



CLIMATE CHANGE

Energy Transitions and the Future of Thermal Coal

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Coal power generation is in decline globally, not only because of the increasing urgency of climate change, but also because the costs of clean energy are dropping, renewables are becoming more efficient, and fossil fuel markets are beginning to falter. Though some of these trends have started from technological and economic developments, governments must work to ensure that transitions are socially and economically just. Coal mining and other fossil fuel extraction activities are typically geographically concentrated in isolated places. Although fossil fuel industries represent a relatively small share of most economies, the impacts of shifting away from fossil fuels could be disproportionately high for specific workers, citizens, and future generations that depend on fossil fuel extraction for their livelihoods.

International collaboration on a transition to clean energy will expand energy access, help create mindful social protections, avoid stranding assets, and create resilience against sharp macroeconomic shifts. Governments need to plan early and connect policies and agendas across geographic locations and levels of government. The momentum already exists internationally—with important movements in high-emissions countries like Germany and China and the emergence of international bodies to tackle the transition, such as the Powering Past Coal Alliance.

While transitions away from coal do present significant risks that need to be managed, they also present opportunities. Coal extraction and power production are sources of jobs, exports, and energy security but impose significant costs on public health, vital natural resources, access to energy, and technological innovation. Historically, transitions out of coal have often been managed poorly, with unabated consequences for workers, citizens, and private industry due to a lack of need anticipation and care in managing the transition. Although coal-fired power remains a necessary bridge technology for some emerging economies, it is important that anticipation and planning to manage the transition to cleaner alternatives begins today.

Global Structural Decline of Coal

The decline of coal-fired power generation is projected to be steeper and to begin earlier than previously thought. Thermal coal decline began decades ago in the European Union; it has been in decline in the United States since about 2012; and China appears to have recently peaked coal-fired power generation. Outside of these national energy perspectives, the best indicator of a faltering industry comes from examining markets. Investment in the industrial coal supply chain (and fossil fuel energy generation writ large) pales in comparison to renewable energy. Investment

in solar photovoltaics alone is much higher than it is for coal-fired power. This is driven by the economic and environmental impacts.

These market shifts have been driven largely by cost. Renewable energy costs have declined dramatically and are still declining, with the price of new renewables now often on par with operational coal plants and likely to be on par across the global fleet by 2030.

The stream of revenue for coal generation is drying up as the environmental impacts of coal are ever more evident. Coal contaminates water supplies and causes air pollution, which reduce quality of life and life expectancy. It also decimates ecosystems, incurring immeasurable costs to local environmental services. This is all in addition to the unparalleled warming effect coal has on the climate.

The effects of investment trends are manifest and have been felt in many areas reliant on coal-fired power. However, countries and regions reliant on coal mining and export should be equally concerned. Existing mining capacity is in sharp decline as new investment responds to falling demand. As a result of that response, near-term demand in coal-importing countries outstrips current capacity. As an example, Glencore, one of the largest coal producers, has given itself a carbon cap and will be limiting production in response to market conditions. As contractions in coal exports grow, many countries that currently import coal will turn to domestic mining to protect industry and guard against international price fluctuation. This leaves coal exporters exposed not only to downward market trends but also to the national energy policies of trade partners.

Examining coal-fired power generation in China illuminates the reasons for decline and the risks of continued investment in coal power generation and coal mining for export. China has peaked consumption at approximately four billion tons of coal—half of the total consumed globally each year. Chinese coal may have made a slight rebound in 2018, but it owes its relatively static current state to investment by the government in order to stave off massive layoffs and protect state-owned enterprises from immense debt. Economically, there is an oversupply of coal power, particularly as steel, iron, and cement industry growth have curtailed. Coal supply and production must thus be brought to balance with decreased demand.

China is the biggest manufacturer and installer of increasingly less expensive wind and solar solutions, a factor that will leave coal more susceptible to contracting government subsidy and protection. Air pollution has also been a major factor in scaling back coal in China as studies estimate air pollution is responsible for approximately 1.6 million premature deaths in the country each year. Large shifts away from coal and toward renewables by actors like China should signal to other countries that investments in coal generation infrastructure are risky and should be viewed on a shorter time horizon than perhaps previously thought. These trends should also send signals to more coal exporters to prepare for decreased demand, which could potentially skew trade deficits

and macroeconomic balance. Exporters focused only on domestic energy markets and not their exposure to international reality do so at their own peril.

The conversation internationally has shifted from whether coal will need to be phased out to when and how. Many examples demonstrate that tackling the issue early is far more cost effective in the long term—but starting politically difficult conversations to map out smooth transitions with minimal disruption is a major challenge. Ensuring that transitions are carefully planned yet still occur fast enough to avoid climate devastation is another.

Planned transitions should hold the following objectives in equal measure:

- Maintain an energy system that is sustainable, secure, affordable, and consistent with the Paris Agreement temperature target.
- Provide a fair transition for affected workers.
- Protect citizens of coal-dependent, local economies.
- Avoid stranded assets.
- Manage international risks and contingencies.

What Structural Changes Must Be Made

Countries and regions will take different approaches to structural changes, but early preparation will ensure smoother transitions. Several issues have served to put coal transitions on the agenda:

Just transition and labor market adjustments

Countries such as Canada and China have begun funds for retirement and retraining of coal miners and refiners. This is a key first step, but the trickier question is often how to develop new, alternative economic opportunities. Regions in Germany, such as Lausitz, have grappled with this through transition. New renewable energy jobs will not always appear where fossil fuel energy jobs were previously abundant, nor will skills always transfer from one sector to the other. Barring these highly pragmatic issues, cultural identities may be even harder to grapple with. The importance of identifying with coal in one region may differ from another, and so might the value of new livelihoods individuals are open to pursuing.

Increasing energy access

Many countries will be confronting the need to curb emissions while also increasing access to energy. In India, for example, 200 million people do not have access to electricity. While increasing grid capacity during a transition may make it more challenging, what is clear is that countries do not want to be locking in coal-fired power in the long term, risking stranding assets when they are no longer economically viable, or operating plants at significant losses while continuing to incur climate and environmental costs.



Ensuring equality

In addition to ensuring that livelihoods are protected, new energy structures must be equitable. In many areas, bifurcated systems exist, where one serves the wealthy and provides abundant energy and another serves the poor and working-class people, providing inadequate or nonexistent access to energy. As governments look to help direct transitions, they should ensure that costs are not socialized while benefits are privatized.

Stranded asset risk

The difficulty facing South Africa is that the transition has already arrived. Changes in global energy markets coupled with issues of corruption and mismanagement by energy providers have fast-tracked the decline of coal in South Africa. While it is not possible to hold on to coal even in the near term, the transition is complicated and will negatively impact many regions, even if it is managed well nationally. The issue is intertwined with access to energy, jobs, equality, and poverty in the complex socioeconomic South African context, where rates of economic inequality are consistently among the highest in the world. Regions with mining, such as Mpumalanga, require complex transition policies inclusive of options such as relocation, otherwise transferability may be severely limited. South Africa may be pushed down the transition route faster than expected and experience consequences that come with managing a transition in haste; however, delaying further will only exacerbate these problems.

Balance of payments/exports

Like South Africa, Indonesia mines and exports coal while also generating coal power. Indonesia exports approximately 80 percent of the coal it mines, primarily to China, India, Japan, and South Korea. Indonesia has not prioritized renewable energy. It is one of the few places where renewables do not outcompete coal even though a distributed renewable system could work very well to increase energy access. If coal imports from Asia drop significantly and the global coal market falters, Indonesia will experience increased pressure to use more domestic coal for its own energy generation. Indonesia should observe the changing market trends carefully, not only because it exports coal to countries with shifting energy markets but also because its continued investment in coal mining and power generation risk stranding its assets in a market the world will soon leave behind. Though Indonesia may be able to hold on to coal longer than South Africa, it will pay a higher price for its continued investment in the near future and must work to reorient itself toward a clean energy transition.

Measures for Effective Coal Transition

Early planning and preparation

Countries must start planning for how people can transfer their careers and livelihoods from one sector to the other. Examples like the Lausitz region in Germany and the Latrobe Valley in Australia can help pave the way for other communities to begin the transition conversation. Governments must plan for the transition and

prepare resources in advance while empowering those transitioning to make their own decisions. Multilevel governance will be important, as the issue spans from highly local to national. Regional exchanges, such as the European Commission's Coal Regions in Transition Platform, can help bridge these different levels of impact, providing finance and guidance in areas that may fall out of the periphery of local or national governments. The Powering Past Coal Alliance (PPCA) is also developing task forces for helping regions deal with some of these specific transition concerns.

Local or region-specific transition agenda and policy

Many look to Germany for guidance on large-scale transitions away from coal, but it is important to understand other contextual pieces to Germany's puzzle. For instance, the reunification of East and West Germany in the early 1990s forced many regions to begin dealing with the broader social and economic questions that came into play decades before an energy transition. Reunification caused economic and social disruption as the two separate economies came together, causing job losses and stark shifts in cultural identity. Lessons from the German reunification prepared regions like Lausitz for grappling with an energy transition, which rooted its transition strategies in local culture, identity, and agency. The result is a more resilient economy and society better equipped to develop and thrive in changing circumstances.

German Coal Commission Case: In 2016, Germany developed the idea of a commission to sketch the nation's climate action path to 2050. That commission became focused on coal, one of the biggest and most immediate areas for Germany to address and one that would potentially cause much social disruption. The commission was comprised of members of Parliament, federal ministries, German state leaders, academics, union representatives, and leaders in business and civil society. Their work set a coal-fired-power phaseout date of 2038. This method of including a variety of stakeholders secured wide buy-in, though potentially set a less ambitious phaseout date. It is worth following as the government begins formulating policy around the commission's recommendations and serves as an example of a multistakeholder process able to focus important leaders and constituents on planning for the inevitable end of coal.

One lesson to take away from Germany's recent coal-transition experience is that markets do not always work in the same measured manner that policy planners envision. As Germany announced its coal phaseout plans—which are to take place over an extended period—some businesses and industries began canceling arrangements with coal suppliers immediately, disrupting a smooth and gradual transition. Still, it is cheaper to take the earlier, if sudden, transition route instead of subsidizing an industry that will not survive nor provide return on investment.

International Momentum Building for Clean Energy Transition

The increasing global recognition of the need for coal transition and the faltering economic ground coal finance stands on is beginning to penetrate some of the world's largest coal producers and consumers. As countries, regions, and markets are highly interconnected, an international approach to the transition is needed to avoid unintended social and economic disruption.

The story that emerged from the United Nations Climate Change Conference in 2017 (COP23) was the announcement of the PPCA. Headed by the United Kingdom and Canada, this group of countries committed to phasing out coal, building no new coal-power generators, and ending finance for coal projects. The coalition has grown since its creation and has over 80 members—including 30 sovereign countries as well as subnational states and regions such as New York and California in the United States and South Chungcheong Province in South Korea.

The recent announcement by Germany of a firm date for its coal phaseout has added to the story of the clean energy transition, and its approach to tackling a just transition may be informative for many. Beyond Germany's story, countries and actors taking on coal phaseout in different regions and socioeconomic circumstances will provide useful tools for states interested in moving beyond coal. Chile, which has announced plans for phasing out coal, will provide contextually similar examples for those in Latin America, for example.

As momentum builds behind the phaseout story around the world, financial institutions are taking note. Investment in coal projects are under increased scrutiny, and many investors—including multilateral development banks—are moving away from coal altogether. As the markets shift, insuring coal projects has also become a riskier financial prospect. The combination of shifting investments away from coal and increased risks to current coal investments may accelerate the pace at which the coal pipeline contracts.

In addition to the local examples countries can turn to and the resources of groups like the PPCA, just transition guidelines have already been developed for a multilateral approach. The International Labour Organization has developed guidelines, negotiated alongside governments, unions, and businesses. The

guidelines have been incorporated into the Paris Agreement. The World Bank has also developed guidelines.

While the energy transition will create tough socioeconomic challenges, the costs of delayed action and rewards for early movers need to be understood. The conversation on coal phaseout is no longer a matter of “if” but “how soon?” Countries, regions, businesses, and investors who understand this and take early action will benefit, as many already have in moving toward renewables. Countries that delay will only exacerbate the pain and costs of an inevitable transition.

The analysis and recommendations included in this Discussion Takeaways draw upon the major themes of discussion put forward at the “International Roundtable on the Future of Coal: The International Thermal Coal Sector at a Crossroads,” organized by the Stanley Center for Peace and Security, Climate Strategies, IDDRI (Institut du développement durable et des relations internationales), and the Energy Research Centre at University of Cape Town in South Africa on February 26, 2019. The roundtable examined the opportunities, challenges, and policy imperatives at play for the energy sector as countries work to meet the goals of the Paris Agreement.

Participants neither reviewed nor approved this Discussion Takeaways. Therefore, it should not be assumed that every participant subscribes to all of its recommendations, observations, and conclusions. For further information, please contact Mark Conway, Associate Program Officer for Climate Change at the Stanley Center for Peace and Security, mconway@stanleycenter.org.



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