47. State-business relations in the green transition

Caroline Ahler Christesen and Milan Babić

Introduction

The relationship between states (or governments) and large corporations is a crucial one for the prospects of rapid and just global green transitions. Historically, only 100 companies were responsible for around 70% of global greenhouse gas emissions since the late 1980s. And even today, just under 60 global corporations have produced a staggering 80% of all emissions since the adoption of the Paris Agreement in 2015. States, on the other side, are aiming to domestically and internationally regulate and oblige businesses to comply with legislation to limit global warming. The main example is the annually occurring United Nations climate change conferences (Conference of the Parties, COP), with the 30th anniversary coming up in Brazil in 2025. These efforts notwithstanding, the reality of still rising global emissions points to a disconnect between global regulatory ambition and the reality of corporate decision-making when it comes to green transitions. Despite indications of a partial decoupling of economic growth and emissions in many industrialized countries, the pace and depth of restructuring the economy remains a persistent problem (Hickel and Kallis, 2020). Beyond being regulators and environmental managers at an arm's-length distance from corporations, states hence find themselves often in a position where they are increasingly involved in market operations or even themselves become market actors (Babic and Dixon, 2022). Whether these changing patterns of interaction between states and businesses will indeed fasten – or maybe even slow down – much-needed green transitions is an open empirical question. A key task for research into state-corporate interactions and environmental governance is to understand the shape this relationship needs to take in order to propel global green transitions.

In this entry, we review three ideal-typical modes of interaction between states and corporations in global green transitions. From the vantage points of states, corporations can be *inhibitors*, *instruments* or *innovators* when it comes to greening the economy (e.g. through decarbonization). These three modes are ideal-typical because they will not be found in a pure form in empirical reality. Rather, states and corporations engage in complex interactions; and different forms of cooperation or conflict will arise from this. Furthermore, not every state will at every point be a 'green' state interested in reducing emissions. We assume that *if* governments want to reduce emissions (as most states in the world agreed to with the Paris climate goals), they can engage in different ways with corporate actors. Our ideal-typical 'three I's' can serve as an analytical heuristic to better understand different modes and modularities of these complex interactions. This can, for example, be used to build different research designs or inform case selections. This heuristic thus helps scholars and students to make sense of variation across countries, within industries and even among single corporations in a given scenario. It can also be applied across different cases in the Global North and South when contextual factors and variables are taken into account.

Inhibitors

The probably best-known and most-discussed role of companies is as inhibitors of green transition plans by governments. Especially energy companies that either produce or sell fossil fuels, or heavily rely on fossil infrastructures to operate, will in theory oppose rapid green transitions, as these would threaten these companies' business models. Fossil-fuel (energy) companies thereby have various practices and mechanisms at their disposal to block and slow down these transformations vis-à-vis governments. These entail instrumental strategies directly aimed at policymakers (lobbying); the exploitation of the structural dependency of economies on carbon-intensive processes (carbon lock-ins); or the dependency of political regimes on fossil fuel revenue (incumbency). We go through each of these aspects while providing examples.

First, large energy companies often have direct access to policymakers and governments due to their relevance for either energy security or the export of energy commodities such as coal, oil and gas. Lobbying is hence a key strategy to preserve their privileged position by stalling energy transitions towards renewables. Next to direct attempts at influencing domestic policymaking by singular

firms, large corporations also organize themselves at the transnational level to exert influence. A prime instance of 'global' lobbying in action is the World Business Council for Sustainable Development (WBCSD), which unites CEOs from some of the world's largest transnational corporations and aims to influence green transition negotiations from international institutions to the annual UN climate conferences and other fora. With industry giants like British Petroleum and TOTAL Energies among its members, the WBCSD represents around 230 influential companies, with a significant portion of its membership coming from carbon-intensive industries. In its presentation, the WBCSD emphasizes a commitment to fostering a global community of organizations dedicated to creating a more sustainable future. However, the organization has faced scrutiny for promoting market-led environmental governance standpoints while at the same time having a dense concentration of fossil fuel corporate members in its ranks (Kaplan, 2024). Lobbying can allow these companies to stall and/or influence green transitions in ways that align with their interest by mobilizing vast resources to influence global environmental policies.

Second, fossil-fuel firms can inhibit change through the structural privilege their interests enjoy in economic systems that are heavily dependent on carbon. The concept of a carbon lock-in captures this situation, in which past decisions about (carbonized) technologies, infrastructures, institutions and practices create path dependencies and limit the (perceived) viability of non-carbon alternatives (Seto et al., 2016). A prime example is coal-fired power. Coal became the dominant energy source during the Industrial Revolution, fueling factories and driving economic growth. Decades of investment in coal-fired power plants and related infrastructure followed. While expensive to build, coal plants are relatively cheap to operate, creating an ecosystem in which investors, operators, transport companies, workers and local communities became locked into the continued usage of coal power. On top of this, many governments, including those of the U.S., India, China and Poland, continue to subsidize the coal industry due to economic and energy security reasons. Such fossil subsidies make it generally more difficult for renewable energy sources to compete on price (Timperley, 2021). This combination of entrenched infrastructure, economic dependency, political support and the integration of further actors into the coal industry orbit created an environment where shifts to lower-carbon alternatives were for a long time severely constrained.

Third, while carbon lock-ins are historical and 'impersonal' structural constraints, fossil fuel firms are often embedded in political power structures that are *purposefully* constructed and maintained to prevent green transitions. So-called fossil incumbency regimes represent a configuration of social forces that concentrates political and economic power over fossil fuel production and consumption in a few hands. While such incumbency regimes are to be found all around the world, they are typically associated with fossil fuel-rich countries, where the revenue of national oil companies (NOCs) is crucial for state survival, which consolidates power in the hands of actors in control over fossil resources. In many cases, both the political elites and incumbent NOCs resist phasing out fossil fuels for economic gains and maintaining political stability. Together with other profiteers of the status quo, they form an incumbency regime that depends on NOC revenues for consolidating legitimacy and wielding political power. Typical for such regimes are the revolving doors and often simultaneous appointments of important NOC executives to government positions. A key example here is Saudi Arabia, an absolute monarchy ruled by the Al Saud family. The country's NOC, Saudi Aramco, is among the most valuable firms in the world and is controlled by members of the Saudi royal family. For instance, the Minister of Energy, who oversees Saudi Aramco, is appointed by the king and is typically a member of the royal family or a trusted advisor. The Saudi government is the main beneficiary of the revenue generated by Saudi Aramco, as oil export revenues at times account for up to 80% of the government's annual income (Jawadi and Ftiti, 2019). Norway provides another example with its NOC, Equinor (previously Statoil). Since the 1970s, the Norwegian petroleum sector has expanded significantly, and today, around 20% of the government's revenue comes from petroleum activities alone (Statistics Norway, 2024a, b). Norway's oil industry has been described as an 'oil-industrial complex', where a group of individuals with shared values and goals occupy

positions in politics, Equinor/Statoil and trade associations (Sejersted, 1999). This makes it difficult to phase out oil and gas production, as Equinor, and those social forces profiting from continued fossil extraction, form a relatively robust incumbency regime to this day. Hence, even in democratic contexts, fossil incumbency regimes with a strong alignment between state apparatuses and NOCs can wield economic and political power to problematize green transitions. In such cases, NOCs, by becoming integral to the political system, blur the lines between corporate and governmental functions, thus consolidating a powerful incumbency regime that is difficult to overcome.

In sum, (fossil fuel) corporations can be inhibitors to green transitions by direct means such as lobbying, through structural privilege as in the case of carbon lock-ins, or by strategically defending their incumbency status with and against other societal actors.

Instruments

Beyond the much-debated role of corporations as slowing down green transitions for various reasons, they can and are often instrumentalized by states in reaching their climate-related goals. After all, (inter-)nationally agreed pledges to reduce emissions and propel green transitions can only be achieved by prompting corporate actors and consumers to adapt their production and consumption behaviors. Next to environmental goals, governments often also need or want to control other aspects of the economy such as growth or employment. States willing to adhere to environmental pledges will hence not simply instrumentalize corporations by force to reduce emissions, but develop various degrees of instrumentalization, from 'soft' to 'hard', to achieve multiple (often contradictory) goals. On the soft instrumentalization side, governments can, for example, incentivize corporations to reduce their emissions through tax credits, giving preferential access to government funding, or industrial policies that develop certain sectors such as clean tech. This soft instrumentalization approach has prevailed until recently in both developed and developing countries, often in combination with various 'derisking' schemes that aim to draw in private capital to sustain green investment (Gabor, 2021). The core assumption behind a soft instrumentalization approach is that a strong intervening state could distort market forces that are favorable to decarbonization such as innovation dynamics. The record of policies falling into this category is mixed: on the one hand, soft instrumentalization approaches were able to improve environmental issues such as pollution or air quality in different countries around the world (Sommerer and Lim, 2016). However, issues such as de facto rising global emissions and accelerated biodiversity loss suggest that a more fundamental systemic shift towards sustainable production and consumption patterns is not yet in reach, despite decades of policy-making akin to 'soft' instrumentalization (Hausknost, 2020).

In a more assertive manner, governments can also phase out certain technologies that stand in the way of emissions reduction and thereby force corporations to adapt and upgrade to meet new technological standards. This form of a more assertive instrumentalization of corporations is reflected in regulatory measures that aim to tilt economic outcomes towards sustainability – for example, by reducing financial and fiscal support for fossil-fuel firms and/or increasing this support for renewable energies (Newell and Johnstone 2018). Assertive instrumentalization became more prominent in the last years of the accelerating climate crisis as governments began to hark back to more interventionist policy measures. A major example is the recent regulations regarding the end of the sale of combustion vehicles in places like the EU, California or New York by 2035, which forces carmakers to adapt to new rules and represents a major market-interventionist move by these jurisdictions. Likewise, global advancements in carbon pricing – which is for many economists the main green transition policy proposal – are taking up speed. Since 2010, the share of global CO2 emissions covered by a carbon price has more than quadrupled from 6.1 to 26% in 2021 (Ritchie and Rosado, 2022). Carbon pricing policies can be designed in an assertive manner so that they incrementally drive profits (and hence demand) out of the fossil sector into renewables and hence 'punish' dirty producers and 'reward' clean ones. As the climate crisis accelerates in the coming years and governments face more societal and exogenous pressure to act, we expect to see an increase in more assertive instrumentalization measures.

Finally, a 'hard' power approach to corporate instrumentalization is to aim for partial

or full state-control of corporate decision-making. The most relevant example is state ownership that allows the involved state to control the invested company. States can either already own or take ownership in carbon-heavy industries and decide to sell, diversify or deactivate and hence 'strand' existing fossil assets. While the latter alternative is rarely happening, state intervention to diversify and transform fossil firms or to sell fossil assets off is not uncommon. State-owned Danish utility Ørsted reduced its CO2-intensity dramatically in a political bid to become a renewable energy champion in the 2010s. Today, the company is the globally leading player in the offshore wind business and is involved in windpark construction around the world (Madsen and Ulhøi, 2021). Furthermore, the German government nationalized the important natural gas importer Uniper in 2022 in order to guarantee energy security after Russia's invasion in Ukraine earlier in the same year. Immediately, the involved economic affairs ministry pushed to transform Uniper into a fossil-free company, grasping the historical opportunity to do so under direct state control (Peters, 2023). Other recent attempts to nationalize energy infrastructure in Europe and beyond have also been motivated by both energy security *and* green transition considerations. For example, the recent full takeover of energy utility EDF by the French state has been justified by, amongst others, a necessary low-carbon transformation and energy security reasons (Messad, 2022). Measures such as (re-)nationalization efforts will not always yield the desired outcomes, as market dynamics are difficult to predict and navigate. However, we expect governments also to increasingly rely on such hard instrumentalization measures as the climate crisis intersects with other, geopolitical and geoeconomic crises that force the hand of the state in securing basic energy supply or ensure the continuity of socio-economic transformations.

Taken together, states can and do develop different and intersecting approaches to corporate instrumentalization. Changes in the global economic and political environment, such as wars or new geopolitical tensions, shift the balance from soft towards assertive and hard approaches. However, such shifts also happen in the other direction; and governments will need to assess the appropriate response in a more volatile global environment.

Innovators

Finally, governments can and need to rely on corporations as innovators in the climate crisis. In spaces like green tech, electric vehicles or renewable energy generation, corporate innovation is key to overcome transition bottlenecks, decrease costs to scale technologies and decarbonize hard-to-abate sectors. Aviation is a key example: without a viable non-carbon fuel solution for operating airplanes, air travel as we know it today in the Global North is not compatible with a net-zero global economy by 2050 (Timmons and

Table 47.1 Different instrumentalization approaches from governments towards (domestic) businesses

Instrumentalization approach	Description	Examples
Soft	States incentivize or nudge corporations to become more sustainable to reach national decarbonization goals.	Government loans; 'green' industrial policy; preferential taxation
Medium ('assertive')	States actively intervene in markets and prefer 'green' practices and actors to drive down emissions.	Carbon pricing (taxes or emissions trading); phasing out of non-sustainable technologies; fossil subsidies reduction
Hard	States outright control or nationalize companies and assets for emissions reduction.	Corporate control via ministries or vehicles; state ownership; nationalizations

Terwel, 2022). Technology that could be part of the solution for this issue, such as commercially viable hydrogen-fuelled airplanes, still needs to be developed. Similarly, many pledges and net-zero plans by governments currently include yet-to-be-developed and scaled technologies such as carbon capture and storage (CCS). This means that without 'green' innovation, government aspirations to roll out green transitions will not be feasible. What is more, governments can even obfuscate the emergence and scaling up of sustainable technologies, e.g. by economically and politically protecting incumbent fossil industries and actors. One example is the rollout of the German green transition since the early 2000s, whereby subsequent governments aided the expansion of renewable electricity markets, but at the same time provided political and regulatory support sustaining the incumbency positions of its export-oriented combustion car manufacturers (Haas, 2021). This led to a bifurcation of the German decarbonization pathway and stifled innovation in the EV sector. Other examples of state-led innovation-stifling involve the massive subsidies of many (Western) governments for fossil fuel production that passed a global record USD 7 trillion in 2022 (Black et al., 2023). Subsidizing fossil firms contributes to the strengthening of incumbent actors and disadvantages innovative actors in renewable industries to replace non-viable emission-intensive energy generation competitively.

At the same time, many innovations, also beyond sustainable technologies, have historically been enabled through government support. Public subsidies, early-stage financing and R&D-funding itself have been crucial in the breakthrough of major technologies such as GPS navigation, search engine algorithms or semiconductor components. Drawing on these historical analogies, states can be expected to play a major role in funding and propelling green innovation. However, public expenditures for low-carbon R&D have remained at low levels (around 0.04% of GDP) in much of the developed world in the last three decades (Cervantes et al., 2023). To fill this void, states have in the last years resorted to different ways of 'de-risking' investment in climate innovation. Government agencies and entities such as the European Commission (through its European Investment Fund vehicle), for example, set out to attract private venture capital to co-finance parts of the green transition (Cooiman, 2024). This strategy of co-financing innovation and green investment might seem at first glance to be a promising public-private interaction for the green transition. However, there is little evidence that such 'green' de-risking actually works, especially when it comes to drawing in significant amounts of private investment into rather risky asset classes such as those in the green innovation space. An alternative way of filling the gap of public funding of green innovation could be to channel parts of the massive government subsidies currently earmarked for fossil firms towards sustainable projects. Through this, the structural selectivity of government funding could be used to accelerate green innovations and transitions while at the same time increasing the costs of producing and selling fossil energy.

Next to technical innovations, corporations can also act as *social* innovators in the green transition. The success prospects of deep socio-economic transformations hinge on the question of whether societal behavior and societal practices can be changed in the long-term. Without a strong global shift away from overproduction and overconsumption, the double crises of climate change and biodiversity loss will be difficult to resolve. Governments can play a role in initiating behavioral change through regulation, knowledge dissemination and economic policies. However, most states cannot straightforwardly enforce sustainable behavior without backlashes, especially in democratic societies. A large part of the green transition hence hinges on whether citizens and corporations will be able to modify and adapt production and consumption patterns in order to live within the means of global resources and sustainability imperatives. This requires social innovation such as reimagining the relation between work and sustainability. Progress towards remote working, for example, can reduce the environmental impact of work-related mobility. Likewise, existing demands by workers and unions to improve working conditions and change production patterns in crucial sectors such as food production can contribute to green transitions. Sustainability-oriented measures such as better working environments, decreasing the environmental footprint of agriculture, limiting intensive food production, increasing global equity in the food value chain or reducing food waste would importantly also be *social* innovations

(McKenzie and Williams, 2015). They require corporations, citizens and also governments to transform existing unsustainable practices towards sustainability through re-imagining and re-arranging those practices and relations – also through social struggle. Corporations and their workforce can be laboratories of innovative forms of re-arranging production and consumption to meet the demands of a planet with finite resources and in need of green transitions.

Conclusion

In this entry, we surveyed three major modes that describe state-business relations in the green transition. This overview has necessary limits, as we abstracted from specific countries, regions, cases or actors to draw a larger picture. Our premise is thereby that state-corporate interactions are central to coordinating and upscaling complex issues like decarbonization. At the same time, they seem to fall short on delivering rapid and just green transitions, as rising emissions and an ongoing loss of biodiversity around the world suggest. It is therefore crucial to better understand where both states and corporations act as inhibitors, instruments or innovators when it comes to propelling green transitions. This entry took the position of the state (or governments) to develop its heuristic of state-business relations; and to facilitate the use of the analytical approach presented here. The deeper causes of the themes reviewed in this entry, such as carbon lock-ins or fossil incumbency, require more sociological, political, historical and economic explanation and would themselves each deserve an encyclopedia. Our overview can be the first entry to dig deeper into these important issues and to consult the extensive literature in political economy, business studies, political science and science and technology studies for further inquiry. A good place to start is of course the Bibliography for this entry, as well as work that is regularly being published in renowned journals such as *New Political Economy*, *Energy Research & Social Science*, *Business and Politics*, *Socio-Economic Review* and *Climate Policy.*

All of these suggestions have in common that they are interdisciplinary outlets, combining political, economic, business and sociological studies with questions of climate, energy and biodiversity. To understand the complex interactions and manifold relationships between states and businesses in the largest socio-economic transformation since Industrialization, such an interdisciplinary approach is indispensable. In this vein, we hope and expect future research on this crucial topic to become less siloed and more open to cross-fertilization than it has been so far.

Bibliography

Babić, M. and Dixon, A.D. (2023) 'Decarbonising States as Owners', *New Political Economy*, 28(4), pp. 608–627.

Black, S. et al. (2023) 'IMF Fossil Fuel Subsidies Data: 2023 Update', *IMF Working Papers* 169. Available at: https://doi.org/10.5089/9798400249006.001.

Cervantes, M. et al. (2023) *Driving Low-carbon Innovations for Climate Neutrality.* OECD Science, Technology and Industry Policy Papers 143. OECD. Available at: https://www.oecd.org/en/publications/driving-low-carbon-innovations-for-climate-neutrality_8e6ae16b-en.html.

Cooiman, F. (2023) 'The Limits of Derisking. (Un)conditionality in the European Green Transformation', *Competition & Change*, online first.

Gabor, D. (2021) 'The Wall Street Consensus', *Development and Change*, 52(3), pp. 429–459.

Haas, T. (2021) 'From Green Energy to the Green Car State? The Political Economy of Ecological Modernisation in Germany', *New Political Economy*, 26(4), pp. 660–673.

Hausknost, D. (2020) 'The Environmental State and the Glass Ceiling of Transformation', *Environmental Politics*, 29(1), pp. 17–37.

Hickel, J. and Kallis, G. (2020) 'Is Green Growth Possible?', *New Political Economy*, 25(4), pp. 469–486.

Jawadi, F. and Ftiti, Z. (2019) 'Oil Price Collapse and Challenges to Economic Transformation of Saudi Arabia: A Time-series Analysis', *Energy Economics*, 80, pp. 12–19.

Kaplan, R. (2024) '"Rather Than Follow Change, Business Must Lead this Transformation": Global Business's Institutional Project to Privatize Global Environmental Governance, 1990–2010', *Organization Studies*, 45(1), pp. 161–188.

Madsen, H.L. and Ulhøi, J.P. (2021) 'Sustainable Visioning: Re-framing Strategic Vision to Enable a Sustainable Corporate Transformation', *Journal of Cleaner Production*, 288, p. 125602.

Messad, P. (2022) 'French Government Launches Public Takeover Bid to Fully Control EDF', *Euractiv*, 20 July. Available at: https://www.euractiv.com/section/energy/news/french-government-launches-public-takeover-bid-to-fully-control-edf/.

McKenzie, F.C. and Williams, J. (2015) 'Sustainable Food Production: Constraints, Challenges and Choices by 2050', *Food Security*, 7(2), pp. 221–233.

Newell, P. and Johnstone, P. (2018) 'The Political Economy of Incumbency: Fossil Fuel Subsidies in Global and Historical Context', in J. Skovgaard and H. van Asselt (eds) *The Politics of Fossil Fuel Subsidies and their Reform*, 1st edn. Cambridge University Press, pp. 66–80.

Peters, R.-H. (2023) 'Gasriese Uniper schaltet um auf grün. Das hat auch mit der Bundesregierung zu tun', *Stern*, 2 August. Available at: https://www.stern.de/wirtschaft/gasriese-uniper-wird-gruen---was-die-bundesregierung-damit-zu-tun-hat-33703392.html.

Ritchie, H. and Rosado, P. (2022) *Which Countries Have Put a Price on Carbon?* Our World in Data. Available at: https://ourworldindata.org/carbon-pricing.

Sejersted, F. (1999) *Systemtvang eller politikk: om utviklingen av det oljeindustrielle kompleks i Norge*. Oslo: Universitetsforlaget (Teknologi og kultur).

Sommerer, T. and Lim, S. (2016) 'The Environmental State as a Model for the World? An Analysis of Policy Repertoires in 37 Countries', *Environmental Politics*, 25(1), pp. 92–115.

Statistics Norway (2024a) *Petroleum Revenues and Surplus Down*. Available at: https://www.ssb.no/en/offentlig-sektor/offentlig-forvaltning/statistikk/offentlig-forvaltnings-inntekter-og-utgifter/articles-for-general-government-revenue-and-expenditure/petroleum-revenues-and-surplus-down.

Statistics Norway (2024b) *General Government Revenue and Expenditure*. Available at: https://www.ssb.no/en/offentlig-sektor/offentlig-forvaltning/statistikk/offentlig-forvaltnings-inntekter-og-utgifter.

Timmons, D. and Terwel, R. (2022) 'Economics of Aviation Fuel Decarbonization: A Preliminary Assessment', *Journal of Cleaner Production*, 369, p. 133097.

Timperley, J. (2021) 'Why Fossil Fuel Subsidies are So Hard to Kill', *Nature*, 598, pp. 403–405.

Caroline Ahler Christesen and Milan Babi