national policymakers, utilities, and IPPs. These three stakeholders play distinct roles and face unique challenges. National policymakers hold sovereign authority over a country's fossil fuel phase-out ambitions and power system reforms. However, they may lack the capacity to plan for transition, face finance constraints, and contend with powerful vested interests. Power producers face specific transition barriers. Utilities are vertically integrated, which gives them the ability to reshuffle their portfolio to meet energy needs and market conditions. But, they often face balance sheet constraints that prevent them from investing in renewables. IPPs, on the other hand, are often under long-term PPAs that are difficult to terminate early and owned by consortiums of investors.

This policy brief addresses low-cost financing for energy transitions through an analysis of innovative financial solutions to scaling financing for decommissioning coal plants. It reviews the conditions under which scarce public funds should be used for the

early retirement of coal plants. It is, therefore, highly relevant for the G20 agenda as it fits with the main areas of interest highlighted by the Brazilian G20 Presidency.

Recommendations

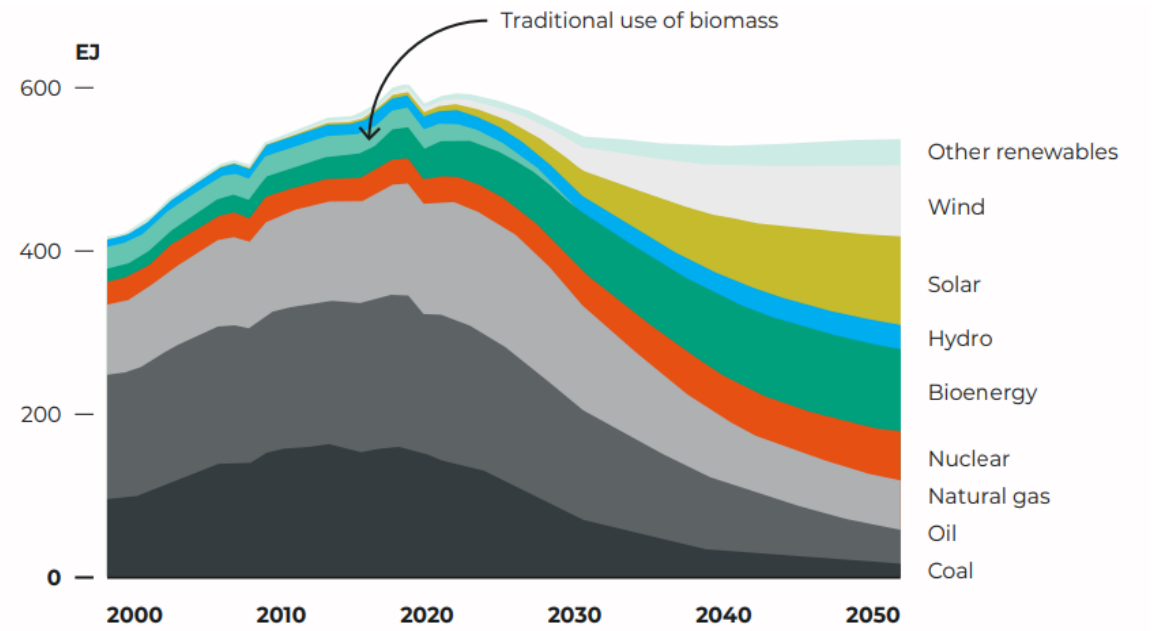
Prior to engaging in coal phase-out efforts, PDBs must seek firm commitments from partner country governments and other stakeholders to stop future fossil fuel investments, reduce current coal pipelines, and phase out existing coal plants. An overview of existing capacities and projects in the pipeline (planned or in construction) for selected G20 countries can be found below:



Based on data from (Global Energy Monitor, 2023)

The IEA highlights a need for "greater policy efforts and investments […] to reduce coal demand in economies where energy needs are growing fast" (IEA, 2023). Such policy efforts require ambitious long-term low emission planning and, crucially, commitment to phase out coal. Commitment is important to avoid emission leakage and moral hazard risks, and to prevent backtracking on coal phase-out in the event of political turnover. Such commitments also send a clear signal to international investors and domestic markets to shift away from coal value chains and provides certainty for renewable energy investments.

All G20 governments should therefore commit to stop future coal and fossil fuel investments, reduce current pipelines, and phase out existing coal plants in line with the IEA's Net-Zero Emissions by 2050 Scenario, as can be seen on the below chart presenting the needed shift in total energy supply in a net-zero scenario.



Adapted from (IEA, 2021)

PDBs are key in addressing barriers to coal phase-out (Kachi et al. 2024). As shareholders of multilateral, regional, and national development banks, G20 governments can use their influence to push for greater engagement in coal phase-out and ensure PDBs have the mandate and resources to:

- **Assist countries in defining Paris-aligned long-term low-emissions development strategies (I4CE, 2022).**

- **Provide technical assistance to build government capacity to plan and implement early retirement by:**
    - Prioritising building capacity to plan and implement the early retirement of coal-fired power plants **within governments' broader coal phase-out efforts**. Depending on local context and identified lack of expertise, capacity building in the energy sector may need to target energy and finance ministries and regulators, state-owned energy companies, civil society, and research and academic institutions (European Commission, 2020).
    - Helping governments **mitigate the financial impacts of the early closure of young coal fleets** by identifying new tax sources (Zhou et al., 2023). It will be important to support finance ministries and regulators in assessing and managing the related systemic climate risks and the overall macroeconomic consequences of early coal retirement.

- **Provide financial and technical support for ambitious energy policy and institutional reforms**:
    - Support for **fossil fuel subsidy reform** is key, as global fossil fuel subsidies reached a record US$7 trillion in 2022 (IMF, 2023). Countries would still have to protect low-income and vulnerable populations from a disproportionate burden of energy costs (Zhou et al., 2023). Technical assistance from PDBs could help countries reform fossil fuel subsidies while maintaining the required energy affordability for their populations.
    - A **carbon price** may serve as a valuable instrument to support coal phase-out, yet it is difficult to introduce in some jurisdictions. In such instances, **policy-based loans, coupled with technical assistance**, would support countries in these efforts. In Indonesia, for example, in a scenario with a relatively moderate carbon price of US$30 per tonne of CO_2 and a rapidly falling cost of renewable energy consistent with global trends, a cost-optimised system has a significantly smaller role for coal until 2040, and a substantially larger role for renewables – notably solar PV (Ordonez et al., 2022). Indonesia introduced an intensity-based emissions trading system in early 2023, but the carbon price remains low, at US$4.5 per tonne in late 2023, and is politically challenging to increase (Rachman, 2023). Coal use in Indonesia benefits from other government subsidies, reaching "2.3 billion US$ of fiscal support for coal-fired power consumption per year (2016-2017 average)" (Suharsono and Gencsu, 2019). Addressing subsidy distortion should form the basis of PDB engagement and reform efforts at the national policy level.

- **Provide technical assistance to support the issuance of sovereign bonds that contribute to transforming economies towards low-emissions and climate-resilient systems**:
    - Governments may issue such bonds to raise funds. If linked to achieving ambitious energy and climate-related targets that go beyond announced policies, they could **provide governments with further incentives to engage in coal phase-out**. For example, the Chilean government issued its first sustainability-linked bond in March 2022. Coal accounts for 20-25% of Chile's current energy consumption and the government has set renewable energy targets of 50% by 2028 and 60% by 2032. The bond can help meet these targets and incentivise the early retirement of coal before 2040, the current target.

In addition, G20 governments should encourage PDBs to engage with power producers as follows:

Utilities

- **Not pursue buyouts for utilities at the asset level but instead support utilities in changing their business model to enable them to attract private capital to finance renewable energy**.
- **Help address financial barriers like cost recovery and restructuring balance sheets.** Different financial instruments can support utility refinancing. However, restructuring debt must avoid indirect support to new natural gas capacity, moral hazard, and perverse incentives.

- **Support utilities with improved integrated resource planning and scenario modelling to inform decision-making**.
    - PDB shareholders in G20 countries can encourage PDBs to support utilities through technical assistance and leverage financing to advocate for ambitious planning. Integrated resource planning may be easier in countries where electricity demand plateaued, but it remains valuable for vertically integrated utilities globally.

IPPs

- **Only consider buying out IPPs under limited circumstances such as when there is a government phase-out commitment, to avoid emission leakage**.
    - In absence of government commitment, PDBs should instead engage with policymakers to increase ambition and focus on no-regret investments (e.g. renewables).
- **Facilitate legal review of PPAs and support competitive and transparent market mechanisms to terminate, replace, and restructure PPAs**.
    - In engaging with IPP owners, G20 governments should push for transparent mechanisms that facilitate price discovery to avoid inefficient use of limited public funds.

Scenario of Outcomes

If the suggested recommendations are embraced by decision-makers, the following potential outcomes calling for trade-offs would need to be considered:

Scenario 1 – Engagement on the early retirement of coal plants approached in a silo without consideration for the long-term decarbonisation of the energy sector

It is important to consider the early retirement of coal-fired power plants within the context of the decarbonisation of the energy system and countries' broader coal phase-out efforts. System-wide decarbonisation requires the phase-out of fossil fuels, in parallel with the continuous development of renewable energy sources and storage.

The pace and scale of retiring coal plants early will vary across countries for a variety of reasons, including the age of the fleet, structure of the grid, growth and shape of electricity demand, readiness to deploy both intermittent and dispatchable renewable energy sources, and the broader policy and investment climate. Early retirement should be planned within the context of comprehensive national long-term decarbonisation pathways to facilitate a smooth transition away from coal and safeguard against risks of locking in new fossil fuel electricity generation capacity or exacerbating energy security concerns.

In countries where projected electricity demand growth can be met in the near term through scaling up renewable energy sources, improved grid connections and management, and energy storage solutions, early retirement of coal-fired power plants should help drive investment in more renewable energy capacity. However, in countries that are still planning to build new fossil fuel power plants, for example, due to significant electricity demand growth and constraints for deploying new renewable energy capacity,

early retirement of coal power plants must be carefully managed to ensure that it does not lead to new fossil fuel electricity generation capacity.

Substituting coal power plants with new fossil fuel capacity presents medium- to long-term carbon lock-in risks and increases the likelihood of stranded assets. While new fossil fuel capacity can, in some circumstances, lead in the short term to emission reductions, the construction of fossil fuel-powered plants today can be counterproductive to the long-term decarbonisation of the energy system. The early retirement of coal plants is a clear example of the need for countries to prepare and implement long-term strategies, as recommended by the Paris Agreement. Climate policy needs to shift its focus away from short-term emission reductions to consistency with long-term decarbonisation pathways.

Scenario 2 – the push for coal phase-out leads to the adoption of short-term emission reduction solutions, such as co-firing, complete conversion, or carbon capture and storage, to maintain coal-fired power plants on the grid while phasing down the use of coal.

Proposed abatement technologies like co-firing, complete conversion, and carbon capture and storage, present several risks including lock-in risks, limited emission reduction potential, efficiency concerns, air quality concerns, and negative impacts of agriculture, forestry, and food security.

Investments today in retrofitting existing plants to co-fire or in building new co-firing or “conversion-ready” plants risk locking in carbon-intensive infrastructure and diverting finance from cheaper wind- and solar-based alternatives. Investments also extend continued economic reliance on coal supply chains in coal-producing regions, which presents a major challenge for a just transition. Co-firing with fossil gas, biomass, or synthetic fuels continues the pollution of fine particles from coal lifecycle emissions

alongside the emission of other pollutants from the burning of the synthetic fuels or biomass, which can negatively impact air quality and human health. If co-firing is considered, transition finance frameworks should provide more clarity on timelines, flanking measures, and feasibility assessments, including assessing if there are better alternatives, both financially and environmentally (OECD, 2023).

Carbon capture and storage (CCS) faces several technical and economic obstacles and is not currently commercially viable and available at a scale that would meet the demand indicated in national planning. Most carbon capture and storage deployed today is, in reality, carbon capture, utilisation, and storage, which offers incomplete emission reduction. Coal-fired power generation, with and without CCS, is progressively uncompetitive against renewable alternatives.

G20 countries have the opportunity to demonstrate leadership in the energy transition. As shareholders of PDBs, they can advocate for a focus on the financing of coal and fossil fuel phase-out to ensure a timely energy transition and avoid the worst impacts of climate change.

References

Bendahou, Sarah, Alice Pauthier, and Ian Cochran. "Long-term strategy use for Paris-aligned investments." I4CE. 2022. https://www.i4ce.org/wp-content/uploads/I4CE-rapport_finance_V8.pdf

Black, Simon, Antung Liu, Ian Parry, and Nate Vernon. "IMF Fossil Fuel Subsidies Data: 2023 Update." Working paper, IMF. Washington, DC. 2023. https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281

Curtin, Joseph, Claire Healy, and Mandy Rambharos. "Scaling the JETP model". The Rockefeller Foundation. 2024. https://www.rockefellerfoundation.org/wp-content/uploads/2024/02/Scaling-the-JETP-Model-Prospects-and-Pathways-for-Action.pdf

European Commission. "Scaling-up Energy Investments in Africa for Inclusive and Sustainable Growth: Report of the Africa–Europe High–Level Platform for Sustainable Energy Investments in Africa". 2020. https://international-partnerships.ec.europa.eu/system/files/2020-05/report-africa-europe-high-level-platform-sei_en.pdf

"Global Coal Plant Tracker", Global Energy Monitor, July 2023. https://globalenergymonitor.org/projects/global-coal-plant-tracker/

IEA. *Net Zero by 2050*. IEA. Paris. 2021. https://www.iea.org/reports/net-zero-by-2050 Licence: CC BY 4.0

IEA. *Coal Market Update – July 2023*. IEA. Paris. 2023. https://www.iea.org/reports/coal-market-update-july-2023 Licence: CC BY 4.0

Kachi, Aki, Sarah Bendahou, and Imogen Outlaw. "Financing coal phase-out: Public development banks' role in the early retirement of coal plants." NewClimate and I4CE.

2024. https://newclimate.org/resources/publications/financing-coal-phase-out-public-development-banks-role-in-the-early

OECD. *Mechanisms to Prevent Carbon Lock-in in Transition Finance*. Green Finance and Investment, Éditions OCDE, Paris. 2023. https://www.oecd.org/environment/mechanisms-to-prevent-carbon-lock-in-in-transition-finance-d5c49358-en.htm

Ordonez, José Antonio, Marek Fritz, and Johannes Eckstein. "Coal vs. renewables: Least-cost optimization of the Indonesian power sector." *Energy for Sustainable Development* 68 (June 2022), pp. 350–363. https://doi.org/10.1016/j.esd.2022.04.017

Rachman, Joseph. "Slow start for Indonesia's much-hyped carbon market." *Climate Home News*, November 20, 2023. https://www.climatechangenews.com/2023/11/20/slow-start-for-indonesias-much-hyped-carbon-market/

Suharsono, Anissa, and Ipek Gençsü. "Indonesia G20 coal subsidies." ODI. 2019. https://cdn.odi.org/media/documents/12746.pdf

Zhou, Lihuan, Ziyi Ma, Shuang Liu, and Amanda Carter. "4 Priorities for Financing Early Coal Retirement in Developing Countries." WRI. 2023. https://www.wri.org/insights/financing-early-coal-retirement-jetp

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