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## Institutions and Climate Change

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# Institutions and Climate Change

## Abstract

This paper reviews research across economics, political economy, political science, and public policy to investigate how institutions shape the adoption, implementation, and durability of climate policies. We examine how formal institutions (i) coordinate implementation capacity, (ii) anchor long-term commitments, and (iii) mediate distributional conflict. We also discuss how informal institutions, such as social norms and trust, further condition whether formal mechanisms translate into durable action. We distinguish quasi-experimental evidence from correlational and case-based findings, identifying where economic methods could further sharpen evidence, and conclude with a research agenda focused on institutional interdependencies and the conditions under which institutions can facilitate the adoption of effective and irreversible climate policies.

## JEL classification

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## Keywords

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# 1 Introduction

Climate change mitigation is a multidimensional, interconnected global challenge, characterised by scientific uncertainty, economic, and political dilemmas. As such, it should not come to a surprise that governments across the globe have responded with different climate policies. However, not only have responses differed in ambition and design, but some countries, including major emitters, have experienced a lack of temporal consistency, with periods of policy expansion followed by rollback. The results of the 2016 and 2024 US elections led to the immediate withdrawal of the US from international agreements, and the European Commission reversed its ban on combustion engines (The White House 2025; Reuters 2025). The contrast could not be sharper with respect to China, which operates through five-year plans and is pushing ahead with the rapid roll-out of green technologies, including solar farms, on- and off-shore wind projects and the decarbonisation of transport. This leads some to wonder whether democracies, with their short-term election cycles, are at a disadvantage with respect to other institutional setups vis-a-vis the fight against climate change (Terzi 2022a). The broader question is whether institutions play a role in determining the degree of ambition and implementation of national climate strategies. This review aims to answer this question.

A growing body of research points to institutions as central. The provision of long-term public goods, of which climate mitigation is a key example, requires formal and informal political and economic institutions that shape incentives and constrain behaviour (Acemoglu, Johnson, and Robinson 2005). However, the analysis of the role of institutions with respect to climate policy specifically and their effect on climate change mitigation remains empirically and theoretically underexplored. Given the need to limit global warming, understanding the conditions under which climate policies remain effective and endure is of obvious academic, political, and policy importance (IPCC 2023).

The ‘wickedness’ of the climate problem demands an interdisciplinary analysis (Stiglitz, Barrett, and Kaufman 2024). However, scholarship on institutions and climate outcomes remains fragmented between disciplines. Political scientists have produced substantial evidence on electoral

systems, veto players, and coalition dynamics (Finnegan 2022; Madden 2014; Mildemberger 2020). Public policy scholars have examined state capacity and bureaucratic coordination (Jordan and Moore 2020; Sabel and Victor 2022). Political economists have traced how corporatist institutions shape transition politics (Thomas and Doerflinger 2020; Brauers, Oei, and Walk 2020). This work identifies mechanisms and documents variation, but remains largely disconnected from economics. Economists have focused predominantly on optimal policy design, treating institutional constraints as exogenous (Nordhaus 2015). The political economy models that do exist, such as Besley and Persson (2023)’s analysis of commitment failures, generate predictions, but remain largely untested. As a result, political scientists tend to study whether policies are adopted but rarely quantify magnitudes, while economists tend to focus on what policies should look like rather than examine why actual policies deviate from optimality.

This review takes this fragmentation as its point of departure. We synthesise research across disciplines to investigate how institutions shape climate policy adoption, implementation, durability, and public support.<sup>1</sup> In line with North (1990), we define institutions as “the rules of the game”. We organise the analysis around three functions that map onto well-developed economic theory: coordinating implementation capacity (transaction costs), anchoring long-term commitments (time-inconsistency), and mediating distributive conflict (political economy of reform). We also examine how informal institutions condition whether formal mechanisms translate into durable action. We focus on domestic climate governance, as the international coordination aspects of this problem form a vast separate literature (Nordhaus 2015; Ostrom 2010).<sup>2</sup>

The evidence reviewed comes from quasi-experiments exploiting institutional reforms, cross-national analyses, comparative case studies, and survey experiments. Throughout, we try to flag identification strength, distinguishing well-identified findings from correlational or case-based evidence. Importantly, we treat descriptive and case-based research not as substitutes for causal

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<sup>1</sup>While extensive research examines climate policy design, including sequencing strategies (Meckling, Kelsey, et al. 2015), policy feedback loops (Jordan and Matt 2014), and layering approaches (Mahoney and Thelen 2010), these analyses focus on policy instruments rather than underlying institutions. This distinction matters as identical policies may produce different outcomes depending on institutional contexts (which we will show throughout this paper), suggesting the need to understand not just optimal policy design but the institutional foundations that enable or constrain policy effectiveness.

<sup>2</sup>International agreements address collective action failures but do not resolve the distributional conflicts and time-inconsistency problems arising within national systems. These domestic constraints remain primary barriers to implementation (Aklin and Mildemberger 2020).

identification but as essential inputs that reveal institutional variation, generate hypotheses, and identify the settings where more rigorous methods could be applied.

Our central findings read as follow. First, institutional capacity is necessary but an insufficient condition for effective climate policy. The evidence points to the importance of how capacity is organised, through administrative structures, coordination mechanisms, and learning processes, rather than capacity per se. Institutions matter less as static endowments than as systems that structure information, incentives, and feedback. Second, institutions play a critical role in anchoring long-term commitments, but commitment devices seem to be only partial solutions. A robust insight from theory and quasi-experimental evidence is that mechanisms which raise the cost of policy reversal, such as constitutional entrenchment, binding frameworks, and regulatory commitment, can stabilise investment expectations and mitigate time-inconsistency problems. At the same time, the literature makes equally clear that such devices cannot substitute for administrative capacity or political support. Commitment without implementation capacity yields symbolic policy, while commitment without coalitions remains vulnerable to erosion. Third, institutions mediate distributive conflict rather than eliminate it. Electoral systems, veto structures, corporatist arrangements, and compensation mechanisms shape who bears the costs of climate policy and how opposition is expressed. Their effects are conditional and often paradoxical. Veto points can obstruct policy adoption yet protect established policies from retrenchment. Proportional representation can insulate governments from short-term backlash while entrenching incumbent interests. Compensation can convert opposition into support while creating hold-up problems that inflate transition costs. The consistent lesson is that institutions amplify existing power structures rather than override them.

Beyond formal rules, the review highlights the central role of informal institutions in conditioning policy feasibility. Misperceived public preferences generate coordination failures that suppress political ambition even where majority support exists. Trust, in turn, determines whether citizens accept short-term costs in exchange for long-term benefits and whether commitment devices are perceived as credible. From an economic perspective, they function as first-order constraints on policy implementation rather than as residual cultural factors. The overarching finding is that there

is no institutional arrangement that acts as a panacea. Institutions alter the structure of political and economic trade-offs within which climate policy is contested. Thus, their effects are conditional on capacity, coalitions, and trust. Institutions can raise reversal costs but cannot prevent reversal by governments willing to bear those costs. They can stabilise trajectories but cannot substitute for political coalitions. Institutions can shift incentives toward investments in low-carbon technologies and infrastructure. These findings will help scholars and policymakers design institutions and implementation mechanisms that are well-suited to tackle long-term multidimensional problems such as climate change.

Much of what we know about how institutions shape climate policy derives from comparative political economy and this body of work documents patterns that economists are well-positioned to investigate using credible identification strategies. We return to evidential gaps in Section 6, where we identify questions that economic research could address.

The remainder of this paper is organised as follows. Section 2 examines how institutions coordinate climate policy implementation. Section 3 analyses how institutions create credible long-term commitment to climate policy. Section 4 investigates how institutions mediate distributional conflict created by climate policy. Section 5 turns to how social norms and trust shape climate policy support. Section 7 concludes with a research agenda. Figure 1 below summarises the conceptual framework underlying our argument (Figures A1 and A2 provide readers a more detailed map of the evidence.)

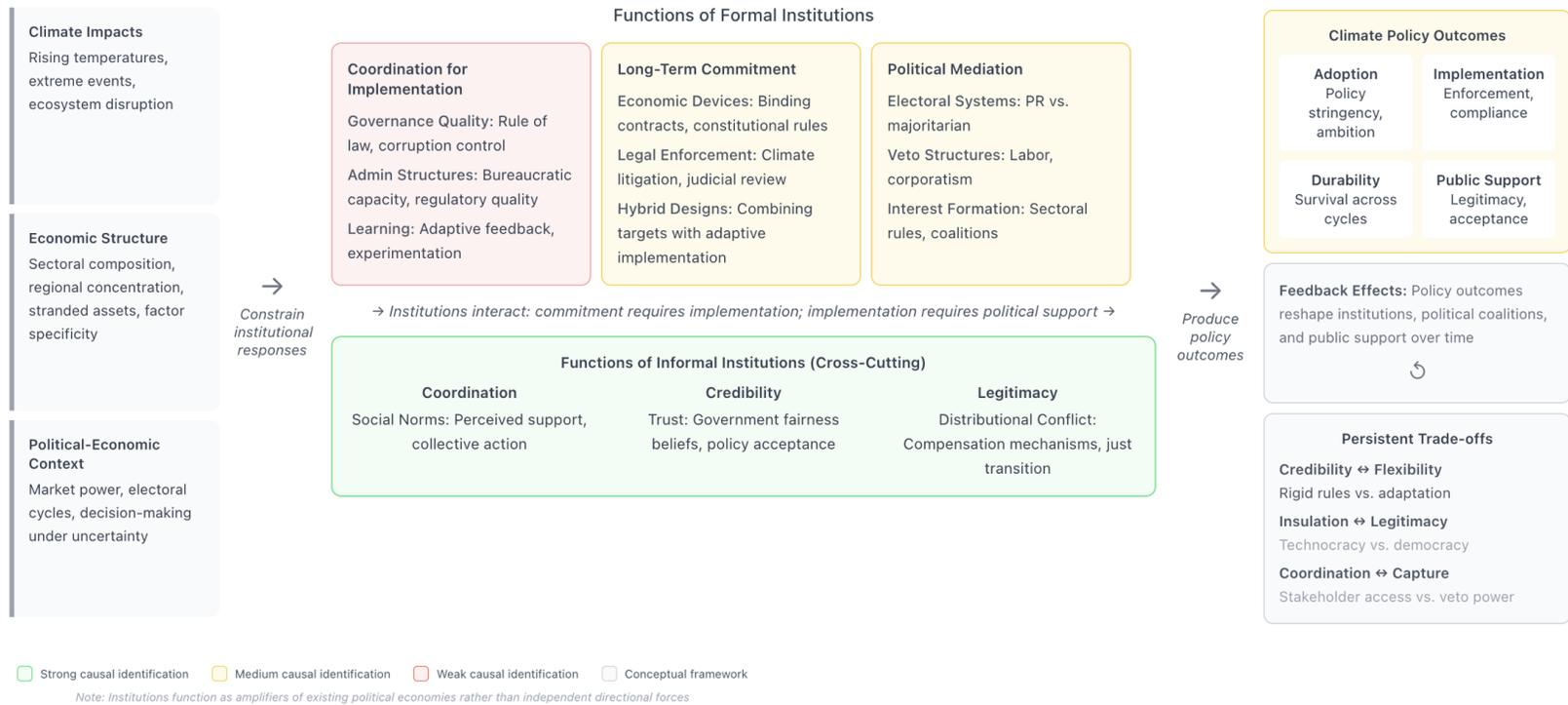


Figure 1: Institutions, Climate Change and Policies.

*Note:* This figure maps the institutional functions that shape climate policy outcomes. Colours indicate the strength of causal identification in the existing literature: green denotes strong causal identification (primarily experimental and quasi-experimental evidence), yellow denotes medium causal identification (difference-in-differences, natural experiments), red denotes weak causal identification (cross-country correlations requiring stronger inference), and gray denotes conceptual framework elements.

## 2 How Institutions Coordinate Policy Implementation

All climate policies, including carbon pricing, renewable subsidies, efficiency standards, or fossil fuel phase-outs, require institutional capacity in their design, implementation, and enforcement. They also require coordination across energy, transport, industry, and agriculture (due to climate mitigation’s cross-boundary effect), which are sectors typically managed by separate ministries with distinct mandates.<sup>3</sup> Institutions can reduce transaction costs and align incentives across these actors (North 1990; Williamson 1985). But what kind of institutional capacity matters? Economists have examined whether general governance quality (rule of law, corruption control, regulatory effectiveness) predicts climate outcomes, finding rather unexpected and ambiguous results. Political scientists have focused on specific administrative structures, like climate ministries, coordination mechanisms, with clearer findings (Limberg, Steinebach, and Nystrup 2024; Steinebach 2022). This section examines both, arguing that the distinction between institutional capacity and institutional orientation (i.e., favouring high-carbon or low-carbon economies) explains the apparent disconnect: governance quality enables implementation but does not determine policy direction.

### 2.1 How Institutions Shape Domestic Climate Governance Quality

Foundational work in institutional economics holds that strong institutions enable long-term public goods provision by reducing uncertainty and enforcing contracts (North 1990; Acemoglu and Robinson 2001). Applied to climate governance, rule of law, corruption control, and regulatory effectiveness should improve emissions outcomes - just as secure property rights encourage private investment by reducing expropriation risk (Acemoglu, Johnson, and Robinson 2005).

Cross-national correlational evidence initially supports this logic. A stronger rule of law is associated with the accelerated adoption and diffusion of renewables (Aklin 2021). Greater corruption control is associated with pollution levels that are about 2 to 5% lower across 163 countries (Akpan

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<sup>3</sup>Effective climate coordination extends beyond state administrative structures to encompass informal institutions, such as civil society networks, business organisations (Ostrom 1996; Evans 1995). Recent literature discusses “hybrid institutional complexes” of formal and informal institutions (Abbott and Faude 2021), with recent work demonstrating state-society synergies through co-production (Mikulewicz and Taylor 2023; Vedeld et al. 2021), social innovation (Hess et al. 2023), experimentalist governance (Sabel and Victor 2022), and informal institutions compensating for weak state capacity (Brown and Sonwa 2015; Dubash, Khosla, et al. 2021). However, this is beyond the scope of this section.

and Kama 2024). Higher civil liberties are associated with reductions in CO2 intensity on the order of 0.01 to 0.05 kg CO2/kg oil equivalent, both domestically and in neighboring countries (Hosseini and Kaneko 2013). Broader governance indicators, including government effectiveness, regulatory quality, and political stability, are consistently associated with lower emissions and emissions trading schemes appear to deliver measurable abatement only in high-governance settings (Rafaty 2018; Stef et al. 2023; Qamruzzaman and Karim 2024). However, these associations face severe identification challenges. Specifically, governance quality correlates with economic development, political stability, and state capacity, factors that independently affect emissions. Reverse causality and selection effects weaken these findings.

More troubling, recent studies suggest that governance effects may reverse across development levels. SenGupta and Sachan (2025) report that governance improvements are associated with lower emissions in emerging economies (2-12%) but higher emissions in advanced economies (23%).<sup>4</sup> However, the governance quality coefficient in reduced-form regressions varies with domestic production functions, incentive structures, and underlying political economies that determine whether governance capacity enables carbon-intensive expansion or low-carbon transitions. The more plausible interpretation is that aggregate governance indices conflate institutional capacity with institutional orientation. States with strong capacity can effectively implement either emissions-reducing or emissions-increasing policies depending on prevailing political-economic incentives. Such interpretation aligns with Evans (1995)’s concept of “embedded autonomy”: state capacity matters, but its effects depend on which societal interests the state is embedded with.

If standard governance indices measure capacity but miss orientation, the challenge becomes identifying what institutional characteristics determine policy direction under uncertainty. Conventional measures treat institutions as stock variables rather than processes adapting to evolving information. Sabel and Victor (2022) offers an alternative through “experimentalist governance” where institutions function as adaptive mechanisms that gather information and revise policies through repeated implementation cycles (Armeni 2015; Bocquillon and Maltby 2025; Hermwille 2021). This reframes institutional quality as learning capacity. Because empirical evidence is lack-

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<sup>4</sup>SenGupta and Sachan (2025) interpret this ex-post as analogous to Jevons-type rebound (the idea that improvements in the efficiency of a resource can lead to an increase in its total consumption, rather than a decrease)

ing, operationalising and testing this concept against static measures remains an opportunity for economic research.

In sum, the literature suggests that general governance quality creates preconditions for policy adoption, but it does not explain why similarly capable states have different climate trajectories. Institutions' effects seem to operate through specific incentive and information channels, and outcomes seem to depend on how institutions structure feedback and adapt to uncertainty, dynamics that cross-country panel regressions cannot easily capture. The next section examines how administrative structures, more specifically, shape climate policy implementation.

## 2.2 How Institutions Shape Administrative Structures

Even with strong governance foundations, climate policy requires dedicated administrative structures. The literature debates whether authority should concentrate in specialised climate bodies or be distributed through coordination mechanisms. This echoes debates in public economics on how specialisation reduces agency costs within domains but creates coordination failures across them (Laffont and Tirole 1994).

Quasi-experimental evidence from Limberg, Steinebach, and Nyrup (2024) exploits staggered institutional reforms across 169 countries (2000-2021): a significant advance over aggregate governance-index correlations. Establishing a dedicated climate ministry leads to cumulative emission reductions of 1.06 metric tons of CO<sub>2</sub> per capita after five years. The magnitude is meaningful but modest: the five-year effect represents approximately 15% of the annual reductions required for net zero by 2050. The mechanism operates through economies of specialisation, i.e., concentrated mandates align personnel, budgets, and monitoring toward climate objectives (Steinebach 2022).

On the other hand, climate policy's cross-cutting nature creates coordination failures when specialised bodies lack authority over sectoral ministries. Case evidence documents how coordination mechanisms fail because line ministries remain trapped in sectoral optimisation (Christensen, O. M. Lægneid, and P. Lægneid 2019). Each ministry maximises domain-specific objectives (growth, employment, energy security) rather than coordinating toward economy-wide decarbonisation. There is detailed evidence from Germany that illustrates this coordination problem: economic ministries

override climate goals through budget control while climate bodies lack countervailing authority (Averchenkova, Higham, et al. 2024). Coordination fails not because actors lack information, but because institutional rules create misaligned incentives.

Effectiveness also depends on institutional complementarities. Limberg, Steinebach, and Nyrup (2024) document substantial heterogeneity in this regard: annual emission reductions of -0.15 to -0.20 tons per capita occur only in high-capacity states, whereas effects in low-capacity states are indistinguishable from zero. Similarly, Torney (2020) demonstrate this through comparative case analysis. When Ireland and Finland tried to reproduce the UK's Climate Act, their domestic institutional contexts, including monitoring capacity, enforcement mechanisms, and bureaucratic quality, mediated and altered outcomes, leading to failure. Driscoll and Blyth (2025) document a similar pattern within the UK nations itself. Despite pioneering climate institutions with binding targets and independent oversight, hollowed-out administrative capacity, from decades of privatisation and public-sector retrenchment, undermines effective implementation. So, while climate implementation seems to require both specialised institutions and general administrative capacity as complementary inputs, neither substitutes for the other. This echoes results from development economics, which argue that formal rules interact with implementation capacity to produce outcomes (Acemoglu, Johnson, and Robinson 2005; Besley and Persson 2014)

Considering these coordination failures, what institutional arrangements optimally aggregate information and align ministry incentives with collective climate objectives? Existing work shows dedicated ministries help, but does not characterise optimal design. What are the conditions under which coordination should be centralised versus distributed? How should inter-ministerial incentives be structured? These questions remain open.

To recapitulate, the literature in section 2 tended to show that general governance quality has ambiguous associations with emissions, likely because static indices measure capacity but not orientation. Capable states can implement carbon-intensive or low-carbon policies depending on prevailing incentives, which create domestic political economies. Administrative structures then channel this capacity through specialised bodies or coordination mechanisms, though their effec-

tiveness depends on broader state capacity.<sup>5</sup>

Effective administrative structures might improve implementation ability, but climate mitigation requires sustained policy effort across decades. Unfortunately, political and economic incentives operate on much shorter time horizons. This creates a fundamental temporal mismatch. The next section examines how institutions attempt to anchor commitments across time through binding rules and enforcement mechanisms.

### 3 How Institutions Anchor Long-Term Commitments

Different types of decarbonisation policies, such as carbon taxes, emissions standards, fossil fuel phase-outs, clean infrastructure investments, impose immediate costs while delivering benefits that accrue gradually, often to future generations. This creates a time-inconsistency problem (Kydland and Prescott 1977), i.e., governments face incentives to announce ambitious targets but renege when short-term costs materialise. This section examines how institutions anchor commitments through mechanisms that raise reversal costs. Scholars identify multiple sources of this dynamic: lobbying and fiscal constraints (Kalkuhl, Steckel, and Edenhofer 2020), political alternation (Dengler et al. 2018), behavioural biases such as hyperbolic discounting (Gerlagh and Liski 2018a; Gerlagh and Liski 2018b), and electoral incentives to shield consumers from energy price shocks (Chiappinelli and Neuhoff 2020; Habermacher and Lehmann 2020). These pressures lead firms to underinvest in green technologies (Brunner, Flachsland, and Marschinski 2012) and citizens to resist policy measures with obvious short-run costs and uncertain long-run benefits (Carattini, Carvalho, and Fankhauser 2018). Much of the economics literature on climate policy commitment analyses this issue without explicitly framing these problems in institutional terms.

#### 3.1 How Institutions Create Credibility

Without binding constraints, societies face equilibria in which short-term optimisation perpetually delays decarbonisation - what Besley and Persson (2023) term “brown steady states”. Their model

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<sup>5</sup>See Collington (2024) for a review of the literature on state capacity and the green transition. For the general role of state capacity in economic development, see Besley and Persson (2014).

shows that transitions between brown and green equilibria require either large exogenous shocks or institutional constraints that bind governments to sustained carbon pricing. This model also shows how incorporating evolving preferences, uncommon in models using social planners, requires institutional constraints that prevent governments from succumbing to immediate pressures.

The investment channel reinforces this logic. When firms anticipate a policy reversal, they underinvest in green technologies with long payback periods (Brunner, Flachsland, and Marschinski 2012). Under policy uncertainty, firms prefer flexible, carbon-intensive capital over specialised green capital that becomes stranded if carbon prices fall. Irreversible policy commitments eliminate this option value, shifting investment toward clean technologies.<sup>6</sup>

Empirical support analysing commitment mechanisms comes primarily from sector-specific studies and regulatory quasi-experiments rather than economy-wide causal estimates. For example, case evidence from Germany illustrates how constitutional protection creates credibility. Chiappinelli and May (2022) trace how constitutional entrenchment of feed-in tariffs (government schemes that pays households and firms to generate renewable electricity and export any surplus back to the national grid), which require supermajority amendment, sustained renewable investment for two decades despite government transitions and mounting consumer costs. Investors observed that policy change required clearing higher procedural hurdles, reducing uncertainty about future returns. The single-country design limits external validity, but the mechanism is clear: raised reversal costs support long-term investment.

While the framework does not explicitly refer to institutions, a quasi-experimental evidence from US utility regulation may provide cleaner identification on institutional commitment problems. Lim and Yurukoglu (2018) exploits variation in regulatory regimes across states to quantify commitment value. Under discretionary rate-setting, regulators can opportunistically reduce allowed returns after utilities sink capital - a classic hold-up problem (Williamson 1985). Their structural estimates indicate that credible commitment would increase steady-state capital by 59%, holding technology, costs, and demand constant. While derived from electricity utilities rather than specifically

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<sup>6</sup>See the literature on the economics of ‘green’ innovation, which faces the same issue of time inconsistency, resulting in the underinvestment of ‘green’ research and development, despite innovation being a public good (Acemoglu, Akcigit, et al. 2016; Aghion et al. 2016; Dechezleprêtre, Martin, and Mohnen 2014).

green investment, the mechanism applies directly to renewables: high upfront costs with returns dependent on future policy create precisely the conditions where commitment problems bind.

Lim and Yurukoglu (2018) also document a second-best response to commitment problems, namely regulatory ideology. In the United States, conservative regulators partially mitigate hold-up by granting higher allowed returns, encouraging investment. However, they simultaneously worsen moral hazard through less stringent auditing, increasing operating inefficiencies.

These findings reveal a trade-off, namely that rigid commitments solve credibility problems but sacrifice adaptability. Since climate governance operates under deep uncertainty about technologies and costs, locking in current policies may prove costly as circumstances evolve. Recent scholarship documents how institutions navigate this commitment-flexibility tension. Jordan and Moore (2023) finds that the European Union has maintained remarkable policy durability - 81% of climate instruments adopted since 1992 remain in force - through constantly recombining policy elements rather than relying on single rigid commitments. Their analysis reveals how the EU preserves its decarbonisation trajectory by working iteratively across governance levels and policy components: long-term targets anchor expectations, while specific instruments can be modified or replaced without disrupting the overall paradigm. This strategy has proven resilient even when individual instruments fail, suggesting hybrid designs may offer more stability than critics acknowledge.

However, Averchenkova, Fankhauser, and Finnegan (2021) provide important nuance to this optimistic view. While their study of climate framework laws in Germany, Ireland, and New Zealand confirms that hybrid designs can strengthen governance through combining rigid targets with adaptive implementation, they also reveal various vulnerabilities. Flexibility enables updating, but also creates openings for political backsliding, as even well-crafted laws cannot compensate for weak or wavering political commitment. These findings illustrate the challenge of designing institutions that must endure stark uncertainty and span multiple political cycles.

In summary, the literature suggests that institutions play a crucial role in climate governance by addressing the fundamental time-inconsistency problem through mechanisms like constitutional entrenchment, binding contracts, and fiscal penalties, institutions can anchor credible commitments that overcome governments' incentives to prioritise short-term costs over long-term climate bene-

fits. However, the literature also reveals deep disagreement about optimal institutional design, as each institutional solution involves inherent trade-offs. Rigid commitment devices solve credibility problems but sacrifice adaptability to new information, while flexible institutions preserve learning capacity but fail to provide the certainty needed for green investment.

### 3.2 How Institutions Enable Legal Enforcement

Legal institutions can anchor commitments by transforming political promises into binding obligations. Climate litigation has grown very rapidly, exceeding 2,000 cases worldwide by 2022 (Setzer and Higham 2022). Constitutional cases provide the clearest examples. In *Urgenda Foundation v. State of the Netherlands*, the Dutch Supreme Court ruled that inadequate climate action violated the government’s duty of care, requiring 25% emissions cuts by 2020 - a binding obligation that future governments cannot escape without constitutional amendment (Dubash, Mitchell, et al. 2022). Germany’s Neubauer ruling similarly invalidated portions of the Federal Climate Change Act because of violating intergenerational rights. These cases create commitment through raised procedural costs rather than direct fiscal penalties. Governments wishing to weaken policy must clear constitutional hurdles that ordinary legislation would not face.

Cross-national evidence reveals significant variation in how legal systems structure climate enforcement. Eskander and Fankhauser (2020) distinguish common law (e.g., U.K.) from civil law (e.g., France) systems, the former featuring broad standing rules, binding precedent, and judge-made law, with the latter showing more restrictive standing and limited judicial policymaking. Table 1 presents litigation outcomes by legal system. The United States shows a relatively low pro-climate success rate (42%) despite its common law tradition, reflecting the double-edged nature of broad standing. The same features enabling environmental advocates to challenge inadequate policy also enable industry to challenge ambitious regulation. These patterns should be interpreted cautiously, as success rates reflect selection into litigation as much as institutional effects.

Cross-national panel evidence suggests climate legislation reduces emissions by 0.78% in the short run and 1.79% in the long run (Eskander and Fankhauser 2020), which are meaningful but remain modest relative to required decarbonisation rates of approximately 7% annually. Legal

Table 1: Climate Litigation by Legal System (1990–2019)

Legal System	Cases	Pro-Climate Rulings	Success Rate (%)
United States (Common Law)	1,154	225	42
Other Common Law <sup>a</sup>	149	79	53
Civil Law <sup>b</sup>	161	91	57
Mixed/Other	45	17	38
<b>Total</b>	<b>1,509</b>	<b>412</b>	<b>51</b>

*Notes:* Adapted from Eskander and Fankhauser (2020). <sup>a</sup> Australia, Canada, UK, New Zealand, India.  
<sup>b</sup> EU countries, Japan, South Korea, Mexico.

frameworks function as stabilising mechanisms, preventing backsliding and creating floors for ambition, rather than transformative drivers of rapid change.

However, legal enforcement also faces important limitations. Judicial victories may not translate into emissions reductions. In fact, the Netherlands partly met its Urgenda obligations through foreign carbon credits rather than domestic abatement (Dubash, Mitchell, et al. 2022). And legal institutions are symmetric: they constrain governments in whatever direction courts rule, not necessarily toward climate ambition. Adding to this, legal mobilisation also generates new complexities. “Just transition” claims, which are framed as protecting workers or communities, can pit social justice goals against decarbonisation, complicating implementation even when filed by climate advocates (Savaresi and Setzer 2022).

In summary, section 3 has shown that institutions address time-inconsistency through mechanisms that raise reversal costs: constitutional entrenchment, binding contracts, regulatory commitment. Legal enforcement transforms political promises into binding obligations, though effects are more modest and context-dependent. Both mechanisms reveal fundamental trade-offs. Commitment devices trade credibility against adaptability, legal rules that enable climate litigation equally enable obstruction. These trade-offs suggest optimal design may not exist under deep uncertainty. Effectiveness depends on configurations where commitment mechanisms, enforcement capacity, and political support reinforce rather than undermine each other.

The commitment problem parallels monetary policy, where delegation to independent central banks addresses inflation bias (Rogoff 1985; Barro and Gordon 1983). Independent climate councils or constitutional provisions represent the climate analogue. But the parallel is imperfect: mon-

etary policy targets a single variable with rapid feedback, while climate policy targets emissions trajectories over decades with deep uncertainty about technologies and costs. How should commitment devices be designed given this uncertainty? State-contingent rules, escape clauses, and periodic review mechanisms represent partial solutions, but their optimal structure remains undertheorised. The commitment-flexibility trade-off in climate governance deserves the analytical attention economists have devoted to monetary policy rules.

However, commitment institutions have clear limits. They can raise reversal costs but cannot prevent reversal by governments willing to bear those costs. They can stabilise trajectories but cannot substitute for political coalitions supporting climate action. Understanding these limitations points toward the distributional politics examined in section 4, regarding who supports climate policy, who opposes it, and how institutions mediate these conflicts.

## 4 How Institutions Mediate Climate Politics

Climate policies may create winners and losers. Carbon taxes raise energy costs, emissions standards threaten carbon-intensive industries, renewable subsidies redistribute toward new sectors, fossil fuel phase-outs eliminate jobs in specific regions. This generates opposition that can block or reverse policy even when aggregate benefits are positive - a dynamic familiar from trade liberalisation (Fernandez and Rodrik 1991). More broadly, some climate policies and the political economy surrounding them present significant parallels with the structural reforms literature (Campos, De Grauwe, and Ji 2025) (see tables A1 and A2 for parallels in challenges and solutions between passing climate policy and passing reform). This section examines how political institutions, such as electoral systems, veto structures, corporatist arrangements, compensation mechanisms, mediate distributional conflict. In contrast to the commitment literature, work on distributive conflict places institutions at the centre of analysis, but this research is largely developed outside economics and is only weakly integrated into formal political-economy models.

## 4.1 How Institutions Structure Political Insulation and Veto Power

The literature disagrees on which macro-political configuration best enables climate policy. Standard veto player theory predicts that additional institutional checkpoints, like second chambers, judicial review, federalism, impede policy change by creating opportunities for opponents to block reform (Tsebelis 2002). On the other hand, political insulation theory predicts that proportional representation (PR) systems diffuse responsibility across coalition partners, corporatist institutions channel opposition into negotiated settlements, and welfare states cushion distributional impacts, together insulating governments from the short-term costs of climate policy (Finnegan 2022).

Cross-national evidence supports veto player predictions for policy adoption. For example, Madden (2014) finds that veto points systematically reduce climate policy adoption across OECD countries. Quasi-experimental evidence exploiting the 1970s oil shocks supports insulation theory for policy durability. Finnegan et al. (2025) show that PR countries with strong welfare states maintained high fuel taxes following the shocks, while majoritarian systems reduced them by 20-40% in real terms over the following decade. The oil shocks provide plausibly exogenous variation in political pressure as all countries faced similar external cost increases, allowing cleaner identification than typical cross-national comparisons. Note that the insulation effect was conditional on labour support. In fact, PR systems maintained fuel taxes only when unions supported or remained neutral toward climate policy. Where unions opposed, the insulation mechanism failed.

Comparative case evidence illuminates how these mechanisms operate. Lockwood (2022) examines renewable energy policy in the United Kingdom and Germany, countries with similar income levels but contrasting institutions. Germany sustained consumer costs of 7 billion euros annually without policy reversal: the PR system diffused blame across coalition partners, corporatist institutions allowed negotiated exemptions for energy-intensive sectors, and welfare programmes cushioned household impacts. The UK reversed subsidies at a fraction of this cost, approximately 1 billion pounds, following media pressure and backbench rebellion. The majoritarian system concentrated blame, weak corporatist traditions offered no channel for accommodation. When Germany's coalition attempted feed-in tariff cuts in 2012, the Upper House vetoed the legislation. States with renewable energy employment blocked retrenchment. The same veto points that impede initial

adoption protected established policy from reversal. These dynamics are not unique to climate policy. As we mentioned above, the challenges of climate policy are similar to those of structural economic reforms (tables [A1](#) and [A2](#)). PR systems achieve more ambitious reforms when compensation mechanisms are available, but the same veto structures that protect reforms from reversal also give incumbent industries ongoing access to dilute them (Haggard and Webb [2018](#); Tsebelis [2002](#)).

Corporatist arrangements are similarly double-edged. When unions represent carbon-intensive workers, institutionalised access can obstruct climate policy - what Mildemberger ([2020](#)) terms “double representation”, where both employers and unions defend fossil fuel sectors, which we discuss in the next section. Cross-national evidence associates corporatist structures with lower carbon-pricing intensity (Klagges [2025](#)). Yet Britain’s rapid coal phase-out after 2015 occurred precisely because weak sectoral institutions left coal interests with no channels to block change. This suggests that what matters is the interaction between veto structures and incumbent power, specifically whether climate policies or fossil fuel interests get locked in first.

## 4.2 How Institutions Shape Interest Formation and Coalition Dynamics

Another strand of literature argues that sectoral rules shaping firm interests may explain cross-country policy variation better than macro-political institutions. Meckling, Kelsey, et al. ([2015](#)) develop the concept of “interest creation”: feed-in tariffs and renewable subsidies create new political constituencies, such as solar installers, wind manufacturers, green finance, that subsequently defend climate ambition. German renewable subsidies created 338,500 jobs, exceeding coal employment (Galgóczy [2020](#)). When retrenchment was threatened, this constituency mobilised through state governments to block cuts. The causal chain runs from regulatory rules to firm incentives to investment behaviour to political preferences, suggesting climate advocates might achieve more by targeting market design than electoral reform. Much of this evidence is based on process tracing and sectoral comparisons, which illuminate mechanisms but do not isolate average treatment effects.

When interest creation proves insufficient, compensation mechanisms can shift political con-

straints. Quasi-experimental evidence from Bolet, Green, and Gonzalez-Eguino (2024) exploits the geographic targeting of Spain’s Just Transition Agreement. Coal-mining municipalities affected by closures increased vote share for the implementing party by 1.8 percentage points relative to similar unaffected municipalities - credible compensation converted potential opponents into supporters. Survey evidence corroborates this: Gazmararian (2024) finds strong climate policy support in US fossil fuel communities conditional on credible local investment commitments.

However, compensation creates its own problems. Incumbents can threaten opposition to extract larger transfers, generating hold-up problems that inflate costs and delay transitions. The German coal phase-out illustrates both: unions extracted 40 billion euros and timelines extending to 2038 (Brauers, Oei, and Walk 2020)<sup>7</sup>. Cross-national evidence suggests structural factors, like fossil fuel sector size, constrain carbon tax adoption regardless of institutional design (Lamb and Minx 2020). Institutions affect how an incumbent’s influence operates but may not neutralise it.

In sum, quasi-experimental evidence indicates PR systems with strong welfare states maintain climate-relevant taxes better than majoritarian systems, conditional on labour support (Finnegan et al. 2025). Comparative case evidence shows veto structures can either obstruct or protect climate policy depending on which interests control them (Lockwood 2022). Corporatism provides fossil fuel sectors with institutional channels that can delay transitions, but the same channels facilitate negotiated phase-outs when conditions shift.

The core finding is that institutions mediate distributive conflict through multiple, often contradictory mechanisms. PR systems insulate policy from opposition but may entrench incumbents. Veto points impede adoption but protect established policy. Compensation shifts constraints but creates hold-up problems. Institutions rarely operate as independent drivers of climate policy outcomes. Instead, they systematically condition how underlying political-economic forces translate into policy adoption, implementation, and durability.

Methodological differences shape conclusions. Formal models and statistical analyses emphasise

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<sup>7</sup>Similarly, Norwegian petroleum unions invoked solidarity norms to block restrictions on oil and gas extraction (Mildenberger 2020; Houeland, Jordhus-Lier, and Angell 2021), while Polish mining unions negotiated closure timelines extending to 2049 with substantial compensation (Brauers and Oei 2020) and Austrian corporatist’s “social partnership” institutions acted as an ex-ante filter that kept ambitious climate proposals off the agenda (Brand and Pawloff 2014). Cross-nationally, corporatist structures are associated with lower carbon-pricing intensity in OECD countries (Klagges 2025), and stronger tripartite representation correlates with less ambitious climate policy across Nordic economies (Gronow et al. 2019).

how rules create incentives for coalition formation. Historical case studies reveal how actors strategically navigate and sometimes subvert these rules. The most persuasive accounts recognise that sectoral institutions powerfully shape climate politics, but within bounds set by economic structure and state capacity. California's success stems not just from market design but from a tech sector predisposed to electrification, while Germany's struggles reflect not just regulatory failures, but coal's regional concentration and political embeddedness.

Further questions arise. How should compensation be structured to overcome hold-up while minimising transition costs? Compensation must be credible, targeted, and incentive-compatible - and yet existing work documents effects without characterising optimal design. Contract theory offers tools for analysing commitment to compensation and transfers under asymmetric information, applications largely unexplored in climate governance.

Ultimately, this section tended to show that favourable climate outcomes emerge when there is insulation from short-term costs, exclusion of incumbent veto power, rules enabling green coalition formation, and legitimate deliberative processes. Macro-political institutions create paradoxical effects, whereby proportional representation can both insulate and entrench, while majoritarian systems can both override and amplify opposition, while sectoral institutions shape interests and coalitions but remain constrained by existing economic structures and power distributions. The persistent question is whether institutions can drive transformative change or merely ratify shifts in underlying power relations within the formal political arena.

However, outside of this arena remains a further puzzle. Despite institutionally mediated distributive conflicts, public support for climate policies remains dependent on shared beliefs, trust and norms, which shape how citizens interpret policy trade-offs and evaluate institutional authority. The next section therefore turns to informal institutions and whether their impact on formal climate governance can command legitimacy, credibility, and sustained support.

## 5 How Informal Institutions Translate Climate Preferences into Policy Support

Previous sections examined formal institutions, but whether citizens accept carbon taxes, support renewable mandates, or tolerate fossil fuel phase-outs depends on more than formal rules. Social norms and trust shape how people perceive policy costs and government intentions. This section examines how informal institutions condition the effectiveness of formal climate governance.

### 5.1 How Social Norms Condition Collective Action

Citizens underestimate the general public support for climate action. Andre et al. (2024) document a striking perception gap across 125 countries: 69% of respondents expressed willingness to contribute to climate action, yet the average respondent estimated only 43% support, a 26 percentage point underestimate. This “pluralistic ignorance” creates, again, coordination failure as most people privately support action but mistakenly believe themselves in the minority, causing them to remain silent and reinforcing the false perception (Geiger and Swim 2016). Politicians face the same problem. In fact, Mildemberger and Tingley (2019) show they systematically underestimate constituent climate concern, constraining policy ambition even when public support exists.

In this situation, the economic parallel is instructive. Pluralistic ignorance resembles coordination games with multiple equilibria, where both high-support and low-support outcomes can be self-sustaining depending on beliefs about others’ behaviour. Interventions correcting norm misperceptions can shift equilibria, though effects are context-dependent. Telling people that most Americans support climate policy increases their own support, whereas telling them that most people in their region support it can backfire, anchoring them to visible local opposition rather than updating their beliefs (Goerg, Pondorfer, and Stöhr 2024). Importantly, policy-support norms (beliefs about what policies others support) matter more than behavioural norms (beliefs about others’ personal actions), communicating that “many people recycle” does not increase support for carbon taxes (Rinscheid, Pianta, and Weber 2021).

## 5.2 How Trust Conditions Policy Credibility

Even when citizens correctly perceive public support, distrust creates a second barrier to effective and durable policy. Cross-national evidence documents a gap between climate beliefs and policy support. In fact, 78% of Europeans believe in anthropogenic climate change, yet only 33% support fossil fuel taxes (Fairbrother, Sevä, and Kulin 2019). Citizens who accept climate science nonetheless oppose policies they perceive as unfair or poorly implemented.

Furthermore, trust functions as a critical moderator of this relationship. Fairbrother, Sevä, and Kulin (2019) find that in high-trust European countries, shifting from climate scepticism to belief substantially increases carbon tax support, whereas in low-trust countries, the same belief shift produces essentially no change in preferences. Trust reduces fear of free-riding and allows citizens to accept short-term costs for collective benefits. Citizens with identical climate beliefs can exhibit opposite policy preferences depending on their trust in implementing institutions, which suggests that preference surveys overestimate support in low-trust contexts.

Trust also interacts with distributional beliefs. Dechezleprêtre, Fabre, et al. (2025) identify three beliefs explaining 70% of variation in carbon tax support across 20 countries: whether one's household will lose economically, whether poor households will lose, and whether the policy will effectively reduce emissions. Revenue recycling and compensation design matter for political feasibility, not just distributional outcomes, as transparency builds the trust that enables support.

Different governance strategies require different trust bases. Trust in impartial institutions (courts, regulators, scientific bodies) powerfully moderates the link between climate concern and policy support, while trust in political institutions has weaker effects based on 46,000 individuals across 23 European countries (Kulin and Johansson Sevä 2021). Technocratic strategies like independent climate councils or binding carbon budgets require citizens to trust impartial institutions. On the other hand, negotiated strategies, like corporatist bargaining or parliamentary mediation, require trust in political institutions. These trust bases are not interchangeable: institutional design must match available trust resources.

These large-scale survey experiments with randomised information treatments provide credible identification of causal mechanisms at the individual level. The challenge lies in aggregating these

micro-level findings to macro-level policy outcomes, a potential avenue for economic research to pursue.

In conclusion, norms and trust, as informal institutions, condition whether formal mechanisms achieve their effects. Misperceived norms create coordination failures parallel to bureaucratic silos, and pluralistic ignorance prevents mobilisation despite majority support. Trust moderates the belief-support relationship: in low-trust contexts, even citizens who accept climate science oppose carbon taxes (Fairbrother, Sevä, and Kulin [2019](#)).

Table 2: Institutional Mechanisms: Parallel Structures Across Formal and Informal

Mechanism	Formal Institution	Informal Institution	Shared Structure
Coordination failures	Inter-ministerial silos block whole-of-government climate policy (§2.2; Christensen et al., 2019; Averchenkova et al., 2024)	Misperceived norms prevent collective action (§5.1; Andre et al., 2024; Sparkman et al., 2022)	Both involve actors who would benefit from coordination but lack information about others' intentions
Credibility requirements	Constitutional entrenchment and binding contracts create investor certainty (§3.1; Chiappinelli & Neuhoff, 2020; Besley & Persson, 2023)	Trust makes government promises believable (§5.2; Fairbrother et al., 2019; Kulin & Johansson Sevä, 2021)	Both solve commitment problems by raising reversal costs (formal) or reputational costs (informal)
Veto power	Corporatist institutions give fossil fuel unions blocking power (§4.1; Mildemberger, 2020; Brauers et al., 2020)	Electoral geography gives fossil-dependent regions blocking power (§5.3; Goerg et al., 2024; Gazmararian, 2024)	Both grant spatially or sectorally concentrated interests disproportionate influence over policy outcomes
Insulation versus engagement	Technocratic delegation versus political mediation (§4.1; Lockwood, 2022; Finnegan, 2022)	Consensus messaging versus identity-based interventions (§5.1; Večkalov et al., 2024; Cole et al., 2022)	Both face trade-off between depoliticisation (builds credibility, risks legitimacy) and engagement (maintains legitimacy, creates vulnerability)
Multi-level governance effects	Federal versus centralised administrative structures (§2.2; §4.1; Limberg et al., 2024)	National versus regional identity framing (§5.3; Goerg et al., 2024; Andre et al., 2024)	Both determine whether broad or narrow identities and jurisdictions are activated, with asymmetric effects on policy support

*Note:* This table synthesises findings across Sections 2 to 5, revealing structural parallels between formal and informal institutional mechanisms that existing scholarship analyses in separate domains. Section numbers indicate where each mechanism is examined in detail.

## 6 Further Research Questions

The discussion in the previous sections stressed the roles of formal and informal institutions. Table 2 summarises these views. The key insight is that formal and informal institutions are complements, not substitutes. Commitment devices lose credibility without trust that governments will stick to promises. Compensation mechanisms fail without trust that transfers will materialise. Administrative coordination cannot build support if citizens misperceive public preferences. Climate governance succeeds when formal capacity aligns with informal conditions.

But how do formal and informal institutions interact? Trust functions as a discount factor on government promises, given that without it, constitutional entrenchment or binding contracts provide little reassurance. If trust is endogenous to policy delivery, institutional design and trust-building are complements: early reforms should prioritise visible follow-through. If trust is largely inherited, formal institutions must be designed to function under existing trust levels. This interaction has received attention in development economics (Tabellini 2010) but has had limited application to climate governance.

Despite a growing literature on formal and informal institutions and climate policy, several open questions remain, particularly with respect to explaining variation across advanced economies and isolating causal effects. Addressing these gaps requires sharper identification strategies and a more explicit treatment of institutional interactions. In this section, we outline what we believe to be the most promising avenues for future scholarship.

First, future research should focus more explicitly on the interdependencies across institutional functions and their implications for different climate policy instruments. Much existing work analyses commitment devices, implementation capacity, and distributive mediation as separate domains, even though these institutional functions are likely to interact in ways that matter differently for carbon pricing, regulatory standards, and public investment policies. For example, carbon pricing mechanisms rely heavily on long-term credibility and political insulation, while regulatory standards depend more directly on enforcement capacity and bureaucratic coordination. Public investment and green industrial policy, in turn, place greater demands on fiscal institutions and state coordi-

nation capabilities. While the literature on policy feedback has demonstrated how climate policies reshape political coalitions and state capacity (Leipprand, Flachsland, and Pahle 2020; Meckling, Kelsey, et al. 2015; Meckling, Sterner, and Wagner 2017; Pahle et al. 2018; Sewerin, Fesenfeld, and Schmidt 2023; Jordan and Moore 2020), interactions between institutional mechanisms themselves remain under-analysed. As Lockwood (2022) notes, institutions are often treated as static infrastructural features rather than as dynamically interdependent systems. Understanding how commitment, implementation, and mediation reinforce or undermine one another is essential for explaining why some advanced economies sustain carbon pricing regimes over time, while others retreat toward less visible regulatory or subsidy-based approaches.

Second, greater integration of informal institutions into the analysis of specific climate policies is needed. Formal climate policies operate alongside informal institutions such as norms, narratives, and shared understandings, which may condition both political support and compliance. This interaction is likely to differ across policy instruments. Carbon pricing, for instance, is particularly sensitive to public narratives about fairness, cost incidence, and compensation, while technology subsidies and green R&D programmes may face weaker distributional resistance but stronger concerns about rent-seeking and industrial capture. From an economic perspective, norm-driven compliance and rule-based enforcement imply different cost structures and distributional consequences. Yet the literature rarely examines how informal institutions mediate the effectiveness of formal climate policies in a policy-specific manner. Clarifying when informal norms complement carbon pricing by increasing acceptance, or when they instead favour regulatory or investment-based approaches, would improve understanding of cross-country variation in climate policy design and durability.<sup>8</sup>

Third, the interaction between political and economic institutions remains a central but unresolved determinant of climate policy choice. Most studies analyse political institutions, such as electoral systems or veto points, separately from economic institutions such as labour market regulation, welfare states, or product market rules. Yet classic political economy accounts emphasise that these domains interact to shape both de jure authority and de facto power (Acemoglu, John-

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<sup>8</sup>See Douenne and Fabre (2020).

son, and Robinson 2005). These interactions are likely to matter differently across climate policy instruments. For example, carbon pricing concentrates costs and therefore interacts strongly with labour market institutions and compensation mechanisms, whereas regulatory standards and public investment may be more compatible with coordinated wage-setting or extensive welfare states. Competing theoretical frameworks offer divergent predictions: varieties of capitalism approaches emphasise complementarities (Hall 2001), power resources theory allows for substitution, and veto-player theory predicts compounding constraints (Tsebelis 2002). Systematic evidence adjudicating between these perspectives for different climate policies remains limited, particularly among advanced economies.

Fourth, the role of multi-level governance requires closer attention in relation to specific policy instruments. Polycentric governance theories emphasise experimentation and learning across levels of authority (Ostrom 2020; Jordan, Huitema, et al. 2015), but much of this work abstracts from how institutional authority is allocated in practice. Different climate policies pose distinct challenges across governance levels. Carbon pricing often requires centralisation to prevent fragmentation and leakage, whereas building standards, transport policies, and renewable deployment frequently depend on subnational implementation and coordination. Misalignment across governance levels may help explain why some carbon pricing schemes fail politically, while decentralised regulatory approaches or investment programmes prove more resilient. Understanding how national institutions interact with subnational authority is therefore essential to explain the variation in enforcement, credibility, and adaptability in advanced economies.

Fifth, institutional resilience under climate shocks remains insufficiently understood. As climate impacts intensify, institutions themselves may be reshaped by repeated shocks. These dynamics are likely to affect different climate policies unevenly. Carbon pricing schemes may be suspended under energy price spikes, while regulatory standards or public investment programmes may be reframed as tools for resilience and security. Since mitigation and adaptation both require sustained administrative and coordination capacity, institutional erosion could undermine long-term policy effectiveness. Existing work suggests that the institutional effects of shocks vary systematically with state capacity, inequality, and political inclusion (Terzi 2024), but evidence remains fragmented.

Better understanding when climate shocks reinforce institutional capacity and when they trigger fragmentation is essential for assessing the long-run feasibility of different climate policy instruments in advanced economies.

Finally, geopolitical pressures increasingly condition the feasible set of climate policies and the institutions that support them. Strategic competition and security concerns are reshaping climate governance, particularly in the European Union, where decarbonisation objectives are increasingly intertwined with industrial policy and competitiveness (Draghi 2024). This shift has important implications for policy choice. Market-based instruments such as carbon pricing may become politically constrained, while subsidies, border measures, and strategic investment gain prominence. Institutions designed for rules-based multilateralism may perform differently under conditions of strategic rivalry, where climate, trade, and security objectives collide (Terzi 2022b). Understanding how institutional configurations mediate these trade-offs is essential for explaining the growing divergence between economies that rely primarily on pricing mechanisms and those that pursue climate action through industrial and regulatory strategies.

## 7 Conclusions

Climate change mitigation presents three fundamental challenges that shape institutional responses. First, climate policies require coordination across energy, transport, industry, and agriculture: domains managed by separate ministries with distinct mandates, creating implementation obstacles. Second, climate mitigation operates on extended time horizons while political incentives operate on shorter cycles, creating time-inconsistency problems that undermine policy durability. Third, climate policies generate distributive conflict: carbon taxes raise costs, phase-outs eliminate jobs, and benefits accrue diffusely over time, producing political resistance that delays action.

By examining a fragmented and rapidly growing literature on institutions and climate policy, the central message in this review is not that particular institutions consistently deliver ambitious climate outcomes, but that institutions shape political, economics and social constraints. The variation in climate policy across countries cannot be explained by ignorance about climate risks

or disagreement over optimal instruments. Instead, we have argued that it can be explained by persistent coordination failures, commitment problems and distributive conflicts that are mediated, successfully or not, by institutions.

Three broad conclusions emerge. Firstly, institutional capacity is necessary but an insufficient condition for effective climate policy. General measures of governance quality correlate weakly and inconsistently with emissions outcomes, particularly in advanced economies. The evidence instead points to the importance of how capacity is organised, through administrative structures, coordination mechanisms, and learning processes, rather than capacity per se. Institutions matter less as static endowments than as systems that structure information, incentives, and feedback.

Secondly, institutions play a critical role in anchoring long-term commitments, but commitment devices seem to be only partial solutions. A robust insight from theory and quasi-experimental evidence is that mechanisms which raise the cost of policy reversal, such as constitutional entrenchment, binding frameworks, and regulatory commitment, can stabilise investment expectations and mitigate time-inconsistency problems. At the same time, the literature makes equally clear that such devices cannot substitute for administrative capacity or political support. Commitment without implementation capacity yields symbolic policy, while commitment without coalitions remains vulnerable to erosion. Moreover, the trade-off between credibility and adaptability is unavoidable under deep uncertainty. No institutional design eliminates this tension - but, at best, institutions manage it.

Third, institutions mediate distributive conflict rather than eliminate it. Electoral systems, veto structures, and compensation mechanisms shape who bears the costs of climate policy and how opposition is expressed. Their effects are conditional and often paradoxical. Veto points can obstruct policy adoption yet protect established policies from retrenchment. Proportional representation can insulate governments from short-term backlash while entrenching incumbent interests. Compensation can convert opposition into support while creating hold-up problems that inflate transition costs. The consistent lesson is that institutions amplify existing power structures rather than override them.

Beyond formal rules, the review highlights the central role of informal institutions in condition-

ing policy feasibility. Misperceived public preferences generate coordination failures that suppress political ambition even where majority support exists. Trust, in turn, determines whether citizens accept short-term costs in exchange for long-term benefits and whether commitment devices are perceived as credible. From an economic perspective, they function as first-order constraints on policy implementation rather than as residual cultural factors.

The overarching finding is that there is no institutional arrangement that acts as a panacea. Institutions alter the structure of political and economic trade-offs within which climate policy is contested. Thus, their effects are conditional on capacity, coalitions, and trust. Institutions can raise reversal costs but cannot prevent reversal by governments willing to bear those costs. They can stabilise trajectories but cannot substitute for political coalitions. Institutions can shift incentives toward investment in low-carbon technologies and infrastructure. Therefore, climate governance is not only about managing conflict, but also about creating incentive-compatible conditions under which private capital and innovation are more likely to be mobilised.

Although research on climate policy has proliferated across disciplines, systematic analysis of how institutions shape climate outcomes remains limited. Much existing work identifies institutional effects indirectly through proxies not explicitly framed as institutions, relying on correlational, quasi-experimental, and qualitative evidence of varying identification strength. While this literature provides substantial insight into how institutions condition the translation of interests and incentives into policy, causal identification remains incomplete.

Addressing this opens several avenues for future research: the interdependencies across institutional functions (e.g., commitment devices require implementation capacity); the interaction between formal and informal institutions (trust as a discount factor on government promises); effect heterogeneity (under what conditions do institutions produce large versus small effects); and welfare analysis (what are the costs of commitment failures that delay decarbonisation). We conclude that research at the nexus of institutions and climate change, and particularly work that formalises mechanisms, strengthens causal inference, and quantifies welfare implications, represents both a tractable and urgent agenda. If institutional constraints determine whether rapid decarbonisation is politically feasible, then institutional analysis is central to climate governance.

# A Appendix

Table A1: Institutional Challenges: Climate Policy and Structural Reform Parallels

Dimension	Climate Policy	Structural Reform	Shared Mechanism
Concentrated costs, diffuse benefits	Carbon pricing imposes losses on fossil-dependent firms and regions while dispersing gains across society (Lamb, 2020)	Privatisation and deregulation harm protected incumbents while benefiting consumers broadly (Alesina, 2006)	Organised opposition from losers blocks reforms despite positive aggregate welfare effects (Fernandez, 1991)
Time inconsistency	Governments announce ambitious targets but face incentives to renege when short-term costs materialise (Besley, 2023)	Fiscal consolidation and pension reforms suffer from commitment problems as electoral cycles shorten horizons (Persson, 2000)	Credible commitment devices required to anchor private investment and behavioural change (Kydland, 1977)
Multi-level governance fragmentation	National–subnational misalignment in energy regulation, permitting, and grid planning (Christensen, 2019)	Regional implementation gaps in labour, land, and product-market reforms (Rodrik, 2000)	Fragmentation multiplies veto players and reduces policy coherence (Tsebelis, 2002)
Low state capacity	Permitting bottlenecks, weak planning offices, insufficient monitoring infrastructure (Driscoll, 2025)	Court backlogs, limited regulatory enforcement, procurement failures (Evans, 1995)	Administrative capacity determines whether well-designed policies translate into outcomes (Centeno, 2017)
Regulatory capture	Fossil fuel incumbents influence policy design through lobbying and institutional access (Mildenberger, 2020)	Monopolistic firms and protected sectors shape reform to preserve rents (Stigler, 1971)	Institutional insulation and transparency required to counterbalance incumbent power (Laffont, 1991)
Cross-sectoral coordination failures	Climate policy spans energy, transport, housing, industry, and agriculture (Averchenkova, 2024)	Structural reform requires alignment across competition, labour, tax, and financial regulation (OECD, 2007)	Siloed bureaucracies impede coherent policy packages (Peters, 2015)

*Note:* This table synthesises insights from the structural reform literature with emerging work on the political economy of climate policy. The parallel mechanisms suggest climate governance faces similar challenges to earlier waves of economic reform.

Table A2: Institutional Solutions: Climate Policy and Structural Reform Parallels

Dimension	Climate Policy	Structural Reform	Shared Mechanism
Independent specialised agencies	Climate councils, independent grid operators, energy regulators (Averchenkova, 2024)	Central banks, fiscal councils, competition authorities (Alesina, 2007)	Depoliticise long-term decisions and provide technocratic continuity (Rogoff, 1985)
Binding long-term frameworks	Carbon budgets, net-zero legislation, renewable portfolio standards (Dubash, 2022)	Inflation-targeting regimes, medium-term fiscal rules, competition law (Wyplosz, 2005)	Anchor expectations, encourage investment, raise reversal costs (North, 1990)
Stakeholder institutions	Just-transition roundtables, sectoral decarbonisation agreements (Newell, 2019)	Corporatist bargaining systems, tripartite wage councils, social pacts (Ebbinghaus, 2010)	Inclusion defuses opposition and generates enforceable compromises (Hall, 2001)
Compensation mechanisms	Regional transition funds, energy-bill rebates, worker retraining (Vona, 2019)	Unemployment insurance, active labour market programmes (Boeri, 2006)	Redistribution reduces political salience of losers (Rodrik, 1998)
Strategic sequencing	Strengthen grid capacity before phasing out fossil assets (Meckling, 2015)	Build regulatory capacity before liberalising markets (Roland, 2000)	Avoid policy shocks unsupported by institutional infrastructure (Dewatripont, 1995)
Monitoring and transparency	Emissions inventories, sectoral dashboards, MRV systems (Eskander, 2020)	Productivity tracking, compliance audits (OECD, 2007)	Track progress, expose capture, enable policy learning (Sabel, 2022)

*Note:* While climate governance may benefit from lessons in earlier waves of economic reform, the irreversibility of climate damages and the global public goods nature of mitigation create additional complexities not fully addressed by traditional structural reform institutions.

## IMPLEMENTATION CAPACITY

### Governance Quality → Climate Outcomes

<p><b>Stef et al. (2023)</b> Better governance → lower emissions. Mechanism: enforcement, lower transaction costs <i>Panel: correlational</i></p>	<p><b>SenGupta &amp; Sachan (2025)</b> Governance improves outcomes in emerging economies BUT increases emissions in advanced economies. Interpreted as Jevons type rebound <i>Panel</i></p>	<p><b>Rafaty (2018)</b> ETS only works in high governance settings. Mechanism: prevents capture <i>Panel: correlational</i></p>	<p><b>Akin (2021)</b> Stronger rule of law → accelerated adoption and diffusion of renewables <i>Cross national: correlational</i></p>
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### Administrative Structures: Specialisation vs. Coordination

<p><b>Limberg et al. (2024)</b> Climate ministries → minus 1.06 tons CO<sub>2</sub>/capita. BUT only in high capacity states. Mechanism: focused expertise + resources <i>DID: strong ID</i></p>	<p><b>Christensen et al. (2019)</b> Norway: coordination tools fail. Ministries remain in sectoral silos. Cross cutting nature requires coordination <i>Comparative case</i></p>	<p><b>Sabel &amp; Victor (2022)</b> Experimentalist governance: Iterative learning → adaptation. Quality as dynamic process <i>Theoretical</i></p>	<p><b>Steinebach (2022)</b> Centralised authority + C&amp;C regulations → up to minus 4.9pp emissions. Specialisation advantage confirmed <i>Panel</i></p>
<p><b>Averchenkova et al. (2024)</b> Germany: economic ministries override climate goals through budget control. Coordination without veto power fails <i>Case study</i></p>	<p><b>Torney (2020)</b> Ireland/Finland failed to copy UK Climate Act. Domestic institutional contexts mediate outcomes <i>Comparative case</i></p>	<p><b>Driscoll &amp; Blyth (2025)</b> UK: good laws, no capacity. Hollowed out administrative capacity undermines implementation <i>Case study</i></p>	

**Key Debate:** Static governance indicators vs. dynamic learning capacity. Quality enables policy implementation but doesn't determine content (can support high or low emissions). Aggregate indices conflate institutional capacity with institutional orientation. Specialisation vs. coordination: dedicated climate ministries reduce emissions, but only in high capacity states. Cross cutting nature of climate policy creates coordination failures when specialised bodies lack authority over sectoral ministries. Neither capacity nor structure alone is sufficient; effectiveness depends on alignment: capacity + structures + political economic incentives.

## LONG-TERM COMMITMENT

### Economic Commitment Devices

<p><b>Besley &amp; Persson (2023)</b> Without commitment devices → "brown steady states" from time inconsistency. Binding rules necessary for credibility <i>Theoretical</i></p>	<p><b>Habermacher &amp; Lehmann (2020)</b> State contingent policies improve welfare. Rigid rules block adaptation to new info. Trade off: credibility vs. flexibility <i>Theoretical</i></p>	<p><b>Chiappinelli &amp; Neuhoff (2020)</b> CCfDs (binding contracts) → unlock private green investment. High reversal costs signal commitment <i>Theoretical</i></p>	<p><b>Lim &amp; Yurukoglu (2018)</b> US utilities: commitment → +59% capital. BUT creates moral hazard. Political preferences shape regulatory outcomes <i>Structural: strong ID</i></p>
<p><b>Brunner et al. (2012)</b> Policy uncertainty → underinvestment in green technologies. Irreversible commitments shift investment toward clean tech <i>Theoretical</i></p>	<p><b>Chiappinelli &amp; May (2022)</b> Germany FIT: constitutional entrenchment sustained 20yr investment despite government transitions <i>Case study</i></p>	<p><b>Gerlagh &amp; Lisk (2018)</b> Hyperbolic discounting creates additional commitment problems. Behavioural biases compound time inconsistency <i>Theoretical</i></p>	

### Hybrid Designs: Navigating the Trade Off

<p><b>Jordan &amp; Moore (2023)</b> EU: 81% of instruments survive since 1992. Constant recombination (not rigid lock in). Long term targets + flexible implementation <i>Longitudinal case</i></p>	<p><b>Averchenkova et al. (2021)</b> Framework laws: rigid targets + adaptive tools. BUT flexibility → backsliding openings. Cannot compensate for weak political will <i>Comparative case</i></p>
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### Legal Enforcement

<p><b>Eskander &amp; Fankhauser (2020)</b> Climate laws: minus 0.78% CO<sub>2</sub> (short term), minus 1.79% (long term) across 133 countries. Judicial enforcement creates binding obligations <i>Panel</i></p>	<p><b>Savaresi &amp; Setzer (2022)</b> "Just transition" claims can pit social justice vs. decarbonisation. Litigation complicates implementation <i>Review</i></p>	<p><b>Setzer &amp; Higham (2022)</b> 2,000+ climate cases globally (2022). Legal systems structure enforcement; Common law: broad standing, precedent; Civil law: restrictive, codification <i>Descriptive</i></p>	<p><b>Dubash et al. (2022)</b> Urgenda (NL), Neubauer (DE): courts force 25% cuts. Constitutional rights anchor commitments. Raises procedural + legal reversal costs <i>Case analysis</i></p>
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**Key Debate:** No optimal institutional design under deep uncertainty. Trade off between credibility (rigid rules) and adaptability (flexibility) cannot be resolved. Hybrid designs show promise but depend on sustained political commitment.

Figure A1: Literature Map Panel A

## POLITICAL MEDIATION

### Electoral Systems & Veto Structures

<p><b>Finnegan (2022)</b> PR systems → higher carbon prices. Mechanism: blame diffusion across coalitions + corporatist compensation for losers</p> <p>Panel</p>	<p><b>Finnegan et al. (2025)</b> 1970s oil shocks: PR + welfare states maintained fuel taxes; majoritarian systems reduced 20 to 40%. Conditional on labour support</p> <p>Natural experiment</p>	<p><b>Madden (2014)</b> More veto points → less adoption. Standard veto player theory confirmed. Institutional checkpoints impede change</p> <p>Panel</p>	<p><b>Lockwood (2022)</b> Germany sustained €7bn/year; UK reversed at €1bn due to media pressure. PR + corporatism insulates policy</p> <p>Comparative case</p>
<p><b>Tsebelis (2002)</b> Veto points protect policy once established BUT block adoption in first place. Outcome depends on who occupies veto positions</p> <p>Theoretical</p>			

### Labour Market Institutions

<p><b>Mildenberger (2020)</b> Corporatism → "double representation": Fossil fuel unions veto climate policy. Germany: unions secured €40bn + delay to 2038</p> <p>Comparative case</p>	<p><b>Brauers et al. (2020)</b> UK flexible labour markets → rapid coal phase out (no veto channels). Weak sectoral institutions enable change</p> <p>Comparative case</p>	<p><b>Galgóczy (2020)</b> Germany: 338,500 green jobs exceeding coal employment. CMEs can enable just transitions when unions shift preferences</p> <p>Descriptive</p>	<p><b>Klagges (2025)</b> Corporatist structures → lower carbon pricing intensity in OECD countries</p> <p>Panel</p>
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### Sectoral Rules & Interest Formation

<p><b>Meckling et al. (2015)</b> Feed in tariffs → new constituencies. Policies create interests that defend ambition. Interest creation reshapes political equilibria</p> <p>Comparative case</p>	<p><b>Lamb &amp; Minx (2020)</b> Large fossil fuel sectors constrain carbon tax adoption regardless of institutions. Structural factors dominate institutional design</p> <p>Descriptive</p>	<p><b>Bolet et al. (2024)</b> Spain just transition agreements → +1.8pp shift away from pro coal parties. Credible regional investment transforms politics</p> <p>DiD: strong ID</p>	<p><b>Gazmararian (2024)</b> Fossil fuel communities support climate policy IF credible local investment commitments</p> <p>Survey</p>
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**Key Debate:** Macro institutions (electoral systems) vs. sectoral institutions (market rules)? Institutions mediate conflict through multiple contradictory mechanisms. Effects are conditional: insulation + exclusion of incumbent veto + green coalition formation + legitimacy.

## INFORMAL INSTITUTIONS (Cross Cutting)

### Social Norms & Coordination

<p><b>Andre et al. (2024)</b> 26pp gap: 69% willing vs. 43% perceived. Correcting misperception → +2 to 3pp support. Pluralistic ignorance blocks coordination</p> <p>Survey experiment: 125 countries</p>	<p><b>Geiger &amp; Swim (2016)</b> "Climate of silence": pluralistic ignorance as barrier to climate change discussion</p> <p>Survey</p>	<p><b>Mildenberger &amp; Tingley (2019)</b> Politicians systematically underestimate constituent climate concern, constraining policy ambition</p> <p>Survey</p>	<p><b>Rinscheid et al. (2021)</b> Policy support norms matter more than behavioural norms. "Many people recycle" doesn't increase carbon tax support</p> <p>Survey experiment</p>
<p><b>Georg et al. (2024)</b> National norms: +1.8 to 3.1pp support. Regional norms (low support areas): minus 2.9pp. Scale of framing matters</p> <p>RCT</p>			

### Trust & Credibility

<p><b>Fairbrother et al. (2019)</b> High trust countries: belief → +12pp support. Low trust countries: belief → no effect. Trust moderates concern → support</p> <p>Survey: 23 European countries</p>	<p><b>Dechezprière et al. (2025)</b> 3 beliefs explain 70% of support variation: (1) household loss, (2) poor household loss, (3) effectiveness. Fairness inseparable from trust</p> <p>RCT: 20 countries</p>	<p><b>Kulin &amp; Johansson Sevä (2021)</b> Impartial institution trust matters most (courts, regulators, scientists). Political trust has weak effects (N=23 countries)</p> <p>Survey: 46,000 individuals</p>	<p><b>Carattini et al. (2018)</b> Revenue recycling and transparent compensation builds trust that enables support</p> <p>Review</p>
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**Key Finding:** Informal institutions condition formal institutional effectiveness. Two complementary functions: (1) Social norms translate concern into support (coordination); (2) Trust determines whether commitments are believed (credibility). Without alignment, formal structures remain inert.

Figure A2: Literature Map Panel B

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