State-owned energy companies are among the world's most polluting—putting a price on carbon could help

February 19 2024, by Anna Grosman, Aldo Musacchio and Gerhard Schnyder

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Existing measures to cajole companies to decarbonize, with subsidies for

renewable energy and carbon taxes, have failed to prevent global emissions rising. Does state ownership, particularly in the energy sector, make this process easier?

State-owned energy firms that search for, produce and refine fossil fuels are among the most polluting organizations in the world. But because governments have a big say in how they operate, it might be considered easier for their emissions to be rapidly phased out by treating them as extensions of the government, without needing to rely on the incentives, fines or sanctions usually necessary to make private firms act.

So far, however, things have not proved to be so simple.

A blessing or a curse?

When it comes to climate change, ownership of a polluting company creates a dilemma for a government. On the one hand, state-owned firms are better equipped to bear the costs of decarbonization as they can draw from a tax base (a more reliable revenue source) to subsidize green measures.

But ownership of a polluting, state-owned firm also creates conflicting incentives within and across different branches of a government. Some ministries may rely on the income generated from these industries (such as the Saudi Arabian Oil Group) to finance public services or support pensions. Other ministries, perhaps responsible for environmental protection, will be tasked with curtailing the activities of these firms to cut pollution.

This conflict indicates that state-owned firms are not simply "instruments of the state" that can be easily directed to cut emissions quickly. The ability of governments to use state-owned firms to tackle climate change depends on various governance issues within the state

bureaucracy.

Governments attempting to reform state-owned entities can face resistance from various stakeholders—ranging from the workers and managers of these firms to the users of subsidized services, who may object to higher tariffs to fund a transition to renewable energy.

State-owned utilities such as the Federal Electricity Commission in Mexico and Eskom in South Africa have previously defended their energy market monopolies against smaller competitors—in some cases, preventing more decentralized renewable energy generation. State-owned firms can exploit their close contact with policymakers to do this, and may even refuse to sign purchasing agreements with independent power generators.

State-owned firms and emissions

Our research showed that for some countries with high CO_2 emissions per capita, the state played a big role in their major polluting industries. Countries such as China, India, Russia, Japan, Iran and Saudi Arabia, where state ownership is extensive in the energy sector, are among the world's ten biggest emitters.

In countries with established state entities to manage the production of fossil fuel reserves, commitments to cut CO_2 emissions are often overridden by the incentive to generate revenue from oil. Yet, we also found that regulatory measures, such as "cap-and-trade" systems, can complement state ownership and produce positive outcomes by resolving conflicts between different government departments.

Cap-and-trade regulations compel firms to buy carbon emission allowances and pay fines if they exceed them. Under a cap-and-trade system designed to limit the total amount of pollutants a company can

emit, firms can also sell unused allowances. Take the EU Emissions Trading System (ETS): state-owned companies within it have lower emissions than their equivalents elsewhere that are not covered by such schemes.

This finding contradicts economic literature that has argued state-owned firms are not sensitive to prices on carbon—the thinking being that state ownership shelters them from the same pressures private firms face to stay competitive, as fines from exceeding emissions allowances eat into private profits.

This puzzle can be solved by what we call the legitimacy effect. Governments that publicly commit to cap-and-trade or similar carbon pricing schemes have stronger incentives as a result of public pressure to ensure state-owned firms reduce emissions, compared with governments that opt out. While other obstacles to achieving this goal remain, the government's commitment goes some way to generating the necessary pressure on state-owned firms—above and beyond the pricing itself.

So, while the the effectiveness of carbon pricing schemes is debatable, our research provides one reason to stick with them. Namely, that they constitute a means of tying a government's reputation to emissions reduction, and so create incentives for that government to get serious about the emissions of its state-owned firms.

Given that these firms are often among the worst polluters, this can make a difference.

Provided by The Conversation