**Political economic constraints to climate policy: literature, a framework and stylized facts**

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Policy prescriptions for climate change mitigation often overlook fundamental constraints to their promotion and adoption. Institutions can lack the capabilities to formulate and apply regulations. Social and cultural ideas can lower trust in public policy making, or disregard the impacts and proximity of climate change, severely limiting opportunities for change. Above all, interest groups actively deploy financial and political power to minimise compliance costs, while shaping ideas and institutions to further consolidate their position. These complex political economic constraints to climate policy have to date been scarce researched. In this paper we review the empirical and theoretical literature relevant for understanding cross-national differences in the adoption and outcomes of climate legislation and policies. We then present a series of stylized facts in order to answer the question - *which countries are severely exposed to political economic constraints to climate policy, and do they matter for global climate mitigation?*

## Introduction

It is largely acknowledged that countries are not on track to meet the climate mitigation goals of the Paris Agreement. Assessments of the Nationally Determined Contributions (NDCs) point to a global emissions pathway that far exceeds the cumulative emissions budget of the 2°C goal, let alone 1.5°C (UNEP, 2018). A majority of countries have put into place climate targets and legislative measures (Iacobuta, Dubash, Upadhyaya, Deribe, & Höhne, 2018), but the implementation of effective and stringent policies is still lacking (Carbon Pricing Leadership Coalition, 2017). Fossil fuels remain a mainstay of the global economy and emissions are once again on the rise (Quéré et al., 2018).

One prominent explanation for the climate gridlock is that a top-down global agreement on burden sharing, technological transfers and climate finance is required (REFs?). In its absence, countries – motivated by their business communities and electorates – choose instead to minimise costs and ‘freeride’ on the actions of others, resulting in piecemeal actions that add up to little substantive effort. Evidence for these claims can be found in the consistent lack of progress made in international climate negotiations, up until the bottom-up voluntary pledge system manifested in Paris.

Another common line of explanation puts the blame on intrinsic human characteristics. It is argued that humans are uniquely unsuited to perceiving the proximity and severity of climate change (Gifford, 2011). We are also not good at addressing particular ethical and socio-temporal difficulties, such as the need to shoulder the costs of mitigation on behalf of distant victims and future generations (Gardiner, 2011). A ‘perfect moral storm’ locks society and its institutions into inaction.

A third avenue focuses on social and infrastructural sources of carbon ‘lock-in’. Since most fossil emitting or shaping infrastructures (e.g. power plants, urban form) have long lifetimes, sunk costs, and socially embedded patterns of use that are by now ‘normal’, energy systems have built-in sources of inertia that severely constrain the speed and ambition of transitions (Ivanova et al., 2018; Seto et al., 2016).

A fourth explanation focuses on political economic causes of the climate gridlock. In this view, shifts away from fossil fuels and energy-intensive activities are seen through a lens of power and conflict between interest groups (Fuchs et al., 2015; Geels, Sovacool, Schwanen, & Sorrell, 2017; Grandin, Haarstad, Kjærås, & Bouzarovski, 2018; Lockwood, Kuzemko, Mitchell, & Hoggett, 2016; Moe, 2010; Roberts et al., 2018). Fossil fuel interests are central to the analysis: strong climate policy poses an existential threat to their standard operating practices, and they will mobilise vast financial and political resources to prevent it. Such strategies may include political lobbying, shaping public discourses against climate action, or ‘capturing’ the very government bodies that are tasked with their regulation. Incumbent interests are also situated within a history and trajectory of political institutions and societal norms – and often these passively reinforce and entrench their articulation of power. For political economists, sources of carbon lock-in, social inertia and moral failure are not accidents of modern society, they are design features of the fossil economy.

The political economy literature on climate change mitigation takes many directions. Strands of theoretical literature have explored the conditions and contexts that support (or hinder) energy or climate transitions (Geels et al., 2017; Gough, 2016; Moe, 2010). Within these, institutions are argued to have a central role in mediating the power of interest groups and locking-in technology systems through sets of rules (Lockwood et al., 2016; Meckling & Nahm, 2018). There has been much attention on the appropriate design of climate policies to overcome political constraints, for instance by compensating interest groups, or recycling carbon tax revenues into public goods to engineer social support (Spencer et al., 2018; Vogt-Schilb & Hallegatte, 2017). Marxian-inspired research has explored the structural factors underlying the dominance of fossil fuels in the global economy (Malm, 2016; Paterson & P‐Laberge, 2018). And there has been a series of studies on the cross-national political economic determinants of climate legislation and policy adoption (Dolphin, Pollitt, & Newbery, 2016; Fankhauser, Gennaioli, & Collins, 2015).

In this article we contribute to the latter stream of work, exploring political economic determinants that manifest at a national level and point to substantive international divergences in the prospects for rapidly mitigating climate change. We adopt the language of ‘constraints’ to describe social, political and institutional contexts that appear to hinder climate policy adoption. (One can argue that ‘constraints’ is the more appropriate terminology here, as it frames mechanisms that actively prevent mitigation, compared to more passive and positive formulations such as climate policy ‘determinants’ and ‘enablers’ that are common in the field).

We aim to answer the question – *which countries are exposed to political economic constraints to climate policy?* – via the following four objectives:

* Review the empirical literature identifying political, social and institutional constraints to climate legislation and policy adoption
* Synthesise the empirical literature under a political economic framework
* Construct an international dataset of indicators and report stylized facts on the international distribution of constraints, trends over time, and their structural correlations
* Examine the overlap between constrained national contexts, available fossil reserves and other bottlenecks in global climate mitigation

The primary focus of analysis is on broadly acknowledged issues such as fossil rent seeking, poor institutional quality, and social fragmentation. Given the known geographic distribution of fossil fuel reserves (McGlade & Ekins, 2015) and planned carbon emitting infrastructures (Davis & Socolow, 2014; Edenhofer, Steckel, Jakob, & Bertram, 2018), we argue that assessments of future climate mitigation prospects (or ‘feasibility’) should begin with the stylized facts: what national-level constraints can be identified, where do they occur, and how are they interrelated? Due to this broad scope, our approach is complementary to, but goes somewhat against the grain of political economic research that has thus far tended to work with detailed case studies, or mid-range theories in a small number of comparative settings (Ylä-Anttila et al., 2018).

Our article is structured as follows. First we introduce theoretical and empirical concepts to structure the forthcoming discussion (section 2). This is followed by our main review of the theory and empirics on climate policy constraints, focusing on the international comparative literature (section 3). We then examine a series of stylized facts on the international distribution of constraints (section 4), before concluding (section 5).

## Background and theoretical setting

The research question we formulate has been addressed in a large scope of literature. To structure the discussion, we first put forward a basic framework to characterise constraints, and then turn to a critical issue: what is the appropriate dependent variable for analysis?

### A basic framework to characterise constraints

Hall (1997) argues that political economy analysis can be broadly categorised into approaches focusing on interests, ideas, or institutions. Interest-based analysis recognises that societal changes have material (e.g. monetary) consequences for different actors, such as workers, capitalists, and political agents. These groups therefore respond to, and participate in, social change. Often the interests of different actors may intersect, stimulating the formation of coalitions to push for a common agenda; or they may diverge, resulting in political conflict and struggles over scarce resources. The socio-technical transitions literature argues that industrial interests are often associated with particular technologies (Geels & Schot, 2007). The conflict between incumbent fossil fuel energy producers versus ‘niche’ renewable energy-based entrants is therefore highlighted as a contemporary example of interest-based struggles that spill over into political pressure to block climate reform (Moe, 2015).

Institution-based analysis usually focuses on the organisation and functions of the nation state. In most political economy traditions the state is seen to have a central role in facilitating markets and capital accumulation, namely through the enforcement of contracts and property rights, socialising the costs of unprofitable ventures required for private enterprise (roads, education, public health), regulating private activity to limit social harms, and directly facilitating economic activity (Heilbroner, 1985). Both the quality of the institutions that carry out these tasks (i.e. their technical and bureaucratic capability) and their different organisational forms (e.g. exposure to veto players or political cycles) are highly consequential for understanding the constraints to structural change (Lockwood et al., 2016; Roberts et al., 2018).

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|  | **Analytical focus** | **Influence on climate policy** |
| **Interests** | Power resources and motives of collective actors, such as industrial associations, political parties, social classes, NGOs | Powerful interests determine – within an institutional setting – the priority order for policies, or shape the possibility space for reform by deploying veto powers |
| **Institutions** | Organisation, functions and capabilities of public policy making bodies, e.g. the nation state | Institutions mediate the distribution of power resources among interests, the channels for promoting ideas (e.g. via media and education), and the quality of policy implementation |
| **Ideas** | Content claims and narratives embedded in social, political and cultural discourses | Ideas with a wide reach shape the underlying worldviews of key interests and the public, regarding the need for (and possibility of achieving) reform |

Table 1: A basic categorisation of political economy constraints on climate policy

Idea-based analysis argues that the underlying worldviews and ideologies of different actors matter. Certain worldviews can undermine political consensus on important points of policy, such as a pre-disposition towards rationalising the status quo (Jost, Banaji, & Nosek, 2004), or an increasing distrust of ‘elites’ such as scientists and politicians (Lockwood, 2018). Beyond the voting public, the ideas of particularly influential actors (e.g. business leaders and politicians) are argued to be highly consequential for social and political change, since such individuals might lead political institutions, or can directly implement policy (Hall, 1997). The volumes of literature on a post-1980s neoliberal turn in global governance – and its wide-reaching social, economic and political consequences – attests to this claim (Harvey, 2005; Rodrik & World Bank, 2006).

Political economists often argue that ideas, institutions and interests interact in a complex manner, potentially fusing into ‘structures’, ‘complexes’ or ‘regimes’ that are internally consistent and self-reinforcing (Geels et al., 2017). The dominance of private automobile transport in many countries is one example, itself the result of decades of sunk investment in infrastructure (roads, refineries), facilitating institutions (transportation ministries), cultural conditioning (cars as symbols of freedom and status), and industries that support a wide array of actors (capitalists, unions, regional economies) (REF Mattioli et al). The ‘ways of doing things’ that are established by regimes may be so embedded in daily life as to appear a natural social phenomenon, with alternatives rarely discussed or simply deemed ‘infeasible’. Together this explains the difficulty of initiating wide-reaching energy transitions – and the need for analysis that identifies architectures of constraints, rather than individual and separable issues.

### Defining the dependent variable

What is the measure or success (or failure) in climate policy making by which we judge the influence of constraints? Following two decades of climate on the political agenda, there are various examples of target setting, treaty ratification, policy adoption, and policy outcomes (e.g. emissions trends) to assess, each with their own issues and implications.

One approach is to examine trends in national carbon emissions. This is taken by a large volume of well-reviewed studies that aim to uncover the ‘human drivers of carbon emissions’, including political economy determinants (Dietz, 2017; Jorgenson et al., 2018; Rosa & Dietz, 2012; Tjernström & Tietenberg, 2008). An advantage is the long and consistent time series of emissions accounts available (Quéré et al., 2018), facilitating quantitative assessments into the influence of various factors. A disadvantage is that current emissions are often the outcome of path dependencies that significantly pre-date contemporary climate concerns, such as early decisions that shape the fuel content of national energy systems (Foxon, Pearson, Arapostathis, Carlsson-Hyslop, & Thornton, 2013), or global developments that shape the distribution of manufacturing activities (Peters, Minx, Weber, & Edenhofer, 2011). For these reasons, recent trends in emissions are unlikely to be a sound guide to constraints in climate policy making.

A second option is to examine the adoption of climate targets, legislation and international agreements. These ‘intentions to mitigate’ might include the Nationally Determined Contributions (NDCs: the bottom-up climate commitments by countries to the Paris Agreement), compilations of national targets and legislative measures (Iacobuta et al., 2018), or the commitments of countries to UNFCCC protocols (Bernauer & Böhmelt, 2013). The large variation in country commitments and different types of strategies adopted (e.g. legislation vs. executive targets) attests to the interesting nature of these data. Yet, a clear disadvantage is that intentions often do not reflect outcomes. Ambitious target setting can be a form of ‘symbolic meta-policy’ that satiates short-term political demands, but does not manifest in concrete instruments and actions that lead to long-term reductions in emissions (Bache, Reardon, Bartle, Flinders, & Marsden, 2015).[[1]](#footnote-1) This is increasingly clear from countries with ambitious targets, such as Germany, but a poor track record of making progress towards them (Meckling & Nahm, 2018).

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| **Dependent variable** | **Description** |  | **Example data sources** |
| **Climate legislation** | The ratification of climate treaties (e.g. the Kyoto Protocol, Paris Agreement); setting of climate targets (e.g. Nationally Determined Contributions); adoption of legislation (e.g. UK Climate Change Act 2008); creation of responsible ministries |  | CLIMI (Steves & Teytelboym, 2013) |
| **Climate policy adoption** | The adoption of regulations, standards and instruments that support energy demand reduction and renewable energy technologies, or penalise fossil fuel use (feed-in-tariffs, carbon tax, emissions trading schemes, coal moratoria, energy subsidy reforms) |  | World Bank Carbon Pricing Dashboard (World Bank, 2019) |
| **Policy stringency** | The scope and strength of policies adopted (e.g. the emissions covered by a carbon tax, and the price level of the tax) |  |  |
| **Policy outcomes** | Composite indicators of climate policy adoption, emissions trends and renewable energy technology adoption |  | CCPI (Burck, Hagen, Marten, Höhne, & Bals, 2019) |

Table 2: Dependent variables of climate policy

A third approach is to examine the adoption and stringency of climate policies, particularly ‘flagship’ policies such as carbon taxes, renewable energy tariffs, fossil fuel subsidy reforms, or moratoria on new fossil fuel infrastructure (Compston & Bailey, 2016; Schmidt & Fleig, 2018). In some sense this is the ideal approach, and yet the variety and variability of policy instruments clearly hampers comparative research: some countries and jurisdictions favour economic instruments (a carbon price), others tend towards direct regulation, and many countries have no formal instruments whatsoever.

A final approach is to combine policy output and emissions outcomes. The Germanwatch Climate Change Performance Index (CCPI) combines measures of national and international climate policy adoption with recent trends and levels of GHG emissions, energy use and renewable energy penetration (Burck et al., 2019). Extended Kaya decompositions have also been suggested, but not operationalised (Peters et al., 2017). These types of assessments are highly dependent on data availability – with only 60 countries tracked in the latest iteration of the CCPI.

[OVERALL THEREFORE, IT IS DIFFICULT…]

## International assessments of climate policy constraints

What climate policy constraints have been examined to date? In this section we focus on the international comparative literature, structuring identified constraints into the three broad areas already introduced: the role of interests, institutions and ideas. We derive the relevant literature from a search in the Web of Science and Scopus [ahhh I lost it somehow!!], followed by manually searching for citations in Google Scholar. Studies examining only emissions outcomes are rejected. Our focus is instead on the adoption of legislation, climate policies, policy stringency and policy outcomes (defined in Table 2). We complement the discussion of these with relevant case study, surveys and qualitative research, particularly from literatures on public policy making and public perceptions of climate change.

### Interests

Certain interest groups are likely to strongly oppose stringent climate policy. Most prominently, electricity utilities with large portfolios of fossil fuel generation (coal, oil and gas) will face increased compliance costs in the short term, along with the upstream suppliers of these fuels (fossil extraction, refining and transportation industries). In the long term, effective and global reforms ought to phase out freely carbon-emitting activities entirely, threatening the standard operating practices of some of the most capitalised international companies in existence (e.g. Shell, BP, Sinopec, Saudi Aramco and others). Other energy-intensive industries are also materially exposed to climate policy, such as mining and smelting firms, and chemical and heavy manufacturing industries.

There is mixed evidence that fossil interests influence the adoption of climate legislation, but more support for the claim that they oppose climate policy adoption and stringency. Steves & Teytelboym (2013) find that high shares of industry in GDP reduce climate legislation adoption rates. Lachapelle & Paterson (2013) and Fankhauser et al. (2015) examine the impact of fossil fuel exports in GDP on legislation adoption, finding a negative correlation, but not a significant relationship. But when it comes to climate policies, Dolphin et al. (2016) show that carbon tax adoption is strongly limited by high industry shares of GDP, as well as fossil fuel shares of electricity generation (coal and oil, but not gas). Carbon tax stringency, in turn, is hampered especially by high shares of coal in the energy generation mix (Dolphin et al., 2016; Levi, Flachsland, & Jakob, 2019).

Fossil interests may take different approaches in minimising their exposure to regulation, explaining these divergent effects. Direct opposition to climate policy adoption (or the roll-back of existing policies) has been well documented in case studies, such as the carbon tax repeal in Australia (Crowley, 2017), heavy lobbying against coal regulation in South Africa (Baker, Newell, & Phillips, 2014), and the more recent and widely commented-on failure of a carbon price ballot in Washington State, US (ref). Yet, when high political demand for climate policy is perceived, affected interests may also take a hedging strategy: support the adoption of policy, but push for exemptions or a particular instrument in order to minimise compliance costs (Meckling, 2015). This occurred in the case of the EU Emissions Trading Scheme (ETS), where industrial associations representing oil and gas and electric utility interests took a pro-regulation stance, but favoured emissions trading over a carbon tax, due to lower predicted costs (Meckling, 2015). The influence of vested interests is therefore mediated by domestic political contexts, such as perceived popular demand for action, and may not necessarily manifest as opposition to climate legislation or policy adoption.

Besides fossil fuel interests, other groups are likely to have a stake in climate policy processes. Environmental NGOs are vocal proponents and are known to support and participate in a wide array of decision making and governance activities (Kuyper, Linnér, & Schroeder, 2018). Indeed, there is cross-national evidence that the absence of environmental NGOs hinders the adoption of climate legislation (Böhmelt, Böker, & Ward, 2016; Fankhauser et al., 2015). Similarly, low-carbon industries (e.g. renewable energy producers) are an interest group that would materially benefit from climate policy. There is emerging evidence from the case study literature that they indeed support and can be decisive for the adoption of climate policies, but require nurturing through technology policies in order to gain an initial foothold (Meckling, Sterner, & Wagner, 2017; Pahle et al., 2018). Workers and unions are another important constituency, often vocal in opposition to reforms that result in job losses. International studies are limited, but small-n comparative research has documented heavy resistance from coal industry workers in particular, who are often well unionised and geographically concentrated, and hence can be politically influential (Spencer et al., 2018).

Fossil fuel consumers have been extensively discussed in the context of efforts to reform fossil subsidies in the global South. Fossil fuel subsidy reform renders certain consumption behaviours more expensive (e.g. household energy and vehicle use) and can have varying distributional consequences (Sovacool, 2017). In some Southern countries, fossil fuel subsidies primarily benefit middle and upper classes (i.e. the minority of households that have electricity and cars) (Dorband, Jakob, Kalkuhl, & Steckel, 2019; Ohlendorf, Jakob, Minx, Schröder, & Steckel, 2018). Many have therefore suggested that fuel subsidies are intentionally distributed to ‘buy’ the support of politically influential constituencies (Lockwood, 2015; van Beers & Strand, 2013). In other contexts, fuel subsidies also benefit poorer households (e.g. kerosene for cooking and lighting), but are often ineffective mechanisms for poverty reduction (Rao, 2012; Sovacool, 2017). Van Beers and Strand (2013) show that oil exporting countries in particular fail to limit fuel subsidies, perhaps due to widespread perceptions that domestic oil resources “belong to the people”. These complexities and the direct and visible nature of subsidy benefits to consumers have rendered reform very difficult, particularly in countries with weak institutions (which limits the delivery of more targeted welfare policies) and autocratic forms of governance (which often rests on visible payments to powerful constituencies) (Lockwood, 2015; van Beers & Strand, 2013; Victor, 2009).

### Institutions

Institutions and governance arrangements have important procedural roles in the adoption and implementation of climate policies. Institutions include formal democratic systems such as elected parliaments and the distribution of powers between different ministries, as well as less formal methods of exchange and governance between public and private actors, e.g. through consultations, lobbying and so forth. Public institutions are also the primary vehicles for monitoring private sector activities and enforcing regulations, and hence have a central role in public policy implementation. Institutional analysis recognises that political struggles are mediated by these diverse arrangements, with significant consequences for the political economy of climate policy (Lockwood et al., 2016).

To date there has been much attention on the role of democratic forms of governance, which (contra autocratic regimes) are argued to have particular features that favour the adoption of climate policy. Notably, democracies are inclusive, allowing citizens to formulate environmental values and attempt to manifest these in policies and governance (Böhmelt et al., 2016). Such entitlements are reflected in the greater number of NGOs dedicated to environmental causes in democratic countries (and the absence of these in autocratic states), as well as their tolerance for a diverse and free press, which has an instrumental role in articulating policy demands and providing oversight of political activities.

Democratic governments also have stronger built-in incentives to provision public goods such as climate protection and basic infrastructures – e.g. health, water and sanitation – since these provide social benefits to a wide electorate on which they depend for legitimacy and support. In regimes with restricted electoral competition, political power tends to be arbitrated by a small elite (e.g. capitalists, the military, or religious figures), and incumbents know that political survival depends on funnelling government expenditures towards this elite, not towards a larger majority (Böhmelt et al., 2016; Deacon, 2009). In this manner, discussions of institutions and environmental policy often draw from an extensive literature tradition on the role of democracy in facilitating (and being mutually strengthened by) the provision of public goods (Bardhan, 2016; Deacon, 2009; Tjernström & Tietenberg, 2008).

These hypotheses are strongly supported by cross-national evidence. Higher indexes of democracy and democratic inclusiveness (e.g. strength of civil society, participation and political freedom) correlate with the adoption of climate legislation (Böhmelt et al., 2016; Lachapelle & Paterson, 2013; Obydenkova & Salahodjaev, 2017), the adoption of carbon prices (Dolphin et al., 2016; Levi et al., 2019), and the absence of fossil fuel subsidies (van Beers & Strand, 2013). Time-averaged analysis also confirms that the long-term accumulation of democratic norms and institutional apparatus is needed to support climate legislation adoption (Fredriksson & Neumayer, 2013; van Beers & Strand, 2013). In other words, even short periods of autocratic rule leave a social and political legacy that is difficult to shake: newly democratising countries are often more focused on consolidating institutions and trust, building competencies and addressing more urgent policies, rather than long-term projects in climate change mitigation.

Of course there are large differences between democracies and their institutions. A prominent claim is that the concentration of political power in centralised and parliamentary systems offers fewer frictions to climate policy adoption relative to federalist and presidential systems, which allocate power among a wider range of actors (Lockwood et al., 2016). In the latter case, a resulting profusion of ‘veto-points’ could limit the passage of strong climate policy – for instance when regional legislatures dependent on coal mining unilaterally block national measures (REF?). There is indeed cross-national evidence that parliamentary systems are more likely to adopt climate policies (Lachapelle & Paterson, 2013), however they do not reduce emissions faster (Lachapelle & Paterson, 2013). Nor do more concentrated political systems with parliamentary majorities implement more stringent carbon prices (Levi et al., 2019). Hence there is no clear perspective on which types of democratic system are more promising.

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| **Study** | **Dependent** | **Identified constraints and their reported effects on the adoption and stringency of climate legislation and policy**  **(+ higher value increases adoption/stringency | - decreases adoption/stringency |** 0 **no effect)** | | |
| **Interests** | **Institutions** | **Ideas** |
| (Levi et al., 2019) | **Climate policy stringency**  [Weighted carbon price level across 191 jurisdictions] | - Share of industry in GDP (+)  - Share of coal in ene. generation (-)  - Share of oil in ene. generation (0) | - Democracy index score (+)  - Government effectiveness (+)  - Control of corruption (+)  - Multilevel governance (e.g. EU) (+)  - Development level (GDP) (+)  - Political concentration (veto points) (0)  - Majoritarian voting system (0) | - High public belief in human-made climate change (+) |
| (Dolphin et al., 2016) | **Climate policy adoption**  [Carbon price adoption in 136 countries + 63 subnational jurisdictions] | - Share of industry in GDP (-)  - Share of coal in elec. generation (-)  - Share of oil in elec. generation (-)  - Share of gas in elec. generation (0)  - Share of trade in GDP (+) | - Development level (GDP) (+)  - EU membership (+)  - Democracy index score (+)  - Institutional capacity (Government effectiveness, Regulatory Quality) (0) | - Left/right political ideology (0) |
| **Climate policy stringency**  [Carbon price level across 37 countries + 24 subnational jurisdictions] | - Share of industry in GDP (-)  - Share of coal in elec. generation (-)  - Share of oil in elec. generation (0)  - Share of gas in elec. generation (0)  - Share of trade in GDP (0) | - Development level (GDP) (+)  - EU membership (+)  - Institutional capacity (Government effectiveness, Regulatory Quality) (0) | - Left/right political ideology (0) |
| (Fankhauser et al., 2015) | **Climate legislation adoption**  [Targets and policies within a given year across 63 national jurisdictions] | - Pro-green lobby (IUCN members) (+)  - Share of fossil/mining exports in GDP (0) | - Existing legislation and path dependency (e.g. presence of flagship laws) (+)  - Electoral cycles (strong democracies) (-)  - Electoral cycles (weak democracies) (0)  - Concentration of political power (seat shares of ruling party in all legislatures) (+) | - Right-political ideology (Anglo-Saxon countries (-)  - Left/right political ideology (all countries) (0) |
| (Böhmelt et al., 2016) | **Climate legislation adoption**  [UNFCCC protocols + emissions across 149 national jurisdictions] | - Pro-green lobby (IUCN members) (+) | - Political participation (freedom of speech, assembly, association) (+)  - Political freedoms (suffrage, elections, women’s political rights) (+) |  |
| (Lachapelle & Paterson, 2013) | **Climate policy adoption**  [Adoption of regulations, incentives, carbon price, voluntary agreements, R&D across 19 countries] | - Fossil fuel exports (-) | - Democratic Polity score (+)  - Parliamentary system (+)  - Variety of capitalism affects instrument choice (0)  - Proportional representation (0) |  |
| (Fredriksson & Neumayer, 2013) | **Climate legislation adoption**  [CLIMI Index for 87 countries] |  | - Years of democracy, with depreciation during autocracy (+)  - Constraints on the executive (e.g. independent judiciary) (+)  - Political competition (free and fair elections) (0) |  |
| (Obydenkova & Salahodjaev, 2017) | **Climate legislation adoption**  [CLIMI Index for 94 countries] | - CO2 per capita (-) | - Democracy index score (+) | - Social cognitive capital (IQ) (+) |
| (Steves & Teytelboym, 2013) | **Climate legislation adoption**  [CLIMI Index for 73 countries) | - CO2 per GDP (-)  - CO2 per capita (-)  - Share of industry, mining, utilities in GDP (-) | - Democracy Polity score ( 0 controlling for public knowledge, CO2 per capita and Kyoto commitments)  - Government effectiveness & regulatory quality ( 0 controlling for public knowledge, CO2 per capita and Kyoto commitments)  - EU membership (+)  - Post communist (0) | - Public knowledge of climate change (+) |
| (van Beers & Strand, 2013) | **Climate policy adoption (fossil fuel subsidy reform)**  [Petrol and diesel prices for 201 countries] | - Oil export surplus (-) | - Development level (GDP) (+)  - Control of corruption (+)  - Years of democracy (+)  - Shift to democracy (- then +)  - Presidential system (-)  - Proportional representation (+)  - Concentration of political power (seat shares of ruling party) (-) |  |

**Table 3: Cross-national studies of political economic constraints to climate policy**. Note: in some cases we do not report variables outside the interest/institution/ideas typology. Often these are control variables such as the share of trade in GDP (Böhmelt et al., 2016), or effect of economic cycles (Fankhauser et al., 2015).

State institutions also vary in terms of quality and exposure to corruption. In wealthier countries, bureaucracies can mobilise greater financial and human resources to formulate and implement policies. In poorer countries, states can often fail to carry out even basic functions, such as effective taxation. These conditions are often referred to as ‘state capacities’ in the institutional literature, a broad definition that encapsulates issues and indicators of “government effectiveness”, “rule of law”, and “control of corruption” (Holmberg, Rothstein, & Nasiritousi, 2009; Kaufmann & Kraay, 2015). In this context, it has been suggested that the implementation of more sophisticated climate policies (such as feed-in-tariffs) are a foregone conclusion where poor state capacities are prevalent (Jakob et al., 2014). Indeed, there are strong positive correlations between weighted carbon prices levels and subjective scores of “government effectiveness” and “regulatory quality” (see Kaufmann & Kraay, 2015), even after controlling for GDP (Levi et al., 2019)[[2]](#footnote-2). Poor control of corruption is also associated with a failure to reform fossil subsidies (van Beers & Strand, 2013) and carbon tax stringency (Levi et al., 2019). In the extensive development literature, poor state capacity is associated with a wide range of public provisioning failures, such as underinvestment in health services, poor economic performance (e.g. GDP), low environmental quality (e.g. air pollution, carbon emissions), and poor human well-being outcomes (Holmberg et al., 2009; Savoia & Sen, 2015).

### Ideas

Climate policy has long been a battle of ideas, with much contestation centred on the perceived existence, severity and human-driven nature of climate change. Many have reasoned that if the public remains in doubt regarding the causes and impacts of climate change, then legislators will be unwilling to push for climate policy adoption (Drews & van den Bergh, 2016; Lee, Markowitz, Howe, Ko, & Leiserowitz, 2015). Indeed, public belief in climate change to a large extent explains willingness-to-pay for climate policies in a US survey (Kotchen, Boyle, & Leiserowitz, 2013).

There is an extensive literature examining the underlying drivers of climate change perceptions. Much attention is paid to left- versus right-leaning political orientations, which appear to correlate with positive and negative attitudes, respectively, on climate change belief, concern and preference for policies (Drews & van den Bergh, 2016; Ziegler, 2017). The negative impact of right-leaning political orientations can be weakened if individuals endorse a deeper set of values with respect to nature (Drews & van den Bergh, 2016; Ziegler, 2017). However, the phenomenon of conservative climate scepticism may be relatively unique to Anglo-Saxon countries (US, UK, Canada and Australia), which are (not coincidentally) highly exposed to organised networks of climate scepticism and misinformation (Farrell, 2016; Farrell, McConnell, & Brulle, 2019; Lewis, Palm, & Feng, 2018; Painter, 2011). Again, this underlines the manifold channels by which interests can intentionally hinder climate policy (Oreskes & Conway, 2010).

In cross-national studies, education emerges as the most significant predictor of climate change awareness and risk perception (rather than belief) (Lee et al., 2015; Lewis et al., 2018), followed by media freedom (Steves & Teytelboym, 2013). Accordingly, countries with poor education provisioning and media landscapes that fail to prioritise climate reporting can have majority populations that are simply unaware of climate change, as is the case in India, Bangladesh, Egypt and Nigeria (Lee et al., 2015). Climate change awareness is in turn a significant determinant in cross-national regressions of weighted carbon prices (Levi et al., 2019) and climate legislation adoption (Steves & Teytelboym, 2013). Of course, here there is a particularly strong case for reverse causality, insofar as climate policy formulation is likely to increase public awareness of the problem. In short, public opinion on climate change (awareness, belief, risk perception) matters for policy making, and it can be bolstered by education and media, or weakened by propaganda.

Trust is another key element of national ideational context that shapes climate policy support. It is the notion that other individuals, institutions, scientists, or politicians share common social norms and act in a mutually beneficial way (Drews & van den Bergh, 2016; Smith & Mayer, 2018). A lack of trust in institutions implies limited confidence that environmental policies will be effective (Harring, 2014); while low social trust (e.g. in others generally) undermines collective action, since few will have the confidence that others are ‘doing their part’. In a small-n comparative study, Smith and Mayer (2018) find that individuals with high levels of social and institutional trust are far more willing to support costly climate policies. Hammar and Jagers (2006) find a similar result for trust in politicians in Norway, while Fairbrother (2016) extends the analysis to an international survey, showing a consistent and positive pattern of trust in explaining environmental policy support. Against a backdrop of progressively eroding trust in social and political institutions, this is a problem that has likely not received the attention it deserves (Fairbrother, 2017).

### Synthesis

The literature we reviewed primary assessed legislation adoption, rather than the adoption of climate policies, their stringency or outcomes.

* More on legislation adoption than policy adoption. Very little on policy stringency and outcomes (Note: also because we are in the ‘early days’), nor on comparing different dependents.
* Potentially missing variables: resource rents, fractionalisation. Many studies test climate policy adoption against per capita emissions (Obydenkova & Salahodjaev, 2017; Steves & Teytelboym, 2013), or shares of industry in general . Tautological thinking… it is hard to regulate fossil fuels, when there are lots of fossil fuels
* Above all, focus is more on identifying individual constraints, and not focusing on their trends and global distribution. We can speculate that countries are not likely to suffer from individual constraints, but multiple overlapping issues that are strongly interrelated.
* Useful to think about political economy regimes. Institutions, social cohesion and social provisioning have interlocking roles.

<https://www.v-dem.net/en/news-publications/democracy-reports/>

closed autocracy, electoral autocracy, electoral democracy, liberal democracy.

- rentier states

Chayes, S., 2017. When corruption is the operating system: the case of Honduras. Washington, DC.

van der Ploeg, F., 2011. Natural Resources: Curse or Blessing? J. Econ. Lit. 49, 366–420. doi:10.1257/jel.49.2.366

- danger of thinking that ‘all good things go together’ (Bardhan, 2016)

* **PA Agreement offers no international enforcement mechanism. Normal routes of accountability (courts, justification, etc.) are available to countries with a ‘rule of law’, but those without are not likely to face sanctions, or even stigmatization!! (Karlsson-Vinkhuyzen 2018). See three pathways**

### Stylized facts

See Rao & Pachauri 2017 for stylized facts.

### Data

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Unit | Date range | Source |
|  |  |  |  |

### Correlations and overlapping constraints

### Trends and improvements in constraints

- trend in climate concern, see Capstick et al. 2015

“It appears that we cannot expect climate change policies (and perhaps international environmental policies more generally) to improve rapidly in countries that recently experienced democratization. Only over time do democratic principles penetrate a society and its policymaking apparatus sufficiently to have a positive effect.” (Fredriksson & Neumayer, 2013)

See also, corruption in post-communist states: <https://www.tandfonline.com/doi/full/10.1080/1060586X.2014.931683>

* Shouldn’t misunderstand the development process … democratic bias… no slow progress towards democracy, capable institutions and climate-aware citizens … but a landscape of distinct regime types (Levitsky and Way 2002)… punctuated by periodic upheavals, but otherwise quite stable.
* “The assumption that hybrid regimes [partial democracies] are (or should be) moving in a democratic direction lacks empirical foundation… these cases should be conceptualized for what they are: a distinct, nondemocratic regime type.” (Levitsky and Way 2002)

### Cluster analysis

Correspondence analysis (Koch & Fritz, 2014)

DFMA?? (Fritz & Koch, 2016)

## Discussion

## Conclusion

In the face of these political economic challenges, authors have naturally called for packages of climate reform that address multiple underlying issues. For instance, earmarking carbon tax revenues for public goods and infrastructures could enhance the public acceptability of policies (Jakob et al., 2016), while pragmatic compensation mechanisms may be needed to buy the support of affected interest groups (Vogt-Schilb & Hallegatte, 2017). There is also wide agreement that establishing “enabling environments” and “institutional capacities” are basic pre-conditions for effective climate policy that are currently lacking (Carbon Pricing Leadership Coalition, 2017).

These are sensible and needed prescriptions, but they risk overlooking a larger architecture of constraints. Fossil fuelled economies are naturally resistant to change: they comprise not just the fixed infrastructures that need to be adapted or retired, but also the social and political systems that have co-evolved with them (Geels et al., 2017). These regimes have design features that either preclude the possibilities for reform, or hamstring those agencies that are responsible for implementation. Thus the terminology of ‘weak institutions’ and ‘lacking political will’ masks the *deliberate* nature of such deficiencies (Chayes, 2017). (… research on regimes?)

* Carbon lock-in literature?? Tends to focus more on individual actions than policies?
* Theoretical perspectives in Lachapelle & Paterson 2013

S. J. Davis and R. H. Socolow, “Commitment accounting of CO2 emissions,” *Environ. Res. Lett.*, vol. 9, no. 8, p. 84018, Aug. 2014.

C. McGlade and P. Ekins, “The geographical distribution of fossil fuels unused when limiting global warming to 2 °C,” *Nature*, vol. 517, no. 7533, pp. 187–190, Jan. 2015.

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## Assessment literature on political economy constraints

How does the assessment literature on climate change mitigation address political economic constraints to climate policy? This is a useful starting point, as it points to the emergence of the issue in recent years, and on-going confusion as to how to define the problem and structure its components.

In the early assessment literature, there was surprisingly little discussion. The Intergovernmental Panel on Climate Change (IPCC) reports have traditionally discussed ‘enabling environments’ or ‘enabling conditions’: terms coined by the UNFCCC (2001) to promote the removal of barriers to upscaling ‘environmentally sound technologies’. In AR5, reference to enabling environments is sparse, but largely focused on technology policy and the macroeconomic context. Constraints are conceived of as institutional in nature (e.g. systems of formal and informal rules that determine the playing field for competition), involving social norms and preferences (e.g. consumer demand for low-carbon technologies), or financial considerations (e.g. tax regimes, labour markets) (Gupta et al., 2014; Kolstad et al., 2014; Somanthan et al., 2014).

The recent IPCC Special Report on 1.5°C reframes enabling conditions as an issue of ‘feasibility’. This is highlighted as a core concept in Cross-Chapter Box 3 (Allen et al., 2018), followed by extensive discussion in the Chapter 4 section titled ‘Enabling Rapid and Far-Reaching Change’ (Conick et al., 2018). Several key issues are reviewed: the role of coordinated multi-level governance in strengthening policy implementation and outcomes; the need to establish institutional capacities such as monitoring, legal frameworks and consultation methods; the importance of public awareness and support; and the potentially adverse distributional consequences of climate policy implementation (Conick et al., 2018).

Recent UNEP Emissions Gap Reports have also given political economic issues a more prominent position, notably in chapters on the phase-out of coal (UNEP, 2017) and fiscal reforms for a low-carbon transition (UNEP, 2018). Again, these underline the need to ensure an equitable distribution of costs, the importance of public support and trust in policy processes, and the likely need to compensate affected industries, regions and workers due to stranded assets and the loss of income.

1. Thanks to Giulio Mattioli for this insight [↑](#footnote-ref-1)
2. Dophin et al. (2016) do not find a significant effect of these indicators on carbon price adoption or stringency. However, their study is based on a smaller sample of mostly wealthier states with strong institutions. [↑](#footnote-ref-2)