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Drake, Evan

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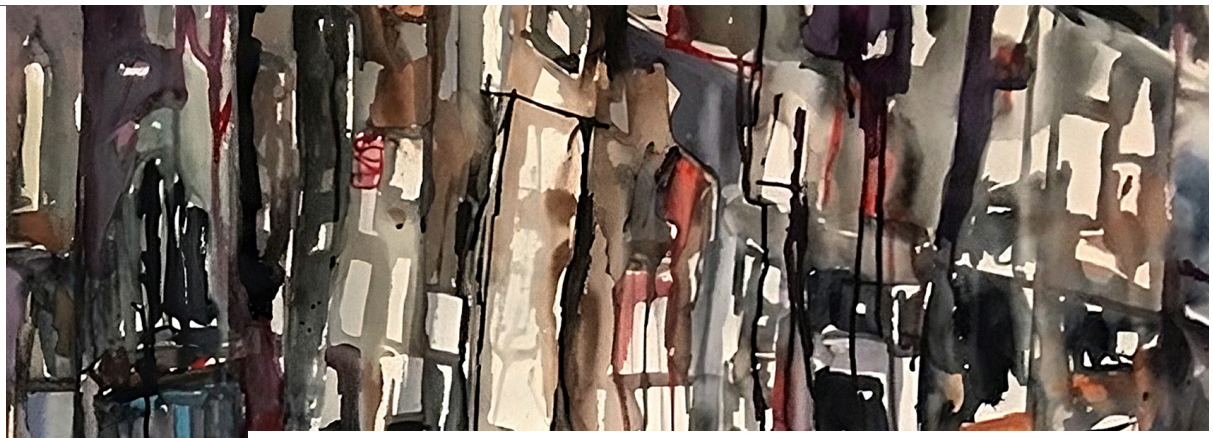

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Pathways Towards Fossil Fuel Subsidy Reform

EVAN DRAKE
DEPARTMENT OF POLITICAL SCIENCE | LUND UNIVERSITY

From Lock-In to Phase-Out: Pathways Towards Fossil Fuel Subsidy Reform

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Evan Drake

LUND
UNIVERSITY

DOCTORAL DISSERTATION

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Abstract:

This dissertation investigates the political determinants of fossil fuel subsidy reform in OECD countries between 2009 and 2023. Despite widespread recognition of their economic inefficiency and environmental harm, fossil fuel subsidies remain entrenched, with OECD countries collectively sustaining around USD 100 billion in annual support. The research addresses why some governments successfully reduce these subsidies whilst others do not. It conceptualises these subsidies as critical mechanisms of "carbon lock-in" that entrench fossil fuel dependence and impede climate action. Drawing on multiple strands of political science literature, the dissertation develops an integrated analytical framework that considers the roles of institutional configurations, governing party preferences, policy processes, and affective polarisation in shaping reform trajectories. Using a mixed-methods approach and four complementary articles covering 34 OECD countries, the research identifies both structural and strategic pathways to reform. Key findings show that proportional representation and corporatist institutions are associated with lower subsidy levels, by offering electoral insulation and facilitating compensatory strategies. Governments led by environmentally committed parties tend to reduce subsidies, whereas market-liberal parties increase them—particularly when they hold parliamentary majorities. The study also introduces the concept of "dismantling by layering", where incremental policies such as carbon taxes erode subsidies indirectly, minimising direct political confrontation. Finally, the dissertation develops a research agenda and theoretical framework proposing how affective polarisation may constrain reform by transforming climate policies into partisan identity markers. Together, the findings suggest that the climate governance challenge is not primarily about identifying technically optimal policy instruments but about understanding the political conditions under which necessary policies become feasible—an analytical shift with profound implications for both academic research and policy practice in addressing the climate crisis.

Key words: fossil fuel subsidy reform; climate policy; carbon lock-in; proportional representation; corporatism; policy dismantling; party programmes; environmental protection; market liberalism; majority government; political insulation; political backlash; policy layering; policy accumulation; carbon taxes; affective polarisation; public trust; identity politics; feedback effects; Canada; Germany; Mexico; OECD.

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To my family

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Despite a global consensus that fossil fuel subsidies should be reformed, limited progress has been made. The study assesses whether domestic political institutions that insulate politicians from backlash and compensate those affected by reforms make subsidies easier to dismantle. It was found that proportional representation and corporatism were correlated with lower levels of fossil fuel subsidies in OECD countries. A comparative case study of coal production subsidies in Germany and gas production subsidies in Canada suggests that political insulation and compensation contributed towards the dismantling of fossil fuel subsidies. The findings provide an understanding of the impact of corporatism and electoral systems on reform.

Published in *Journal of Comparative Policy Analysis: Research and Practice*, 26(3-4), 367-382.

Article II: Drake, E. (2025). From Party Programmes to Climate Policy: A Comparative Analysis of Fossil Fuel Subsidy Reform in OECD Countries

Fossil fuel subsidies incentivise the production and consumption of coal, oil, and gas, and persist in virtually every country despite growing international calls for their phase-out. While many high-income democracies have explicitly pledged to reduce subsidies in international forums, implementing such reforms domestically has been limited. This study investigates why some governments reduce fossil fuel subsidies while others do not, focusing on the influence of governing parties' programmes across 28 OECD countries from 2010 to 2021. The results suggest that governments supportive of environmental protection tend to reduce subsidies, while those supportive of market liberalism tend to increase them. Additionally, stronger support for environmental protection policies moderates the effects of market liberal agendas, leading to reductions in fossil fuel subsidies. These effects are even more pronounced when governments command a majority in their primary legislature.

Under review in *Party Politics*

Article III: Drake, E. (2025). Policy Dismantling by Layering: The Case of Carbon Taxation and Fossil Fuel Subsidies

This article proposes a novel conceptualisation of policy dismantling via policy layering—a strategy where policymakers deliberately introduce new policies that systematically undermine existing ones without formally abolishing them. Unlike highly visible dismantling approaches that provoke organised opposition, layering operates as a blame-avoidance strategy by diffusing policy changes across multiple domains and governance levels while maintaining formal policy continuity. We theorise that this approach imposes asymmetric monitoring costs on opponents, who must track complex policy interactions across jurisdictions, thereby fragmenting resistance efforts and making coherent counter-mobilisation more challenging. The mechanism is illustrated through carbon pricing and fossil fuel subsidies, where carbon taxes gradually erode subsidy effectiveness by introducing competing fiscal pressures and price signals. An analysis of Mexico (2009-2023)—where federal and state carbon taxes coexist with substantial gasoline subsidies—demonstrates how multi-level policy layering can produce net dismantling effects. While Mexico's federal carbon tax remains modest, ambitious state-level measures have created ratcheting dynamics that incrementally undermine subsidies. The findings suggest that strategic policy layering may offer a viable pathway for decarbonisation in contexts where direct subsidy removal faces entrenched opposition, revealing how seemingly incoherent policy accumulation can serve transformative purposes.

Unpublished manuscript

Article IV: Drake, E. (2025). Revisiting the Carbon Lock-In: Outlining an Agenda on How Affective Polarisation Constrains Climate Policymaking

Carbon lock-in—the self-reinforcing inertia that perpetuates fossil fuel dependence—emerges from interdependent technological, institutional, economic, and behavioural factors. As climate policy has become increasingly polarised, current explanations may not fully capture contemporary decarbonisation barriers. I argue that affective polarisation is likely to generate novel lock-in mechanisms operating through elite-mass interactions, trust erosion, and feedback effects between elite cues and mass climate policy resistance. This research agenda asks a central question: To what extent does affective polarisation reinforce the carbon lock-in? Drawing on social identity theory and carbon lock-in literature, I develop a theoretical framework showing how affective polarisation—as a cross-cutting process—reinforces carbon lock-in through three

mechanisms: (1) elite strategic framing that activates or circumvents partisan identities, (2) trust as a mediating factor linking polarisation to policy acceptance, and (3) self-reinforcing feedback loops between polarising rhetoric and mass resistance. The theoretical framework suggests that partisan identity sorting transforms climate policies into identity markers rather than policy solutions, creating path-dependent resistance that may systematically constrain policymakers' space for climate action. This research agenda calls for empirical investigation of these mechanisms and their implications for designing effective climate policies and communication strategies in polarised political environments.

Under review in *Perspectives on Politics*

1. From Exothermic Reaction to Political (In)action

The enormous energy unleashed from fossil fuels has been harnessed to tremendous effect, irreversibly transforming technological, cultural, economic and political systems. However, this transformation has come at a cost: the heat-trapping gases released as a byproduct of these reactions have prompted long-term climatic shifts, posing dire consequences for the ecological systems humanity depends upon for survival. Modern societies are now significantly reliant on fossil fuels. We rely on these energy sources not only for electricity, heating, and transportation, but also for essential products like plastics, fertilisers, pharmaceuticals, and construction materials. Our fossil fuel dependency has become increasingly entrenched through positive feedback effects (Unruh, 2000), creating what might be called a "carbon lock-in." The efficiency of fossil-based systems—developed through decades of optimisation—has progressively narrowed the available pathways for transitioning away from them.

One critical pathway for transition involves reducing or eliminating fossil fuel subsidies. Despite broad scientific consensus on the urgency of climate action, such reforms remain challenging. This thesis examines the political factors that both enable and constrain fossil fuel subsidy reform in advanced democracies, exploring this avenue as a necessary component of the phase-out toward a decarbonised future.

To this day, practically every government in the world subsidises the consumption and production of fossil fuels, exacerbating the climate crisis by creating incentive structures that favour maintaining or expanding fossil-based energy systems over cleaner alternatives. This, in turn, results in a systemic resilience that tends to eliminate, dampen or reverse efforts to reform towards decarbonised economies (Bernstein & Hoffmann, 2019). Despite widespread recognition of these dynamics and growing international pressure to address climate change, attempts to dismantle fossil fuel subsidies continue to encounter formidable political obstacles. Fossil fuel subsidy reform is an undertaking nearly always fraught with major political costs and risks (Inchauste and Victor, 2017).

Three recent cases—Mexico's reform attempt and subsequent backlash, Canada's symbolic reforms, and Germany's rare success—showcase some of the political dynamics that typically constrain fossil fuel subsidy reform. In each case, similar obstacles emerged: organised resistance from subsidy beneficiaries, significant electoral risks from imposing visible costs on specific constituencies, and the challenge of

sustaining reform momentum when benefits such as climate mitigation remain distant and diffuse.

Mexico's attempt at gasoline price liberalisation triggered massive political backlash. On New Year's Day, 2017, the government ended decades of gasoline price controls, effectively removing consumer subsidies that had kept fuel artificially cheap. Within hours, protests erupted nationwide as prices shot up by 20 per cent. Demonstrators stormed gas stations, blocked highways, and called for the president’s resignation (Agren, 2017). The backlash was so intense that President Enrique Peña Nieto's approval ratings plummeted to record lows, severely undermining his government’s political standing.

Canada's approach was more cautious but largely ineffective. Despite repeated pledges since 2009 by successive Canadian governments to phase out “inefficient fossil fuel subsidies" (G20, 2009), little substantive progress has been made. Trudeau's government, elected in 2015 on promises of climate leadership, opted for a symbolic dismantling of fossil fuel subsidies—high-profile announcements of reform accompanied by minimal actual change. Fossil fuel production subsidies remained largely intact, protected by industry lobbying and concerns about electoral consequences in fossil fuel-producing provinces.

Germany, however, achieved the phase-out of hard coal production subsidies by 2018, ending nearly seven decades of government support. German policymakers benefited from a grand coalition government between the Christian Democrats and Social Democrats, which distributed political responsibility and provided insulation from electoral competition. This institutional arrangement enabled extensive negotiations with mining unions and regional governments, crafting compensation packages that transformed potential opponents into reform partners. The process took over a decade, but it succeeded without significant political backlash (Drake & Skovgaard, 2024).

Despite compelling reasons for reform, fossil fuel subsidies persist at record levels worldwide. Fossil fuel subsidies are government measures that incentivise the consumption and production of fossil fuels to achieve policy outcomes, including poverty reduction, energy security, and economic development (Skovgaard & Drake, 2024). Yet eliminating these subsidies would significantly contribute towards global efforts to mitigate climate change, preserve biodiversity, reduce air pollution, and free up resources for strained public services (Skovgaard & van Asselt, 2018). Yet governments continue subsidising fossil fuels at unprecedented levels, with global support reaching over USD 1.6 trillion in 2022 (IISD & OECD, 2022).

Contemporary policymakers inherit fossil fuel subsidies as entrenched policy commitments that prove difficult to abandon despite their environmental costs (Rose and Davies, 1994). These subsidies constitute a key mechanism of carbon lock-in—the interconnected technological, political, and economic systems that perpetuate fossil fuel

dependence through self-reinforcing dynamics built up over decades (Unruh, 2000; Seto et al., 2016). Once established, subsidies generate economic dependencies, institutional processes, and political constituencies that actively resist reform.

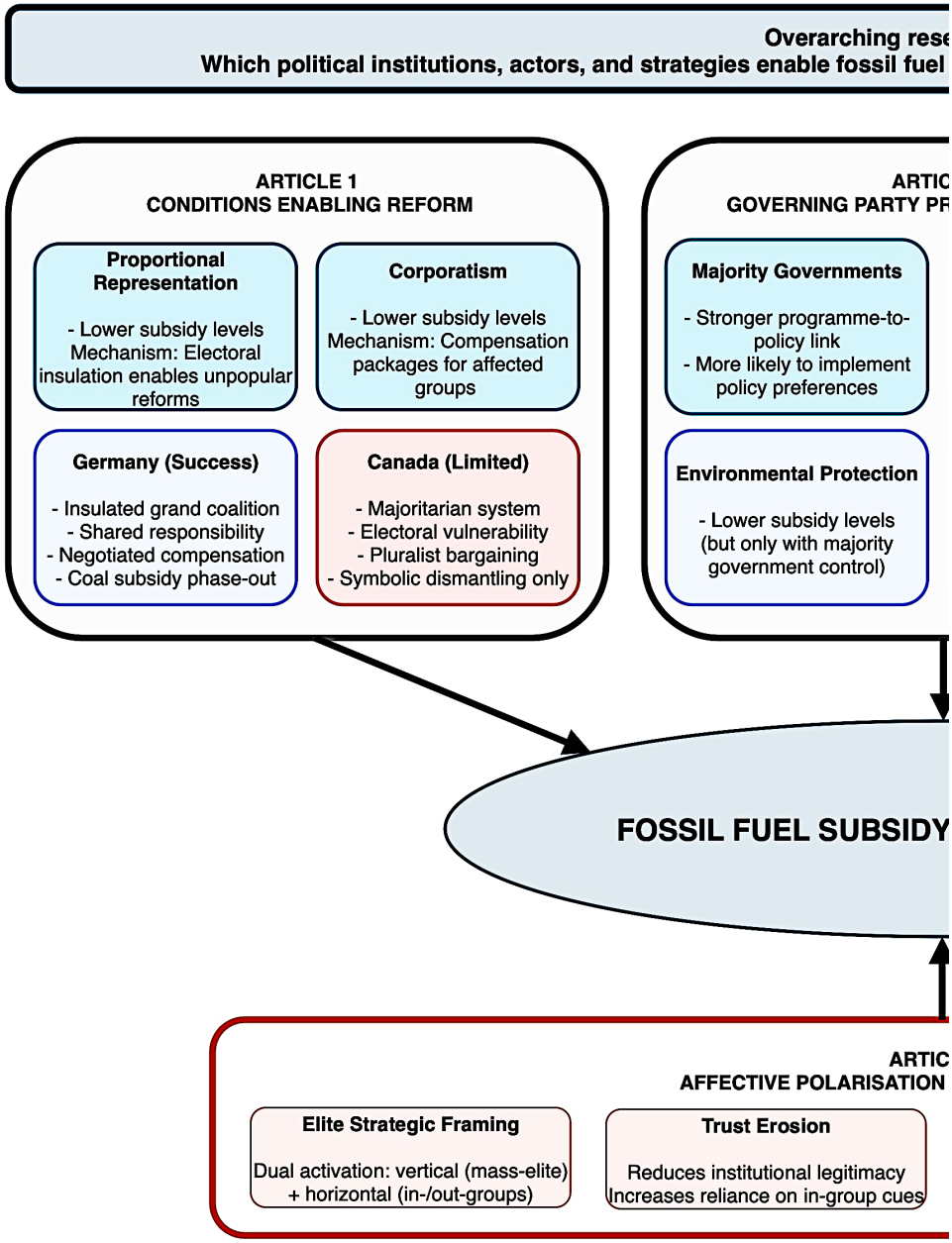
These policies create economic dependencies whereby firms develop business models dependent on subsidised operations, fuel-dependent industries become reliant on artificially cheap inputs, and entire regions structure their economies around subsidised sectors. Subsidies become embedded in legal frameworks, policy networks, and governance structures that develop their own path dependence and resist disruption. Such arrangements also generate powerful constituencies—such as workers and shareholders in carbon-intensive sectors—with vested interests in maintaining the status quo. The inevitable conflicts stemming from reform attempts carry substantial political risks that policymakers must carefully navigate or potentially face backlash (McCulloch et al., 2022).

Breaking this inherited carbon lock-in requires overcoming the fractal nature of fossil fuel dependence that reproduces resistance across multiple scales—from global supply chains to local employment dependencies (Bernstein & Hoffmann, 2019). While disrupting key segments of interconnected fossil fuel systems can trigger spillover effects that induce broader decarbonisation, the political challenge remains formidable.

This challenge is particularly pronounced in advanced democracies. While much existing literature has examined economic and technological barriers to fossil fuel subsidy reform in developing countries (e.g. Inchauste & Victor, 2017; Rentschler & Bazilian, 2017a & 2017b; Chelminski, 2018; Krane, 2018), this thesis shifts analytical focus to the 34 OECD countries where subsidy persistence presents a different puzzle. Unlike developing nations that often lack the resources or capacity for reform, OECD countries possess the administrative capacity, economic resources, and institutional stability necessary for subsidy removal.

Nevertheless, many continue to provide extensive fossil fuel support despite public commitments to climate action and subsidy reform. This persistence cannot be explained simply by the dominance of carbon-intensive interests—which operate across all democracies—but rather suggests that subsidy entrenchment in wealthy democracies arise from distinctly political mechanisms involving structural constraints, partisan dynamics, and policy processes that require systematic investigation. This thesis, therefore, addresses the core research question:

Which political institutions, actors, and strategies enable fossil fuel subsidy reforms, and what constraints are there to such reforms?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Which political institutions, actors, and strategies enable fossil fuel
ARTICLE 1
CONDITIONS ENABLING REFORM
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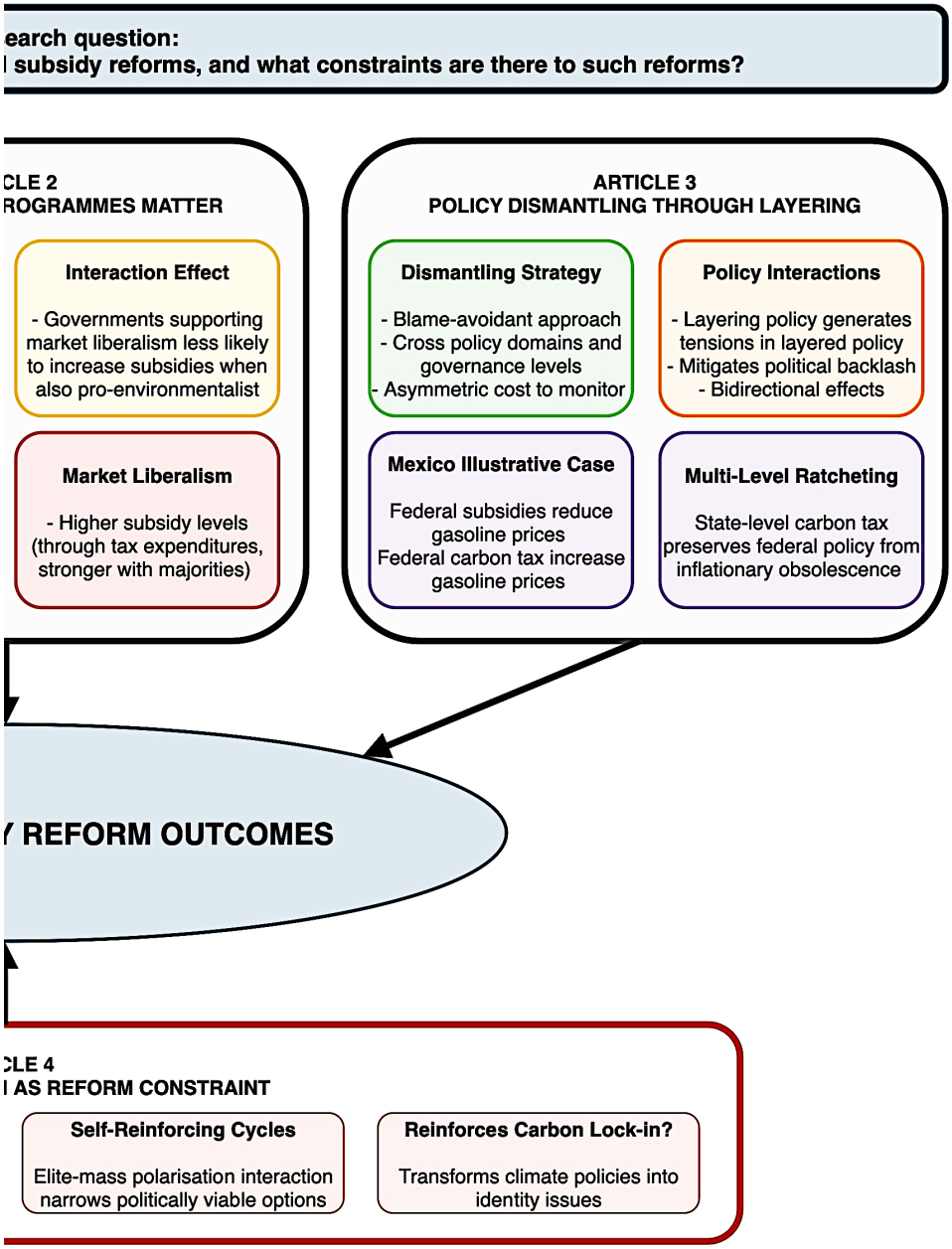

Figure 1. Overview of the compilation thesis's key concepts, empirical findings, and theoretical contributions.

To address this research question, I draw from diverse literatures, from comparative political economy, neo-institutionalism, party politics, policy studies, and affective polarisation. This thesis examines how electoral systems, corporatist bargaining structures, government policy positions, majority control, and policy layering strategies create distinct pathways for reform. Through four articles analysing fossil fuel subsidy data, party manifestos, government reforms, and policy interactions across OECD countries between 2010 and 2023, this research examines structural conditions (electoral systems and corporatism), political agency (party programmes and majority government control), and policy processes (layering and dismantling strategies). The first three articles investigate how these different factors shape reform pathways, while the fourth article proposes a research agenda exploring how affective polarisation reinforces carbon lock-in by transforming climate policies into partisan identity markers.

The integrated analytical framework presented above (Figure 1) synthesises the theoretical contributions and empirical findings of this compilation thesis, mapping the interconnected political dynamics that contribute towards fossil fuel subsidy reform outcomes in OECD countries. By examining how structural institutional arrangements, strategic political actors, policy process mechanisms, and contemporary polarisation constraints shape reform possibilities, the framework reveals both the multiple pathways through which reform can emerge and the systematic barriers that increasingly limit the political space for ambitious climate policy action across advanced democracies.

2. Fossil Fuel Subsidies: Overview

Understanding the persistence of fossil fuel subsidies in OECD countries requires analysing the underlying political economy factors that sustain these policies despite increasing pressures for reform. While developing economies typically reform subsidies in response to fiscal crises or external shocks, advanced democracies operate under fundamentally different conditions of institutional stability, administrative capacity, and insulation from economic volatility that drives reform elsewhere. However, this stability can sometimes act as a barrier rather than facilitate reform. This section provides the essential background for understanding how subsidies serve as embedded policy tools within political structures, examining their diversity across policy areas, the empirical patterns that highlight OECD exceptionalism, and the stakeholder configurations that consistently support policy preservation over reform.

2.1 Typology of Fossil Fuel Subsidies

Fossil fuel subsidies encompass government interventions that reduce the cost of fossil fuel production or consumption below market levels. These interventions are conventionally categorised into two primary types: consumer subsidies, which reduce energy costs for households and firms through mechanisms such as reduced VAT rates on heating fuels (as in the UK and Germany), regulated gasoline prices below market rates (as Mexico has long maintained), or direct rebates for fuel costs to households (seen in various Canadian provinces), and producer subsidies, which support fossil fuel companies through instruments including accelerated depreciation allowances for oil and gas exploration (common across OECD countries like Canada and Norway), direct grants for coal mine closure compensation (as in Germany's phase-out program), and government loan guarantees for fossil fuel infrastructure projects (such as pipeline construction support in the United States) (Wooders et al., 2019; IISD & OECD, 2022).

These subsidy types are delivered through different mechanisms that carry distinct political implications. Direct budget transfers and market regulation create visible fiscal costs and clear beneficiary groups that facilitate mobilisation by both supporters and opponents. In contrast, tax expenditures and risk transfers operate with lower public visibility, making them both less susceptible to reform pressure and easier for beneficiaries to defend politically due to reduced public scrutiny and lower salience in

policy debates. For instance, when governments provide loan guarantees for pipeline construction, they effectively subsidise fossil fuel infrastructure by lowering financing costs and enabling projects that might otherwise lack commercial viability. Yet, these subsidies rarely appear in public budget debates (Koplow, 2018). The political implications of these different subsidy mechanisms become apparent when comparing reform experiences across development contexts. Economically developed countries predominantly employ tax expenditures and production transfers—administratively complex, indirect subsidies that remain insulated from short-term price fluctuations and public scrutiny. Developing economies more commonly use direct price controls that become fiscally unsustainable when international fossil fuel prices rise, forcing periodic reform attempts. These different subsidy architectures create fundamentally different political dynamics around reform efforts.

Beyond the political challenges created by different subsidy mechanisms, quantifying fossil fuel subsidies remains methodologically and politically contentious. This thesis adopts the World Trade Organization's definition from the Agreement on Subsidies and Countervailing Measures (1995), which defines subsidies as government interventions that reduce the cost of fossil fuel production or consumption below market levels through direct financial transfers, tax expenditures, or regulatory measures. This definition excludes negative externalities such as environmental and health costs, despite their essential relevance to the actual social cost of fossil fuel support.

While estimates that include externalities are substantially higher—reflecting the broader costs from air pollution, climate change, and public health impacts (Kitson, Wooders, & Moerenhout, 2011)—this thesis focuses on the narrower WTO definition for several reasons. First, most international organisations, including the OECD, adopt this approach to maintain analytical consistency across countries and time periods. Second, the inclusion of externalities has complicated international reform efforts by undermining consensus on subsidy scope and magnitude, making it difficult to establish clear baselines for reform commitments. Third, from a political perspective, policymakers often frame reform debates around direct fiscal costs and market distortions rather than externalised damages, making the narrower definition more relevant for understanding contemporary reform dynamics. This definitional choice ensures that the analysis captures the subsidies that are most visible to policymakers and most directly subject to political contestation in reform processes.

2.2 Global Fossil Fuel Subsidy Patterns and OECD Exceptionalism

From 2010, global fossil fuel subsidies have fluctuated dramatically with international petroleum prices, ranging from USD 400 billion to over USD 1.6 trillion in the period

after the Russian invasion of Ukraine (IEA, 2023). However, this aggregate volatility masks a crucial divergence: OECD subsidies have remained remarkably stable around USD 100 billion annually through 2020, while non-OECD countries drive virtually all global variation during this period (see Figure 2 below). This stability in OECD subsidy levels appears particularly puzzling given three convergent reform pressures that have emerged since 2010. First, the institutionalisation of subsidy reform agendas within multilateral governance regimes, including G20 peer-review mechanisms and SDG target 12.c, created unprecedented international pressure for reform (Skovgaard & van Asselt, 2018). Second, demonstrable electoral gains by green parties and the mainstreaming of climate platforms in party manifestos suggested growing domestic political demand for climate action (Eskander & Fankhauser, 2020; Grant & Tilley, 2019). Third, post-2008 fiscal austerity paradigms that prioritised expenditure rationalisation should have made subsidy spending politically vulnerable (Rawdanowicz et al., 2021). These reform pressures merit closer analytical attention.

Fossil fuel subsidy reform has garnered notable international political momentum following the G20 commitment in 2009 to 'rationalize and phase out' fossil fuel subsidies—an urgent climate mitigation measure needed to keep global temperature increases within 1.5 to 2 degrees (Alers & Jones, 2021). This commitment catalysed efforts by international organisations, including the Asia-Pacific Economic Co-operation (APEC), the G7, Friends of Fossil Fuel Subsidy Reform, and the Sustainable Development Goals framework to support subsidy reform (Skovgaard, 2021; Whitley & van der Burg, 2018).[1] The urgency of these commitments reflects the significant climate benefits that reform could deliver: the removal of global fossil fuel subsidies has been estimated to reduce greenhouse gas emissions up to 10% by 2030 (IPCC, 2022) and substantially reduce air pollution (Coady et al., 2019).

However, these estimates understate the full transformative potential of subsidy reform, as they exclude the compounding benefits of redirecting savings toward renewable energy development (Schmidt et al., 2017). More significantly, such calculations fail to account for the political-economic ramifications of breaking fossil fuel lock-in—not merely in terms of stranded physical assets, but crucially, the disruption of entrenched corporate power structures that perpetuate carbon-intensive systems (Erickson et al., 2020; Newell & Johnstone, 2018). Fossil fuel interests leverage their privileged policymaking access not only to preserve subsidies but to shape broader regulatory frameworks: diluting compliance costs for climate policies, securing transition

[1] SDG Target 12.c contains a voluntary commitment to ‘‘[r]ationalize inefficient fossil-fuel subsidies that encourage wasteful consumption’’ (UNFCCC, 2015). In 2021, the United Nations Framework Convention on Climate Change agreed to “accelerate … efforts towards the phase-out of … inefficient fossil fuel subsidies” (UNFCCC, 2021).

compensation packages, and systematically tilting the playing field against low-carbon alternatives (Meckling, 2015; Wood et al., 2019).

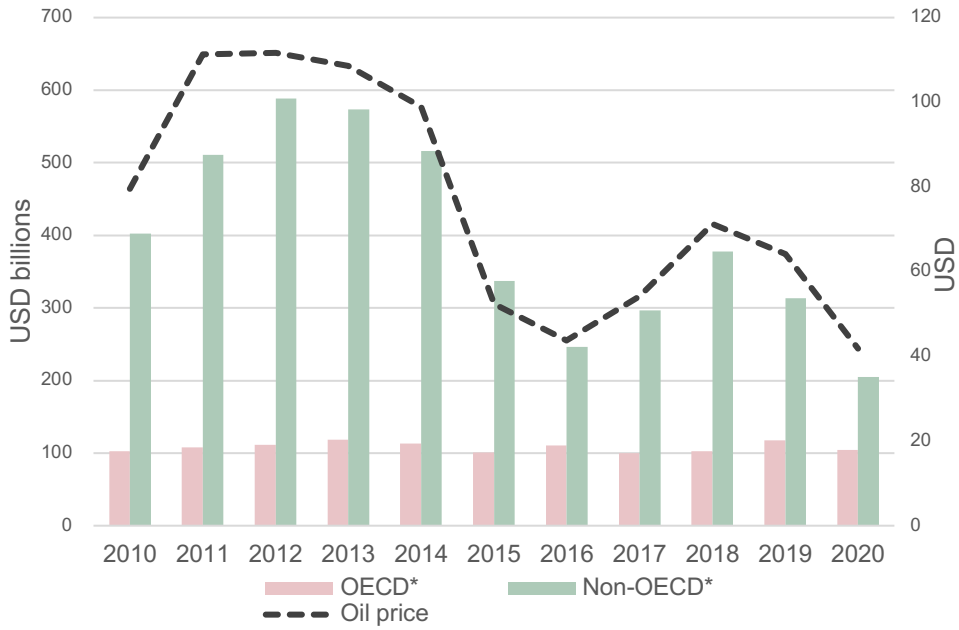

Figure 2. Subsidy levels between OECD and non-OECD countries in USD billions, with the international petroleum price trendline for a barrel of oil in USD. Data sourced from IISD & OECD (2022).

Every OECD country remains "at risk of not delivering on its fossil fuel subsidy phase-out commitment" (Geddes et al., 2020), even as climate action has gained unprecedented political momentum. The rise of green parties and environmental policies, particularly in advanced economies, has elevated climate action from niche advocacy to mainstream political discourse. As of 2023, the number of climate laws and policies implemented globally reached 3,150—up from 1,800 in 2020—with OECD countries leading this legislative surge (Grantham Research Institute, 2024). While governments demonstrate increasing willingness to enact new climate policies—from carbon pricing mechanisms to renewable energy mandates—they simultaneously preserve existing fossil fuel support structures that directly undermine these efforts by maintaining artificial incentives for carbon-intensive activities. This selective policy implementation reveals that subsidy persistence reflects not governmental indifference to climate concerns or lack of policy capacity, but rather the political influence of carbon-intensive interests in defending established arrangements. The result is a contradictory policy landscape

where climate commitments operate alongside measures that actively subsidise carbon-intensive activities.

Post-2008 fiscal austerity paradigms altered the political calculus surrounding government expenditure, creating what, on the face of it, should have been fertile ground for fossil fuel subsidy reform (Hall, 1993). Austerity discourse reframed public spending through the lens of fiscal responsibility, making previously protected expenditures politically vulnerable to cuts as governments sought to demonstrate fiscal discipline and reduce deficits (Blyth, 2013). Within this context, fossil fuel subsidies present a theoretically attractive reform target, offering the rare possibility of cross-partisan coalition-building that transcends traditional ideological divides. For right-leaning parties, subsidy elimination aligns with free-market principles by removing government interventions that distort markets and misallocate resources (Koplow, 2018). For left-leaning parties, reform simultaneously advances environmental objectives while freeing fiscal resources for progressive spending priorities such as renewable energy investment and social programs (Rentschler & Bazilian, 2017a). This ideological convergence around subsidy reform—where market efficiency and environmental protection arguments point toward the same policy outcome—suggests that continued subsidy persistence cannot be explained through conventional left-right partisan dynamics alone.

Examining fossil fuel subsidy levels across OECD countries between 2010 and 2020 reveals substantial variation both between countries and within individual countries over time (see Figure 3 below). This variation is significant because OECD countries represent a unique analytical context where explanations for subsidy persistence in developing economies largely fail to apply. Unlike developing economies where subsidies persist due to fiscal crises, oil price volatility, or institutional capacity constraints, OECD countries possess the budgetary resources to pursue reform, the administrative capacity to enact policy changes, and stable governance structures to withstand temporary political pressures. Yet despite these enabling conditions for reform—combined with democratic accountability mechanisms that should make governments responsive to environmental constituencies—these countries demonstrate markedly different subsidy trajectories. Countries such as Germany and the United Kingdom have achieved significant reductions in specific subsidy categories.

In contrast, others, including Canada and Australia, have maintained or even expanded their fossil fuel support despite comparable capacities and pressures. Mexico exhibits dramatic fluctuations reflecting episodic reform attempts followed by policy reversals—a pattern that, while partly attributable to its reliance on direct consumer subsidies, nonetheless illustrates the difficulties of sustaining reform momentum. This divergent performance among OECD countries points to domestic country-level conditions primarily driving subsidy levels (Mahdavi, Martinez-Alvarez, and Ross, 2022).

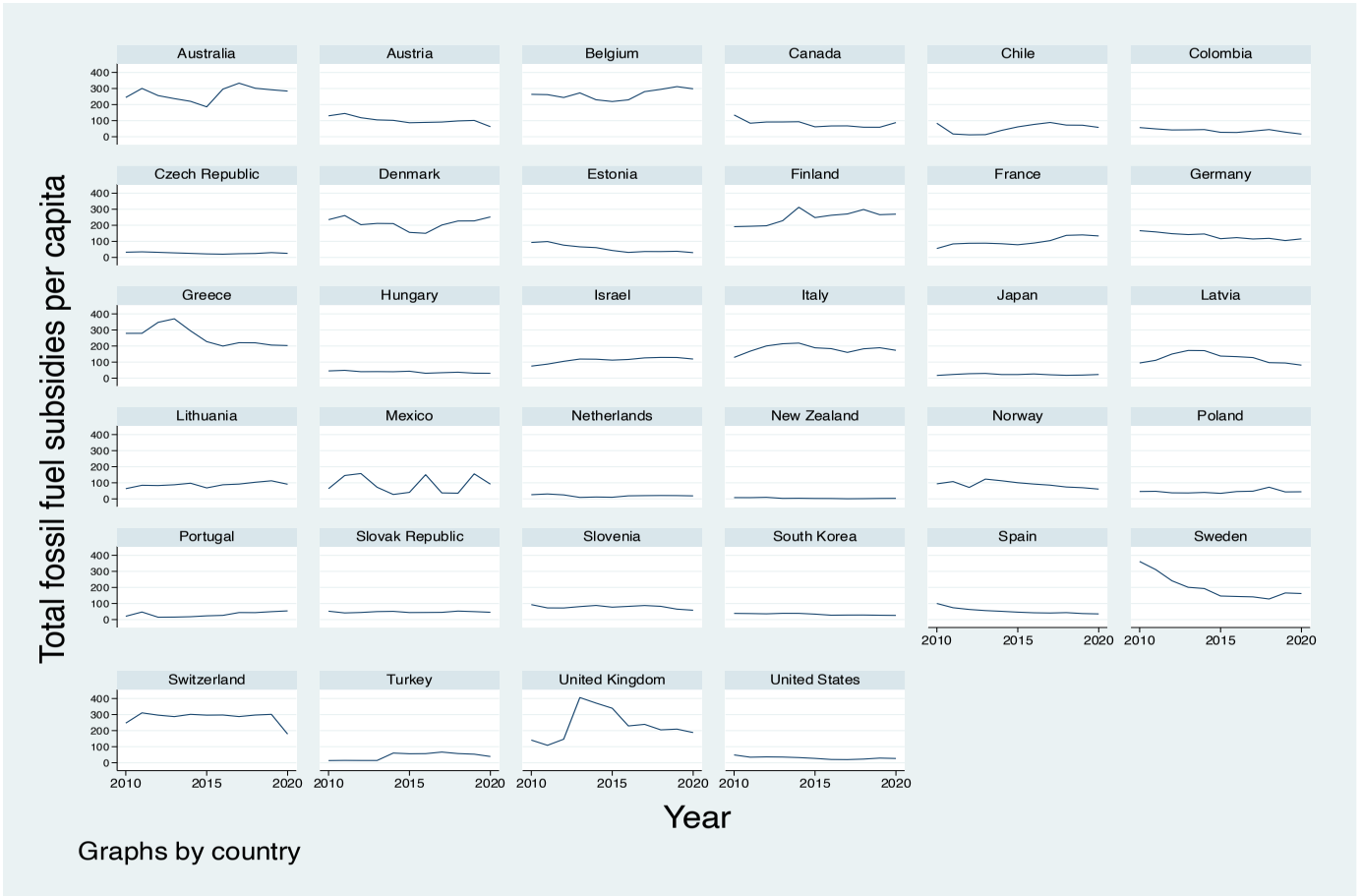

Figure 3. Variation of fossil fuel subsidies per capita in OECD countries. Data from IISD & OECD (2022)

2.3 Stakeholder Configurations of Fossil Fuel Subsidy Reform

The persistence of fossil fuel subsidies despite their well-documented environmental and economic costs reflects the complex stakeholder dynamics surrounding reform efforts. While subsidies impose diffuse costs on society through fiscal burdens and ecological degradation, they generate concentrated benefits for specific actors who possess both strong incentives and substantial resources to resist change (Gourevitch & Shinn, 2010). Understanding these political coalitions—both opposing and supporting reform—is essential for explaining subsidy persistence and identifying pathways for successful reform.

The primary opponents of subsidy reform can form powerful coalitions spanning carbon-intensive industries and labour interests, alongside politicians across levels of government. Carbon-intensive sectors—including fossil fuel extraction, petrochemicals, steel, cement, aluminium, aviation, shipping, and other heavy industries—constitute the more influential beneficiaries (Cheon et al., 2015), leveraging their substantial economic resources and access to policymaking to protect subsidy instruments through lobbying, campaign contributions, and regulatory capture (Blankenship & Urpelainen, 2019; Newell & Johnstone, 2018). These industries benefit not only from direct production subsidies but also from consumer subsidies that reduce input costs for energy-intensive business processes (Downie, 2017). The Canadian case exemplifies this dynamic: despite early 2010s progress in eliminating direct federal subsidies, the government continued supporting carbon-intensive industries through indirect mechanisms such as liability protections, infrastructure subsidies for liquefied natural gas projects, and above-market payments for pipeline assets that benefit the broader fossil fuel supply chain (Corkal, Gass, & Levin, 2020). Similarly, energy-intensive manufacturing sectors benefit from subsidised fossil fuel-generated electricity that reduces their operational costs and enhances competitiveness against international competitors.

Public actors, including politicians with ties to sectors or regions that receive subsidies, also constitute powerful opponents to subsidy reform. These actors may view fossil fuels as essential to economic growth, or as national resources that should be cheaply distributed or benefit the public (Scobie, 2018; Segal, 2012; Skovgaard & van Asselt, 2018). Fossil fuel subsidies can be propping up local economies or entire regions, with workers and businesses fiercely opposed to subsidy dismantling. Oftentimes, distributional conflicts in this regard are not just at the margins, for example, in profits or wages. Shutting down a coal mine or major oil fields can devastate a significant part of an economy; like in other climate policy issues, each side could lose all its assets. Politics becomes not merely who gets what, but who survives (Ross, 2025). These distributional conflicts are not dissimilar to those that have historically undermined or

watered down other climate policies, and they are a defining characteristic of fossil fuel subsidy persistence. Convergent pressures from powerful business interests and citizens resistant to higher fuel costs raise the political stakes for leaders considering reform (Aklin & Mildenberger, 2020; Colgan et al., 2021).

While actors against fossil fuel subsidy reform have emerged, other actors in favour of such reform have come to the fore. First, fiscal actors such as finance ministries have often been the leading actors behind reform (Skovgaard, 2018, 2021), usually motivated by the desire to cut government expenditure, which is why fossil fuel subsidies have often been reformed when countries face fiscal crises (Chelminski, 2018; Krane, 2018; Rentschler & Bazilian, 2017b). This fiscal imperative has historically been more pronounced in developing economies where subsidy costs can represent substantial portions of government budgets during periods of high international oil prices.

Second, and closely related to the first factor, international organisations such as the International Monetary Fund and the World Bank have often promoted fossil fuel subsidy reform, particularly in developing economies during fiscal crises that involve lending programs from the two organisations. These actors are opposed to fossil fuel subsidies due to their fiscal and macro-economic impact, as subsidies that distort the market and create unfair competitive advantages for carbon-intensive industries (Skovgaard, 2021). In the same vein, however, it should be noted that there is limited evidence to suggest that international organisations have played a significant role in motivating fossil fuel subsidy reform in industrialised countries (e.g., van Asselt, 2023; Droste, Chatterton and Skovgaard, 2024).

Third, environmental civil society actors have emerged as reform advocates in industrialised countries, calling for elimination of fossil fuel subsidies due to their detrimental effects on local environments and the climate (see e.g. Gençsü et al., 2017; Oil Change International, Friends of the Earth U.S., The Sierra Club, & WWF European Policy Office, 2017; Thunberg et al., 2020). Additionally, climate-friendly political parties have become key reform supporters in developed economies. However, green parties and environmentally oriented political movements have not necessarily made fossil fuel subsidy elimination an explicit or consistent priority across OECD countries. This political framing has gained traction in developed economies where fiscal pressures are less acute and climate commitments more salient.

Actors in favour of fossil fuel subsidy reform currently converge on the idea that fossil fuel subsidies constitute a costly, distortionary and environmentally damaging incentive structure. However, these actors are motivated to different degrees by fiscal, macro-economic and environmental concerns. Despite this convergence of interests, actors in favour of reform face a fundamental collective action challenge: the benefits of reform remain distant, dispersed and less tangible, whereas the costs are definite and concentrated on a few actors (Victor, 2009). This asymmetric stakeholder configuration

favours subsidy maintenance over reform, explaining why even broad coalitions supporting reform often struggle to overcome organised and well-resourced opposition from carbon-intensive sectors and their political allies (Cheon & Urpelainen, 2013).

2.4 Existing Reform Strategies and Their Limitation

Successful reform efforts in various countries have provided some insights into practical strategies for managing organised opposition and transforming energy subsidy systems. One key insight is the gradual phasing out of subsidies, which allows for a smoother transition and minimises disruptive impacts on affected carbon-intensive industries and consumers. This incremental process provides stakeholders with time to adapt and adjust their behaviours and investments accordingly (Sanchez et al., 2020). Timely implementation of reforms is another crucial factor. Seizing opportunities presented by low international fossil fuel prices can help mitigate potential resistance or backlash from affected parties. By aligning reforms with favourable market conditions, governments can leverage cost savings and reduce the overall fiscal burden associated with subsidy programs while minimising competitive pressures on energy-intensive industries (Skovgaard & van Asselt, 2018).

Strategic revenue recycling has emerged as crucial for building durable reform coalitions by transforming potential losers into stakeholders with vested interests in policy success. Rather than simply eliminating subsidies, effective reforms redirect savings through three complementary channels that address different political constituencies (Bassi et al., 2023). First, investments in clean energy infrastructure and renewable technology development create new economic opportunities while accelerating decarbonisation, appealing to greener business interests and environmental advocates (Meckling et al., 2017). Second, targeted social protection programs—such as direct cash transfers, energy efficiency retrofits for low-income households, or job retraining initiatives—protect vulnerable populations who depend on subsidised energy services, thereby neutralising a key source of political opposition (Newell & Johnstone, 2018). Third, visible public investments in infrastructure, healthcare, or education demonstrate tangible benefits to broader constituencies, building public support for continued reform efforts. This multi-pronged approach can transform subsidy reform from a zero-sum political battle into more of a positive-sum opportunity that creates new winners while compensating potential losers (Ross, 2025). By addressing distributional concerns proactively and creating cross-cutting coalitions with stakes in reform success, revenue recycling strategies enhance both the political feasibility and long-term sustainability of fossil fuel subsidy elimination (Sanchez et al., 2020).

These technical insights, while valuable, provide an incomplete understanding of why fossil fuel subsidy reform remains so politically challenging across advanced

democracies despite widespread knowledge of effective implementation strategies. The persistence of subsidies in OECD countries suggests that technical solutions alone cannot overcome the fundamental political obstacles to reform. This gap between knowing what works and achieving implementation highlights the importance of understanding the political power dynamics that shape reform possibilities.

3. Fractal Carbon Lock-in and Reform Implications

3.1 Defining the Fractal Framework

The concept of carbon lock-in, first articulated by Unruh (2000), describes how carbon-intensive systems become entrenched through self-reinforcing technological, institutional, and economic mechanisms that create path dependencies (Mahoney, 2000), favouring fossil fuel use. Building on this foundation, Bernstein and Hoffman (2019) introduce the notion of a "fractal carbon trap" as a helpful metaphor to problematise how carbon dependence reproduces its logic across multiple, interconnected political scales and policy domains simultaneously.

The fractal metaphor is particularly apt because it captures how carbon lock-in exhibits self-similar patterns across different levels of analysis but also points to some of its vulnerabilities. Like mathematical fractals that display similar structures at varying scales of magnification, fossil fuel dependence manifests comparable reinforcement mechanisms whether examined at the macro-level (global energy systems), meso-level (national institutions and policies), or micro-level (individual behaviours and consumption patterns). This multi-scalar reproduction means that carbon-intensive systems can maintain their overall trajectory even when disrupted at individual scales, as the fractal structure allows other levels to compensate and restore equilibrium.

Macro-level lock-in encompasses global systems including transnational fossil fuel supply chains, international energy trade networks, and financial systems that privilege carbon-intensive infrastructure investments. These macro-scale dynamics create structural dependencies that constrain national policy autonomy and establish the broader parameters within which domestic energy transitions must occur.

Meso-level lock-in operates through domestic institutions that perpetuate carbon-intensive pathways via subsidies, regulatory frameworks, infrastructure investments, and planning decisions optimised for fossil fuel systems (Lockwood et al., 2017). This includes not only direct policy support for fossil fuels but also the institutional arrangements that make such support politically sustainable—from electoral systems that privilege concentrated fossil fuel interests to bureaucratic structures organised around carbon-intensive sectors.

Micro-level lock-in emerges through individual behaviours and consumption patterns aligned with carbon-intensive systems through daily practices such as automobile-dependent transportation, natural gas heating, or consumption of goods requiring fossil fuel-intensive supply chains (Shove & Walker, 2014). These behavioural patterns become embedded in social norms, infrastructure dependencies, and economic routines that resist change even when individuals express pro-environmental preferences.

A critical insight of fractal carbon lock-in is that these levels are not merely nested but dynamically interdependent. Disruption at any single scale typically triggers compensatory responses from other scales that restore carbon-intensive equilibrium. For instance, local renewable energy adoption (micro-level change) may be offset by increased fossil fuel exports enabled by national subsidy policies (meso-level compensation) that benefit from global supply chain advantages (macro-level reinforcement). However, this same interconnectedness that provides robustness to carbon lock-in also creates potential vulnerabilities that strategic interventions might exploit to trigger system-wide transformation (Levin et al., 2012). This fractal perspective supports the case for climate unilateralism—uncoordinated action by individual countries or subnational actors—rather than waiting for comprehensive international cooperation (Mildenberger, 2019).

3.2 Interconnectedness as Vulnerability

The resilience of carbon lock-in through multi-scalar mechanisms can also create the conditions for its disruption. Complex systems theory suggests that highly interconnected networks, while efficient and robust under normal conditions, can experience cascading failures when critical thresholds are exceeded or key leverage points are strategically targeted (Carlson & Doyle, 2002). This robust yet fragile property implies that the same interconnectedness that maintains carbon lock-in across multiple scales could potentially be redirected to accelerate decarbonisation through carefully designed interventions. Recent empirical evidence supports this possibility. Germany's Renewable Energy Sources Act of 2000 exemplifies how targeted policy intervention can generate spillover effects across scales. By creating guaranteed markets for renewable technologies, the policy not only transformed Germany's domestic energy mix but also drove down global renewable technology costs through scale effects, making low-carbon alternatives economically competitive in other national contexts (Meckling, 2019). This demonstrates how meso-level policy intervention can disrupt macro-level technological and economic dynamics.

The theoretical foundation for such leverage-based approaches draws from historical institutionalist concepts of critical junctures and positive feedback mechanisms. While carbon lock-in has historically operated through increasing returns that reinforced fossil

fuel dependence, the same mechanisms of positive feedback can be redirected toward low-carbon pathways once sufficient momentum is achieved (Aklin & Urpelainen, 2013). The challenge lies in identifying and activating the specific intervention points where such redirection becomes possible.

3.3 Fossil Fuel Subsidy Reform: Pathway to Breaking Carbon Lock-in

Within this framework, fossil fuel subsidies occupy a particularly strategic position as both a mechanism sustaining fractal carbon lock-in and a potential leverage point for disrupting it. Subsidies operate simultaneously across all three scales of lock-in: they reinforce macro-level fossil fuel trade patterns by maintaining artificial demand, they constitute direct meso-level institutional support for carbon-intensive sectors, and they shape micro-level consumption behaviours by distorting price signals that would otherwise encourage conservation and fuel switching.

The strategic importance of fossil fuel subsidies extends beyond their direct fiscal and environmental costs. Subsidies serve as a critical mechanism through which fossil fuel incumbents maintain their privileged position within political systems (Smink, 2015). By providing tangible benefits to specific constituencies—from energy-intensive industries to fuel-dependent consumers—subsidies create politically mobilised stakeholder coalitions that resist broader decarbonisation efforts (Newell & Johnstone, 2018). This lock-in function means that subsidy reform can potentially weaken the political foundations supporting broader carbon lock-in mechanisms.

Moreover, subsidy reform offers particular advantages as a leverage point because it can operate through market mechanisms rather than requiring extensive new institutional infrastructure. Unlike policies that create new regulatory frameworks or public investments, subsidy elimination works by removing distortions that artificially favour carbon-intensive activities. This market-based approach may encounter less resistance from actors who support general principles of economic efficiency, even if they oppose direct climate regulations.

3.4 Spillover Effects and System-Wide Transformation

The fractal perspective suggests that successful fossil fuel subsidy reform in some countries could trigger cascading effects that accelerate broader decarbonisation. Price spillovers would emerge as subsidy elimination increases fossil fuel costs in reforming countries through both direct effects—removing artificial price supports that kept fuels

below market rates—and second-order downstream effects as higher input costs propagate through carbon-intensive supply chains, affecting everything from petrochemicals to transportation. These domestic price increases would potentially affect global commodity prices and make renewable alternatives more competitive internationally, particularly if reform occurs in major energy-consuming economies. Political spillovers could occur as successful reforms demonstrate political feasibility to policymakers in other jurisdictions and establish precedents that reshape international norms around acceptable energy policies. Technological spillovers might result from reduced fossil fuel demand, freeing capital for low-carbon investments, accelerating innovation and cost reductions in clean technologies.

Perhaps most significantly, subsidy reform could generate institutional spillovers by systematically undermining the political influence of fossil fuel incumbents (Smink et al., 2015). As subsidies are eliminated, carbon-intensive industries experience a dual erosion of power: they lose not only direct economic benefits that sustain their operations, but also the indirect political leverage that derives from their privileged status as subsidy recipients within policymaking networks. This dual weakening could fundamentally alter the political equilibrium by creating institutional space for the emergence of pro-decarbonisation coalitions that were previously marginalised or excluded by entrenched incumbent dominance. The resulting shift in political influence could enable broader policy changes beyond subsidy reform itself, as newly empowered clean energy constituencies gain access to policymaking processes. At the same time, fossil fuel interests face reduced capacity to block or water down climate initiatives (Hess, 2014).

3.5 Implications for Reform Strategy

The fractal carbon lock-in framework has important implications for fossil fuel subsidy reform strategy. First, it suggests that reform efforts should be designed with explicit attention to cross-scale interactions and spillover effects. Rather than treating subsidy reform as an isolated policy intervention, reformers can consider how changes in subsidy regimes might catalyse or be reinforced by complementary changes at other scales and in different policy domains. Second, the framework highlights the importance of sequencing and coordination in reform efforts. While coordinated action across multiple jurisdictions could amplify spillover effects, the fractal perspective also provides theoretical support for unilateral climate action. Because interconnected carbon systems can experience cascading disruptions when critical thresholds are exceeded, individual countries or subnational governments can trigger broader systemic change without waiting for comprehensive international cooperation. This challenges conventional wisdom that effective climate action requires multilateral coordination,

suggesting instead that strategic unilateral interventions at key leverage points could generate the spillover effects necessary for system-wide transformation (Mildenberger, 2019). Third, the fractal perspective emphasises the importance of designing policy interventions that can entrench support over time and constrain future policy choices toward continued decarbonization. Given that carbon lock-in systems can mobilise compensatory responses to attempted disruptions—such as new subsidies or regulatory rollbacks that emerge to counteract carbon pricing initiatives—successful reform strategies must create path-dependent trajectories that make policy reversal increasingly difficult while progressively expanding constituencies that benefit from reform.

The following section of this thesis examines how domestic political institutions, party dynamics, policy processes, and affective polarisation shape the feasibility of activating these leverage points through fossil fuel subsidy reform in OECD countries. By analysing the political factors that enable or constrain reform—from electoral systems and corporatist structures to governing party preferences, policy layering strategies, and the polarisation dynamics that transform climate policies into partisan identity markers—we can better assess the prospects for generating the system-wide transformations that the fractal carbon lock-in framework suggests are possible. This analysis proves crucial because the interconnected vulnerabilities identified within carbon lock-in systems can only be exploited through politically feasible interventions that navigate democratic constraints, overcome identity-based resistance to climate action, and build sufficient coalitions to sustain reform momentum over time.

4. Theoretical Framework: Political Determinants of Fossil Fuel Subsidy Reform

Research on fossil fuel subsidy reform has predominantly focused on documenting the persistence of these economically inefficient and environmentally harmful policies across diverse national contexts (Victor, 2009; Benes et al., 2015; Inchauste & Victor, 2017; Skovgaard & van Asselt, 2018). While this emphasis on policy stasis has generated valuable insights into the barriers constraining reform, it has also revealed the theoretical contours of potential change. Understanding the architecture of subsidy lock-in highlights the pressure points where reform might gain traction, providing a foundation for identifying the political conditions under which meaningful change becomes feasible. The concept of an interdependent lock-in proves particularly valuable in this regard, offering an analytical framework for examining fossil fuel subsidy reform trajectories across multiple scales of political action.

This section develops an integrated theoretical framework that draws on five academic literatures to identify the political determinants of fossil fuel subsidy reform in OECD countries. Rather than treating these approaches as competing explanations, I argue that they offer complementary insights into several determinants of the reform process: the institutional conditions that enable or constrain reform attempts, the political actors and coalitions that drive or resist change, the strategic processes through which reform unfolds, and the polarisation dynamics that increasingly influence contemporary reform efforts.

Comparative political economy scholarship reveals how electoral systems and corporatist bargaining structures—institutions frequently credited with enabling long-term climate policy investments by insulating decision-makers from short-term political pressures—may similarly facilitate fossil fuel subsidy reforms by mitigating organised opposition from entrenched interests. The party politics literature demonstrates that programmatic commitments to environmental protection often translate into environmental policy outputs. However, subsidy reform presents a distinct challenge because it involves removing existing benefits rather than establishing new programmes, requiring parties to impose concentrated costs on powerful constituencies while providing diffuse benefits to wider society. Neo-institutionalist concepts, illuminate how government parliamentary support mediates the translation of party programmes into policy outcomes, while policy layering theory provides insights into

how reforms might progressively undermine subsidy regimes through indirect mechanisms. Policy dismantling scholarship highlights strategic opportunities for policymakers aiming to phase out policies while reducing risks of political backlash. Finally, research on political polarisation offers context for understanding current limitations on reform, especially as climate issues become symbols of partisan identity that make cross-party coalition-building more difficult and turn technical policy debates into identity-based conflicts resistant to evidence-based resolution.

Together, these theoretical approaches contribute to existing analyses of fossil fuel subsidy reform by systematically examining how institutional configurations, governing party preferences, and policy feedback processes shape reform trajectories across different national contexts, while identifying polarisation dynamics as an increasingly important constraint requiring future investigation. Each article in this compilation thesis uses elements of this framework to examine specific explanatory variables, test hypotheses about causal mechanisms, and develop novel theoretical contributions regarding the political determinants of fossil fuel subsidy reform outcomes in OECD countries.

4.1 Comparative Political Economy: Institutional Foundations of Reform Capacity

Comparative political economy scholarship has demonstrated how domestic institutions shape policy outcomes across diverse domains, from industrial policy (Katzenstein, 1985) and taxation (Steinmo, 1989) to labour market regulation (Martin & Swank, 2012) and environmental protection (Jahn, 2016; Neumayer, 2003; Scruggs, 2003). Building on this institutional foundation, recent scholarship on "long-term policy investments"—policies requiring short-term costs for greater long-term benefits—has identified three necessary conditions for successful implementation: credible expectations of long-term benefits, electoral safety for policy-implementing politicians, and institutional capacity to overcome organised opposition (Finnegan, 2022; Lindvall, 2017).

Fossil fuel subsidy reform exemplifies the challenge of long-term policy investment. The anticipated long-term benefits include climate mitigation, reduced air pollution, and fiscal savings, while the immediate costs must be distributed across affected actors in politically sustainable ways. The institutional framework within which policymakers operate fundamentally shapes their capacity to navigate this distributive challenge while limiting exposure to electoral backlash.

Electoral Systems and Political Insulation

Electoral institutions create systematically different incentives for politicians contemplating costly reforms. Proportional representation (PR) systems typically provide greater electoral safety compared to majoritarian systems by reducing both electoral competition and accountability linkages between voters and politicians (Finnegan, 2022). This occurs through several interconnected mechanisms that collectively insulate governing parties from electoral punishment.

First, PR systems exhibit lower seats-votes elasticities, meaning governing parties face reduced risk of seat loss for any given decrease in vote share (Kayser & Lindstädt, 2015). This mathematical relationship between vote changes and seat changes creates a buffer that enables parties to pursue policies with higher potential electoral costs than in majoritarian systems. Second, PR systems systematically reduce clarity of responsibility, making it more difficult for voters to assign blame for unpopular policies compared to majoritarian systems where single-party governments bear clear responsibility (Powell & Whitten, 1993). Third, PR systems commonly produce coalition governments, creating opportunities for governing parties to share political responsibility for controversial decisions and deflect blame to coalition partners when facing voter dissatisfaction.

These institutional features imply that politicians operating under PR systems should be systematically better positioned to pursue fossil fuel subsidy reforms despite potential electoral costs (Rogowski & Kayser, 2002). The reduced electoral competition and diffused responsibility characteristic of PR systems provide the institutional capacity to pursue long-term beneficial policies despite short-term political costs.

Corporatist Institutions and Strategic Compensation

While electoral safety enables politicians to withstand some opposition, successful reform typically requires actively transforming potential opponents into supporters or, at a minimum, securing their acquiescence. Corporatist institutions—characterised by centralised, hierarchical peak labour and capital associations with privileged access to policymaking processes—provide structured channels for negotiating compensation packages that can achieve such transformations (Martin & Swank, 2012).

The corporatist model operates through what Martin (2015) terms "concertation"—institutionalised processes whereby organised interests provide political support to government in exchange for influence over policy direction and implementation timing. This institutional arrangement offers several strategic advantages for fossil fuel subsidy reform. It reduces transaction costs of negotiating complex distributive agreements by establishing stable, credible bargaining relationships between government, industry, and labour representatives. It also enables private negotiations that minimise audience costs

and reduce risks of public mobilisation against reform (Lindvall, 2017). Perhaps most importantly, it creates opportunities for comprehensive package deals that provide tangible compensation to affected stakeholders while securing their cooperation with broader reform programs.

The Swedish carbon tax experience illustrates these dynamics. When Sweden introduced its carbon tax in 1991, corporatist negotiations initially provided substantial exemptions to energy-intensive industries, making the policy politically feasible. However, these arrangements established a platform for ongoing negotiations through which the government gradually increased carbon tax stringency over time. By 2019, industry paid similar tax rates to consumers, demonstrating how corporatist institutions enable governments to initiate reforms through moderate policies while building toward more ambitious measures incrementally (Finnegan, 2022).

Institutional Complementarities and Reform Synergies

The corporatist compensation mechanism offers additional strategic benefits beyond directly managing organised opposition. First, it reduces public conflict by transforming potentially contentious reforms into "quiet politics" (Culpepper, 2010), where negotiations occur within closed institutional channels rather than through high-profile media campaigns that risk mobilising diffuse opposition coalitions. This institutional insulation prevents powerful incumbent actors from deploying public mobilisation strategies that typically generate widespread resistance and can derail reform efforts entirely. Second, by reducing the political salience of reform costs and containing them within elite bargaining processes, corporatist arrangements may enable governments to pursue more comprehensive policies that impose costs on both producers and consumers, thereby expanding reform scope beyond what would be politically feasible under conditions of public scrutiny. Third, agreements negotiated through corporatist channels exhibit greater durability and cross-partisan legitimacy because they incorporate the interests of major organised stakeholders—business associations, trade unions, and government—creating shared ownership that reduces risks of policy reversal following electoral transitions or coalition changes.

The comparative political economy perspective suggests that PR electoral systems and corporatist institutions function as complementary mechanisms for enabling fossil fuel subsidy reform. PR provides the electoral insulation necessary to pursue potentially unpopular policies by reducing the elasticity of seats to votes and diffusing responsibility across coalition partners. At the same time, corporatism offers the institutionalised process for negotiating compensation packages that transform potential opponents into reform supporters or secure their acquiescence (Meckling et al., 2022). This institutional complementarity creates synergistic effects: countries possessing both features should therefore exhibit systematically higher reform capacity through dual

pathways of political insulation and stakeholder co-optation, while those lacking either feature face compounded constraints that make meaningful subsidy reduction politically hazardous. The interaction between these institutions proves particularly crucial because fossil fuel subsidy reform requires both the political space to initiate controversial policies and the institutional capacity to manage the inevitable resistance from well-organised carbon-intensive interests (Geels, 2014).

4.2 Party Politics: Programmatic Commitments and Policy Outcomes

The party politics literature addresses, inter alia, a fundamental question of democratic representation: whether and how the ideological orientations and policy commitments of governing parties translate into observable policy outcomes. This research tradition examines what scholars term the "program-to-policy linkage"—the extent to which parties fulfil their electoral promises once in government (Rose, 1984; Thomson, 2001; Thomson et al., 2017; Brouard et al., 2018). The theoretical foundation rests on democratic accountability mechanisms embedded in the responsible party model (McDonald & Budge, 2005) and mandate theory (Downs, 1957), both of which emphasise that parties face electoral incentives to implement their programmatic commitments to maintain voter support and avoid electoral punishment (McDonald et al., 2004).

Partisan Effects on Policy Outcomes

Political parties matter for policy outcomes. Extensive research confirms that governing party ideology shapes policy across diverse domains, from public expenditure patterns (Pettersson-Lidbom, 2008) and unemployment responses (Hibbs, 1979) to immigration policy (Akkerman, 2015) and welfare state development (Allan & Scruggs, 2004; Korpi & Palme, 2003; Pierson, 1994, 1996, 1998). This partisan influence extends to environmental policy, where party ideology significantly affects both policy outputs (Båtstrand, 2014; Lim & Duit, 2018; Schulze, 2021) and environmental outcomes (Jahn, 1998; Neumayer, 2003; Garmann, 2014), with left-leaning parties consistently adopting stronger pro-environmental positions and achieving superior environmental performance (Facchini et al., 2017; Farstad, 2018).

However, scholars diverge on the theoretical interpretation of this empirical relationship between party ideology and environmental policy outcomes. Some argue that environmental policy inherently conflicts with right-wing ideology due to its regulatory nature and constraints on business autonomy (McCright & Dunlap, 2011). Others contend that environmental issues increasingly operate as a distinct political dimension

that transcends traditional left-right divides, particularly when policies align with market-oriented principles (Dalton, 2009; Knill et al., 2010). Fossil fuel subsidy reform presents an interesting case in this regard because it involves eliminating government interventions rather than imposing new regulations. This creates potential for cross-partisan support, as reform could ostensibly appeal both to left-green parties concerned with environmental protection and to market-liberal parties opposed to economically distortive government interventions.

Despite growing electoral salience of environmental issues and their recognition as an independent political dimension (Hooghe et al., 2002; Rohrschneider, 1993), scholarly attention to how party programmatic commitments translate into concrete environmental policies remains surprisingly limited. Existing studies examining the program-to-policy linkage typically adopt quantitative approaches that focus on the volume of environmental policies enacted rather than analysing their substantive content, policy stringency, or distributional implications. This gap proves particularly problematic for understanding fossil fuel subsidy reform, where the key question is not simply whether parties enact environmental policies, but whether they are willing to eliminate costly policy interventions that benefit powerful constituencies.

Government Composition and Policy Outcomes

The translation of programmatic commitments into policy outcomes faces systematic mediation by institutional constraints, particularly the presence of veto players who can block or substantially modify proposed reforms (Tsebelis, 2002). These constraints prove especially pronounced in coalition governments, which exhibit systematically lower rates of electoral pledge fulfilment compared to single-party majoritarian systems due to the need to accommodate multiple party preferences and maintain coalition stability (Mansergh & Thomson, 2007; Thomson et al., 2017).

Veto players—individuals, groups, or institutions possessing authority to block proposed policy changes—can significantly influence reform trajectories. In the context of fossil fuel subsidy reform, relevant veto players include coalition partners with different policy preferences, legislative chambers controlled by opposition parties, and bureaucratic agencies with implementation responsibilities. The policy positions of these veto players relative to proposed reforms determine whether they amplify or dampen reform efforts (Tsebelis, 2002; Lockwood et al., 2017). Political parties with significant legislative representation, particularly those in government coalitions, function as partisan veto players whose influence depends on intra-party discipline and inter-party cohesion.

Coalition governments represent a common institutional feature in parliamentary democracies (Hobolt & Karp, 2010). They are particularly prevalent among OECD

countries, where proportional representation systems frequently prevent single parties from achieving parliamentary majorities. Consequently, their internal dynamics and configurations significantly shape policy outcomes. Parties matter in coalition governance because they represent distinct voter constituencies and bring specific ideological orientations and policy preferences to coalition negotiations, which shape both coalition agreements and subsequent policy implementation (Bergman, Bäck, & Hellström, 2021).

Scholars have developed three theoretical models explaining coalition government policymaking processes (ibid). The Ministerial Government model posits that coalition parties exercise substantial autonomy over their respective portfolios, allowing them to implement preferred policies within their domains with limited interference from coalition partners. For fossil fuel subsidy reform, this model suggests that the ideological orientation and policy preferences of parties controlling key portfolios—particularly finance, energy, and environment ministries—prove especially consequential for reform outcomes (Skovgaard & Drake, 2024). This could create scenarios where a green party controlling the environment ministry pursues subsidy phase-outs while an industry-oriented party controlling the energy ministry resists such measures. However, the extent of such autonomy varies across political systems and policy domains.

The Prime Ministerial Government model emphasises the centralising authority of the prime minister's office as the primary locus of policy coordination and agenda control. Under this model, the party controlling the premiership can exert disproportionate influence over government priorities, potentially overriding ministerial preferences when necessary (Bergman et al., 2019). This dynamic could either facilitate or constrain fossil fuel subsidy reform depending on whether the prime minister's party prioritises climate objectives or economic stability concerns. However, recent empirical evidence suggests that the impact of individual political leaders—including prime ministers—on fossil fuel subsidy reform may be more limited than theoretical models predict. Martinez-Alvarez et al. (2022) find that across 155 countries from 1990 to 2015, the personal characteristics, ideology, and environmental commitments of political leaders had surprisingly little lasting impact on fossil fuel taxes and subsidies, with most reforms being reversed within twelve months. This suggests that while the Prime Ministerial Government model identifies important institutional mechanisms for policy control, the structural and political constraints surrounding fossil fuel subsidies may limit even influential leaders' capacity to implement durable reforms.

The Coalition Compromise model highlights continuous negotiation and mutual adjustment between coalition partners as the primary mechanism generating policy outcomes. Under this framework, fossil fuel subsidy reform would reflect negotiated settlements between parties with potentially divergent preferences, often producing incremental changes or diluted measures accommodating diverse coalition interests. This

model might explain why some coalition governments struggle to implement comprehensive subsidy reforms despite rhetorical commitments, as coalition maintenance imperatives may override environmental policy ambitions. Martin and Vanberg (2014) argue that this Coalition Compromise model provides the most accurate description of how coalition governments function, offering superior explanatory power compared to the Ministerial Government and Prime Ministerial Government models. These models offer complementary analytical frameworks for understanding how power distribution within coalition governments might shape fossil fuel subsidy reform trajectories. Their relative explanatory power likely varies across political systems and institutional contexts, with ministerial autonomy being more pronounced in some countries (e.g., Germany) (Bäck et al., 2022) compared to systems characterised by stronger prime ministerial coordination (e.g., United Kingdom) (Poguntke & Webb, 2005).

4.3 Policy Process: Layering and Dismantling Strategies

Modern democracies are enacting a growing number of policies that can overlap or even contradict one another (Compston & Bailey, 2013), both within the same domain and across different policy areas (Adam et al., 2019), creating what Mettler (2016) terms complex "policyscapes." These layered policy environments, where different interventions coexist and interact within institutional frameworks, pose significant challenges for evidence-based policymaking, impede sustained policy debate, and complicate effective implementation, monitoring, and enforcement of government programs (Adam et al., 2019). However, this complexity also creates strategic opportunities for reform-minded policymakers. Rather than viewing policy accumulation solely as an obstacle, political actors can exploit these layered environments to achieve reform objectives through indirect mechanisms that circumvent direct political confrontation. This section examines two complementary approaches that leverage policy complexity for fossil fuel subsidy reform: policy layering, which introduces new interventions that gradually undermine existing subsidies through complex interactions, and policy dismantling, which provides systematic strategies for weakening entrenched policies while managing organised opposition and minimising electoral risks.

Policy Layering

Policy layering fundamentally reshapes strategic landscapes for political actors by altering stakeholder interest configurations. As new policy elements interact with existing frameworks, they can create unexpected coalitions, generate novel political opportunities, or produce unintended consequences that influence subsequent reform possibilities. These

feedback effects mean that layering functions not merely as a mechanism of policy continuity but as a dynamic site of political contestation and institutional transformation. In this context, institutions encompass both formal rules (laws, regulations, procedures) and informal norms (conventions, practices, expectations) that structure political behaviour and policy processes (Hall & Taylor, 1996).

The path-dependent nature of layered policy development has important implications for progressive policy design. Historical policy decisions constrain future options while generating feedback effects that shape both actor preferences and institutional capacities (Rosenbloom et al., 2019). Understanding these dynamics enables strategic policy design that leverages positive feedback mechanisms to advance environmental objectives incrementally while building political coalitions supporting more ambitious future measures (Levin et al., 2012; Jordan & Matt, 2014).

For fossil fuel subsidy reform specifically, this layering approach offers several strategic advantages over direct elimination strategies. First, it operates through complex policy interactions that may be less visible to organised opposition than direct subsidy cuts. Rather than confronting fossil fuel industries with transparent subsidy reductions that threaten their interests, layered reforms work indirectly—for example, carbon pricing mechanisms can gradually erode the practical value of production subsidies while appearing to be separate policy initiatives. This complexity makes it more difficult for opponents to mobilise against specific measures or calculate precise impacts on their interests.

Second, this approach allows reformers to claim credit for new environmental initiatives while avoiding blame for subsidy reduction. Politicians can announce ambitious climate policies—such as renewable energy targets or carbon taxes—that might generate favourable media coverage and satisfy environmental constituencies, while the subsidy-reducing effects of these policies remain less prominent in public discourse. This credit-claiming dynamic allows leaders to develop pro-climate reputations without directly addressing the politically sensitive issue of removing subsidies.

Third, layered reforms create path-dependent dynamics that may make subsidy rollback more difficult over time. As new policies become embedded within existing institutional frameworks, they generate their own constituencies, administrative procedures, and political expectations that resist reversal (Jacobs, 2011). For instance, carbon pricing systems create revenue streams that governments become dependent upon, while renewable energy policies generate new industries with stakes in maintaining supportive policy environments. These feedback effects gradually shift the political equilibrium in favour of continued decarbonisation while making restoration of the original subsidy regime increasingly costly and challenging to execute.

Policy Dismantling Strategies

Policy dismantling encompasses the strategic reduction or weakening of existing policies without complete elimination, including both substantive changes to policy instruments and erosion of implementation capacity (Bauer & Knill, 2012). This process operates along multiple dimensions that can be understood as different approaches to reducing government intervention. Policy density refers to the sheer number of different policy instruments operating within a domain—dismantling can reduce this by eliminating some mechanisms while leaving others intact. Policy intensity refers to the strength or generosity of individual policy measures—dismantling can weaken this by reducing benefit levels, tightening eligibility criteria, or decreasing funding without eliminating programs.

For fossil fuel subsidies, density reduction might involve eliminating some of the multiple subsidy mechanisms while preserving others—for instance, removing accelerated depreciation allowances for oil exploration while maintaining depletion allowances for existing wells. Intensity attenuation could involve gradually decreasing subsidy rates (reducing a 15% tax credit to 10%, then 5%), tightening eligibility criteria (limiting subsidies to smaller companies or specific technologies), or reducing the scope of covered activities (restricting subsidies to domestic rather than international operations). Dismantling may occur through various modalities—from overt retrenchment to subtle, indirect, or symbolic forms of policy degradation—targeting either core policy components or the administrative infrastructures sustaining them (Jordan et al., 2012).

Policy dismantling reflects calculated decisions by office-seeking political actors who must balance potential electoral repercussions of policy reduction against their fundamental imperative of maintaining political power (ibid). This strategic calculus explains why dismantling often proceeds incrementally through less visible channels, as policymakers seek to minimise backlash from policy beneficiaries while achieving reform objectives. The political logic of dismantling proves particularly relevant for fossil fuel subsidy reform, where concentrated beneficiary groups possess strong incentives and substantial resources to resist change.

Politicians can pursue policy dismantling through four distinct strategies defined by two key dimensions: visibility(whether the dismantling effort attracts public attention) and active decision-making (whether politicians deliberately choose to dismantle or allow it to happen passively) (Bauer & Knill, 2012). These dimensions create a typology where dismantling can be either highly visible (attracting media coverage and public debate) or operate with low visibility(proceeding without significant public awareness). Similarly, dismantling can result from active decision-making (deliberate political choices to reduce policies) or occur through passive processes (where politicians allow policies to weaken without explicit decisions to dismantle them).

Dismantling by arena shifting involves actively transferring policy responsibilities to different governmental levels or private entities, thereby reducing enforcement capacity and administrative effectiveness while maintaining low public visibility. This approach might include devolving subsidy administration to subnational governments without transferring adequate resources, or privatising subsidy delivery through market mechanisms that gradually reduce government involvement. Dismantling by default occurs when policies are eroded passively through governmental inaction, allowing policies to gradually weaken under changing external conditions with minimal public attention.

For fossil fuel subsidies, this might involve failing to adjust subsidy rates for inflation or changing market conditions, effectively reducing their real value over time. Active dismantling entails deliberate, visible efforts by policymakers to reduce or eliminate existing policies, typically generating significant political controversy. This represents the most overt and politically risky form of dismantling, often requiring favourable political conditions such as fiscal crises or strong electoral mandates. Dismantling by symbolic action features highly visible announcements of policy cuts or terminations designed to create appearances of reform without implementing substantial changes. This strategy serves to appease reform constituencies while avoiding significant political costs, often involving high-profile rhetoric about subsidy elimination coupled with minimal actual policy change.

Table 1. Four strategies to policy dismantling (adapted from Bauer and Knill (2012))

	Blame avoidance (low visibility)	**Credit claiming (high visibility)**
Active policy decision	Dismantling by arena-shifting. For example, delegating policy responsibility to another governmental body without transferring adequate funding.	Active dismantling. For example, passing a law which reduces the scope, level, or number of policies.
Passive policy decision	Dismantling by default. For example, failing to update existing legislation despite knowing it is outdated.	Symbolic dismantling. For example, promising to dismantle without follow-through.

Barriers to Policy Dismantling

Policy dismantling faces systematic obstacles that make sustained reductions in policy portfolios relatively rare and typically limited in scope (Knill et al., 2020). Four key factors explain this resistance. First, established policies create vested interests that mobilise to protect their benefits, generating substantial political opposition to reform efforts. These interests often possess superior organisational capacity and political access compared to diffuse beneficiaries of reform. Second, elected officials face strong electoral disincentives to pursue dismantling due to potential voter punishment for

removing popular policies, particularly when costs are concentrated and visible while benefits remain distant and diffuse. Third, sunk costs of existing policy investments—including financial commitments, institutional infrastructure, and bureaucratic expertise—create powerful path dependencies favouring policy continuity over change (Mahoney, 2000; Pierson, 2000). Fourth, cognitive limitations and bounded rationality among decision-makers often make maintaining status quo arrangements appear simpler than evaluating complex dismantling scenarios with uncertain outcomes.

These barriers to policy dismantling have become increasingly compounded by contemporary developments in democratic politics, particularly the rise of affective polarisation that transforms policy debates into identity-based conflicts.

4.4 Affective Polarisation: Contemporary Constraints on Reform

Affective polarisation—characterised by amplified positive feelings toward political ingroups and intensified negative feelings toward outgroups—has emerged as a significant feature of contemporary democratic politics with important implications for policy reform processes (Bäck et al., 2023). This phenomenon extends beyond mere policy disagreements to encompass social identity and emotional attachments that can transform technical policy questions into markers of group membership and political identity. Understanding polarisation dynamics proves crucial for analysing fossil fuel subsidy reform because climate and energy issues have increasingly become partisan identity markers across advanced democracies (e.g., McCright and Dunlap, 2011; Hart & Nisbet, 2012; Hornsey et al., 2016).

Defining Affective Polarisation

Affective polarisation operates through emotional rather than purely cognitive mechanisms, providing individuals with rapid evaluative heuristics for processing political information that bypass careful consideration of policy details or evidence (Cole et al., 2025). Recent studies document widening "affective gaps" between political groups across advanced democracies, raising concerns about deleterious effects on democratic governance despite potential benefits for political engagement and mobilisation (Nelson, 2022; Garzia et al., 2023; Phillips, 2024; Ryan, 2023; Boxell et al., 2024). These concerns centre on polarisation's potentially destructive effects on democratic functioning, including erosion of social cohesion and democratic norms, institutional gridlock that prevents necessary policy reforms, and in extreme cases, complete democratic breakdown manifesting as civil unrest or political violence (Berntzen, Kelsall & Harteveld, 2023).

The severity of polarisation effects depends critically on the intensity of associated emotional responses. While mild affective distance may produce relatively benign political sorting effects—such as partisan social networks or selective media consumption—intense polarisation linked to discrete emotions such as fear, anger, and disgust can generate far more serious consequences (Brosch, 2021). These range from social avoidance of outgroup members and dehumanisation of political opponents to active support for or participation in political violence against opposing groups. The emotional intensity of polarisation suggests that its effects vary significantly across different policy domains, with issues that activate strong identity-based responses proving particularly susceptible to polarised dynamics that resist policy solutions.

Social Sorting and Identity Alignment

Mason's (2016) concept of "social sorting" illuminates how individual social identities become increasingly aligned with partisan affiliations, reducing cross-cutting social pressures that traditionally moderated political behaviour. Cross-cutting cleavages historically mitigated societal tensions by creating overlapping group memberships that discouraged extreme positions (Lipset, 1960). However, contemporary research demonstrates that alignment of religious, racial, class, and partisan identities systematically exacerbates intergroup antagonism regardless of ideological extremity (Mason, 2016; Mason & Wronski, 2018).

Cross-national research shows that as political affiliations increasingly overlap with other social identities, hostility toward opposing groups intensifies (Harteveld, 2021). Social sorting intensifies emotional responses to political stimuli by creating self-reinforcing cycles of outrage and tribal identification (Renström et al., 2023). Crucially, these effects are most pronounced among individuals with highly aligned identities—those whose religious, racial, class, and partisan affiliations all point in the same direction. Conversely, individuals with cross-cutting identities, whose conflicting group affiliations create competing loyalties, demonstrate more muted emotional responses that appear to buffer their engagement with partisan political conflicts.

Dimensions of Affective Polarisation

Affective polarisation manifests along two primary dimensions in democratic systems. Horizontal polarisation occurs between actors at equivalent political levels, encompassing both elite-to-elite relationships (e.g. governing parties versus opposition parties) and mass-to-mass divisions (e.g. partisan citizens versus opposing partisan citizens) (Berntzen, Kelsall & Harteveld, 2023). This dimension captures adversarial dynamics emerging when political actors view each other as competing teams rather than participants in shared democratic processes. Horizontal polarisation erodes

interpersonal trust across partisan lines, making cooperation increasingly difficult as political opponents are viewed not merely as holding different policy preferences but as fundamentally threatening to core values and group identity (Iyengar & Westwood, 2015). This breakdown in cross-partisan trust extends beyond elite politics to affect citizen-to-citizen relations, fragmenting social networks and reducing the social capital that traditionally facilitated democratic deliberation (Hetherington & Rudolph, 2015; Mason & Wronski, 2018).

Vertical polarisation operates across different political levels, particularly between political elites and mass publics, encompassing citizens' relationships with political institutions and democratic processes more broadly. Unlike horizontal polarisation's mutual antagonism between competing groups, vertical polarisation often exhibits a one-sided affective character, particularly when citizens develop negative feelings toward political institutions without reciprocal hostility from those institutions. This dimension proves especially relevant for understanding citizen trust in government and acceptance of policy reforms implemented by political elites (Grelle & Hofmann, 2024). When vertical polarisation intensifies, institutional trust declines across multiple domains—from confidence in electoral integrity and judicial impartiality to faith in bureaucratic competence and policy effectiveness (Hetherington & Rudolph, 2015; Citrin & Stoker, 2018). This erosion of institutional trust creates a vicious cycle where citizens become increasingly sceptical of government actions, making them more resistant to policy reforms regardless of their substantive merits, while simultaneously reducing politicians' incentives to pursue long-term beneficial policies that may generate short-term costs (Kallbekken & Sælen, 2011; Johnson & Schwadel, 2019).

Climate Change as Partisan Identity Marker

Climate change has emerged as a particularly salient marker of partisan identity across advanced democracies, with positions on climate action increasingly serving to define broader political allegiances rather than reflecting instrumental calculations about policy preferences (Tranter & Booth, 2015; Smith & Mayer, 2019; Feldman & Hart, 2018). Comparative research demonstrates how climate attitudes have become systematically embedded within partisan identity structures, though the specific mechanisms through which this embedding occurs vary across different institutional and political contexts (Reiljan, 2020; Wagner, 2021; Coffé et al., 2025).

In multiparty systems, political alignments on climate issues tend to coalesce into broader ideological blocs spanning multiple parties, creating polarised camps rather than simple party-to-party divisions (Kekkonen & Ylä-Anttila, 2021). Affective polarisation in these contexts extends beyond traditional party loyalties to encompass broader political markers such as Left-Right positioning and ideological radicalism (Bantel, 2023). The most pronounced affective divisions emerge between Left and Right

political blocs and between Radical Right movements and other political camps, with the conventional left-right spectrum serving as a powerful mechanism for group identification that fosters bipolar alignments rooted in identity-based cleavages transcending specific policy disagreements (Comellas & Torcal, 2023).

The increasing polarisation of climate issues creates several challenges for fossil fuel subsidy reform efforts. First, it may systematically reduce possibilities for bipartisan reform coalitions by making cooperation across party lines politically costly for individual politicians and parties (Bäck et al., 2024). Second, polarisation may transform technical questions about subsidy effectiveness and economic efficiency into identity-based conflicts resistant to evidence-based resolution. Third, it enables reform opponents to frame subsidy elimination as partisan impositions by opposing political camps rather than policies serving broader public interests. However, polarisation effects likely vary across different fossil fuel subsidy regimes, reform strategies, and framing approaches. Reforms framed primarily in terms of fiscal responsibility or market efficiency may prove less susceptible to polarised dynamics than those framed exclusively in environmental terms, as economic arguments can appeal to cross-cutting ideological commitments that transcend partisan boundaries (Lyons, 2018). Similarly, reform designs that create visible beneficiaries—such as eliminating accelerated depreciation allowances for fossil fuel extraction while using the revenue savings to fund direct energy bill assistance for households (Jakob et al., 2015)—may generate cross-cutting political pressures that complicate simple partisan divides. By redistributing benefits while reducing subsidies, such approaches can potentially neutralise opposition by creating new constituencies with stakes in reform success, thereby opening opportunities for broader coalition-building even within polarised political environments.

5. Structure of Compilation Thesis

Together, the four articles of this compilation thesis provide a comprehensive understanding of fossil fuel subsidy reform that progresses analytically from structural enablers (why reform emerges) through political drivers (who leads reform) and strategic policy processes (how reform might unfold) to contemporary constraints (why reform might increasingly fail). This cumulative approach shows that successful reform relies not on a single explanatory factor but on varied causes across different institutional arrangements, party political actions, policy processes, and emerging political psychology dynamics.

Article Summaries

Article 1 assesses whether political institutions that provide electoral insulation and stakeholder compensation facilitate fossil fuel subsidy dismantling. Using mixed-methods analysis across 34 OECD countries (2010-2020), the study finds that proportional representation and corporatism correlate with significantly lower subsidy levels (Drake & Skovgaard, 2024). Comparative case studies reveal the underlying mechanisms: Germany's successful hard coal subsidy phase-out (2018) was enabled by grand coalition insulation from electoral backlash and corporatist negotiation of comprehensive compensation packages for affected workers and regions. Conversely, Canada's majoritarian system provided insufficient insulation for the governing Liberal party, while pluralist state-business relations made compensation negotiations more challenging due to the absence of centralised collective bargaining structures, resulting in symbolic reform rhetoric with minimal policy change. The research demonstrates that institutional configurations providing both electoral insulation and compensation mechanisms create viable pathways for subsidy reduction, suggesting that countries with these features may serve as crucial first movers in phasing out the lock-in.

Article 2 examines how governing party programmes influence fossil fuel subsidy reform across 28 OECD countries (2010-2021). Using panel data combining manifesto content, government composition, and subsidy levels, the study tests whether environmental protection commitments and market liberal positions translate into observable policy changes. The findings reveal that governments with stronger environmental commitments reduce fossil fuel subsidies, while those prioritising market liberalism increase them—but these effects only achieve statistical significance when governments control parliamentary majorities. The research reveals a crucial interaction

effect: market liberal governments are less likely to increase subsidies when they also support environmental protection, suggesting internal "green coalition" dynamics or intra-party compromises that moderate pro-market positions. The study demonstrates that voters face genuine programmatic choices, with environmental parties systematically reducing subsidies that incentivise carbon-intensive activities while market liberal parties expand them, often through tax concessions. The analysis contributes to understanding domestic political drivers of subsidy reform by demonstrating that party positions matter for policy outcomes. Still, institutional power determines whether programmatic commitments can overcome veto players and result in real policy change.

Article 3 introduces the novel concept of "dismantling by layering," theorising how policymakers can strategically introduce new policies to weaken existing ones without formally abolishing them. Unlike conventional dismantling approaches that often provoke organised backlash, this blame-avoidant strategy exploits complex policy interactions across multiple domains and governance levels, creating overall dismantling effects while imposing asymmetric monitoring costs on organised opposition who must track changes across jurisdictions and policy areas. The approach operates bidirectionally: new policies can undermine existing ones (as when carbon taxes erode subsidy effectiveness), while opponents may respond with counter-layering strategies to mitigate or reverse dismantling effects. Mexico (2009-2023) provides the illustrative case, where federal and state carbon taxes coexist with substantial gasoline subsidies delivered through a floating excise tax mechanism. The analysis reveals that while Mexico's modest federal carbon tax (41.81 MXN per tonne CO_2) only marginally increases fuel prices, it partially erodes the much larger gasoline subsidy's price reduction effects. More significantly, ambitious subnational carbon taxes—such as Durango's 100 MXN per tonne CO_2 levy—demonstrate multi-level ratcheting dynamics that preserve federal climate policy from inflationary obsolescence while creating fiscal pressures for more fundamental subsidy reform. The study considers both intentional and unintentional dismantling through layering, emphasising the importance of analysing overall policy impacts across temporal and spatial dimensions instead of focusing on individual policy instruments in isolation.

Article 4 develops a theoretical framework integrating affective polarisation into carbon lock-in theory as a cross-cutting mechanism that reinforces technological, institutional, economic, and behavioural barriers to climate policy adoption. As climate policies become increasingly contentious and politically integrated into broader "culture wars," affective polarisation transforms climate policies from technical solutions into partisan identity markers. The framework disaggregates polarisation into horizontal dimensions (between actors at the same political level) and vertical dimensions (between elites and masses), showing how climate change has emerged as a key marker of partisan identity across advanced democracies. The study proposes three mechanisms through which

polarisation reinforces carbon lock-in: elite strategic framing, where anti-climate action elites frame climate policies as both "elite impositions" (activating vertical polarisation) and "outgroup threats" (activating horizontal polarisation); trust erosion, where polarisation systematically reduces policy acceptance by strengthening institutional, behavioural, and economic lock-in through identity-based opposition; and self-reinforcing feedback loops, where successful polarising rhetoric creates electoral incentives for continued polarisation while systematically narrowing the policy space available for climate action. The theoretical contribution extends carbon lock-in theory beyond its traditional dimensions while identifying how policy resistance becomes systematically decoupled from more material concerns about policy costs and benefits when issues activate polarised identity responses.

6. Research Contributions

This thesis develops a comprehensive framework to address the core research question of which political institutions, actors, and strategies enable fossil fuel subsidy reforms in advanced democracies, and what constraints there are to such reforms. The four papers explore how political institutional arrangements (electoral systems and corporatism), strategic political actors (governing party programmes and majority control), policy processes (layering and dismantling strategies), and contemporary polarisation dynamics shape reform possibilities across OECD countries. Together, they advance our understanding of why technically sound climate policies like fossil fuel subsidy elimination often encounter formidable political obstacles despite their demonstrated economic and environmental benefits, while identifying viable pathways through which reform can emerge.

Theoretical Contributions

The thesis creates a unified framework examining entrenched policy change through three complementary perspectives that bring politics into the study of fossil fuel subsidy reform. Institutional mediation explores how formal political institutions shape policy outcomes, revealing the mechanisms through which proportional representation and corporatism influence reform capacity for deeply embedded policies. Strategic actor behaviour examines how political actors employ layering and dismantling strategies to navigate organised opposition, demonstrating the potential for incremental change through carefully sequenced interventions that circumvent direct confrontation. Political psychology mechanisms explore how changing voter preferences and polarisation create systematic barriers to policy change, showing how identity-based resistance can constrain reform options independently of technical or economic considerations.

The compilation builds systematically across multiple levels of analysis. Macro-level patterns established through cross-national institutional analysis provide the foundation for understanding broad relationships between political systems and climate policy outcomes. Meso-level mechanisms explored through policy interaction dynamics reveal how these broad patterns manifest within specific country contexts. Micro-level foundations examined through individual-level psychological processes explore the behavioural underpinnings of policy resistance and acceptance.

This multi-level synthesis generates three key theoretical contributions that shift focus from non-political structural conditions—such as fossil fuel reserves, corruption, or stakeholder configurations emphasised in existing literature on fossil fuel subsidy reform—to the political determinants of entrenched policy change. First, it demonstrates that reform pathways for deeply embedded policies exhibit causal heterogeneity rather than universal mechanisms, with different combinations of institutional configurations, strategic actor behaviour, and evolving voter preferences creating viable routes to change. Second, it reveals how policy change can occur through indirect mechanisms that circumvent direct political confrontation, offering new theoretical insights into how political actors navigate the distinctive challenges of reforming policies that persist despite obvious inefficiencies and contradictions with major political commitments. Third, it identifies how contemporary polarisation dynamics may be fundamentally altering the political feasibility of reforming entrenched policies by transforming technical debates into identity-based conflicts resistant to evidence-based resolution.

Key theoretical insights emphasise that fossil fuel subsidies represent a case of entrenched policies that persist despite the benefits of reform and clear inconsistencies with major political commitments, requiring political analysis that goes beyond structural or stakeholder explanations. The thesis demonstrates that successful change of such policies depends on the strategic alignment of enabling institutional configurations, actor preferences and capabilities, and management of evolving voter objectives that increasingly operate through identity-based rather than instrumental logics. First, it demonstrates that reform pathways exhibit causal heterogeneity rather than universal mechanisms, with different combinations of institutional, strategic, and psychological factors creating viable routes to change; second, it reveals how policy change can occur through indirect mechanisms that circumvent direct political confrontation, offering new theoretical insights into blame-avoidance strategies in contentious policy domains. Third, it identifies how contemporary polarisation dynamics may be fundamentally altering the political feasibility of climate action by transforming policy debates into identity-based conflicts resistant to evidence-based resolution. These insights collectively advance our understanding of climate policymaking while identifying strategic opportunities for overcoming political resistance.

This integrated framework bridges important gaps in climate policy research by systematically connecting technical policy analysis with political implementation challenges. The study explains why economically efficient and environmentally beneficial policies like fossil fuel subsidy reform often encounter formidable political obstacles despite their clear merits. The thesis shows that successful reform depends on achieving strategic alignment across multiple dimensions: enabling institutional configurations, supportive actor preferences and capabilities, and skilful navigation of contemporary voter dynamics that increasingly operate through identity-based rather than cost-benefit logics.

Empirical Contributions

The thesis advances understanding of climate policymaking through several key empirical contributions. Most notably, it offers the first systematic cross-national analysis of institutional effects on fossil fuel subsidy reform in advanced democracies. The study reveals that proportional representation correlates with lower subsidy levels through insulation mechanisms that protect policymakers from electoral punishment, whilst corporatism enables reform through structured compensation processes that transform potential opponents into stakeholders. Detailed case studies of Germany and Canada illustrate these causal pathways, with Germany's successful dismantling of coal production subsidies contrasting with Canada's symbolic approach to gas production subsidies.

Secondly, the thesis presents systematic empirical evidence of cross-national partisan effects on climate policy across 28 OECD countries between 2010 and 2021. The analysis shows that governments prioritising environmental protection systematically reduce fossil fuel subsidies, whilst market-liberal governments tend to increase them. However, this latter effect is moderated when governments simultaneously express environmental commitments, suggesting that coalition dynamics can constrain partisan policy preferences. The research further demonstrates that legislative majorities amplify these programme-to-policy effects, highlighting the importance of institutional capacity for translating partisan preferences into policy outcomes.

Thirdly, the thesis provides a novel analysis of multi-level policy interactions through a detailed examination of Mexico's concurrent carbon taxes and fossil fuel subsidies between 2009 and 2023. This case study reveals how federal and state-level carbon taxes create ratcheting dynamics that incrementally undermine subsidy effectiveness. By quantifying net dismantling effects through price transmission mechanisms, the research demonstrates how layered carbon pricing can erode fossil fuel price supports while maintaining formal policy continuity.

Policy Contributions

This thesis makes substantial contributions to understanding how democratic politics both constrains and enables ambitious climate action. Rather than treating political resistance as an insurmountable barrier, the research identifies specific institutional configurations, strategic approaches, and design principles that can facilitate climate policy reform even in contexts of organised opposition. The overarching insight is that successful climate policy depends not on overcoming politics, but on working strategically within political constraints to create viable pathways for change. This approach shifts focus from lamenting political obstacles to identifying leverage points where reform coalitions can achieve meaningful progress.

The first article demonstrates that specific institutional configurations create natural advantages for climate policy leadership. Countries with proportional representation and corporatist structures possess both the electoral insulation and compensation mechanisms necessary to pursue long-term beneficial policies despite short-term political costs. The research suggests these countries may serve as crucial first movers in global decarbonisation efforts, with their successful reforms generating demonstration effects and spillover pressures that enable broader international adoption. The second article reveals that governing party preferences significantly influence climate policy outcomes, but only when parties possess sufficient institutional power to overcome veto players. This finding provides practical guidance for climate advocates about when political windows of opportunity exist—specifically when environmentally committed parties achieve parliamentary majorities. The research also shows how coalition dynamics can moderate extreme positions, suggesting opportunities for building cross-party support even in polarised environments when environmental and market-liberal parties govern together. The third article proposes strategies for achieving climate policy goals through indirect mechanisms when direct approaches face insurmountable opposition. The concept of dismantling by layering offers a blame-avoidance approach that can achieve incremental reform through complex policy interactions while maintaining formal policy continuity. This approach may prove particularly valuable in polarised contexts where direct subsidy elimination would trigger organised backlash, providing a strategic pathway for gradually undermining fossil fuel support systems without provoking concentrated opposition.

Together, these contributions offer a comprehensive framework for climate policy strategy that acknowledges democratic constraints while identifying multiple pathways for meaningful progress. The research provides practical tools for policymakers, advocates, and international organisations seeking to advance climate action within the realities of democratic politics.

7. Final Reflections

A key strength of this compilation thesis lies in its theoretical pluralism, which showcases the complexity of fossil fuel subsidy reform dynamics. By integrating insights from comparative political economy, party politics, policy process theory, and polarisation research, this theoretical pluralism reveals that political pathways to reform exist but remain constrained by the intersection of structural conditions, political agency, policy processes, and contemporary polarisation dynamics—none of which alone provides sufficient explanatory power for understanding reform outcomes.

Rather than seeking single explanations for complex phenomena, the research demonstrates how different theoretical traditions can provide complementary insights that together offer a more comprehensive understanding of policy change dynamics. This approach proves particularly valuable for understanding complex policy challenges where multiple causal mechanisms operate simultaneously and where a central analytical objective is identifying viable pathways to change. This compilation thesis was conducted as part of a broader research project with the explicit aim of generating knowledge about which pathways are most conducive to promoting fossil fuel subsidy reforms across advanced democracies.

The research reveals how policy outcomes—whether persistence or change— result from the convergence of various mechanisms working concurrently across multiple facets of political systems. Many policy domains exhibit similar patterns where policies persist because they create constituencies with vested interests, become embedded in institutional arrangements, and generate path-dependent political dynamics that resist change. Conversely, successful policy change occurs when these same dimensions align to create windows of opportunity. Successful policy change occurs when institutional configurations provide reform capacity, political actors possess both the will and capability to pursue change, policy processes enable strategic implementation, and contemporary political dynamics facilitate rather than preclude reform coalitions. Understanding these dual dynamics of persistence and change provides analytical leverage for explaining why some reform efforts succeed while others fail, even under comparable political conditions.

The research highlights how contemporary polarisation dynamics are likely transforming the nature of policy change in advanced democracies. When policy questions become identity markers rather than technical choices, traditional approaches to policy reform—based on evidence, economic incentives, or institutional design—may prove insufficient.

This transformation suggests that policy change theories must increasingly grapple with the psychology of identity-based politics, its behavioural implications for political actors and mass publics, and the strategic communication challenges of implementing reforms within polarised political environments. The rise of nationalist and populist movements across OECD countries has further intensified these polarisation dynamics, creating additional barriers to climate policy reform. Climate policies are increasingly framed through nationalist lenses, with energy security concerns strategically deployed to justify continued fossil fuel support and resistance to international climate cooperation. The theoretical framework developed here suggests that this intersection of nationalism and climate politics may create remarkably durable forms of political carbon lock-in, as energy policies become markers of national identity rather than pragmatic choices about optimal and sustainable energy systems.

The theoretical insights of this research have gained particular relevance given recent geopolitical developments that have fundamentally reshaped energy politics across advanced democracies. The Russian invasion of Ukraine and subsequent energy crisis have simultaneously created both opportunities and obstacles for fossil fuel subsidy reform. On one hand, the crisis has highlighted the strategic vulnerabilities of fossil fuel dependence, strengthening the case for renewable energy transitions. On the other hand, some governments have responded with massive new fossil fuel subsidies that may become politically entrenched and difficult to reverse. Moreover, the erosion of multilateral institutions and the return of great power competition have systematically weakened the international pressures for subsidy reform identified in existing literature. This development strengthens the case for unilateral climate action rather than waiting for multilateral coordination, while simultaneously highlighting that domestic political dynamics—the central focus of this thesis—may become even more crucial for understanding reform possibilities in an era of weakened international cooperation. The research findings point to specific opportunities where proponents of fossil fuel subsidy reform can strategically focus their efforts: leveraging institutional configurations that provide electoral insulation and compensation mechanisms, supporting political parties with firm environmental commitments when they achieve parliamentary majorities, exploiting policy layering opportunities that create indirect reform pathways, and developing framing strategies that minimize polarisation effects which otherwise exacerbate lock-in dynamics and make reform increasingly difficult.

Perhaps most significantly, this compilation thesis demonstrates that climate policy research must engage seriously with political science to understand why technically sound solutions often fail in practice. The articles collectively argue that the climate governance challenge is not primarily about identifying technically optimal policy instruments but about understanding the political conditions under which necessary policies become feasible—an analytical shift with profound implications for both academic research and policy practice in addressing the climate crisis.

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