POLICY FORUM CLIMATE POLICY

No new fossil fuel projects: The norm we need

A social-moral norm against new fossil fuel projects has strong potential to contribute to achieving global climate goals

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Pipe is laid during construction of a natural gas pipeline in Texas, USA. PHOTO: ED LALLO/GETTY IMAGES

Global production and use of fossil fuels continue to expand, making the goals of the Paris Agreement ever more difficult to achieve. Echoing calls made by climate advocates for years, the groundbreaking decision at the United Nations (UN) climate meeting in late 2023 (COP28) calls on parties "to contribute to…transitioning away from fossil fuels in energy systems." The normative case for ultimately phasing out fossil fuels is strong, and in some cases, it is feasible to phase out projects before the end of their economic life. However, the movement should focus on a more feasible, yet crucial, step on the road to fossil fuel phaseout: stopping fossil fuel expansion. Proponents of ambitious climate action should direct policy and advocacy efforts toward building a global "No New Fossil" norm, encompassing exploration for and development of new fossil fuel extraction sites, and permitting and construction of new, large-scale fossil fuel–consuming infrastructure.

We make the case for this norm in three steps. First, we show that no new fossil fuel projects are needed in a 1.5°C world: Existing fossil fuel capital stock is sufficient to meet energy demand in representative scenarios aligned

with the Paris Agreement target of limiting global warming to 1.5°C. Second, we explain why preventing new fossil fuel projects is, generally, more economically, politically, and legally feasible than closing existing projects. The first two claims together justify a third, normative claim: that new fossil fuel projects ought not be permitted. It is this third claim that, we argue, ought to form the substantive content of the new norm that we propose. We draw on norm diffusion theory from the field of international relations to argue that efforts to stop fossil fuel expansion are conducive to the generation and spread of such a norm. By contrast, initiatives targeting a full fossil fuel phase-out (which do not differentiate between new and existing projects) are less conducive to normbuilding. We conclude by explaining how the institutionalization of a No New Fossil norm would make it easier to phase down fossil fuels and ultimately achieve the goals of the Paris Agreement.

No New Fossil Fuel Projects in a 1.5°C World

Existing fossil fuel capital stock is sufficient to meet energy demands implied by representative 1.5°C scenarios; arguments for new projects assume that governments will not meet their shared climate goals. The International Energy Agency (IEA) has found that no new fossil fuel extraction projects are needed in its Net Zero Emissions by 2050 (NZE) scenario (*1*). However, as a single scenario, this provides a limited guide for policy. Here, we assess a range of 1.5°C scenarios compiled for the Intergovernmental Panel on Climate Change's (IPCC's) Sixth Assessment Report (AR6) (*2*), by comparing them with data on capacity of existing projects, and we find that the IEA's conclusion is warranted. In addition to analyzing oil and gas extraction projects [coal extraction is excluded owing to data limitations; see supplementary materials (SM) for discussion], we go beyond the IEA to also assess the largest consuming segments, coal and gas power generation (see the figure).

Forecast data on existing and planned oil and gas production levels are derived using the Rystad Energy UCube, whereas forecasted capacity levels from gas and coal plants are derived from Global Energy Monitor datasets. The scenarios that we assess are the C1 scenarios (limiting warming to 1.5°C with low or no overshoot) reviewed in the IPCC's AR6 (*2*), including only those scenarios that do not exceed IPCC feasibility and sustainability thresholds on carbon sequestration (see SM). Such thresholds effectively exclude scenarios dependent on high levels of carbon sequestration technologies, such as carbon dioxide removal (CDR), which are unproven at scale and which, if they failed to materialize, would pose serious risks to the achievability of the Paris Agreement's temperature goals. For comparison, we also show the IEA's NZE scenario (*1*). Additional scenarios are considered in the SM.

Demand for oil and gas in the scenarios could be met from fields already in production or under development (see the figure). These findings are consistent with the IEA's conclusions based on the NZE scenario (*2*) and follow similarly from the vast majority of major credible 1.5°C scenarios (*3*) (see SM). Coal production needs are even lower in both presented scenarios, declining by over 90% by 2040 (see SM). There is far too much coal-fired power generation capacity already in existence relative to 1.5°C-consistent capacity, which plummets over the coming decade in the analyzed scenarios (see the figure). Adding those new coal plants that are under construction or at an earlier stage of planning would only widen this gap. Finally, existing and under-construction gas power infrastructure is sufficient to meet projected demand under most scenarios.

Regional disaggregation of scenarios' data shows that the only exceptions to the general conclusion that no new capacity is required are due to minor discrepancies in gas power capacity and modeled demand in India and Sub-Saharan Africa. However, shifts in market conditions for renewables have now effectively priced out gas in India, while African governments have economic and political incentives to avoid risks of stranded fossil fuel assets. In any case, new gas power plants could not be justified within the analyzed 1.5°C scenarios if the availability of CDR did not materialize to the extent that relevant scenarios rely on it to counterbalance fossil fuel emissions, or if the highly ambitious pace of coal power phaseout in these model projections cannot be achieved (see SM).

Our analysis considers the energy production over time that is associated with a given set of infrastructure and compares this to mitigation scenarios. An alternative analytical approach would compare fossil fuel reserves or cumulative lifetime production with carbon budgets. Applying the latter approach, the IPCC, in its AR6, indicated that continuing to operate existing fossil fuel–consuming infrastructure at current levels would, by itself, generate enough carbon dioxide emissions to exhaust the remaining 1.5°C carbon budget (*2*). Research since the AR6 reaches the same conclusion for fossil fuel–extracting infrastructure (*4*).

In short, existing fossil fuel infrastructure is sufficient to meet energy demand in the vast majority of scenarios consistent with the 1.5°C objective. In theory, the same outcome could be achieved with more new projects coming online if these are offset by retiring more existing infrastructure before the end of its economic life. However, the economic, political, and legal considerations that we adduce in the next section show that this strategy would be misguided.

Political Economy of New Versus Existing Projects

In this section, we synthesize evidence from economics, political science, and law that explains why it is, generally, more feasible to restrict new fossil fuel projects than to close existing projects early. The evidence provided is widely accepted in each field but in our view has been insufficiently appreciated in the debate over fossil fuels and climate change.

For firms, a future fossil fuel project represents an investment prospect, which is weighed against the returns that could be obtained from alternative investments. But once construction has begun and capital sunk, the proponent's economic interests lie in continuing to operate that project for as long as possible, so long as the product can be sold at a price greater than the marginal operating cost (even if that price is less than required to recoup the capital invested, because ongoing production will reduce losses). This economic dimension of "infrastructure lock-in" is a key reason why climate mitigation costs are higher in scenarios where mitigation is delayed than in those where it begins immediately (*5*).

To protect their sunk investments, firms tend to lobby more intensely against environmental regulations that diminish the value of their existing assets than they do against regulations that would diminish the value of hypothetical future investments, in which their capital is not yet sunk. Similarly, trade unions work mainly to support the interests of their members, and so lobby harder to protect their members' existing jobs than for hypothetical future jobs from new projects. Moreover, publics often oppose new developments for multiple reasons (see below) but are generally more likely to tolerate operational projects, especially where they generate local economic benefits. Because of these political pressures, legislators that support environmental regulation find it politically easier to enact more stringent regulations on new entrants (here, proponents of new fossil fuel projects in a given market) than on incumbents (*6*).

There are often also legal barriers to governments enacting regulations that decrease the value of existing investments. Most notably, foreign investors in fossil fuel projects can often avail themselves of strong protections against regulatory reforms that reduce expected profits, and can enforce these claims in private tribunals for investor-state dispute settlement, under international trade and investment treaties (*7*). By contrast, decisions to approve or reject a new project are not legally constrained in this way.

It is, therefore, generally more economically, politically, and legally feasible to stop new fossil fuel projects than to close existing capacity early.

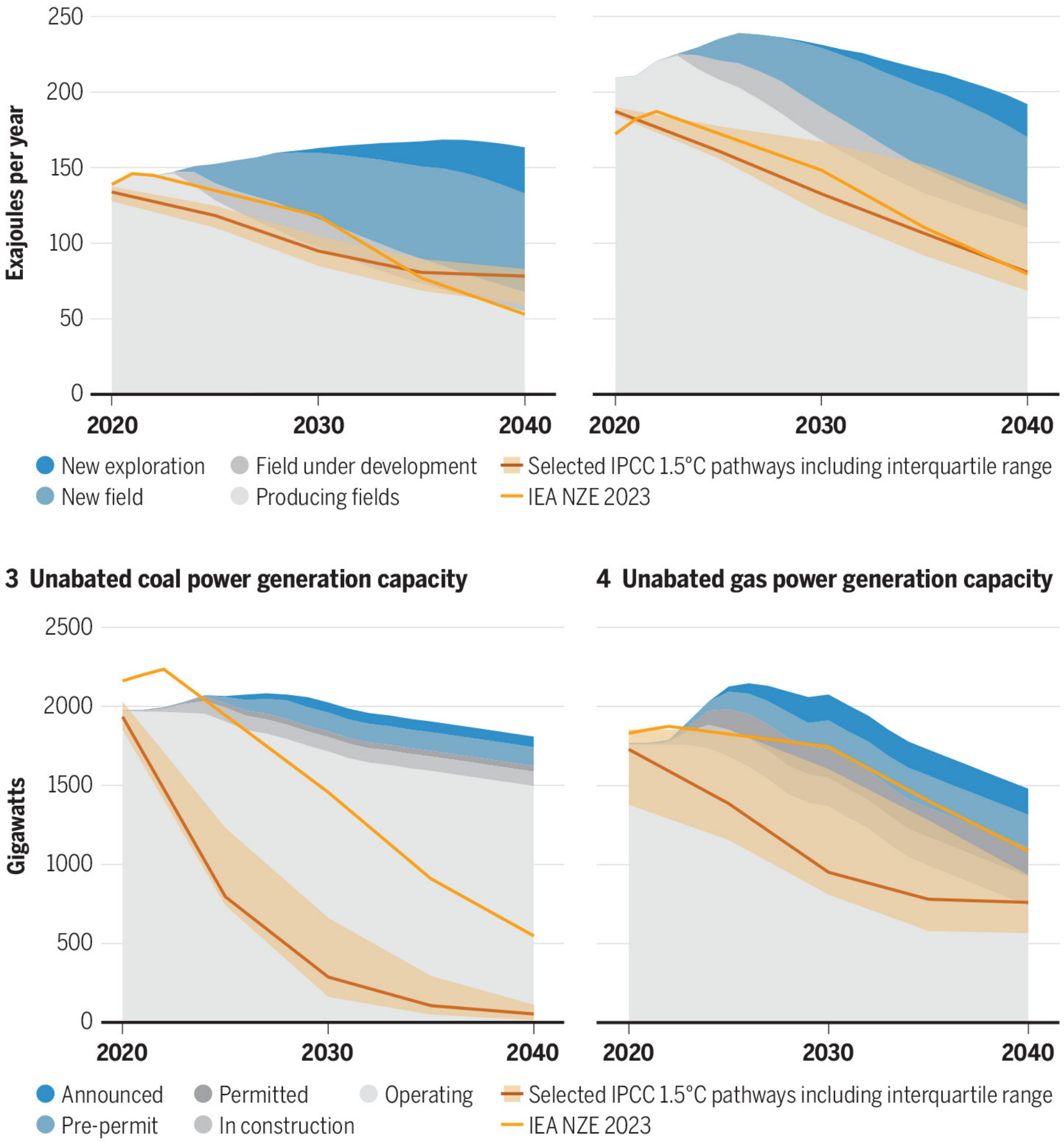
A "No New Fossil" Norm

The analysis in the preceding two sections justifies a normative claim: that new fossil fuel projects ought not be permitted. But how can this be achieved? We argue that state and nonstate proponents of ambitious climate action should engage in policy and advocacy aimed at diffusing and institutionalizing a social-moral norm against new fossil fuel projects.

A social-moral norm is a standard of appropriate behavior that is expected of an agent with a particular identity (*8*). Historical processes of social-moral norm change, though not perfectly analogous, are instructive for climate action to restrict fossil fuels, because they show how activities that were once profitable for powerful firms or geostrategically valuable for powerful states—such as trading in slaves or testing nuclear weapons—can become taboo (*9*). Committed groups of people, often acting through civil society organizations, generated these shifts by highlighting the harms these practices caused and mobilizing elite supporters and mass social movements to pressure governments to ban them. Ultimately, states institutionalized these new norms by enshrining bans in international treaties and domestic laws (*8*).

Forecasted global demand, extraction, and generation

Graphs reflect forecasted global primary energy production from gas and oil (panels 1 and 2) and capacity of unabated coal and gas power plants (panels 3 and 4) compared with energy demand based on IEA NZE and Selected IPCC 1.5°C scenarios (*n* = 26). See supplementary materials.



IEA, International Energy Agency; IPCC, Intergovernmental Panel on Climate Change; NZE, Net Zero Emissions.

Forecasted global demand, extraction, and generationGraphs reflect forecasted global primary energy production from gas and oil (panels 1 and 2) and capacity of unabated coal and gas power plants (panels 3 and 4) compared with energy demand based on IEA NZE and Selected IPCC 1.5°C scenarios (*n* = 26). See supplementary materials. GRAPHIC: D. AN-PHAM/*SCIENCE*

Elements of a No New Fossil norm are already emerging. Member governments of the Beyond Oil and Gas Alliance (BOGA) have agreed to stop issuing new oil and gas exploration and production licenses, and Powering Past Coal Alliance (PPCA) members have agreed to a moratorium on new coal power stations without operational carbon capture and storage. In the Clean Energy Transition Partnership agreed at COP26, governments and financial institutions agreed to stop providing international public finance for fossil fuels (which largely affects new projects). And the UN secretarygeneral has repeatedly called on countries to stop new fossil fuel projects (*10*).

We argue that proponents of ambitious climate action should build on these nascent efforts by mobilizing for a No New Fossil norm. Specifically, we urge governments to announce that they will no longer permit new fossil fuel exploration, production, or power generation projects (including expansions of existing projects) and to take whatever legislative or administrative action is necessary to give effect to such a policy. Ideally, such action would take the form of a legislated ban, which would send a clear signal about the inappropriateness of new fossil fuel projects and would apply to successor administrations (*11*). Additional measures, including restrictions on finance and on subsidies to new projects, and measures to enable a just transition away from fossil fuels, would complement and facilitate such bans. Elite proponents of climate action outside of government, such as opposition politicians, senior officials from international organizations, leaders from civil society, and the wider climate movement, should advocate such government action. Both state and nonstate proponents should also seek to build the No New Fossil norm through international "soft law" instruments, such as COP decisions and declarations in other intergovernmental forums.

The fossil fuel industry and large fossil fuel–consuming and –producing states will inevitably continue to resist such initiatives. But there are good reasons to think that concerted action could build a No New Fossil norm that diffuses widely. First, the norm's framing is conducive to such diffusion: Norms are most resonant when they are framed in terms of simple demands for powerful actors to cease or ban harmful activities (*8*). Second, the focus on new projects structures the interest group contest in a way that reduces the power asymmetry between pro- and anti-fossil fuel forces. Because new fossil fuel projects cause multiple types of harms—not only through climate change but also through adverse local environmental, health, and social impacts—calls to stop such projects provide a focal point around which opponents with different grievances can mobilize (*9*). Meanwhile, the fossil fuel industry's alliances are more limited in respect of new projects for the reasons outlined in the previous section.

As more states adopt the No New Fossil norm, "holdout" states (those that continue to enable new fossil fuel projects) will face intensifying political pressure from other countries, and (in those countries with robust civil and political freedoms) from domestic civil society, to conform to the norm (*9*). Such pressure would push holdout governments to the international negotiating table seeking international concessions for committing to stop new projects and/or reciprocal commitments from other states (to address concerns about cross-border consumption or production "leakage").

Such concessions and reciprocal commitments could ultimately be provided for in a multilateral treaty prohibiting new projects (*12*). A treaty would also facilitate the emerging norm's institutionalization and its equitable implementation—for instance, by providing for finance and technology support for poorer nations, ensuring that all people have access to clean energy sources for decent living standards (*1*, *12*, *13*). A promising near-term building block toward such a treaty is a "club" arrangement (like BOGA and PPCA), involving a nonbinding agreement among a coalition of like-minded states and nonstate actors, which would aim to enlist larger fossil fuel producer and consumer states through persuasion, socialization, and incentives (*9*, *12*). That the PPCA's membership has expanded to include Germany and the United States proves this logic has merit. Nor is the logic limited to the Global North. For instance, President Petro of Colombia, a substantial producer of oil and coal, has committed to stop fossil fuel expansion and transition away from existing production, signing up to both the PPCA and BOGA (and in the latter case, receiving financial support from the BOGA Fund).

Any such international cooperative arrangement would depend on states building mutual trust and confidence amid an increasingly fragmented global order. A historically successful strategy for doing so involves adopting commitments that are quickly and easily verifiable by third parties and increasing their ambition as performance is verified and trust is built (*14*). In this respect, a No New Fossil norm has two further advantages relative to a full phaseout. First, a commitment to cease or ban something creates an expectation of immediate policy action, for which the leaders making the commitment can be held accountable. This contrasts favorably with long-term targets to reduce greenhouse gas emissions or phase out fossil fuels, because leaders can all too easily "commit" to such targets rhetorically, safe in the knowledge that someone else will be in charge when the performance falls due. Second, because issuing fossil fuel licenses, permits, and other consents involves public processes, and because building fossil fuel infrastructure has a large physical footprint, compliance with a No New Fossil norm can readily be monitored and verified by third parties, such as journalists, nongovernmental organizations, and other states (*15*).

Ultimately, states will need to largely or entirely phase out fossil fuels. By building the necessary trust and confidence, successful cooperative efforts to stop new projects would make this more ambitious endeavor easier. Additionally, the successful institutionalization of a No New Fossil norm would substantially weaken the fossil fuel industry: An industry that is not expanding is an industry in decline, and declining industries find it harder to attract finance and win political favor. In short, efforts to construct a No New Fossil norm have great potential to be a major step on the path to achieving the goals of the Paris Agreement.

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Supplementary Materials

This PDF file includes:

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Other Supplementary Material for this manuscript includes the following:

Data S1

References and Notes

1 IEA, “Net Zero Roadmap: A Global Pathway to Keep the 1.5°C Goal in Reach, 2023 Update” (2023); https://www.iea.org/reports/net-zero-roadmap-a-global-pathwayto-keep-the-15-0c-goal-in-reach

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