On the Merits and Limits of Nationalising the Fossil Fuel Industry

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Abstract

We explore the desirability of an idea that has not received the attention it deserves by political philosophers: that governments should bring privately-owned fossil fuel companies into public ownership with a view to managing their wind-down in the public interest—often simply referred to as "nationalising the fossil fuel industry". We aim to make a conditional case for public ownership of fossil fuel companies. We will assume certain conditions about government motivations and capacities that are similar to assumptions made generally in the philosophical and economic analysis of climate policies: that the government is suitably motivated, has effective control over the companies it acquires, and is able to sustain this motivation and control for long-enough to wind-down acquired companies in the public interest. We argue that bringing fossil fuel companies into public ownership, under these conditions, allows the government to take ten actions that are in the public interest, which will enhance social justice, enable a fair division of burdens and benefits, and strengthen democracy. We consider four plausible objections. While some of these point to the need for further research, they do not undermine our claim that nationalising the fossil fuel industry is a policy option that merits serious consideration.

1. Introduction

Climate change, or global heating, is one of the most profound crises facing humanity. It threatens the ecological and social preconditions for wellbeing and social justice. To safeguard those preconditions as best we can, the rise in global average temperatures must urgently be restrained. It is now widely agreed that average temperature increases should be kept within 1.5°C above pre-industrial levels (they have already risen 1.2°C). To do so, the greenhouse gas (GHG) emissions that cause climate change must be rapidly reduced and carbon dioxide (CO_2) needs to be removed from the atmosphere (the balance between GHG additions and CO_2 removal is known as *net* GHG emissions). The policies and measures aimed at reducing GHG emissions and removing CO_2 are collectively known as *climate change mitigation*.[1] A great many mitigation policies and measures have been discussed, proposed and implemented, to varying degrees on all continents and across all levels of society. But emissions keep rising, year on year. The United Nations Environment Program (UNEP) estimates that if governments' current, unconditional 2030 emissions reduction pledges were implemented (but no more), average temperatures would rise by 2.7°C by the end of the century (UNEP 2021). Worse still, many countries have a long history of failing to achieve their previously pledged (inadequate) emissions reduction targets. Yet, to restrain global heating to within 1.5°C above pre-industrial levels, it is estimated that net emissions must fall by 55% between now and 2030 (UNEP 2021). For every year that mitigation efforts fail, and net GHG emissions continue to rise, the rate at which they must subsequently fall in order to meet the goal becomes steeper.

The mainstream social-scientific paradigm in which the climate problem, *qua social* problem, has been studied takes its cues from this description of the proximate causes of climate change, i.e. excessive net emissions. On this "pollution paradigm", the social problem of climate change is

[1] The other key category of policies and measures to respond to climate change is known as *climate change adaptation*. Adaptation is about preparing for and responding to the effects of climate change, now and in the future—for example, by giving farmers access to affordable seeds that are resistant to more extreme weather.

understood in reductionist terms, as an issue of cumulative anthropogenic GHG emissions, and agents—be they persons or collectives—are typically assumed to have extensive control over their emissions-relevant choices (F. Green 2021). Climate ethicists have almost universally accepted the pollution paradigm as the social-scientific frame within which to undertake their ethical theorising. Consequently, the seminal debates in the field have focused on the correct principles for distributing the "burden" of reducing emissions, and the correct subjects to whom those principles should apply (see Caney 2020, secs. 5–6). Insofar as philosophers have debated desirable mitigation policies and measures, the debate has, again, largely paralleled the pollution paradigm, with the bulk of attention focused on GHG emissions trading schemes (Caney and Hepburn 2011; Hyams 2009; Page 2013).

Social scientists working on climate change have begun to question the pollution paradigm, arguing for a more holistic, systems-level frame of analysis, and placing greater emphasis on the structural determinants of emissions-intensive activities (Bernstein and Hoffmann 2019; Farmer et al. 2019; Otto et al. 2020). Bernstein and Hoffman redescribe the social problem of climate change as one of "global carbon lock-in":

> multiple, interdependent systems at local, regional and national levels, as well as the economic activity within and among them, are locked into the use of fossil energy. In other words, carbon lock-in is a multilevel and multisectoral challenge of similar, overlapping and interdependent political, economic, technological and cultural forces that reinforce dependence on fossil fuels in many places simultaneously. (Bernstein and Hoffmann 2019, 919)

Understanding the problem in this way, they argue, suggests a need to "reorient research and action from a dominant focus on the collective action problem of distributing emissions reductions to preserve the global commons, to analysing and deploying strategies that disrupt carbon lock-in at multiple levels and scales" (ibid, 919). In a similar vein, Jessica Green and others have called for radically different thinking about the kinds of policy options for mitigating global climate change (e.g., J. F. Green 2021).

In this spirit, we explore in this paper the desirability of an idea that has, at least on the face of it, the potential to "disrupt carbon-lock in": that governments should bring privately-owned fossil fuel companies into public ownership with a view to managing their wind-down in the public interest.[2] There has been growing interest in the US and elsewhere in such a strategy—often simply referred to as "nationalising the fossil fuel industry" (Alperovitz, Guinan, and Hanna 2017; Aronoff 2020a, 2020b, 2021; Bozuwa and Táíwò 2021; Paul, Skandier, and Renzy 2020; Sweeney 2020). But to our knowledge the issue has not received the attention it deserves by political philosophers. We aim to contribute to this debate by making a case for public ownership of fossil fuel companies, under certain assumed conditions.

The three conditions we will assume for the sake of our argument are as follows. First, we assume that each public acquisition of a fossil fuel company is undertaken by a *suitably motivated government*, by which we mean a government that is genuinely committed to achieving deep and rapid decarbonisation, and doing so via a portfolio of policies and measures that includes winding down fossil fuel companies in the public interest. Second, we assume that each (suitably motivated)

[2] We will provide a *normative* analysis (rather than, for example, a descriptive or explanatory analysis), thus we develop an answer to the question what we *should do*, and what *reasons* we have for doing something.

government acquisition results in the government enjoying *effective control* over the company. By effective control, we mean control that is sufficient to carry out the Public Interest Actions described in section 2.1. We assume this is obtained by the government acquiring a majority stake in each relevant company that is large enough to enable the government to (i) amend the company charter or constitution to specify that the company shall be governed for public purposes / in the public interest, and (ii) appoint a majority of the company's board of directors, effectively giving the government control over company strategy and policies, and over the hiring and firing of senior management. Third, we assume that the motivation specified in the first assumption and the effective control specified in the second assumption are *sustained* (i.e. continue to obtain) throughout the period of time necessary for achieving the wind-down of the company's assets in the public interest. Given these assumed conditions, our argument should be understood as pertaining to *suitably motivated and effective public ownership of fossil fuel companies*.

We acknowledge that these are "big" assumptions. However, they are no bigger than the assumptions that are standardly made by normative theorists, and in the mixed normative/social-scientific field of "public policy analysis", when discussing other climate change policies. For instance, the merits and "effectiveness" of global systems of carbon pricing (taxation or emissions trading) have been debated at length in the mainstream climate policy community (e.g., High-Level Commission on Carbon Prices 2017). Most such analyses assume that governments are motivated to deeply cut emissions, have the capacity to successfully implement carbon pricing, and will sustain that motivation and capacity for as long as necessary to achieve the policy's goals. That said, we think that issues of motivation and feasibility, including the successful enactment of policies and laws, and their sustained implementation, merit much more consideration by philosophers and social scientists—and this plea applies equally to our own proposal. While we cannot explore these issues in-depth in this paper, we set out some of the key issues meriting further attention (section 3.4).

Our focus on the conditional desirability of public ownership of fossil fuel companies means we must bracket certain practical issues, many of which raise additional philosophical questions. First, while we focus on the case for governments acquiring majority stakes in those fossil fuel companies that are currently majority privately owned, we do not specify which governments should acquire which companies, nor do we discuss the principles by which such acquisitions should be distributed between governments. Rather, we implicitly assume the perspective of a hypothetical suitably motivated, high-capacity government acquiring a hypothetical privately-owned fossil fuel company. Second, we do not discuss the means by which a controlling majority stake should be acquired. We assume the acquisition will occur via an acquisition of shares (rather than an acquisition of business assets) since this is a necessary incident of our assumption that governments will obtain effective control via a "controlling majority stake". However, we do not consider whether the shares should be purchased on the open market or compulsorily acquired. Nor do we consider, in the latter case, how much compensation (if any) should be paid to current shareholders. Third, we do not directly consider what should be done about those fossil fuel companies that are currently majority state-owned (or those that do not even have a separate legal existence from the state). Finally, while we focus on the case for public ownership of fossil fuel *production/supply* companies, we will not here defend this supply-side orientation. The case for supply-side (upstream) climate policy—as part of a portfolio of climate policies that includes strong measures to decarbonise

downstream industries and greatly reduce energy demand—has been made by one of us elsewhere (F. Green and Denniss 2018). We discuss the benefits of including ownership of fossil fuel (production) companies as part of a portfolio of policies and measures in section 3.1. We acknowledge that the case for public ownership may apply similarly to other links in the fossil fuel supply chain (e.g. coal-fired power stations) and other sources of emissions, and we are open to extensions of our argument to such other targets of public ownership.

Given the contentiousness of our three assumptions and the numerous issues that we bracket, what our argument amounts to is the proposition that *the idea of public ownership of fossil fuel companies, as one component in a portfolio of climate mitigation policies and measures, has conditional merit and deserves to be seriously considered and debated*. In this sense, our contribution is to use the techniques of political philosophy to advance the exploration of an important idea. In doing so, we contribute not only to the literature on climate ethics and climate policy, but also to an orthogonal debate concerning the appropriate role of the state in the economy and whether (some of) the means of production should be state-owned (see Gilabert and O'Neill 2019).

Our argument is structured as follows. In Part 2, we outline our positive case for suitably motivated and effective public ownership of fossil fuel companies. Section 2.1 specifies the key actions that such ownership would allow such governments to take. In section 2.2, we evaluate these actions, explaining how they would enhance *social justice*, which we stipulate to be the primary evaluation criterion. For this purpose, we simply adopt a widely held principle of justice, namely that all persons, current and future, should enjoy genuine opportunities to pursue the most central human functionings (Robeyns 2017). In section 2.3, we evaluate these actions by reference to two additional (secondary) criteria: *fairness* in the sharing of burdens and benefits and *democracy*. In Part 3, we consider and respond to four potential objections to our proposal: that public ownership of fossil fuel companies would be redundant because similar outcomes could be achieved (at lower cost) with other policies and measures (3.1); that it would not be welfare-maximising because perfectly competitive markets are better at maximising welfare, and markets for fossil fuels could be rendered approximately perfectly competitive through other policies (3.2); that state acquisitions of fossil fuel companies are a step on the road to serfdom (3.3); and that our three assumed conditions do not hold (3.4). Part 4 concludes.

2. The desirability of suitably motivated and effective public ownership of fossil fuel companies

2.1. The Public Interest Actions that public ownership enables governments to take

The desirability of suitably motivated and effective public ownership of fossil fuel companies rests on the effective control the relevant government would gain over fossil fuel companies and their associated assets and operations, enabling it to manage these in the public interest. Specifically, such control would enable the government unilaterally to take the following actions, which we shall subsequently refer to as the Public Interest Actions:

1. cease all exploration for and development of new fossil fuel deposits;
2. account for and disclose the emissions embodied in the fossil fuels it produces, and phase out existing production in a timeframe consistent with the achievement of the relevant emission reduction targets and other relevant goals (e.g. ensuring a sufficient supply of energy to satisfy requirements of social justice);

3. use its market power to raise the price of those fossil fuels it continues to sell (i.e. those sales that are compatible with the phase-out timeframe).[3]
4. disclose and minimise the company's Scope 1 and Scope 2 greenhouse gas emissions, and comply with the letter and spirit of all (other) government laws and regulations relating to climate change and energy efficiency;[4]
5. expend research, development and demonstration (RD&D) resources on developing emissions reduction technologies that are likely to be necessary to the global decarbonisation effort and that leverage the company's existing assets (e.g. geological expertise);
6. cease all governmental and public affairs operations aimed at promoting fossil fuels, obstructing climate policies and repressing local opposition to operations (e.g. lobbying, political donations, advertising, public relations, litigation, surveillance of anti-fossil fuel protestors etc.);
7. cease all forms of tax avoidance and evasion, and comply with the letter and spirit of applicable tax laws;
8. undertake ongoing operations in accordance with high standards for occupational health and safety, labour relations, community relations and environmental/pollution management.
9. fully decommission former production sites and restore them to high standards of safety, amenity and ecological functioning, and carry out associated maintenance and monitoring of decommissioned sites to a high standard;
10. justly manage the transition of the workforce and of local communities dependent on company operations.

2.2. Primary desirability criterion: social justice

All of the above-mentioned 10 actions advance social justice. The first six do so by more effectively achieving decarbonisation at a scale and speed consistent with maintaining the ecological and social preconditions for social justice.

The combined effect of actions 1–3 would be to increase the price of fossil fuels that remain on the market, effectively constraining the (very large amount of) "scope 3" emissions that are released when fossil fuels are burned by downstream customers, such as by drivers of petrol-based cars and trucks. Basic economic theory tells us that an increase in price results in a contraction in demand and hence, all else equal, a reduction in greenhouse gas emissions. Of course, all else is not

[3] The oil market is highly globalised and so governments would have limited market power to set prices *directly*, but reductions in supply increase prices, all else equal. Other fossil fuel supply markets are typically based on longer-term supply contracts and only some markets are open to cross-border trade (e.g. the markets for liquefied natural gas and certain types of coal), meaning governments acting unilaterally would have some power to set prices directly.

[4] Scope 1 emissions are emissions from point sources under the operational control of the company, such as CO_2 from gas flaring, CO_2 from on-site electricity production and combustion, company vehicle usage, and fugitive methane emissions from oil and gas production. Scope 2 emissions are emissions from electricity and heat production supplied to the company by third parties for use in the company's operations. Relevant scope 3 emissions are primarily addressed through action #2, above.

equal. In particular, the higher price of remaining fossil fuels will incentivise other suppliers (in other countries) to expand their supply—a phenomenon known as cross-border *production leakage*. The new equilibrium price will depend on the relative price elasticities of demand and supply—an empirical question that depends on numerous factors. Existing studies of relative elasticities in various fossil fuel markets show mixed results, but the balance of literature suggests that unilateral reductions in fossil fuel supply tend to be replaced elsewhere at a ratio of less than 1:1, meaning unilateral fossil fuel supply restrictions tend to lead to genuine net global emissions reductions. For example, here is the conclusion of Fæhn and colleagues from their empirical study of cost-effective climate mitigation in Norway:

> The global combustion of fossil fuels extracted in Norway leads to CO_2 emissions that are about ten times higher than total emissions of CO_2 within Norway. Even though leakages are likely to be larger with supply side measures than demand side measures, we conclude that it is cost-effective for Norway to let most of the contribution to global emission reductions be achieved through supply side measures. In our benchmark scenario, only one third of a given global reduction should be realised through demand side measures; the remaining two thirds should come through supply side measures, that is, by reducing oil extraction." (Fæhn et al. 2017)

The more countries that pursue a supply reduction strategy, the more they will foster a new global moral norm against fossil fuel production, which will raise the *social costs* of non-cooperation, incentivising supply reductions (Collier and Venables 2015; F. Green 2018). First-movers have a crucial role to play in modelling such "anti-fossil fuel norms" and persuading other countries to cooperate (F. Green 2018). We assume that such a foreign policy strategy would be part of the policy mix of a suitably motivated government seeking to adopt ambitious climate mitigation strategies. Ultimately, such actions could lead to international cooperation among like-minded governments to phase-out fossil fuel production (Asheim et al. 2019; Collier and Venables 2015; F. Green 2018; F. Green and Denniss 2018; Newell and Simms 2020; Piggot et al. 2018).

The effect of action 4 would be to directly reduce the emissions produced in the course of the company's operations. These operational emissions can be significant: for example, the International Energy Agency (IEA) estimates that emissions from the upstream production, processing, transportation and refining of oil and gas account for 10-30% of the lifecycle emissions of oil and 15-40% for gas (IEA 2018).

Action 5 would contribute to global climate mitigation through the innovation of new technologies and processes that ultimately accelerate global emissions reductions. Stockmarket listed firms tend to be myopic, pursuing short-term strategies to boost stock prices and dividends at the expense of investments in technological innovation that are profitable in the longer term and that benefit the firm's wider stakeholders (Lazonick and Shin 2019; Mazzucato 2013; Stout 2012). Fossil fuel companies are no exception to this myopia (Kenner and Heede 2021). Under suitably motivated and effective public ownership, this trend could be reversed: the assets of the acquired companies could be utilised for the RD&D of emissions reduction technologies.

Action 6 would remove powerful sources of pro-fossil fuel influence over politics, policy, civil society, and consumer beliefs, attitudes and preferences. Instead, fossil fuel companies under the effective control of suitably motivated governments would become advocates of decarbonisation. The effect of this political shift in the strategic orientation of fossil fuel companies could be great (see section 3.1).

Actions 7–10 enhance social justice in the transition process.[5] There is considerable evidence that the fossil fuel industry as a whole (albeit with regional variability on some measures) performs poorly—at best, patchily—with regard to transparency, payment of taxes, occupational health and safety, site decommissioning and restoration, local environmental management, labour relations, and community relations (Olson and Lenzmann 2016). Consequently, considerable injustice is done to workers in these firms and to (other) persons who are killed or harmed by these firms' operations (Wenar 2015). Meanwhile, the low levels of tax paid by the industry constrains governments' ability to provide public goods and services that advance social justice (J. F. Green 2021). A suitably motivated government would run such firms according to high standards across these areas (see actions 7–10), enabling large social justice gains relative to current ownership patterns.

Consider, for example, the issue of workforce transition. Privately-owned fossil fuel companies tend to treat their workers as mere factors of production. They are often swiftly made redundant when labour-saving technologies and processes are implemented to reduce costs and in adverse circumstances (e.g. when fossil fuel prices fall), with little thought given to their career development, their skills or their general wellbeing and that of their families and communities. Many fossil fuel firms have used bankruptcy as a means to escape their liabilities to fund their workers' pensions and other entitlements (Aronoff 2021). In the context of debates about a "just transition" of the carbon-dependent workforce, it is often assumed that only governments have obligations to support workers, or that, if firms do have obligations, they are unlikely to fulfil them. However, if such firms were in the employ of a suitably motivated government, the government would be able to secure a just transition for fossil fuel workers (F. Green and Gambhir 2020; International Labour Organization 2015). A publicly owned fossil fuel company could, for example, engage its workers in a workplace-democratic process concerning transition arrangements; ensure pension liabilities are paid out to eligible beneficiaries; facilitate voluntary early retirement for older workers; redeploy workers to site decommissioning, restoration, maintenance and monitoring operations, RD&D operations or other (sustainable) parts of the business; and facilitate the training and reskilling of non-retiring workers for employment in good quality jobs in growing, zero-carbon industries (as part of the wider policy mix, we assume the government would be facilitating and investing in such industries).

2.3. Secondary criteria: fairness and democracy

A public controlling majority stake performs well not only on the primary desirability criterion of increased social justice, but also on the following two secondary desirability criteria.

Fairness

Consider first the issue of fairness. The public ownership and management of fossil fuel companies, post-acquisition, will entail costs and benefits the distribution of which needs to be judged from the standpoint of fairness. A key issue is the distribution of financial costs or benefits from fossil fuel operations. Whether the operations of a fossil fuel company, once government-

[5] Since social justice informs the decarbonisation objective (which we consider a *precondition* for social justice) consistency demands that the transitional effects of alternative climate policies also be evaluated by reference to social justice.

owned (and thus on a rapid phase-out trajectory), result in net costs or benefits depends on whether revenue exceeds operating costs over a relevant timeframe. We shall assume for the sake of argument that the companies will be operated at a loss. Public ownership effectively socialises these (assumed) losses, so the relevant question becomes: what fiscal and monetary arrangements most fairly distribute these losses across the population?

The answer to this question depends on one's preferred principle of fairness. Much has been written elsewhere on what fairness requires by way of distribution of burdens and benefits, including in the climate context (see Caney 2020) and, more specifically, with regard to phasing out fossil fuel production (Kartha et al. 2018; Lenferna 2018; Muttitt and Kartha 2020). Contributing, let alone resolving, this more abstract debate is beyond the scope of this paper. We simply claim that *whatever one's preferred principle of fairness*, an advantage of the socialisation of fossil fuel companies' operational losses through public ownership is that, in principle, it is possible for governments to arrange their fiscal and monetary institutions and policies such that the burdens are borne ultimately as directed by the relevant principle. To illustrate, consider the plausible principle that burdens should be borne by those with the greatest ability to pay (i.e. progressively according to income or wealth). The government could manage its fiscal and monetary policies so as to recoup losses from its fossil fuel companies' operations by increasing the progressivity of taxes on income and/or wealth.

We can also say something about fairness in the sharing of burdens and benefits internationally. We do not here propose any particular fair global distribution of rights to extract. However, as we discuss later (section 3.4), the conditions of effective control and/or suitable motivation may effectively limit the case for public ownership of fossil fuel companies to rich democracies. If this results in rich countries phasing out fossil fuels faster than poorer ones, then the policy is likely to be consistent with principles of historical responsibility and capacity to pay that have been advocated in the ethical literature on fossil fuel extraction (Kartha et al. 2018; Muttitt and Kartha 2020).

Democracy

A public controlling majority stake in fossil fuel companies is likely to improve democracy in two respects. First, when democratic countries bring fossil fuel companies into public control, citizens gain collective authority over a larger sphere of economic decision-making than they otherwise would, which itself arguably counts as a democratic improvement (Arnold n.d., sec. 4). To the extent that economic decisions affect the public, the underlying idea behind the expansion into the economic sphere of the scope of democratic decision-making is the principle that "those affected by a decision should enjoy a say over that decision, proportional to the degree to which they are affected" (ibid, sec. 4(a)). The decisions of fossil fuel companies about the extraction of fossil fuels have profound, potentially existential impacts on the public. As such, there is a particularly strong case for bringing them under democratic control.

Second, majority public control over fossil fuel companies would indirectly increase the influence of ordinary citizens over the democratic process. Democracy is strengthened when (all else

equal[6]) citizens have more equal influence over, or more equal opportunity to influence, democratic decisions (Christiano 2012). In capitalist societies, those who own the means of production use their structural, instrumental and cultural power to disproportionately influence democratic decision-making. Public control over the means of production reduces this distortive influence over democratic decision-making, making it more egalitarian (Arnold n.d., sec. 4(b); Bowles and Gintis 1986; Meiksins Wood 1995; Wright 2010). This argument applies particularly forcefully in the case of fossil fuel companies: perhaps no other industry in modern history has more profoundly corrupted government decision-making and distorted the informational basis for democratic accountability (Carroll 2021).

3. Objections

3.1. Public ownership is redundant: other policies could achieve similar outcomes (at lower cost)

The first objection we consider is that public ownership of fossil fuel companies would be redundant because similar outcomes could be achieved (at lower cost) with other regulations. For example, the government could remove fossil fuel subsidies, ban new fossil fuel exploration and development, reduce existing production (by instituting a system of declining production quotas—which could be tradeable—or by taxing fossil fuel production), price carbon, mandate higher standards for energy efficiency, and so forth. The same could be said for the regulation of fossil fuel companies' decommissioning and site restoration, technological innovation, local environmental protection, labour relations and community relations obligations.

We certainly think that many such regulations could be valuable elements of the climate policy mix. However, we think these other regulations are more likely to be effective if combined with suitably motivated and effective public ownership of fossil fuel companies. There are two reasons for this, both of which have to do with *post-enactment dynamics*. For the purpose of responding to this objection, we shall therefore assume that the government enacts some set of the aforementioned regulations such that, *if fully implemented*, this set of regulations would achieve similar results to what would be achieved with public ownership alone. Our claim is that those policies would have feedback effects that mean they would be less effective than they would be if fossil fuel companies were publicly owned, under the conditions outlined in Part 1, because of different—and superior—feedback effects of such ownership.

First, all regulation of private corporate activity faces *implementation and enforcement challenges*. These challenges arise from the strategic (e.g. profit-maximising) orientation of the privately-owned firms that the regulation seeks to control, combined with the information asymmetry between what firms know about their own activities compared with what the government can know. The fewer resources a government has available for monitoring and verifying (i.e. auditing) firms' behaviour, the greater these information asymmetries will be. Moreover, the larger and more powerful the regulated firms are, the more likely they will "capture" regulatory agencies, thus influencing executive rule-making, as well as auditing and enforcement policies and practices. Larger firms are also more likely to be able to avoid enforcement actions or penalties for

[6] This caveat is necessary to accommodate the principle, discussed in the previous paragraph, that those more affected should enjoy greater decision-making authority.

non-compliance, and to engage in forms of "creative compliance"/"gaming" (Baldwin, Cave, and Lodge 2011; McBarnet and Whelan 1991). The fossil fuel industry has proven itself highly adept at capturing and gaming regulatory and tax systems (Bergin and Bousso 2020; J. F. Green 2021; Stokes 2020). By contrast, a fossil fuel company controlled by suitably-motivated government owners would by definition be motivated by the public interest objectives that govern its mandate, thus eliminating the motivation for strategic evasion of regulations (see action 4 on our list in section 2.1).

The second set of relevant post-enactment dynamics concerns the incentives and capacities of regulated firms to mobilise politically in order to repeal or dilute the enacted legislation itself (Patashnik 2008). If a government were to enact mainstream climate policies, the affected fossil fuel firms would have every incentive to redouble their political efforts to repeal or weaken the legislation. To be sure, the enacted policies themselves would inevitably weaken these firms' capabilities. Still, the incentive for fossil fuel companies to use their remaining capabilities to mobilise politically would continue. This incentive would be eliminated if a suitably motivated government controlled the relevant firms—hence action 6 on our list.

3.2. The market is better at maximising aggregate welfare than the government

A second objection is that public ownership of fossil fuel companies would not be welfare-maximising because perfectly competitive markets are better at maximising welfare.[7] Before we respond to the core of the objection, note that it only gets off the ground if markets for fossil fuels are perfectly competitive, or could be made so with additional regulation. In reality, markets for fossil fuels are about as far from perfectly competitive as a market can get. Fossil fuel companies are propped up by massive direct and indirect government subsidies that support production (e.g., production tax credits), or downstream consumption of their products (e.g., consumer fuel rebates) (Coady et al. 2015). Most discussions of subsidies don't even count government investments in military operations to protect fossil fuel production sites, infrastructure, and transport routes, or government diplomatic efforts to secure favourable contracts and other arrangements (Olson and Lenzmann 2016). Aside from subsidies, the industry pays nowhere near (plausible estimates of) the social cost of its externalities, which include not only its greenhouse gas emissions but also air pollution and other environmental impacts (Coady et al. 2015), not to mention human rights abuses and democratic distortions across the world (Olson and Lenzmann 2016; Wenar 2015). Finally, the supply of fossil fuels is oligopolistic, as there are high barriers to entry to the industry and it requires natural monopoly infrastructure such as pipelines, railways and ports. If the industry received no subsidies (other than for any positive externalities it provides), and paid the full social costs of its externalities (e.g. through carbon and pollution taxes), much—perhaps all—of it would be unprofitable, and perfect competition would bid down any remaining rents.

However unlikely it is that a perfectly competitive fossil fuel market comes about, let us assume for the sake of argument that it does and consider the original objection on its merits.[8] The

[7] We do not accept that maximising welfare *qua* preference-satisfaction should be the ultimate normative objective, but we will assume it is for the sake of responding to this objection.

[8] It is not even theoretically clear what this would mean in the case of internalising the social costs of GHG emissions. Calculating social costs assumes that the disvalue of GHGs can be determined by what current

objection is that, under perfectly competitive market conditions, the (*ex hypothesi* highly-regulated) market would achieve higher aggregate welfare than if fossil fuels were produced and distributed according to government priorities. This, so the argument goes, is because markets enable fossil fuels to go to those who have the greatest willingness to pay for them.

The objector's argument rests on an implicit assumption that efficient outcomes (which we are assuming for the sake of argument) are welfare-maximising, where welfare is understood to mean the aggregate satisfaction of consumption preferences. But efficiency and welfare are not the same. Rather, given the diminishing marginal propensity of money to satisfy preferences, aggregate preference satisfaction is a function of how economic resources are *distributed*. Efficiency is, therefore, at best an indication of society's *potential* to satisfy preferences (assuming costless redistribution); realising that potential requires actual redistribution (which is not costless) (Hausman, McPherson, and Satz 2016, 159–61). The more unequally economic resources are distributed, the greater the distance between efficiency and aggregate preference satisfaction (i.e. the less efficiency is a proxy for welfare) because a wealthy person is able and willing to pay more for a good they value than a poorer person who values the good just as much. It follows that the more unequal a society is, the more effective government rationing (as compared with market allocation) will be as a means of maximising welfare (Weitzman 1977). Income and wealth inequalities are currently extremely high (Chancel et al. 2021). Consequently, some individuals can fly around the world in private jets, while others can barely heat their homes in winter, and others still don't have access to housing at all. Under these conditions, our objector cannot rely on neoclassical welfare theory alone to argue that the allocation of fossil fuels via the market mechanism is more welfare-maximising than is its allocation according to the priorities determined by the government.

3.3. Public ownership is the first step on the Road to serfdom

A second objection comes from those who are worried that the government taking over economic production entails the undermining of economic freedoms. Following Hayek's famous arguments in *The Road to Serfdom* (1944), economic and political liberties go hand in hand, hence the increase of government ownership over the means of production will eventually lead to tyranny: the government will start by curtailing economic freedoms of entrepreneurs in the fossil fuel industry, and once they have taken this step, we are on a slippery slope to further restrictions of economic freedoms and eventually a totalitarian state.

Given the prevailing ideological background in many countries, the idea of public ownership of a large sector may come across as radical. But that position may reveal more about the biases in those prevailing ideologies, since contemporary governments—even prosperous, democratic ones—already own many assets. Indeed, all rich democracies have mixed economies that combine private, public and common ownership, yet there is no evidence that this public and common ownership has set those countries on a path towards totalitarianism.

The relevant question, then, is: which sector, or the production of which goods and services, should be organised in what way? The answer will likely vary from case to case, and depend on a

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consumers are willing to pay to avoid the effects of climate change. But this poses insuperable empirical difficulties and requires questionable normative assumptions (Stern 2013).

wide range of factors, including values and social-scientific knowledge (Bayliss and Fine 2020). Focusing on the normative issues at stake, we have made a specific set of arguments as to why governments should take fossil fuel companies into public hands, assuming they are suitably-motivated and capable of exercising effective control. We do not argue in this paper for public ownership in a broad range of sectors, let alone in the entire economy. At most, the arguments we have made could be extended to encompass other links in the supply chain of fossil fuels (e.g. large coal-fired and gas-fired power generators), and other large sources of emissions. The onus therefore lies with the objector to explain the causal dynamics by which suitably motivated and effective public ownership of fossil fuel companies—or other public ownership of other targets to which our arguments may extend—would lead to serfdom.

3.4. Motivation and feasibility issues

In this final section, rather than considering a specific objection, we explore a set of issues concerning motivation and feasibility.[9] These issues are linked in that they question one or more of our main assumptions in ways that have significant implications for our arguments—especially concerning the effectiveness of public ownership as a means of decarbonisation. We do not propose to treat these issues comprehensively, let alone to resolve them. Rather, we merely aim to lay out the relevant issues and invite further multi-disciplinary discussion.

Our first two assumptions are that in each case of a public acquisition of a fossil fuel company it is undertaken by a suitably motivated government that acquires sufficient control over the company to carry out the Public Interest Actions. Following the philosophical literature on feasibility, these can be thought of assumptions about *accessibility*, i.e. the attainability of an outcome, by way of a set of possible transformations (social, political, economic etc.) from the status quo (cf. Gilabert 2017; Gilabert and Lawford-Smith 2012). Our third assumption is about *stability*, i.e. the maintenance of the requisite motivation and control over a relevant time period (Cohen 2009), and this assumption can be decomposed into an assumption about the stability of the requisite motivation and an assumption about the stability of the requisite control. Objections can be envisaged targeting each of these assumptions.

Accessibility of the requisite motivation: An objector may argue that governments are unlikely to be motivated to incur the economic and political costs of acquiring fossil fuel companies only to wind down production in the global public interest. The objector may point to the fact that, historically, where governments have been motivated to acquire fossil fuel assets their motivation has been to gain control over a higher share of short- to medium-term revenue from the sale of oil and to use this to retain power, consistent with an overall objective of *maximising net benefits to the ruler* (Mahdavi 2014, 2020).

However, just because some rulers in some countries in the past nationalised oil companies to enrich themselves and entrench their power does not preclude other governments in other countries in the future acquiring fossil fuel companies in the interests of decarbonisation. Numerous governments have pursued policies to manage the phase-out of fossil fuel production or power

[9] We are grateful to participants in the 2021 Princeton Climate Futures Workshop, especially Paasha Mahdavi and Alexandra Gillies, for raising and discussing many of the below issues with us.

generation assets on climate mitigation grounds, especially in the coal sector (Rentier, Lelieveldt, and Kramer 2019). Moreover, we do not assume that public ownership would necessarily involve expropriation / compulsory acquisition, as did the oil nationalisations of the 1970s: as we note in Part 1, we are open to the possibility that shares could be acquired on the open market or some amount of compensation could be paid for a compulsory acquisition (though we acknowledge that would be controversial, so we remain neutral on this issue here).

As for whether the requisite motivation might extend to *using public ownership* to engineer such a phase-out, we note that free-market ideology is increasingly being called into question among the public and among segments of the intellectual elite in many parts of the world, and there is substantial interest in expanding public ownership of essential assets (Guinan and O'Neill 2018; Hanna 2018; Kishimoto, Steinfort, and Petitjean 2020; Lawrence and Hanna 2020). The imperative to decarbonise is often a central motivation for such proposals (Aronoff et al. 2019; Galvin and Healy 2020; Pettifor 2019; Prakash and Girgenti 2020). To provide just two examples, proposals for a Green New Deal in the US, advocated by the socialist-progressive wing of the Democratic party, have proved extremely popular with the public (Bergquist, Mildenberger, and Stokes 2020; Gustafson et al. 2019) and have clearly influenced the policies of the Biden administration (Kurtzleben 2021). In the UK, the nationalisation of a wide range of strategic assets, and implementing a Green New Deal, were central planks of the Labour Party manifesto for the 2019 national election (Labour Party 2019). Clearly, this political-economic trajectory faces barriers in the US and UK, and we do not necessarily think it is *likely* to eventuate. Our point is simply that the probability that a future progressive government in the US, UK or elsewhere would be motivated to acquire fossil fuel companies as part of their decarbonisation strategy seems sufficient to warrant further debate.

Still, this response has its limits. Even if all rich democracies (say) underwent a progressive revolution in which suitably motivated governments came to power, stubborn facts about the geographic dispersion of fossil fuel reserves and their current ownership are likely to limit the effectiveness of the decarbonisation actions we envisage (in section 2.1). This is a particularly thorny issue for oil, since the vast majority of reserves are controlled by national oil companies, most of which are currently owned by poorer and/or undemocratic states where, to put it mildly, the requisite motivational state seems less accessible for the foreseeable future (Heller and Mihalyi 2019; Manley and Heller 2021). It is somewhat less of an issue for coal—where large deposits exist in the US, Australia, Germany and other rich democracies, and where markets are more regionalised. Future research could usefully explore the feasibility of suitably motivated governments coming to power in different countries with significant fossil fuel reserves.[10]

Sustainability of the requisite motivation. A further issue concerns whether the requisite motivation, once attained, could be sustained for sufficiently long to carry out the Public Interest Actions. If it turns out that the probability of suitably motivated governments coming to power is only sufficiently high to warrant serious consideration in rich democracies, then we must also recognise that those governments could lose power at a subsequent election and be replaced by a

[10] We are assuming in this paragraph that governments will only be able to exercise control over operations *in their* jurisdiction. Legal and other factors may limit the ability of such governments to wind-down operations in overseas jurisdictions, and in any case they are unlikely to be able to prevent the overseas government from engaging another company to exploit the resources.

government with contrary motivations. Indeed the replacement government might even be motivated to use its newfound control over the fossil fuel sector to *increase* production, or otherwise pursue the opposite actions that we have envisaged. Much depends on the political feedback effects of the initial acquisition: are these likely to entrench or weaken support for the incumbent and its decarbonisation strategy? Future research could usefully explore this question in relevant democracies.

Accessibility and sustainability of the requisite control: Finally, it may be objected that many states lack the fiscal or administrative capacity necessary to acquire and sustain ownership of private fossil fuel companies, or obtain and sustain sufficient control over the companies they own to implement the Public Interest Actions.

Whether a government has the capacity to *acquire ownership* of relevant companies depends much on the acquisition strategy pursued (see Part 1) and jurisdiction-specific features, and is therefore difficult to evaluate in the abstract. Further analysis of specific feasibility constraints, and the feasibility trade-offs associated with different acquisition strategies, in key jurisdictions would be valuable.

Whether a government that acquires a fossil fuel company can then obtain and sustain sufficient control over it to carry out the Public Interest Actions is likely to be contingent on the capacities of the relevant government and the motivations and behaviours of managers and employees in the relevant company. Historical and contemporary case studies suggest two kinds of generic risks. First is the principal-agent problem, which might be called the "state within a state" problem: that the acquired fossil fuel company is so large, and so wedded to its (former) objectives of profit-maximisation through fossil fuel production, that it remains *de facto* autonomous—both motivated and able to ignore government mandates. This might manifest as successful resistance to either the initial bid for government control, or an ability to thwart the directives of the government-installed directors and their appointed senior managers, or to co-opt them over time. A related problem applicable to a company that exhibits this kind of autonomous resistance to the government's desired public interest strategy is what might be called the "fox in the henhouse" problem: that the company, once brought into the government apparatus, is able to exert *more* corruptive influence over the government's energy and climate policy than it did when it was privately owned. Again, the conditions under which these kinds of dynamics are likely to be triggered vs avoided in specific contexts is a worthy object of further study.

4. Conclusion

Philosophers—in particular political philosophers—have often presented the philosophical case for new institutions they think will improve the world, from the implementation of an unconditional basic income, to the abolition of borders.[11] We are unlikely to think all such ideas were, upon closer analysis, *good* ideas; but they make us think about how the world could be different. We believe that climate change demands from us that we think out of the box, and consider seriously proposals that go against the ideological mainstream.

[11] For a discussion of fifty of such proposals, see Gosseries and Vanderborght (2011).

It is in this spirit that we have explored the idea of nationalising privately-owned fossil fuel companies, on the assumed conditions that such national acquisitions are undertaken by a suitably motivated government that is able to obtain effective control over such companies, and that such motivation and control are able to be sustained for long enough to phase out the companies' production of fossil fuels in the public interest. We argued that, under such conditions, public ownership would advance the achievement of social justice—both climate justice (via increased / more effective climate mitigation) and the justice of the transition to a net-zero emissions economy. We also argued it would facilitate a fair sharing of burdens and benefits, and would enhance democracy. Finally, we responded to four types of objections to this argument. The strongest of these was a set of objections to the feasibility of our assumed conditions and the implications for our argument of applicable feasibility constraints: could the requisite motivation and control really be obtained and sustained? In what countries is there a sufficiently significant probability of this occurring to be worthy of serious consideration? Would nationalisations in *those* countries alone be sufficient to achieve significant advances in climate mitigation, given the global distribution of fossil fuels? These are important questions that we hope to continue to discuss with social scientists and other philosophers.

Without claiming to have resolved the debate, this paper has made two contributions to literatures at the intersection of political philosophy and political economy. First, the literature on climate ethics has predominantly adopted the mainstream "pollution paradigm" within which to deliberate about how states ought to respond to climate change. Alongside the social-scientific turn towards a systems paradigm in the climate field, and calls for radically different thinking about climate policy options, political philosophers have begun to think about how the substance and methods of normative theorising need to evolve if they are to be relevant to the challenge of decarbonisation (e.g., F. Green 2021; F. Green and Brandstedt 2021). Both substantively and methodologically, our open-textured and non-definitive exploration of what is a normatively and social-scientifically complex idea contribute to a mode of climate ethics that we think well-suited for the precarious historical moment in which we find ourselves.

Second, we contribute to a longstanding debate about the role of the state in the economy, encompassing both the desirability and feasibility of government ownership of (some of) the means of production (Gilabert and O'Neill 2019). In recent years, there has been a resurgent exploration of public ownership models for a wide range of essential goods and services (Guinan and O'Neill 2018; Hanna 2018; Kishimoto, Steinfort, and Petitjean 2020; Lawrence and Hanna 2020; Mazzucato 2013). In these cases, the aim is to reclaim the production of a good or service from the market, in order to deliver it in a more democratic and equitable way, or to ensure a fairer balance of risks, costs and benefits, between private and public actors in systems of production and innovation. Examples of governments taking on enterprises to *phase them out* in the public interest are less commonly discussed. Although the public acquisition of loss-making assets is not historically anomalous—for example, in the banking sector (e.g., Schäfer and Zimmermann 2009)—the unique aims of fossil fuel nationalisations raise novel issues of distributive justice that merit deeper debate among political philosophers, which we hope that this paper will encourage.

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