

# COAL'S EMISSIONS SHADOW:

## MEETING CLIMATE GOALS REQUIRES CANCELLING ALL PROPOSED COAL POWER PLANTS AND ACCELERATING THE RETIREMENT OF EXISTING FLEETS

The world is facing a critical moment to increase global ambition to address climate change, using all the resources at our disposal, and including all levels of government and all actors. A key and readily available aspect of this strategy is to rapidly reduce coal power production worldwide, which would bring multiple benefits to human health and the environment. The most immediate and potentially low-cost opportunity is to simply avoid building the large number of coal-fired power plants that have been proposed, but not yet built.

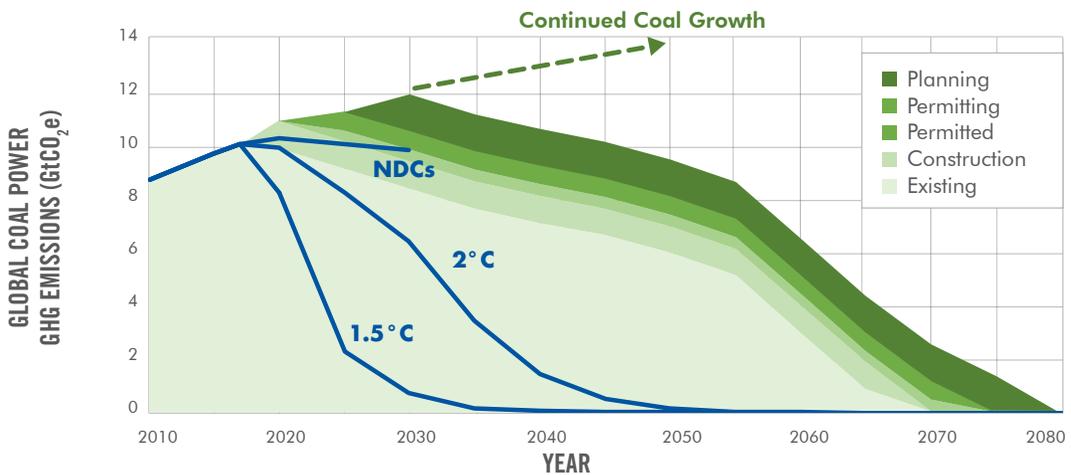
Burning coal for power is one of the largest contributors to climate change, and yet countries around the world are building large numbers of new coal power plants every year, and planning more. Our research leverages and builds new global datasets of individual coal power plants to paint a global and country-specific picture of coal power planning and construction and the rapid phase-out necessary to keep the world on track to the climate goals embedded in the Paris Agreement—particularly, the need to keep warming under 2°C with best efforts to approach 1.5°C.<sup>1</sup>

More than 2,000 coal-fired generation units (2,368 units, 871 GW) have been built in the last ten years and **more than 1,250 units (598 GW) are planned to be built in the next decade—a critical turning point for climate action.**<sup>2</sup> These proposed 1,250 coal units cast a critically dangerous “emissions shadow” of 178 GtCO<sub>2</sub>e of potential new greenhouse gas (GHG) emissions throughout their lifetime. Coal plants historically have a designed lifetime of 50 years, and locking in this high-polluting infrastructure would have serious negative consequences for both the climate and the many people globally who would be breathing in more air pollution and undertaking dangerous mining to feed these units. Canceling all future coal plants can ensure that the world does not cast this emissions shadow over our globally-agreed climate goals.

The math is clear. With the coal plants proposed globally, many countries are not on pace to meet their near-term emission reduction pledges under the Paris Agreement—a first step toward longer-term decarbonization. Canceling coal plants in early development stages (permitting and planning) will get them on track. However, much more is needed to get us on a sustainable path towards 2°C, or even more ambitious 1.5°C. Not only do we need to cancel future coal plants, but we must also accelerate the retirement existing coal fleets at a much faster pace. **A well-below 2°C future calls for retiring more than 90% of existing coal capacity before 2045; a 1.5°C future moves this timeline up to 2030. This includes eliminating the aging U.S. coal fleet of 249 plants.**<sup>3</sup>

Our work quantifies the implications of this retirement at the plant level. **To keep warming below 2°C, all units must retire after 35 years of service. Older, inefficient coal plants that have been in operation for longer should be retired immediately.** This is 15 years earlier than the typical average lifetime, and planning must begin today to ensure a smooth transition. A below 1.5°C future requires an even faster coal shut down—after 20 years of operation. Any new construction from now on would further shrink the operating space for all units, making them even less attractive to build.

Accelerating coal retirement and stopping new plants in their tracks is an important but not impossible task. Nationally and internationally, coal is no longer economical in many places, and dedicated policy actions and grassroots engagement to reduce emissions have resulted in rapid coal retirement in some locations. Our research forecasts that in the U.S., more than 100 units (102 GW) of the existing coal fleet representing 36% of total remaining capacity will not be competitive in the market by 2030. Moreover, the U.K., Germany, and many other national and sub-national governments have made commitments to phase out coal within the next one to two decades. The challenge remains to expand this approach and ensure that cleaner and often cheaper forms of energy can support inclusive economic development, clean air, and climate mitigation.



The global “emissions shadow” from existing and proposed coal plants. The area of the figure shows how much emissions coal plants would emit over their lifetime. The lightest color shows existing plants and the darker colors show the additional emissions added by potential new plants in various stages of planning and construction. Pathways consistent with 1.5°C and 2°C, and with existing Nationally Determined Contributions, are shown for comparison, and demonstrate the massive scale of coal retirement necessary to reach global climate goals.

### References

- 1 Center for Global Sustainability, University of Maryland, *The State of Global Coal Power*, <http://stateofglobalcoal.org>.
- 2 Global Energy Monitor, *Global Coal Plant Tracker*, <https://endcoal.org/global-coal-plant-tracker>, accessed July 2018.
- 3 Sierra Club, *Climate & Energy*, <https://www.sierraclub.org/climate-and-energy>.