



Energy Transition and Universal Access

The Challenge

The world must transform the way it generates and uses energy to reduce emissions while meeting growing energy demand and providing energy access for the poor. Energy demand in developing countries is rapidly increasing to support economic growth, reduce poverty, and increase shared prosperity. However, the energy used to power people's lives and livelihoods and to fuel global trade and industry produces about three-quarters of global greenhouse gas (GHG) emissions.¹ At the same time, about 760 million people in the poorest countries live without electricity, an estimated 1 billion more suffer from unreliable electricity for their homes and businesses, and 2.6 billion people still lack access to clean cookstoves, with disproportionate impacts on women and girls.² Transformational, not incremental, changes in energy and economic policies as well as public and private energy finance are required to deliver affordable, reliable, clean energy while expanding energy services for the poor.

What is Needed?

A well-managed retirement of coal power plants and a massive scale-up in clean energy are essential to achieving the Sustainable Development Goals and the targets of the Paris Agreement. This global energy transition requires a redesign of the ways in which energy is produced, consumed, and financed. Eliminating one-third of global emissions, which is what comes from today's roughly 2,100 GW of coal power capacity—would require retiring and replacing more than 100 GW of coal capacity each year for the next 20 years, roughly one power plant every day until 2040.³ This capacity will need to be replaced with cleaner and reliable energy. The International Energy Agency (IEA) estimates that solar and wind power capacity would need to grow from 1,400 GW today to 17,000 GW by 2040, with two-thirds of this new capacity in developing countries.⁴ To support the integration of renewable energy and provide reliable supply, electricity networks will need to double in length, and annual deployment of energy storage will need to increase by two orders of magnitude. Natural gas investments may be considered in select cases where there are urgent energy demands and limited renewable alternatives to reliably serve such demand, bearing in mind the risk of stranded assets. The primary role of natural gas in such situations should be to enable the integration of renewable energy. For industry, transportation, and buildings, electrification and a doubling of energy efficiency are top priorities to reduce emissions while meeting the growing need for affordable energy services.

A successful energy transition requires a clear political commitment to close high-emission power plants in the developed and developing world. Political will is needed to halt investments in new coal-fired power plants and to retire, repurpose, and replace coal generation while addressing the potential

for stranded assets. Today, 89 percent of the global capital at risk of being stranded in coal-fired power plants is in the developing world. While the average economic lifetime of a coal plant is 40 years, 60 percent of the global fleet is less than 20 years old, with newer investments concentrated in developing economies, mostly in Asia. Retiring these assets, and replacing them with reliable low-carbon energy, is vital for the climate and to prevent developing countries from lagging in clean energy—and in the electric mobility and efficient industries that depend on it.

Political declarations need to be underpinned by policy frameworks with suitable incentives, including in tax and subsidy structures. Only a third of countries worldwide have developed adequate legal frameworks and policies for renewable energy.⁵ Well-designed power markets and demand-side management, including digitalization, can reduce the costs of electricity. Reforms that remove fossil fuel subsidies and that price carbon appropriately are critical to create a shift away from fossil fuels. Implicit and explicit subsidies encourage fossil fuel overuse and further entrench their role in the economy, magnifying the political obstacles and economic disruptions caused by their removal. Carbon taxes, which have emerged as the most impactful explicit carbon pricing instrument, should be considered together with all options that help to broaden the tax base. Evidence suggests that raising domestic revenue from environmental taxes tends to be less distortionary—and less likely to hamper growth—than labor taxes, especially in cases where the starting point is low, as is the case for many developing countries. The mix of low-carbon technologies will vary across countries, but in every country, policies and markets must be aligned to make the most of energy technologies and national circumstances through proper planning.

All the above requires public, private, and development financing to increase substantially and be channeled towards high-impact projects. Such projects can be complex, take many years to deliver, and require coordination among multiple parties—public, private, communities and civil society. Their different components will require different sources of capital, with different structures, maturities, and different costs of capital reflecting their risk.

In addition to enabling policies to unlock investment, grant and concessional resources will be essential. Grant resources will play an important role in financing upstream work and project preparation to get projects off the ground. And grant and concessional financing may be needed to provide blended tranches that enable, for example, high-impact climate projects that face specific barriers to be implemented (such as decommissioning a coal plant and mitigating the cost of the energy transition for the affected communities), or to provide de-risking instruments to finance, for example, new or proven but expensive technologies for which cost curves are yet to drop, or projects in challenging International Development Association (IDA) markets.

How Is the WBG Contributing to Solutions?

The energy sector is one of the key systems we are prioritizing in the World Bank Group's (WBG) Climate Change Action Plan. Using the WBG suite of technical assistance, policy lending, and investment products, we provide technical and financial support to help countries accelerate the energy transition, improve energy efficiency, and achieve universal access. The WBG is assisting countries with climate and development diagnostics, energy sector planning, and coordinated policies

to meet socioeconomic, environmental, and energy security goals.⁶ Technical and financial support for universal access is anchored in comprehensive national energy access strategies and integrated least-cost electrification plans. The WBG is also supporting long-term strategies (LTSs) to foster country-owned and private sector development pathways that are aligned with development priorities, as well as the mitigation and adaptation goals of the Paris Agreement.⁷

The WBG supports energy efficiency operations, which are among the lowest-cost interventions to expand energy services and reduce investment needs for new energy supply, fiscal outlays for subsidies, and costs to consumers. The WBG supports projects both on the supply side (in power generation and by reducing transmission and distribution losses) and the demand side (industry, municipalities and other public sector users, residential buildings, and agriculture).

The WBG has a track record of catalyzing private investment in the energy transition by creating new markets. The WBG finances public investments in grid integration infrastructure and helps de-risk private investments in clean energy. In the last five years, the World Bank invested US\$6.5 billion in clean energy and related infrastructure. These activities resulted in 34 GW of renewable energy and catalyzed private investments of more than US\$19 billion. Over this period, the International Finance Corporation (IFC) financed 8 GW of renewable energy, representing US\$10 billion of gross financing. The Multilateral Investment Guarantee Agency (MIGA) supported the development of another 4 GW of renewable energy capacity with US\$ 2.8 billion in guarantees.

In Uzbekistan, under the [WBG Scaling Solar program](#), IFC and the World Bank supported the country's first competitively procured private solar project, which will deliver 270 GWh of electricity at US\$0.027/kWh. In Malawi, the Bank and the IFC are working on a hydroelectric power project that will almost double Malawi's installed capacity and support the target of universal electricity access by 2030 from a current level of 11 percent. MIGA's political risk insurance cover is expected to enhance the bankability of the Project.

The WBG provides assistance to strengthen institutions and improve the financial sustainability of the energy sector to create an enabling environment for private capital financing. For example, through the [West Africa Regional Energy Trade Development Policy Financing Program](#), the WBG is providing technical and financial support for reforms to promote private investment in regional, clean, affordable, reliable electricity. The project will remove barriers to electricity trade and lower electricity costs in a region where only 50 percent of the population have access to electricity, and those who do, pay among the highest prices in the world. The WBG will support payments and enforcement mechanisms for energy trade. Similarly, the WBG's [Lighting Global](#) program has built an international solar off-grid market that now supports a US\$1 billion-a-year industry providing energy access to over 150 million people.

The WBG is accelerating the pace of the energy transition and universal access with strategic use of grant and concessional finance.⁸ Targeted concessional climate finance is essential to support project preparation and increase the supply of de-risking instruments and blended finance. Together with the upstream work on policy reforms, energy strategy development and planning, project preparation and risk mitigation support are key to accelerate the energy transition and attract more private sector investment.

For example, the [Global Facility on Mini Grids](#) is enabling private sector investment in mini grids in nine low-access countries. With the support of this facility, the Nigeria Electrification Project amounts to a World Bank investment commitment of US\$150 million for mini grids to provide more than 1.5 million people with access to electricity by 2024, leveraging an additional US\$250 million in private sector and donor co-financing.

Similarly, [Scaling Solar](#) has created new markets for large-scale solar power in eight developing countries, as noted in the Uzbekistan example above, which incorporated US\$20 million from the Canada-IFC Blended Climate Finance Program.

The global [Sustainable Renewables Risk Mitigation Initiative \(SRMI\)](#) facility, financing access and the energy transition, has targeted over US\$1 billion in climate financing, supported primarily by the Green Climate Fund. It is to be blended with US\$4 billion of World Bank financing to help 22 countries develop 11 GW of solar and wind power, finance 2 GWh of battery storage, and enable US\$14 billion in private financing.

As new technologies come to market, the WBG will expand support with concessional financing for breakthroughs such as offshore wind, hydrogen, and carbon capture and storage.

The WBG is ramping up support for a well-managed transition from coal, including coal power plant retirement and repurposing, based on experience with coal mine closures. Since 1995, the WBG has provided more than US\$3 billion to support coal community transitions. The [“Just Transition for All”](#) initiative brings together stakeholders to create plans, policies, and reforms to remediate land and assets and support people post-transition. Building on experience in Poland, Romania, Russia, and Ukraine, the WBG’s activities focus on regional transformation and revitalization to engage communities and local governments, design strategies to reskill workers, and support communities. They are redefining local economies; remediating and repurposing equipment, buildings, and lands to protect the environment; and piloting projects, using public and private capital. The WBG is increasing its support to client countries to inform accelerated coal power plant retirements. In South Africa, the WBG is working with the government and the state-owned electric utility, Eskom, on detailed analytics for the possible retirement and repurposing of four coal-fired power plants.

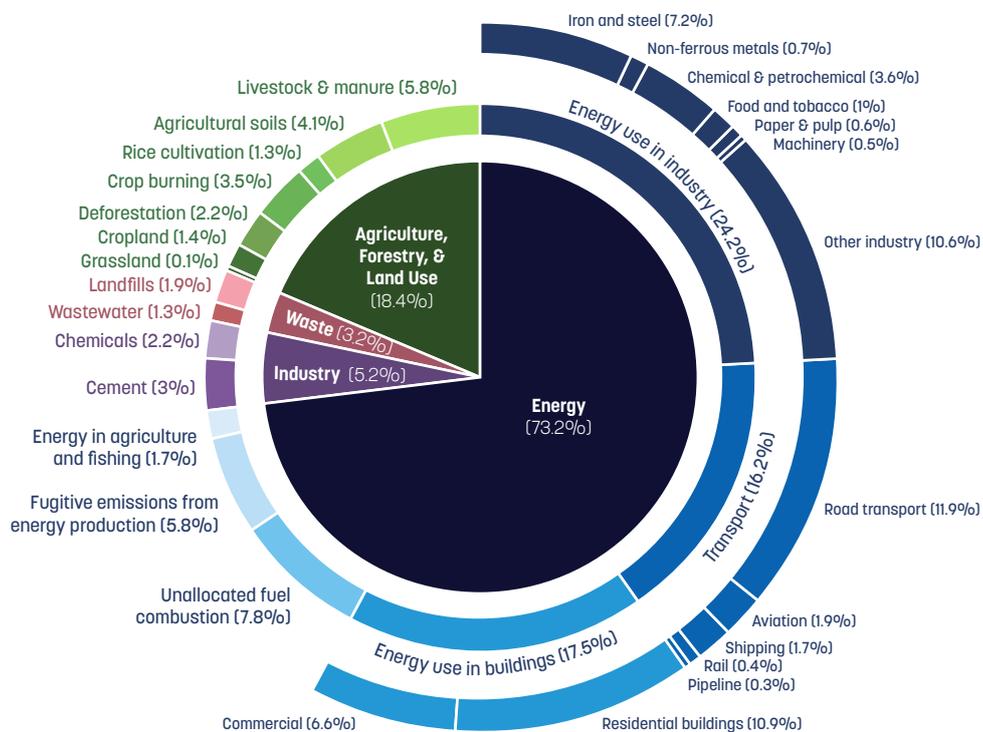
The WBG helps all its clients make their energy systems more resilient to climate change.⁹ Power outages are estimated to cost low- and middle-income countries up to US\$390 billion per year, and the lack of resilience to extreme weather is responsible for 10–80 percent of those costs, depending on the country context.¹⁰ WBG efforts to improve resilience include projects in distributed renewable energy, strengthening grid infrastructure to withstand temperature and weather extremes, and supporting the energy nexuses with health, water, and agriculture. For example, based on a climate risk screening, [the World Bank helped Belize](#) implement high-priority measures to increase the resilience of its power system to coastal storms.

What Will Success Look Like?

With a strong international commitment to the Sustainable Development Goals, universal access to affordable, reliable, sustainable, and modern energy by 2030 is within reach. Affordable, reliable, low-carbon energy is an ambition for all countries as they aspire to see greater shared prosperity. This focus on expanding energy access will proceed alongside policies to avoid lock-in into high-carbon development and to build resilience to climate change.

The success of the energy transition will be measured by its capacity to catalyze change at scale. The WBG will channel targeted concessional climate financing and other tools to advance clean energy national strategies; support fossil fuel subsidies reforms and carbon price signals; strengthen implementing institutions; accelerate a just transition away from coal; and invest in network infrastructure and technologies to ensure a reliable supply with low-carbon electricity generation. If successful, such comprehensive interventions will also attract private sector investments for clean energy at scale. With strong policy frameworks and adequate investment, developed and developing countries will benefit from new jobs, strengthened climate resilience, reduced exposure to volatile fossil fuel prices, and significant emissions reductions by the end of this decade, while laying the groundwork for shared prosperity in a low-carbon future.

FIGURE 1: Global greenhouse gas emissions by sector, 2016



Source: Adapted from Hannah Ritchie, Our World in Data, 2020: <https://ourworldindata.org/emissions-by-sector>. Data sources: Climate Watch, World Resources Institute, 2020.

Endnotes

1. See Climate Watch data: <https://www.climatewatchdata.org/ghg-emissions>.
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