



CLIMATE AND DEVELOPMENT BRIEF

Scaling Climate Finance to Lower Emissions in the Power Sector

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- In the current context of overlapping crises, climate action remains critical.
- Greenhouse gas (GHG) emissions caused by human activities are causing climate change, which in turn is having tragic impacts on people and development in multiple ways.
- The energy sector accounts for nearly three-quarters of global GHG emissions.ⁱ As developing countries strive to provide reliable and affordable access to electricity for all of their citizens, they need to find low-carbon growth paths.
- Adequate policy actions, capable institutions, impactful projects and a significant increase in funding from all sources – public and private sectors and international development partners – at affordable terms are needed for a successful power system transition in developing countries.

The Challenge

Developing countries are striving to meet the growing demand for affordable and reliable access to electricity in the midst of overlapping crises. 733 million people globally were without access to electricity and 2.4 billion people were still lacking access to clean cooking as of 2020. 77 percent of people without electricity lived in Sub-Saharan Africa and 80 percent lived in rural areas.ⁱⁱ As demonstrated in World Bank Group's new core diagnostic tool Country Climate and Development Reports (CCDR), technological advances such as grid and off-grid renewables offer a massive opportunity to substantially increase access to electricity and could bring affordable and reliable electricity to two-thirds of the population currently without access in the Sahel.ⁱⁱⁱ Robust policies, public financial support, and innovation by public and private actors are critical to boosting growth in electrification and expanding access to the most vulnerable people quickly enough to meet the 2030 sustainable development goals (SDG 7) in a financially and environmentally sustainable manner.^{iv} In addition, increased competition with the participation of the private sector is critical to driving down the price of renewable energy, which is key to enhanced access and affordability.

Coal continues to play an important role in a number of developing countries, which collectively represent over 75 percent of global installed coal generation capacity. Coal is also responsible for 33 percent of global CO₂ emissions.^v Moreover, the age of the existing coal fleets in these countries is often relatively young, with most of the capital invested yet to be recovered. In addition, around 160 gigawatts (GW) of coal-fired power plants are expected to be built by 2030 in developing countries under currently announced energy roadmaps.^{vi} Unless a drastic shift to more sustainable sources of energy occurs in advanced and emerging economies, the world will not be on track to reach the goals of the Paris Agreement.

The lower economic costs of key clean energy technologies offer significant investment and growth opportunities, but many developing countries do not have supportive policy and regulatory environments to attract affordable capital to fund a rapid power sector transition. Renewable energy can help reduce the overall economic costs of energy as compared to fossil fuel technologies with its lower operating cost. In addition, it enables countries to reduce their dependency on fossil

fuels in a context of high prices and market volatility. However, some countries cannot afford to finance renewable energy, energy efficiency, and flexible grids at the high costs of capital they face - even though projects are more economical in the long run. Low-income countries in particular are unlikely to be able to afford (in terms of the fiscal space and consumers' ability to pay higher costs) the energy transition without a comprehensive reform and risk mitigation agenda to overcome the policy, macro and business environment barriers they have. These include subsidies that tilt the playing field against sustainable investments, lengthy procedures for licensing and land acquisition, restrictions on foreign direct investment, currency risks, and weaknesses in local banking and capital markets. In addition, the financial performance of state-owned utilities can be a major constraint, reflecting challenges in cost recovery policies and clearing of customers' bills in arrears. This is especially true when the incumbent utility is insolvent, as their financial performance can act as a huge overhang on the entire sector. These utilities often operate national grids, act as the buyer of renewable electricity and sponsor of the required investments to upgrade transmission and distribution networks. In order to significantly increase private participation in energy generation, it is critical to ensure that transmission and distribution are improved to provide adequate connectivity.

Retiring and repurposing coal power plants and closing coal mines offer an opportunity to reduce emissions but come with costs that need to be addressed. The costs of decommissioning the facilities, managing the social and environmental impacts, and building new clean energy assets to replace the previous generation sources must be considered. A just transition requires deep analysis of the coal ecosystem and long-term planning to manage and mitigate the environmental and community impacts. This should include planning for necessary social expenditure (such as direct compensation and reskilling for job losses), compensation for loss in net asset value to owners due to early retirement, compensation for breakage of long-term supply agreements, investments in affected communities and regions, addressing environmental legacy issues, and the repurposing of land and infrastructure assets for new investments by the public and private sectors. Governments have an important role, both in funding the transfers required to make the transition socially acceptable by protecting the poor and the vulnerable, and in creating the enabling environment for strong private sector participation to invest in repurposed land and infrastructure assets. Our estimates suggest that phasing down coal in developing countries would require (i) between \$3 billion and \$35 billion per year as compensation for coal power plants owners, (ii) about \$60 billion per year to cover the social costs from closing coal power plants and mines, and (iii) about \$100 billion per year in grant equivalent financial support to increase the implementation of clean energy projects to replace existing coal power plants.^{vii}

There is a significant gap in funding for the power transition in developing countries, at a time when these countries face broad economic and fiscal challenges. Climate finance flows covering all sectors to low- and middle-income countries need to quadruple from less than \$425 billion annually to \$1.7 trillion by 2030.^{viii} At the same time, most developing countries are facing an acute increase in energy prices, food insecurity, slowing growth, rising interest rates globally, rising inflation, high levels of public and private debt, and growing fiscal constraints. These overlapping challenges mean developing countries face trade-offs between short- and long-term investment needs and are struggling to mobilize public and private resources to finance them.^{ix} Given the competing priorities for public funds, private capital and investors will play an important role in the energy transition. Reforms to enable the private sector and the creation of impactful projects are more critical than ever before.

What Is Needed?

Adequate macro, fiscal, and energy policies, capable institutions and enabling regulatory environments are key to enhancing countries' access to capital and lowering the costs for countries to accelerate the power sector transition. These efforts also maximize the impact of limited public resources through increased participation of the private sector. Governments in developing countries can consider:

- (i) putting in place policy and regulatory reforms to open markets for clean energy, such as: public-private partnerships for power generation, unbundling the transmission and distribution networks, and tariff reforms to enhance energy efficiency and enable private finance;
- (ii) provide upfront funds for appropriate program and sector planning as well as preparation of impactful projects;
- (iii) using tenders for procurement of clean energy projects to lower the end cost to consumers where feasible (for example, auctions instead of feed-in-tariffs);
- (iv) repurposing a substantial portion of the \$300 billion fossil fuel subsidies spent annually in developing countries;
- (v) introducing carbon pricing mechanisms (e.g., carbon taxes) to support low-carbon power development while mitigating distributional impacts of reforms;
- (vi) expanding the capacity of electricity grids to integrate larger volumes of renewable electricity and storage;
- (vii) devising a funding and financing strategy for public and private sector investments needed in collaboration with partners; and
- (viii) using instruments, such as results-based climate finance (RBCF), grants, carbon markets, guarantees, green finance and sustainability-linked bonds and loans.

Financial and real sector firms can expand their presence in developing countries in a manner consistent with their fiduciary responsibilities, while making use of political and credit risk insurance products and de-risking tools. Under the right policy and regulatory environments, proven renewable technologies in more mature markets could be financed by private capital (domestic and international) at commercial rates, although long tenor debt may be needed to enhance the affordability of the power generated. In less mature markets, co-financing by domestic and international investors with a multilateral development bank (MDB) or the use of liquidity, termination, or other guarantees could help mitigate the political, policy, and regulatory risks of clean energy investments, lowering the financing and capital costs. Real sector firms can contribute to the transition by innovating to green their supply chains, logistics, and equipment and improve their energy efficiency. Financial firms, including institutional investors, can increase their allocations to sustainable finance instruments such as green or sustainability-linked loans and bonds. Private actors could support the transition by buying emission reduction credits (ERCs) in carbon markets to provide additional sources of revenue for large scale clean energy projects. Carbon markets with transparent price signals can improve the commercial viability and affordability of renewable energy and energy efficiency projects and enable coal decommissioning. Methodologies to properly calculate the emissions reductions are key to ensure high integrity credits in the market.

The international community should increase its funding available for climate finance, including in the form of grants, concessional funds, de-risking instruments and RBCF. Development finance will play an important role but is not sufficient. Only a significant increase in international public and philanthropic climate finance will (i) make it viable for countries to undertake the costly decarbonization of the power sector decades sooner than planned, including by funding portions of social and financial costs related to early coal power retirement; (ii) provide upfront funds for appropriate program and sector planning as well preparation of impactful projects; and (iii) provide blended finance and credit enhancement solutions that crowd in private capital (together with appropriate domestic policies) at attractive terms to ensure affordability. RBCF and sustainability-linked financing products can play a key role to incentivize public and private actors to achieve SDG-linked targets related to emissions reductions and energy access.

How is the World Bank Group Contributing to Solutions?

The World Bank Group (WBG) is the leading provider of climate finance for developing countries, delivering \$31.7 billion in fiscal year 2022 and representing over half of all MDB climate finance in these countries. It has led the way to mobilize international public and private finance to integrate climate and development and continues to identify ways to go further to support the power sector transition, as committed to in the WBG's Climate Change Action Plan 2021-2025. The WBG supports developing countries to make this transition through the following:

Analytics, technical assistance and development policy interventions: The WBG will use its new core diagnostic, Country Climate and Development Reports (CCDRs), and other relevant analytics to inform the implementation of country-led, resilient, and low-carbon development pathways. WBG provides financing and technical assistance to support (i) sector planning and electricity pricing reforms; (ii) the strengthening of public institutions that are key to the transition, including state-owned utilities; (iii) policy advice and financing for subsidy reforms as well as other reforms needed for a just transition from coal; (iv) the development of effective carbon pricing instruments, as well as domestic and international carbon markets; and (v) strengthening domestic institutional capital (using initiatives such as J-Cap) and initiatives to green the financial sector (including through taxonomy and regulations for green finance) to improve transparency and boost demand for long term climate finance assets.

Financing instruments, private capital mobilization, and carbon markets: The WBG is combining its own financing instruments and RBCF together with private co-financing and carbon markets to support investments in clean power generation, network reliability and upgrades, and in funding the retirement of coal power fleets while easing the related social impacts. In addition to actively using guarantees, the WBG is developing new approaches and models to pool funding from the global community and make it available for the most impactful and scalable projects to reduce GHG emissions and mobilize private capital for the power sector transition:

- Results-based climate finance (RBCF) – SCALE. The WBG is presenting a new fund called Scaling Climate Action by Lowering Emissions (SCALE) to deploy RBCF for the power sector and other sectors. RBCF delivers grant payments for climate results, usually in terms of verified emissions reductions, during project or policy implementation. This provides additional revenues for the activity, can lower the impact on end-consumer tariffs, and support increased ambition in countries' nationally determined contributions (NDCs). RBCF

is delivered during implementation when resources can be scarce and guards against reversal of policies and other actions because it is only paid upon achievement of agreed-upon climate targets. SCALE will support countries to build a track record of generating emission reductions from impactful programs and policies that they can apply towards their national emission reduction targets (per their NDCs) and will also yield excess credits that can be offered in carbon markets with the potential to unlock additional private sector funding. In sum, SCALE will pool public and private resources to (i) channel additional funding to middle and low-income countries' emission reduction programs; (ii) help bridge the gap between the supply of and demand for high-quality emission reduction credits by supporting large-scale climate investments; and (iii) help countries develop high integrity credits and enhance their access to international carbon markets.

- Standardization – Scaling Solar and Wind. The WBG is using standardized approaches to help clients develop replicable public and private sector projects in clean energy. In addition to strengthening policies and institutions, developing transparent competition and a well-prepared pipeline of power transition projects can achieve the scale of investment needed in ways that single asset development cannot. Key tenets of this approach include: (i) standardizing operations and project documents to minimize the need for extensive negotiations; (ii) providing a common set of service providers (e.g., technical and insurance advisors) to achieve bulk discounts and lower fees; (iii) benchmarking engineering, procurement, and construction (EPC) and operations and maintenance (O&M) costs to enhance transparency and reduce costs; and (iv) offering commercial co-financing on a programmatic basis. By standardizing processes and documentation at the country and program levels, these approaches enable competitive tendering, faster delivery, and lower prices. The WBG is implementing this approach through the Scaling Solar and Scaling Wind programs.

- Programmatic engagement – MPAs. The World Bank is developing climate multiphase programmatic approaches (MPAs) as a way to support financing of medium-term programs in the power sector transition at the country level. Under the MPA, the World Bank would engage to finance clients over 7 to 10 years as they implement a program of investments such as in renewable energy and transition away from coal. Under this approach, a client country would benefit from sustained World Bank technical assistance and financing as well as private co-financing over the period. This can be supplemented by RBCF to incentivize the implementation of sector decarbonization programs by rewarding related emissions reductions. This type of engagement could be aligned with work under the Just Energy Transition Partnerships if beneficiary countries wish to do so.

- Enabling the private sector. The WBG is enabling private sector climate investments through policy work, enhancing market transparency and efficiency, project preparation, and innovative approaches. The WBG will also mobilize private co-financing for the power sector transition through co-financing facilities. The World Bank is exploring ways to streamline mobilization of private capital for portfolios of large-scale public sector projects as well as programs using wholesale approaches to raise private co-financing facilities. Results-based payments under SCALE could be used in a complimentary way to provide additional revenues to help borrowers reduce the cost of their commercial borrowing. For example, such facilities could be used in one or multiple countries to finance a medium term program of retiring and repurposing coal power plants while (i) the World Bank and its private co-financiers could finance the public investments required to enable replacement of energy (e.g., grid upgrade); (ii) World Bank and MIGA guarantees as well as IFC

financing could be used to mobilize private capital for the power generation projects; and (iii) results-based payments under SCALE would provide additional revenues to fund the “irrecoverable” costs (such as social costs and potentially financial compensation to the asset owners) and improve the overall affordability of implementing the program.

WBG energy portfolio delivery

- The WBG is committed to ensuring access to affordable, reliable, and modern energy services. Over FY18-22, the World Bank connected or improved the connection to the electricity of about 77 million people, IFC’s power projects have delivered electricity to over 45 million people, and MIGA of about 40.7 million people, including in the most fragile settings.
- The WBG also supports countries in transitioning to more diversified and cleaner sources of energy to meet the growing demand, support economic growth, and create jobs. Over FY18-22:
 - o The World Bank committed over \$5.4 billion to support renewable energy and about \$4.6 billion to support energy efficiency. This resulted in around 7.6 GW of renewable energy generation capacity that was constructed or rehabilitated.
 - o IFC invested \$2.6 billion in renewable energy projects and mobilized \$7.5 billion to finance 7.8 GW of renewable energy projects.
 - o MIGA provided over \$2.7 billion in support of renewable energy generation projects, for a total of 4.5 GW of renewable energy capacity.
- \$1.7 billion in World Bank guarantees allowed the mobilization of \$7.8 billion of private financing for \$13.8 billion worth of clean energy projects over FY14-22.

What Will Success Look Like?

Success will be measured by progress made in meeting the growing demand for affordable, reliable electricity in developing countries while simultaneously reducing emissions from the power sector and ensuring a just transition for all. Development finance, RBCF and grants will play an important role, given the large global public good element and absence of returns of some of the activities that need to be financed (social costs and other compensations) and the long-term nature of clean energy projects. Significant financing will also be needed from other public and private sources under well-structured public-private co-financing arrangements and using de-risking instruments and blended finance where needed. **This calls for a sizeable increase in grant, concessional, and results-based financing as well as de-risking instruments from donors and international development partners to support the path to success.**

ⁱ International Energy Agency (IEA). 2021. “Greenhouse Gas Emissions from Energy Data Explorer”. Paris: IEA

ⁱⁱ IEA. 2021. “Financing Clean Energy Transitions in Emerging and Developing Economies”. Paris: IEA.

ⁱⁱⁱ G5 Sahel Region Country Climate and Development, WBG 2022,

^{iv} ESMAP, World Bank Group (WBG). 2022. “Tracking SDG 7”. Washington, DC: WBG

^v World Economic Forum. 2022. “This is how to accelerate the move from coal to renewables in emerging markets”. Geneva: World Economic Forum.

^{vi} IEA. 2021. “Financing Clean Energy Transitions in Emerging and Developing Economies”.

^{vii} Voegelé, J; Puliti, R. 2022. “How can we scale up the finance needed for climate action?”. Washington, DC: World Bank.

^{viii} World Bank Group. 2022. “Achieving Climate and Development Goals: The Financing Question”. Washington, DC: WBG

^{ix} WBG. 2022. “The Food and Energy Crisis – Weathering the Storm”. Washington, DC: WBG.

