5

Phase II

The Politics of Making Mitigation Policy Choices

5.1 Introduction

This chapter considers the next phase of climate politics, starting in the immediate post-Kyoto time frame, within which increasingly wide ranges of policy decisions were made, and remade, with the intention of meeting greenhouse gas (GHG) emissions reduction targets. As we saw in Chapter 4, mitigation had been politicised to the extent that it had become an area of public policy aimed at reducing emissions – but considerable levels of action were needed to meet even compromised targets. This chapter, by focusing the analysis on political processes of making policy, offers insights into specific complexities and tensions involved in making mitigation choices in practice. Old anti-mitigation narratives and interests persisted – but were articulated in slightly different ways through policymaking debates. Policy choices were shaped not just by ideas about how to reach goals but by embedded political and material institutions and by interactions between mitigation and previously agreed policy areas and goals. If Chapter 4 told the story of constructing mitigation as a public policy area, this chapter tells the story, once on agendas, of making collective mitigation policy choices through a focus on the conditions, political and socio-material, within which those choices were made. Interestingly, this relatively more domestic-level analysis reveals a greater variety in policy approaches to mitigation than might have been suggested by UN level compromise on policies.

The Kyoto Agreement had placed responsibility on Annex I national governments to deliver timetabled emissions reductions and this contributed towards the significant uptick in domestic targets, and strategies and policies designed to deliver them (Schreurs 2004; Jordan 2008; Bulkeley 2010; Bernstein & Cashore 2012; Purdon 2015; Tobin 2017; Bayer & Genovese 2020; Carter & Little 2021). Some countries, regions, and cities, such as Sweden, the EU, and Ottawa, had already implemented mitigation policies, but for others, Kyoto inferred a need for accelerations in domestic collective mitigation decision-making. There is

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some emphasis in this chapter on Annex I countries, given that it was incumbent upon historically high emissions countries to lead the way in mitigation, reflected in a degree of territorial concentration of mitigation policy at that time (Hoppe et al. 2023). There are, however, also references to mitigation policymaking debates and choices in countries, and cities, without the formal incentive of Kyoto targets, including China which made early moves to develop manufacturing capabilities for low-emissions goods. This is a practical choice to the extent that these were areas where we can discern evidence of how complex processes of decision-making unfolded. The analysis in this chapter ends in 2008 – providing a decade's worth of mitigation policy choices to consider. The choice of end year also reflects the political importance of the global financial crisis and of austerity and the relatively more difficult political conditions for mitigation that followed.

Although, as discussed below, the 'phases' of getting mitigation onto agendas and making collective public policy choices infer slightly different political dynamics they are also highly inter-related. On the one hand, without political acceptance of emissions reduction targets, there would be little need for climate mitigation policymaking. Being an Annex I party to the Kyoto Convention conferred responsibility onto domestic policymakers in certain countries, whilst formally accepted GHG emissions reduction targets were useful for some in placing political authority and state agency behind taking mitigation decisions. On the other hand – the inter-relationships between the two phases are part of how mitigation policy and politics shape one another over time – not least because placing an issue on political agendas creates new politics as mitigation policies were debated, implemented, and started to have outcomes (Skocpol 1992). Particularly in democracies, governments can be held to account for not meeting targets. This is part of the reasoning behind the notion that new public policy goals, such as mitigation, drive further political and policy change (see Hall 1993).

The intention of mitigation policy is to shift nations away from high emissions, inferring often quite considerable changes in every 'sector' of the economy – particularly in developed countries where emissions were so deeply, materially, and socially embedded. Partly as a result, making collective decisions to reduce emissions opened up further debates, opportunities, and conflicts (Burke & Stephens 2018; Stokes 2020; Paterson et al. 2022). This reveals specific interactions not just, as in Chapter 4, between forces for and against mitigation but also between policies designed to engender change and existing path dependencies across a range of policy areas. Policy choices, and the debates within which they were embedded, were also shaped by previous mitigation framings and compromises – including the new norms of target setting, emissions trading, differentiated responsibilities, and sustainable development as resulting from growth.

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The complexity of making mitigation choices was heightened by the novelty of reducing emissions – after over a century of largely unquestioned and rapid emissions growth associated with economic development. Given the embryonic nature of this policy area, and despite agreed global policy norms, there were few 'proven' policies for meeting GHG emissions reduction targets or, indeed, experienced mitigation policymakers or governing bodies. As such although decisions needed to be made about *how* to go about reducing emissions through policy, this sometimes involved processes of learning-by-doing, including how to design new policies and what associated targets should be set, for example around the conservation of carbon sinks, renewable energy, and/or energy efficiency.

Significant here, in capacity and deliberation terms, is the gap, revealed in Chapter 4, between climate science and agreed knowledge about how to mitigate using social and political tools. Some ambitious governments, at the national and sub-national levels, had set high targets for emissions reduction – only to later reduce them as it became clear how difficult it was politically and in policy terms to meet those targets in practice (Jordan 2008; Bulkeley & Kern 2006; Paterson 2021). Constructing a successful climate mitigation policy, then, would require both deliberative and state agency politicisations.

As discussed in detail in Chapter 3, taking complex, and contested, public policy decisions about who should govern and how are also subject to nationally embedded political and socio-material institutions. It is, however, only during the collective decision-making phase that the *details* of how institutions shaped mitigation choices are revealed. This chapter, then, explores the ways in which political and socio-material institutions shaped choices drawing, in part, on insights from new institutionalist scholarship on sustainable transformations and from comparative mitigation research (Harrison & Sündstrom 2007; Kern 2011; Kuzemko et al. 2016a; Lachapelle et al. 2017; Lockwood et al. 2017; Dubash et al. 2021). Whilst Chapter 4 revealed some ways in which certain economic ideas shaped the compromises reached, this chapter reveals the degree to which a wider variety of domestic political institutions have shaped national, and sub-national, decisions. This follows an approach similar to that of Katherine Harrison and Lisa Sündstrom's exploration of the comparative politics of climate change (2007).

Here, however, I also explore the significance of inter-relationships between mitigation policymaking and other, longer-standing public policy areas and associated policy goals, not least energy, transport, and economic. These relations are explored partly by foregrounding socio-material interests and embedded infrastructures. Arguably, it is at the domestic and local scales that the relationships between material energy systems, their political and social path dependencies, and societal and electoral views on mitigation become more apparent. One of the issues, discussed at length in Section 5.4, is that policymakers needed to identify

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policies capable of reducing emissions and changing current systems whilst also delivering on other pre-existing, and often electorally more popular, public policy goals (Kuzemko 2019; Newell 2021; Paterson 2021). Hence inter- and intra-policy area relations are foregrounded here as a means of better understanding the political conditions within which mitigation choices were made – revealing important hierarchies between policy departments, or ministries, and tensions made overt by seeking to engender change.

When conceptualising the collective choice feature of politics Hay suggests that, once an issue is accepted as political, it entails the capacity to "dissect choices available" (2007: 68). This chapter reveals just how much needs to be learned in order for that capacity to be realised – given the novelty of and *scale* of transforming economies, and the extent to which political choices were not just about mitigation. Indeed, mitigation policymaking was a "highly uncertain" policy project (Kern & Howlett 2009). This raises questions of capacities to design policies that would be effective in reducing deeply embedded emissions, against the interests of some powerful actors, whilst maintaining sufficient political support for mitigation. Beyond designing such policies, and balancing different sets of interests, policymakers also needed to figure out: which departments/actors should be responsible for driving changes, what administrative arrangements should be made, how GHG emissions should be measured (and by whom), how to recruit and educate staff, and how to finance policies. This raises important questions about what deliberative and other capacities existed, and needed to be created, to make and implement effective policy (Kuzemko & Britton 2020; Stokes 2020).

There are several key insights from this chapter. If the politics of setting mitigation targets seemed complex, not least in terms of navigating the wide spectrum of (anti-)climate narratives, then making domestic mitigation policy decisions reveals new levels of complexity, conflict, opportunity, and specifics associated with climate politics. Analysing this phase of making choices both reinforces and explains claims made about the nature and scale of the task at hand, of mitigation as both novel and 'super wicked', and of the significant political work involved in reducing emissions in economies and societies built on high emissions whilst maintaining support for mitigation (Jordan 2008; Kuzemko 2019; Paterson et al. 2022). The emphasis here on how embedded high emissions are in socio-material systems also reveals the extent to which other policy areas rely on high emissions practices and industries to meet public policy goals, and how that shapes the socio-material context for mitigation policy.

Taken together these insights into making mitigation choices help to explain why chosen policies tended to focus on supporting new, low emissions alternatives rather than phasing out fossil fuels. Whilst creating new, low emissions

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alternatives might be associated with policy costs, they also held the promise of new income streams for businesses and employment. Fossil fuels, at the same time, continued to be considered key inputs into meeting economic, transport, industrial, and building policy goals. As such, low emissions alternatives needed to be widely available and affordable before fossil fuels phase outs could be considered.

5.2 Making Mitigation: Global Contexts

This analysis starts by placing domestic climate policymaking within the wider global contexts that continued to shape how climate mitigation was framed but also to take account of important political events of the time (for a similar approach see Harrison & Sündstrom 2007; Vogler 2016). For the 37 Annex I countries their Kyoto Protocol commitments came into force in 2005, which, in effect placed formal responsibility for reducing emissions on a limited number of countries. This is not to say that policies associated with delivering emissions reduction were not already being pursued, but that as of 2005 mitigation policies covered <20% of emissions (Hoppe et al. 2023). Some nations and cities had already agreed on new targets associated with reducing emissions, like renewable energy or energy efficiency targets, and associated policies. For example, the city of Ottawa had implemented a range of policies to meet its target of a 20% reduction in emissions from 1988 to 2005 (Paterson 2021: 31), whilst in 2001–2002, the EU had implemented renewable energy and energy performance of buildings directives to contribute towards reducing emissions (Dupont et al. 2024).

The Kyoto Protocol is interpreted by some as a starting point for more widespread domestic mitigation policies and politics in that it placed emissions reduction formally onto domestic agendas (Carter & Little 2021: 5). Indeed, the UNFCCC was becoming increasingly focused on influencing domestic practices, policies and policy-making processes (Bernstein & Cashore 2012), rather than limiting recommendations to the 'targets and timetables' compromise agreed at Kyoto. Some landmark climate mitigation policies were voted into legislation in this post-Kyoto period – including the EU's 2020 package of measures, the UK's Climate Change Act, Germany's 2004 feed-in-tariff (FiT), California's Renewables Portfolio Standard, and China's solar PV manufacturing policies. The decade or so post-Kyoto is, then, important to revealing the details of what kinds of policies were deemed appropriate and to considering the politics of making those choices.

Noticeable in this period was the tendency to focus new domestic targets and policies on changes to reduce energy sector emissions – focused on producing low emissions alternatives but not fossil fuel phase out. For example, the EU's

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2020 package included new mitigation-related targets, to produce 20% of energy from renewables and to deliver a 20% improvement in energy efficiency, and associated policies. Certain types of policy choices dominated: emissions trading schemes (ETSs) (in line with Kyoto policy norms); renewable energy support schemes of varying kinds; insulation of buildings, and energy efficiency standards. No country had fossil fuel phase out targets in this period, the first was the UK's coal phase out target, set in 2015.

Deeply held assumptions about the importance of GDP growth remained largely unchallenged over the 1990s and early 2000s, as did those about the role of energy in enabling growth – both for industrial-based economic development and consumer-based, technologically advanced economies. Economic globalisation accelerated during this period, underpinned by WTO rules and China's accession in 2001. Many OECD economies underwent processes of relative de-industrialisation whilst the manufacturing of consumer goods was taken up largely by China, but also Vietnam, Indonesia, and Thailand. Consumption in OECD economies of goods made elsewhere was underpinned by huge growth in global supply chains and contributed towards the growth in shipping and aviation emissions, reductions in the emissions intensity of de-industrialising economies, and fast growth in Chinese and Indian emissions. Under norms established by the UNFCCC growing non-Annex I economy emissions resulting from industrialisation were acceptable whilst, as emissions are measured territorially, global supply chain emissions and OECD 'export' of emissions were both rendered largely invisible (Vogler 2016: 141). Relatedly, given their importance to economic development, fossil fuels continued to be subsidised, despite various liberalisations of energy markets, in most countries.

The 1990s and early 2000s marked the peak in the 'end of the history of ideas' era, and the associated dominance of neoliberal economic policy ideas and liberal multilateralism. Chapter 4 emphasised this ideational context as important in shaping the mitigation governance norms that emerged through the UNFCCC process, including preferences for flexible, market-friendly policies, like emissions trading and offsetting. This period also saw hundreds of privatisations of firms previously responsible for delivering public goods, not least in energy and transport sectors. Privatisations reflected the influence of arguments, reviewed in Chapter 2 as part of the 'leave it to the market' perspective, that governments are not competent to make decisions in certain, more technical areas, like the economy and energy (Strange 1994; Hay 2007; Kuzemko 2013). In some ways, this view is also mirrored in the 'follow the science' perspective, to the extent that only specific expert actors, climate change scientists, and orthodox climate economists, are understood to have relevant knowledge about climate change and policy design. The concurrent growing lack of trust in governments to provide public goods is offered

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as part of the explanation of 'democracy in crisis', which also accelerated during the 1990s and 2000s and the associated disengagement with politics (Hay 2007; Flinders 2004; Willis 2020).

Global events of the early 2000s caused some shifts in the post-WWII multilateral order with implications for the global mitigation pact and domestic policy in some regions (Vogler 2016: 134). The administration of George Bush Junior, who came into power in 2001, did not ratify Kyoto and pulled back on commitments to lower CO_2 emissions from coal. These decisions were supported by the Republican electoral mandate which incorporated a re-run of narratives of questioning the science and the need to act immediately, but also through decisions to block the publication of climate data (Goldenberg 2009). Soon after, the catastrophic events of 9/11 led to the invasions of Afghanistan and Iraq – the foreign politics of which dominated for many years in the US and parts of Europe. 'Western' transatlantic relations soured given the EU's divided position on the Iraq invasion and growing anti-Americanism – both of which impacted mitigation relations (Vogler 2016: 139). The EU continued to position itself as a global climate leader and in opposition to the US position under George Bush Junior's administration. In an attempt to keep the Kyoto Protocol relevant, given wider global events, the US refusal to ratify, and its relatively weakened negotiating position, the EU had to offer further 'inducements' to Russia to ratify, keeping at least that high emitter superficially on board.

At the same time, energy company re-nationalisations in Russia and across Latin America, a 'resurgent' Russia under Vladimir Putin, and the Russia-Ukraine gas transit disputes and associated energy crises served as further reminders that liberal internationalism in energy was not working. As outlined above, the EU had passed some significant mitigation legislation prior to the first gas transit dispute of 2006, but during the following years energy security, and geopolitics, became of equal concern and refocused policy debates onto questions of pipelines and fossil fuel supplies (Kuzemko 2014; Dupont et al. 2024).

5.3 Making Mitigation Policy Choices: Domestic Political Institutions

If the pre-Kyoto period was marked by relatively higher levels of global political processes, the period post-Kyoto saw significant growth in mitigation policy deliberation, design, and implementation at domestic and sub-national scales. It is to an analysis of these political processes of collective choice and deliberation that this chapter now turns. Targets might have been agreed globally, but the work to meet them was largely domestic. Even in this period of the 'hollowing out' of the state (Rhodes 1994), national governments retained authoritative

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capacities – for example, to create climate change governing departments and to devise and pass climate legislation.

At the same time, as discussed in Chapter 1, global and domestic mitigation processes were linked in a variety of ways. Just as policies associated with the Kyoto Protocol provided templates that domestic governments could choose to follow, so too did some of the, in effect more varied, policy design choices made by national governments become templates for subsequent mitigation decisions in other countries and regions. Global commitments can make domestic mitigation choices easier in some cases, not least by offsetting some of the responsibility for needing to mitigate, but domestic policy choices, successes, and ambitions can also influence global mitigation deliberations (Death & Tobin 2017; Tosun & Peters 2021). Domestic decisions taken, and any associated successes, were globally significant in this time frame. Particularly given the long-term consequences of failure; the limited number of countries formally responsible for taking the lead; and the vulnerability, particularly in legitimacy and credibility terms, of targets without actions to meet them (see Stirling 2014b). This is even more so given the relative novelty of mitigation as a policy area and the amount of deliberation and policy learning that needed to take place.

Domestic political actors, often newly, assigned responsibilities for deliberating, designing, and passing new mitigation policies had a mountain to climb – even if few understood the scale of the task (Jordan et al. 2022). This is not just a question of figuring out what policies might work in reducing emissions, but policymakers also need to adjudicate between conflicting sets of economic and political ideas and interests in making choices, and in getting those choices passed into legislation (Schreurs 2004; Liefferink et al. 2009; Kern 2011; Purdon 2015; Kuzemko et al. 2016a; Lockwood 2015a; Dubash 2021). It mattered to processes of deliberating and choosing policies whether countries were fossil fuel producers, whether electorates broadly supported mitigation, and what political approaches to policy design were deemed more appropriate.

The analysis in this section explores the ways in which different types of political institutions, with some emphasis on economic ideas and administrative and electoral structures, shaped mitigation deliberation, approaches to policymaking, and decisions taken. Interestingly, although neoliberal economic ideas had done much to shape compromises at the global level, at the domestic and sub-national scale a much wider variety of influential ideas, and policy choices, become apparent. These include Germany and China's relatively more state-led approaches to creating renewable markets and low emissions industrial policy. By exploring political institutions and their relationship to policymaking it is possible to identify implications for policy design and for the character of policies chosen. As outlined in Chapter 3, the nature of policies pursued matters in a range of ways.

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Different types of policies vary in how they distribute the costs and benefits of sustainable transitions; poorly designed instruments risk undermining public trust in that policy area (Hay 2007: 57); whilst if citizens are uninformed about policies they may start to care less (Carter et al. 2018 in Jordan et al. 2022).

5.3.1 Policymaking Institutions and Economic Ideas

Thinking about politics as collective choice highlights the need for governments to reach an agreement for policy to proceed. At the same time, mitigation policies are social constructions and contingent upon global and domestic contexts and temporalities. As such, although they are designed to start the hard work of changing high emissions aspects of domestic economies, the choice of policy is shaped by political institutions and bureaucratic structures which can make mitigation more politically palatable (Harrison & Sündstrom 2007; Kern 2011; Kuzemko 2013; Henrysson & Henrickson 2021; Dubash 2021). This can also be about what policymakers think is the correct approach as they lean on policy knowledge when designing this new policy area. As explored in Chapter 4, some scholars have explained the compromises made in order to get mitigation onto the global agenda in relation to the growing influence of neoliberal economic ideas (Bernstein 2001; Newell & Paterson 2010; Newell 2021). We can look at this in a few ways – one is that this represented depoliticisation to the extent that policy choices were limited and market actors preferred over governments. The other is that without coherence around policy ideas by many of the main Annex I actors it would have been harder to find a compromise and politicise mitigation by getting it onto agendas – especially given the breadth of debate.

During this early phase of making mitigation choices, orthodox policy ideas shaped new policy debates in some countries – including whose ideas and interests were heard, what appeared as an appropriate approach to policymaking, and which type of policy was deemed politically and administratively workable. Others have made similar claims in relation to making mitigation choices within certain countries, particularly but not always liberal market economies (LMEs), with some emphasising the degree to which choices of mitigation policy instruments were shaped by public choice ideas about 'least cost' policy (Hay 2007; Kern & Howlett 2009; Kuzemko 2013; Lockwood 2021). These, in many respects, mirrored anti-mitigation narratives of mitigation policy as an economic cost articulated during UN debates. Of course, it is not just LMEs that tend to cite costs as an obstacle to action, indeed it is commonplace in many different parts of the world (Maltby & Misik 2024).

Others have pointed to constraints upon mitigation policy, and public policymaker capacity building, associated with processes of liberalisation in important

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sectors. Liberalisation is understood to have heightened the political power of high emissions incumbents, whilst market-liberal ideas had discredited government action in sectors highly relevant to mitigation, such as energy, water, and food provision (Baker et al. 2014; Moss et al. 2015; Brown & Cloke 2017; Johnstone & Newell 2018; Newell 2021). The influence of neoliberal ideas is understood to have had related implications for the choice of actors deemed best suited to driving down emissions and investing in low emissions alternatives, for limiting investment in public policy capacity, and for tendencies to choose market-oriented policies (Kuzemko 2015; Scoones et al. 2015). Hence the emphasis on flexible policies at the UN level but see, for example, the UK 'renewables obligation' introduced in 2002 that was explicitly designed to 'mimic' the market and not 'pick' technology 'winners' (Lockwood 2015a: 97).

The choice of ETSs at the UN level reflected the increasing dominance of market-liberal economic ideas within IGOs, but also within powerful UN negotiating countries and regions, not least the US, UK, Canada, Australia, and, increasingly, the EU. These preferences were significant within the context of long-running debates about regulation versus market-oriented instruments (Garner 2011: 126). Early mitigation movers, like Sweden and the Netherlands, had used taxation-based solutions to price emissions, whilst these had not been without their detractors. Choices of ETS over taxation incorporated ideas of climate change as market failure and of emissions as an issue of pricing and rather than of potential for societal transformation (Green 2021: 126).

In terms of the establishment of mitigation policy norms, it is significant that the EU switched from supporting from taxation to ETSs. This u-turn was partly about power relations, the US, UK, Spain, Portugal, Greece, and Ireland all backed market-oriented, flexible policies, whilst opponents of taxes could point to instances of public push-back against them. These had been evident in Sweden, whilst the EU had failed in its attempts to bring in carbon taxes in the 1990s (Dupont et al. 2024). It was also the case that the influence of neoclassical ideas was growing more generally within the EU. In terms of embedding new policy norms, it is significant that the EU soon went on to invest considerable political and administrative capital in establishing the world's first ETS – which became a template for others (Steinbacher 2015). By 2022 there were 32 ETSs in operation worldwide, with China launching theirs in 2021, a significant endeavour at three times the size of EU ETS (World Economic Forum 2022).[1]

ETSs are designed to 'incentivise' high emitting businesses to reduce emissions, whilst creating new trading markets and opportunities for financial institutions, without regulating behaviours – very much in the mode of governing via 'carrots'

[1] Interestingly, in the same year, there were also 36 carbon tax regimes in operation (ibid.).

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rather than 'sticks' (Sidortsov 2023). The trading route, as suggested in Chapter 4, fits with the interests of powerful financial sectors (Newell & Paterson 2010; Paterson 2012). At the same time, relevant market actors could decide whether it is in their interests to reduce emissions – dependent upon the costs associated with not doing so. The price of emissions in the flagship EU ETS, however, tended to fluctuate but, overall, remained low for some time (Green 2021). This was one of the issues associated with the novelty of mitigation as a policy area and designing new schemes from scratch – it took the EU a few rounds of redesign for the pricing system to improve – including the backstopping debate and decisions to implement a market stability reserve. Ultimately, through deliberation and policy learning, the EU ETS did improve as a system for reducing emissions by placing a higher price on emissions. To the extent that so much emphasis was put on the EU ETS as the core instrument to drive down emissions, this represented some depoliticisation in terms of the ability to deliver on the social goal of mitigation – particularly during the early years of low emissions prices.

Another idea behind the choice of emissions trading was to explicitly use the market as a depoliticising mechanism, but in a different way. Depoliticisation here could be achieved to the extent that choosing the ETS, especially over carbon taxes, would avoid some political conflict and bargaining with corporations by lowering costs associated with mitigation and detaching the question of who would pay financial costs from that of the distribution of emissions (Paterson 2021: 155). Although some receipts from the EU ETS were used to finance further sustainability policies, and later to finance just transition funds, emissions trading took less account of the (re-)distributive nature of mitigation policy, whilst also placing relatively less pressure on businesses to reduce emissions.

Others, taking a more comparative approach, explain differences between countries' mitigation policies in relation to wider varieties of institutional influences (Schreurs 2004; Kern 2011; Mikler & Harrison 2011; Andrews-Speed 2016; Lockwood et al. 2017; Kucharski & Unesaki 2018; Dubash 2021). There has been some suggestion that coordinated market economies (CMEs), and embedded ideas about the state taking a relatively more active role in shaping the economy and distributing benefits, can create conditions that are conducive to more effective and just mitigation policy (Mikler & Harrison 2011; Lauber & Jacobsson 2016; Tobin 2017). Germany is often used as a case in point of government intervention to create low emissions alternatives. Going against the market-oriented tide of this time, under the Red-Green government coalition that came to power in 1998, German policymakers designed and implemented a feed-in-tariff (FiT), as part of the German Renewable Energy Sources Act 2000, which allocated a fixed price for renewable electricity units over a fixed timeframe of 15 years (Jacobsson & Lauber 2006).

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This provided stable and technology-specific prices to generators and a guaranteed market for renewables under a more mission-oriented approach that favoured directed, green industrial policy (ibid.; Rogge et al. 2015; Lockwood 2015a; Sovacool et al. 2020a). Its design took account of the fact that – at this early stage – wind and solar-powered electricity, although technically viable for many decades, were still 'niche' technologies, not in a position to compete with deeply embedded fossil fuel systems. As such, renewables were in need of targeted financial and other support to disseminate at a system-wide scale. A further idea behind the FiT was to explicitly widen the range of energy actors, to include small and medium-sized generators, and to decentralise electricity production in Germany – with high degrees of success (Rogge et al. 2015). Some have linked German FiT policy design with the rise of new low emissions constituents and with the more distributed nature of its renewable energy system (Jacobsson & Lauber 2006; Kuzemko et al. 2016a). Early FiT results in Denmark were similar, with significant development of community and other forms of distributed energy providing wider public support for wind (IRENA 2025). FiTs as policy instruments, then, have been designed with positive non-emissions outcomes in mind, such as expanding the numbers of actors capable of generating renewable energy and with local economic development (Steinbacher 2015: 37). By 2008, 49 FiTs had been implemented worldwide (Statista 2023).

Interestingly, although Germany's FiT had been designed with these wider distributions of the benefits of renewable expansion in mind, it was also more regressive in terms of how the early *costs* of renewable generation were distributed. It was a generous instrument, and therefore relatively expensive, whilst it was paid for by electricity consumers with households paying a higher rate than industry (Kuzemko et al. 2016a). At the same time, however, German households were supported by strong energy efficiency policies – which meant that energy costs were comparable with other European countries, whilst those on benefits did not have to pay energy bills. Here we can see the relevance of having a mix of mitigation policies in place that work together to underpin complex and ongoing sustainable energy system transformations (Rogge et al. 2015).

It can also be argued that the success of Germany's FiT in terms of renewable energy dissemination was augmented by China's, and initially, Germany's, industrial policy decisions to mass-produce solar panels. This, in China, involved considerable government support under its state-led model of economic development via green and cleantech sectors (Lockwood 2015a; Andrews-Speed 2016; Shen & Xie 2018). The broader effect, however, was that the global cost of solar panels fell dramatically as production and exports scaled up, thereby reducing some of the barriers associated with this previously niche renewable alternative (Sovacool et al. 2020a; Helveston et al. 2022). These early industrial policy

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decisions have since proven significant in terms of lowering the economic, and political, costs associated with building renewable energy systems (Helveston & Nahm 2019). At the same time, China's state-led early green industrial policy has since been used as a model for other middle-income countries – including South Korea, Indonesia, and India.

Approaches that recognise institutional variety can also foreground instances of multiple policy-relevant ideas *within* countries and regions (Kern 2011; Kuzemko 2013 and 2014). Although this time period saw a relative shift towards the acceptance of neoliberal ideas in policymaking bodies, conflict and competition between sets of ideas within policymaking processes and between political parties persisted. The EU had switched from favouring taxation to emissions trading for putting a price on carbon, but it clashed with Germany over their FiT, on state aid grounds. Germany's Red-Green coalition had favoured the more redistributive FiT, but later administrations preferred auctions for renewables that suited larger corporations and did less to redistribute access to energy generation (Fitch-Roy et al. 2020; Boasson & Leiren 2022). At the same time, coalitions for greater climate mitigation within the European Commission continued to highlight gaps between mitigation targets and a lack of progress in meeting them, arguing for greater degrees of state intervention (Kuzemko 2014). Policies designed to better distribute the benefits of mitigation policy, and low emissions transitions, can contribute towards politicisation understood as learning how to balance mitigation with other policy goals.

Finally, it is worth noting, in terms of ideational influences over policy choices that much mitigation policy at this time was focused on developing low emissions alternatives to, but not explicitly on processes to reduce the use of, fossil fuels. This is partially explained by widespread acceptance that low emissions alternatives needed to be affordable and accessible before fossil fuels could be phased out. This in, turn, is related to the broader compromise based on strong preferences for economic growth, and energy as a key production factor, shared by market-oriented and state-led approaches. As such, whilst institutionalist approaches focused on economic ideas explain both why different decisions were made by different countries and the variety of instruments and distributive outcomes, they provide only a partial explanation.

5.3.2 Electoral, Party Political, and Bureaucratic Institutions

Moving beyond institutions as embedded ideas, the nature of mitigation choices is also shaped by electoral institutions, party politics, and administrative structures, whilst considering their influence foregrounds aspects of politics as social interaction. Lamb and Minx, in their global comparative research, have considered

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factors like democratic norms, corruption, and public climate awareness as influencing degrees of ambition in climate change policies (2020). Others point to the importance of constitutive political structures, that is, whether a government is Federal or Centralised can shape possibilities for Green Parties to form part of governments (Carter 2018); and the capacity and authority of local governments to design and implement mitigation policy (Bulkeley 2010; Kuzemko 2019; Harrison 2020). Some analysis argues that in Federal systems states have relative authority, financial, and deliberative capacities to drive ambitious mitigation policies forward (Bulkeley & Kern 2006; Kuzemko 2019). This is particularly compared with the relative lack of political capacity of, even ambitious, sub-national authorities in more centralised political systems to make and implement mitigation policy (Bulkeley & Kern 2006; Eckersley 2017; Kuzemko & Britton 2019). There are ample examples of sub-national authorities in Federal systems with ambition and capacity driving forward innovations in mitigation technologies and policy; politicising levels of national policy ambition by setting higher targets; and using local state-backed financial institutions to support sustainable lending (Bulkeley 2010; Kuzemko 2019; Harrison 2020).

These approaches, like those considered in Section 5.3.1, reveal aspects of the contingent nature of policymaking but tend to assume little change, whereas this section highlights conflict and competition between political approaches to mitigation within countries over time. In Chapter 4 we saw how consequential changes in government have been in the phase of getting mitigation onto political agendas. Here types of electoral systems can make a difference in choices made and mitigation policy change. Some analysis has found that 'pluralist' political cultures have more tendencies towards high issue competition between parties and, therefore, bigger swings in approaches to mitigation policymaking when a new party comes to power (Lockwood 2021; Dubash 2021). This is more especially so in countries, like the US and Australia, where climate change has become a *partisan* issue (Mildenberger 2021). In both countries switches in government between the two main political parties have had far-reaching consequences with climate mitigation being foregrounded and then marginalised; reversals and reinstatements of policy instruments; and deliberative capacities created and rolled back (Vogler 2016; Mildenberger 2021). Interestingly, however, as both countries also have Federal systems this has left more space for states, and other subnational actors, to pursue ambitious mitigation policymaking in the absence of Federal support (Rabe 2004; Vogler 2016).

Scholarship on electoral politics and broader party ideologies reveals further details about links between particular parties and mitigation preferences as well as reasons for changes in political approaches to mitigation within nations (Carter 2018; Carter & Little 2021; Pearson 2023). Left-wing parties have been

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shown to be more supportive of environmental issues, including climate change, as well as more accepting of state-led economic and climate policies (Neumayer 2003 in Tobin 2017: 31). This might partly be because they are more prepared to pursue regulatory, tax, and/or other state interventions (Harrison & Sündstrom 2007). Certainly, during this period, policy choices made by Germany's Red-Green coalition and the UK's Labour administration were ground-breaking – both relative to what had come before and in absolute terms (Bulkeley & Kern 2006; Lockwood 2021). Both Germany's 2000 Renewable Energy Sources Act and the UK's 2008 Climate Change Act sought to challenge the high emissions status quo through different forms of low emissions technological and policy-making capacity building.

Part of the thinking behind the UK's CCA, and the decision to make its carbon budgets legally binding, was to provide greater policy stability given the UK's pluralist electoral system and historically high issue competition (Lockwood 2021). Likewise, the UK's decision to establish an independent Committee on Climate Change, to hold the government to account in terms of meeting its budgets, was designed to get around party differences, whilst also securing a route for climate science to have direct deliberative input into government policy. This approach, then, combines depoliticisation of the question of whether to have emissions reduction targets, with politicisations in the form of establishing deliberative capacities, and maintaining climate mitigation as a public policy area, whilst leaving the choice of specific policy strategies and instruments more open.

Scholars, such as Neil Carter (2018) and Miranda Schreurs (2004), have explored the influence of Green Parties, and environmental NGOs, in shifting the political and electoral landscape in Europe toward support for mitigation and for more progressive and ambitious policies. Growth in Green parties, of course, reflected general trends upward in social awareness of, and desire for policies to address, anthropogenic climate change. Here, the argument is extended to suggest that more mainstream political parties also take on green views over time, partly through a need to increasingly win the green vote often associated with younger demographics (Carter 2018; Pearson 2023). At the same time, it is more likely for Green Parties to win votes, and enter into coalitions, in proportional representative (PR) rather than pluralist electoral systems (Garner 2011: 132; Carter 2018: 124). Whilst there might be expectations for centre-right parties to backslide on climate change this has been relatively rare, partly because of the need to attract younger voters and to appeal to Green parties for coalition purposes (Pearson 2023). The closer relationship between Green Parties and organised environmental groups also enabled more radical and/or progressive green ideas to be debated and heard within policy making circles.

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5.4 Where Ideas Meet Socio-material Interests: Mitigation and Other Policy Areas

This section takes a step on from considering the influence of ideational, electoral, and party political institutions by exploring the political importance of material, high emissions underpinnings of industrialised societies. The analysis here explores how embedded materialities relate to established policy goals, including in energy and transport, and implications for the politics of making mitigation choices. This builds on a range of notions explored in Chapter 3. These include: carbon lock-in and high emissions path dependencies (Unruh 2000), the cultural embeddedness of high emissions sectors, like petrol-based transport or livestock agriculture (Bulkeley et al. 2016), and technologies both as drivers of social practices (Shove & Walker 2010), and of climate mitigation policy (Schmidt & Sewerin 2017).

There is some focus on how more established policy areas like energy, security, transport, and the economy tend to further underpin the reinforcing dynamics of high emissions systems, and on the ways in which this complicates inter-relationships between climate mitigation, as a new and emerging policy area, and pre-existing policy. Part of the intention here is to reveal links between societal expectations, citizens' everyday material environments, and policy goals and how these inter-relationships have shaped the political contexts within which mitigation policy is deliberated and made. The complexity here lies in the fact that much mitigation policy is designed to change some of the high emissions structures, practices, and behaviours upon which other, often popular, public policy goals have long been dependent for their delivery. This analysis of making mitigation choices in practice, then, makes visible the high emissions nature of delivering public policy goals.

5.4.1 Socio-material Systems and Policymaking

Some material characteristics of social systems, like gas pipeline infrastructures, sunk capital, or the GHG emissions produced through everyday modern living, have not always been socially or politically visible (Balmaceda et al. 2019). Material characteristics have done much to shape the politics of governing a variety of sectors. Since the mid part of last century emissions have, however, become more visible as pollution and dirty air. They have also become more politically visible based on scientific knowledge about inter-relationships between human actions and material systems, and how it has been communicated, debated, and amplified via social organisations.

What is of the upmost importance, however, is that to reduce emissions many aspects of socio-material systems need to change, often radically. At the same

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time, interests associated with embedded technologies, infrastructures, and sunk capital shape possibilities for action and choices made. Put simply, transport, buildings, industrial, energy, and agricultural systems all provide social functions often viewed as vital, but whilst producing emissions. Hence material artefacts and physical systems can be understood as integral to the conduct of politics (Barry 2013 in Stripple & Bulkeley 2019; Balmaceda et al. 2019). Historians of socio-technical systems associate historical material legacies with difficulties faced by alternative systems in emerging and becoming widely disseminated – providing explanations as to why it has taken so long for socio-technical systems to change (Unruh 2000; Perez 2002; Fouquet 2010).

In this sub-section, however, the focus is more specifically on revealing ways in which the socially embedded nature of material systems can have implications for making mitigation policy choices. During processes of political and social change, as emphasised by scholars across political science and political geography, some remnants of previous eras, social, political, and material, are carried over and come into conflict with the new (Hall 1993; Brophy 2018; Kuzemko et al. 2024). Conflicts between old and new continues for decades, whilst one of the main insights of this chapter is that conflicts become especially apparent when making mitigation choices that have the potential, or are perceived as having the potential, to harm the delivery of other public goods and policy goals.

The first point I want to make is largely about social interaction, and more specifically about how societal expectations, shaped as they are by embedded materialities, become reflected in political systems – through public policy goals. This is about how previous sectoral policies, for example in energy or transport, shape the context within which new mitigation policy choices are made. For example, government policies in support of the social and economic goal of universal electricity access have had the additional outcome of embedding electricity infrastructure and high emissions. Programmes of universal access that started in OECD countries in the post-WWII era were by this stage also being pursued in many developing and transitioning economies under large-scale, state-led programmes, such as Brazil's 'Luz Para Todos' plan, or Morocco's electricity strategy that took access from 18% of households in 1995 to 98% in 2015 (Steinbacher 2015).

These policies also privileged electricity within everyday life, and supported behaviour change, whilst dependencies on technologies increased (Shove & Walker 2010),[2] but so too did societal expectations. In the post-WWII era, electricity access went from an aspiration to, in effect, a social and political necessity over a few decades in OECD countries. The physical systems required to make and

[2] Elizabeth Shove also tells the story of how expectations around personal hygiene changed dramatically post the arrival of access to hot water 'on tap' in the home. In many countries, people went from bathing on an irregular to a daily basis – in this way access to technologies has shaped social practices.

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deliver electricity, such as gas and electricity grids, became important economic and social goods that states invested in (Kuzemko 2013). New assumptions, still embedded in national government and much global governance thinking, started to emerge about the relationship between economic growth, societal development, and energy demand growth (ibid.; Clift & Kuzemko 2024). In turn, energy policy emerged as a field focused on the delivery of accessible, reliable, and affordable energy – partly reflecting electoral and industrial expectations around the need for electricity, and responses when prices were too high or access unreliable.

Attachments to high-emissions material artefacts, such as internal combustion engine (ICE) cars or washing machines, became embedded culturally and, for many, aspirational (Bulkeley et al. 2016; Paterson 2021). Employment in associated industries, like coal or oil production, sometimes became reflected in individual and community identities (Daggett 2018). Here, it also matters what *types* of systems underpinned the provision of social goods and provided employment. France, by the 1980s, had become heavily reliant on nuclear- powered electricity and had also made nuclear into a significant domestic and export industry. In mitigation policy choice terms, because of its low GHG emissions credentials, this led to some crowding out of renewable electricity as a low emissions option, indeed France failed to meet renewable energy targets in 2020 (Mouterde 2022). Such choices between *types* of low-emissions electricity have further complicated mitigation policy.

A country's energy materialities are also shaped by whether a country is home to fossil fuel production. As outlined in Chapter 4, fossil fuel production and export have underpinned exports, foreign direct investment, abilities for international influence, government revenues, and indirect social services, in a range of countries – making fossil fuels politically, economically, and socially important. In some countries where coal is mined, such as Poland, Australia, and the US, coal had underpinned industrialisation and came, over time, to be seen as part of both community and national economies and identities – so much so that some citizens of these countries celebrate 'national mining day' each year. In Poland coal was also, importantly, at this time explicitly understood as a means of energy security and independence from Russia (Żuk & Suzlecki 2020). Given that coal is the highest emitting fossil fuel, such cultural and political attachments have had implications for mitigation – particularly in the energy sector in these countries.[3] For example, Polish political leaders, particularly from the Populist right, have often invoked national coal identities in attempts to avoid mitigation choices and continuing to support coal-based electricity (ibid.). In

[3] The UK is an outlier here – in the 1980s, coal production was culturally embedded within many communities – but it was also a sector associated with trade union power which the Conservative administration of the time chose to weaken through coal phase out.

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electoral terms, particular energy interests, like coal or gas, have influenced policymakers – see, for example, districts in the US with high-emissions industries are less likely to support climate legislation (Stokes 2016).

Insights from political geography about scale can be used to better understand how different aspects of the material characteristics of energy systems have influenced mitigation policymaking, and the types of political decisions made in this time period (Bridge et al. 2013; Kuzemko 2019). During the second half of last century, electricity systems went from being regional to national in many countries. The large-scale, centralised nature of OECD electricity systems, often resulting from heavy national state investment in infrastructures, is understood to have empowered large-scale actors and limited the role of local governments and the ability of small-scale actors to enter the market (Bridge et al. 2013; Goldthau 2012; Johnstone & Newell 2018; Schmidt & Sewerin 2017). The move towards large-scale energy systems has also been reflected in agriculture. Over the course of the 20th century, the mechanisation of agricultural systems combined with the widespread use of synthetic fertilisers, and the extension of this approach via the 'Green Revolution' to the global South, has resulted in higher emissions and a sector increasingly dominated by powerful global actors (Stevenson 2017). For a century or so, embedded governance thinking about efficiency and optimisation has been fixed around the benefits of size and scale, whilst being able to deliver vital goods, like energy and food, has lent large-scale sectoral actors high degrees of concentrated power and influence (Newell 2021). This takes us back to importance of policy design, for example the ability of FiTs, as opposed to auctions, to challenge centralised energy systems to more broadly distribute the power to generate electricity (Brisbois 2020).

Political, and energy, geography also highlight the political importance of mitigation in terms of the availability of natural resources. Just as some countries have had domestic access to fossil fuels, so too do some countries and regions have better access to renewable sources such as solar, wind, hydro, tidal, wave, and geothermal. Every country in the world has access to some form of renewable energy, which is explicitly not the case for fossil fuels – hence claims that energy independence will rise for countries that shift to renewables (IRENA 2019). Different types of renewable sources, however, are unevenly located. Some countries have high potential for solar photovoltaic – for example, 70 countries, many in Africa, have a very high potential for solar PV (World Bank 2020), whilst others have high wind potential.[4] Other parts of the world, with specific geographies including mountainous regions, have a high potential for hydropower, which currently provides 47% of the world's renewable electricity (Ritchie et al.

[4] See the 'Global Wind Atlas': Global Wind Atlas.

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2024). Such resource geographies imply both different constraints and new electricity generation and export opportunities and thus shape types of mitigation policy choices made. The UK and Denmark's renewable energy policy choices have focused on wind given their high potential in offshore wind; Morocco and Egypt have focused on solar given consistent levels of sunshine; whilst Brazil and India's mountains and lakes have provided a basis for their focus on hydro-power.

At the same time, electricity generation from solar and wind is modular and can range from large down to very small, individual scales. As mentioned above, this started to open up generation to a wider range of actors in this timeframe – including local, small, and medium-sized actors – whilst some local governments started to make explicit policy choices to produce renewable electricity locally (Bulkeley 2010; Brisbois 2020). Land is an important consideration here – for example, cities have limited space for renewable energy generation – especially in relation to the size of demand. As such policy choices have focused on rooftop solar and have sometimes also included generation agreements with surrounding rural areas (Kuzemko 2019).

Unlike centralised electricity systems, however, where resources (gas and coal) are mined below ground and electricity is generated in smaller numbers of large-scale facilities, renewable energy generation is far more visible. This movement of energy above the surface associated with wind and solar has resulted in local objections in countries that took the lead on wind and solar generation. Social acceptance has emerged as an area of contested political debate, with rural communities often speaking out most vocally against the local siting of renewables, and a constraining factor on renewable energy choices (Balmaceda et al. 2019). For example, in 2013 the UK, partly on the basis of fears over electoral backlash related to opposition to local citing of renewables, made policy decisions that essentially made new onshore wind generation projects untenable and to focus its efforts on large-scale offshore wind farms.

5.4.2 Interactions between *Mitigation and Other Policy Areas*

This sub-section further builds on the notion that the existing landscape of materialities shapes mitigation by foregrounding ways in which *other* public policy areas and goals further underpin the reinforcing dynamics of high emissions systems. As already argued, reducing emissions through policy was novel for many countries, much existing policy supported high emissions systems, whilst societal expectations about access to road transport or electricity had become embedded within longer-standing public policy goals. I draw here on climate change and energy politics research which further elucidates important relationships in practice between mitigation and other policy areas (Compston & Bailey 2013; Lockwood et al. 2017; Butler et al. 2018; Bernstein & Hoffmann 2018; Bridge

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et al. 2018; Newell 2021). Chapter 4 touched on debates about perceived, almost always negative, implications of acting to reduce emissions for other sectors but it is just as true that decisions made to meet embedded policy goals, like growth or improved access to private transport infrastructures, had also long had implications for GHG emissions.

Compston and Bailey have developed a concept of 'anti-climate' policies to encompass the notion that policies in support of other public policy goals can produce high emissions and/or make choosing mitigation policies more challenging (2013). At this stage this was hardly surprising given decades of political emphasis on economic growth, the relationship between fossil fuel industries and growth, and growing societal expectations around access to machines and technologies. Policies in so many areas then, and now, result in emissions. These include obvious policies such as universal electricity access or subsidy support for fossil fuels and high emissions industries but extend broadly to building out aviation and road infrastructures, more machines in hospitals, and the mechanisation of defence forces (see Roberts et al. 2018; Johnstone et al. 2021). As already discussed above, the provision of associated infrastructures deepens dependence on technologies and emissions – until such time as the demand for energy is met by a sufficient supply of alternatives. Here, we can extend arguments about making mitigation policy 'fit' with existing institutions, as explored in Chapter 4 in relation to global governance, to consider ways in which it was made to 'fit' with existing public policy goals, material systems, and societal expectations. Longer-standing, often more popular, goals persist even as new mitigation targets and associated goals are set. As such, national and local governments became responsible both for meeting policy goals that inferred GHG emissions and for those that enable emissions reduction.

A foregrounding of complex and dynamic relations between policy areas also reveals competition between, often siloed, departments or ministries of government. There had been some preferences in early mover countries for integrating mitigation policy across existing departments, Sweden and the Netherlands came closest to doing so (Garner 2011). Somewhat similarly, in the early 2000s, both Ecuador and Bolivia wove 'buen vivir' into their constitutions in an attempt to establish citizens co-existing in harmony with nature as an overarching goal.[5] It was more common, however, for countries to set up new departments or assign responsibility to an existing department (Garner 2011: 127). Recent research claims that if political choices were made to dedicate a department or ministry to climate change this resulted in relatively greater emissions reduction (Limberg

[5] Buen Vivir, loosely translated means 'living well', is in turn informed by centuries old ideas such as 'sumac kawsay' which is a kichwa term denoting the fullness of live, rooted in communities living in harmony with nature. Such ideas are rooted in the cosmovision of the Quechua peoples of the Andes, in Latin America.

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et al. 2024). Just as often, responsibility for mitigating would be placed on existing departments – often Energy or Business departments or ministries. Sometimes standalone bodies, that is, the US National Oceanic and Atmospheric Agency (NOAA), became a sub-division of existing departments, that is, the Department of Commerce (Mildenberger 2021).

Focusing on choices made regarding which departments were assigned responsibility opens up new political questions. These include power relations between departments and questions of how responsibilities for, and capacities to act on, climate mitigation inter-act between departments – especially given the high emissions nature of meeting policy goals in energy, trade, industry, transport, housing, and agriculture (Newell 2021: 147). Here, it is useful to explore perceived and real hierarchies between government ministries or departments. If politics is partly about the allocation of scarce resources, then different policy areas can find themselves in competition. This, in turn, has implications for mitigation policy choices by placing limits on how much access departments with responsibility for mitigation had to financial, personnel, and knowledge resources. Both in absolute terms and relative to other departments with 'anti-mitigation' policies. Some scholarship has identified various 'turf wars' between departments of government – often with environment and climate departments having relatively less access to resources (Carter 2007: 294, 299 in Garner 2011: 129; Newell 2021). The were some notable exceptions, for example, the Danish Environment Ministry and decisions to 'force' fossil fuel companies to switch to wind in the 1990s (Johnstone et al. 2021: 8).

It is hardly surprising that hierarchies often tended to work in favour of departments that more directly purported to deliver economic growth or security, given also that mitigation was consistently portrayed as a cost to economies and/or a hindrance to business. For example, in India, the Ministries of Power and of Coal, responsible for providing the energy that underpins economic growth, have relatively higher levels of financial backing and political power than the Ministry of Environment and Forests or Ministry of New and Renewable Energy (MNRE) (Newell 2021: 147). Here too relative degrees of policy salience are important – many citizens may care about climate change, but other policy goals have higher salience which infers greater power for economic, transport, and energy departments (Roberts et al. 2018).

In countries where neoliberal policy ideas dominated, like the US, UK, and Australia, finance departments tended to assume central positions or, in the words of Wolfgang Streeck, were hegemonic 'lead' departments (2009). This sometimes led to decisions to over-ride, constrain, or amend mitigation policy choices taken elsewhere. For example, in the UK in the late 2000s the Secretary of State for Energy and Climate Change had to seek permission from the Treasury for

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renewable policies (Kuzemko 2013); or the UK Treasury's opposition to regional or industrial strategy (Johnstone et al. 2021). Such decisions were, in turn, often framed in relation to mitigation policy as a cost rather than as a societal contribution. Indeed, low emissions alternatives were still very niche in this timeframe and needed financial backing to compete with embedded high-emissions systems.

Focusing on competition between mitigation and other policy areas paints an overly negative picture, however, if more positive inter-relations between mitigation policy and other public policy goals are not considered. Research on co-benefits explores positive outcomes of mitigation policy in relation to meeting goals in other policy areas, but this can also work the other way around. Policy decisions in other areas have served to expand low-emissions sectors and bring emissions down, even if that was not the primary motivation of that policy. There are quite a few cases in point during this timeframe. These include China, India, Denmark, and Germany's industrial policies to manufacture renewable goods, such as solar panels, wind turbines, and batteries, on a significant scale (Lockwood 2015a; Sovacool et al. 2020a; Johnstone et al. 2021). These were essentially industrial policies, designed to contribute towards growth, jobs, and trade, but they also served to lower the cost of constructing renewable generation and supported the growth of low emissions alternatives to fossil fuels. Such countries perceived the need, early on, for 'first-mover advantage' in the manufacture of renewable energy parts (Newell 2021: 144), whilst green industrial policies were largely state-led (Johnstone et al. 2021). For China, this was an explicitly export-oriented policy – they kept PV cell production as an export only until 2009 (Lockwood 2015a). Lachapelle et al. note that, by 2015 about 10 countries dominated clean technology manufacturing in rapidly growing markets and that clean technology was, for them, increasingly perceived as a route to domestic capital accumulation (2017).

There are other examples of policies, in disparate areas like health and industrial relations, that led to emissions reductions. Indonesia's decision, in 2006–2007, to encourage the use of LPG stoves instead of kerosene, partly by removing subsidies for kerosene, reduced emissions but was motivated by health and development objectives (Newell 2021: 142). In the 1980s, the UK had started to reduce coal mining, and the use of coal for electricity generation, as part of a strategy of weakening the power of domestic unions (Paterson 2024). Ultimately, however, given the emissions levels associated with coal, this strategy did as much to reduce UK emissions as any later, emissions reduction-focused policies.

As such, it is not the case that meeting public policy goals in other areas necessarily results in more emissions or that hierarchies denote that mitigation will always lose out. Recognition and more careful consideration of the inter-relationships between mitigation and other public policies, revealed through these early processes of making mitigation choices, can provide a basis for more

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reflexive and informed policymaking in later phases. This might include exploring how to proactively go about designing policies that deliver on multiple goals. This is a subject to which I return in Chapters 6 and 7.

5.4.3 Making Climate Mitigation Choices within *Policy Areas*

The 1987 Brundtland Report suggested giving 'principled priority' to the concept of sustainable development (Steinbacher 2023). This is akin to the notion of climate policy 'integration', inferring a coordinated prioritising of emissions reduction goals across government. In reality, as already inferred, the integration of climate mitigation mandates into existing institutions tended to be far more piecemeal. For many countries, new goals were added on top of existing mandates in departments of government representing sectors with high emissions, such as industry or energy. For example, India's Ministry of Energy set up a Department of Non-conventional Energy Sources to meet its goals; whilst in Germany, Sweden, and the UK departments for business were given mitigation mandates – sometimes changing their names to make their added purpose clearer.

Kathleen Thelen's notion of 'layering' is instructive here – when a department is given a new purpose, like reducing emissions, it then co-exists, not always peacefully, with previous departmental goals (2005). More often than not, in the case of climate, this happened without the necessary prioritisation of mitigation over pre-existing departmental goals. What emerges, then, are new sites of struggle based on the need for new mitigation goals and policies to drive change in that sector; the influence of embedded ideas and interests particular to that policy area; and deliberation over how to meet multiple, layered policy goals and potential 'trade offs'. This sub-section explores some of these intra-policy area relationships in energy.

In this late 1990s and 2000s timeframe, relatively high levels of effort to mitigate were focused on energy as it contributed to over 60% of global GHG emissions. The emphasis on emissions reductions in energy sectors leads to political strategies designed to transition energy systems towards sustainability in a wide range of countries. To reflect the creation of sustainable energy strategies, energy policy and political research started to refer to the emergence of an 'energy-climate nexus' (Keating et al. 2012; Kuzemko 2013), whilst some went so far as to claim that climate policy was becoming "overwhelmingly a matter for energy policy" (Scrase & Ockwell 2010).

In the post-WWII period, energy had become a well-established area of public policy in a range of countries, often with significant resources allocated to it. Given its fundamental role in underpinning industrialisation and technologies, energy policies were focused on ensuring energy supply security, access, and

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affordability. In the post-WWII period, large-scale programmes of fossil fuel infrastructure build-out had been state-led in most OECD countries, utilities were state owned and/or run, whilst most oil and gas reserves were owned by state-owned corporations. Interestingly, by the late 1990s/early 2000s, when mitigation goals started to be incorporated into energy policy, energy had become subject to processes of liberalisation and privatisation. As such, not one, but *two* new goals were being pursued: the creation of freely trading, competitive gas and electricity markets and emissions reduction. The EU is a case in point – much political, and regulatory, capacity became focused on the considerable and complex political project of liberalisation just at the time that climate mitigation goals were added. This complicated intra-energy department policymaking debates and, to some extent, it tested member state capacities to make mitigation choices (McGowan 2008; Kern & Howlett 2009; Kuzemko 2013). Tensions arose between the EU Competition Commission and member states using state interventions, like FiTs, to support the creation of new, low-emissions electricity markets.

Energy policy research has long highlighted the complexities of meeting established goals, of energy security and equity, alongside new emissions reduction mandates. These three goals together were commonly referred to as the energy policy 'trilemma' (Florini & Sovacool 2009; Lesage et al. 2010; Kuzemko et al. 2016b; Bridge et al. 2018). Security of energy supplies was the longest standing and primary goal of energy policy in most countries – given the degree to which access to affordable and reliable supplies underpinned economic development, growth, and such a wide range of societal functions. This hierarchy of trilemma goals extended across industrialised and developing economies, often informed by the many social and economic impacts felt by consumer nations as a result of various energy crises since the 1970s. Examples of political foregrounding of energy security abound: the reversal of China's coal-to-oil policy given the centrality of energy to industrialisation (Gao 2013); energy security as a driver of Cuba's Energy Revolution (Newell 2021); and the prioritisation of energy security over mitigation in many central and eastern European countries for developmental and general security reasons (Maltby & Misik 2024). Countries seeking to meet mitigation targets, then, were faced by the practical and political difficulties of delivering on the trilemma of goals simultaneously – maintaining or improving affordability and availability whilst transitioning energy systems – often framed in the language of (perceived) 'trade offs'.

Given energy's economic and social roles, no government wants to be at the helm when the 'lights go out'. This means that when trade off's have been identified between energy security and climate mitigation, security has won out more often than not – from Mexico to China, the Netherlands to Vietnam – particularly during this early phase of climate politics (Mitchell 2008; Kern & Howlett 2009; Kuzemko et al. 2016b; Bridge et al. 2018; Henrysson & Hendrikson 2020). Even

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in the relatively more climate committed EU, there are examples of policymakers, at times of crisis, prioritising energy security over mitigation policy in this timeframe (Goldthau & Sitter 2014; Bridge et al. 2018). Coalitions against mitigation have been quick to emphasise costs and other risks associated with switching to renewables as a warning against focusing too much on mitigation over resilience and affordability.

Security, of course, is the language of priority and exceptionalism. Once an issue, like energy supply, is successfully framed as one of (national) security it enters a different sphere – one of 'high politics' that becomes harder to argue against (Kuzemko 2013; Vogler 2016). During the Russia-Ukraine gas transit disputes of the 2000s, and related energy crises, various East European states resisted further mitigation policy as reduced use of domestic coal would make them more dependent on Russian energy (Vogler 2016: 140). The issue here is not just of choices made at times of perceived trade-offs, and related delays in mitigation, but also one of which energy sector(s) received vital financial investment and subsidy – with fossil fuels receiving far more subsidy and reinvestment based on bolstering the energy infrastructures that deliver supply security. The logics of security are also generally conservative tending to reinforce status quo relations in energy (Lockwood 2023).

Arguably, it is this intra-energy policy relationship that, more than any others, underpins the norm of concentrating mitigation policy on developing and disseminating renewable alternatives to fossil fuels rather than on processes of fossil fuels phase out. From energy security, and indeed growth and development perspective, low emissions alternatives have to be available and affordable before fossil fuels can be phased out. It is not perceived as politically or socially feasible to take any other route. The issue, of course, is that the norm became so embedded that even when renewables started to grow rapidly, fossil fuel phase out policies did not always follow. Germany is a case in point here – by the late 2000s renewables had reached 14% of electricity consumption but coal phase out remained on the back burner (Kuzemko et al. 2016a). Energy security questions about greater reliance on intermittent renewable sources, in particular solar and wind, also became an issue at this time. The argument ran, again supported by incumbent energy companies, that electricity back-up from coal, gas, and nuclear would be required for a reliable electricity supply. These fears further complicated questions of fossil fuel phase out. Gas, as a relatively lower emissions fossil fuel, started to be framed as a 'transition' fuel that could remain central to energy systems for decades to come.

In practice, of course, there are many different paths that could be taken to better reconcile trilemma goals. Some responses to the 1970s oil shocks were focused less on boosting supplies, which is the most common energy security solution, but on how to reduce demand for energy by increasing efficiency. The cleanest,

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safest, and cheapest energy is that which is not used, as such energy demand reduction can meet multiple goals – hence it became a core sustainable energy policy in many countries and regions in the 1980s and 2000s. Energy independence became an energy policy focus during the Russia-Ukraine gas transit disputes of the 2000s – which also boosted arguments for domestic renewable generation and demand reduction. Indeed, the goal of energy independence is what underpinned Cuba's 2006 Energy Revolution, which had the side effect also of reducing emissions – in six months Cuba removed all old, incandescent light bulbs by supporting all citizen to switch free of charge (Renewable Energy World 2009). In this timeframe, the EU, China, India, and Uruguay had all framed renewable energy policies in relation to reducing exposure to potentially unreliable exporters and/or volatile markets (Kuzemko 2013; Newell 2021).

However, much of the political power and authority of energy companies, and their entrenched position within national elites in many countries, stemmed from their roles as providers of energy security and vital public goods, whilst liberalisation and privatisation did little to alter these power dynamics. The deep pockets of large-scale energy corporations paid for the development of energy and climate analysis and policy teams which, in turn, informed high-emissions lobbying practices and increasingly supplied important energy system data (Bouwen 2004; Lockwood 2015a; Newell 2021). Because of the importance of accessible and affordable energy societally, the interests of energy companies can seem similar to those of society in modern economies. This is even more so in fossil fuel producer countries where growth, export revenues, and taxes are delivered through, and economic and job interests tied up in, high emissions. Hence the adoption of phrases such as 'oil hegemony', or energy companies as 'private empires' (Newell 2021: 139). Their ability to influence mitigation policy debates and choices took many forms – from drawing investment away from low emissions alternatives, to demanding fossil fuel support policies and subsidies, to outright climate denial (Vidal 2005; Franta 2021; Newell 2021).

On a more mundane basis, with relevance to policy-making as deliberation, some mitigation policymaking teams developed certain degrees of reliance on energy companies for technical and industry knowledge and data (Kuzemko 2015; Stokes 2020). Energy companies' policy units inform debates not just in a lobbying sense, but in terms of providing the underlying data and other information upon which energy policies, including transition strategies, relied. It is hard to restructure a sector if you do not understand the underlying infrastructures, markets, and trade in that sector – information that more often than not lies in the hands of energy companies. Again, these more everyday relations between energy companies and policymakers took many forms: the European Commission offered private sector access in exchange for technical information (Bouwen 2004); in the UK the Department of

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Energy and Climate Change (DECC) paid private sector energy companies for data (Kuzemko 2013); and representatives from incumbent energy companies sit on regulatory boards in the UK and US (Lockwood et al. 2017a; Stokes 2020). Global oil and gas companies, like Shell, BP, and Exxon Mobil, started to invest in considerable modelling and scenario planning capacities to create visions of energy futures that include oil and gas in net zero compliant energy systems (Blondeel et al. 2024).

This brings us back again to questions of policymaking capacities in this novel policy area with its constant push and pull between the drive for change, fears of changing too fast that were fuelled by influential incumbents, lack of previous knowledge about how to reduce emissions, and fact that alternative, clean energy needs to be available before fossil fuels can be phased out. From an energy policy perspective, mired in long histories of increased reliance on and demand for fossil fuels, it made sense to stick with what 'works' and not engender political backlash from powerful energy elites.

Energy as a policy area, then, can be seen as illustrative of the practical and day-to-day difficulties faced by teams of policymakers in departments where mitigation goals had been layered on top of other public policy goals that had long inferred high emissions. That there were conflicts, perceived trade-offs, and preferences, often at time of crisis, for reinforcing the status quo should not come as a surprise – particularly in this early phase when alternatives, such as renewables, were only just starting to become more widely available and affordable – and given the scale of the task of reducing energy emissions. Elite incumbent high emissions interests were also articulated in buildings, agricultural, and transport sectors to even greater effect than energy.

5.5 Conclusions

Although it may have made bleak reading at times, one of the ideas behind this chapter has been to explore the politics of making choices as an early phase of climate mitigation policy. Through detailing the wide range of political choices that needed to be made this analysis has reinforced claims about the scale of the political challenge of reducing GHG emissions in practice (Kuzemko et al. 2019; Newell 2021; Paterson 2021). Arguably, in turn, the scale of the challenge is only truly revealed through an in-depth analysis of the politics of making policy choices within specific institutional and historical contexts. What matters here, also, is that although some limited deliberative and capacity politicisations had occurred – this phase of making choices required and implied the need for a wide range of new politicisations to better inform policymakers about how to make choices in this novel area. Indeed, because policymakers had emissions reduction targets to meet it did force some further seeking of new knowledge, deliberation about

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what choices could be made, and debates about how mitigation policy relates to longer-standing policy areas and goals.

This analysis has further suggested, however, that, in this phase as in the previous one, mitigation decisions tended to reflect wider domestic political and material institutions – rather than challenge them. This is partly because new mitigation goals were so often layered upon existing policy mandates that were explicitly high emissions and without sufficient levels of understanding of how to navigate and/or avoid potential or actual trade-offs. That economic growth, and energy security, trumped sustainability at times of perceived trade-offs reflects a hierarchical dominance based on longstanding electoral support for such goals and engrained societal norms and material infrastructures. Relatedly, this reveals ways in which mitigation politics was being constructed in relation to goals and policies across a wide range of sectors. These examples of how domestic political and material institutions differently shape choices are also illustrations of the gaps that existed, in practice, between scientific advice about the degrees of emissions reduction required and the realities of pursuing sustainable transformations within political contexts.

On some levels, in theory, this should be a relatively easier phase in climate politics. Some agreements had been reached and targets agreed, whilst the focus at this stage was on growing new markets for low emissions alternatives. Although quite considerable upfront investments were required to do so, this approach offered prospects of new businesses, jobs, and revenue streams as opposed to actively phasing out fossil fuels, which infers potential economic and social losses. Indeed, as becomes more apparent in Chapter 7, fossil fuel phase out goes far more against the grain of growth and other societal norms. In this early phase, it was easier, also, to hold out hope that as low emissions alternatives, like renewables or energy efficiency, became more available and affordable that they would naturally disrupt and displace fossil fuels (Geels & Turnheim 2022). That placing policy emphasis on creating low emissions alternatives did not result in much emissions reduction is a clear lesson from this phase. Indeed, aside from severe economic decline, as experienced by ex-Soviet states in the 1990s and 2000s, very few countries reduced emissions during this period (Lamb et al. 2021).

Although domestic political and material institutions constrained and shaped mitigation choices, many policy deliberations that started to emerge in this phase were, however, often about *how* to mitigate rather than *whether to* – as opposed to the previous phase of getting mitigation on to agendas. This, in turn, offered up opportunities for learning by doing as one form of deliberative politicisation. For example, it became clear that low emissions alternatives needed state support to disseminate broadly but also that there were different ways of constructing that support. Whilst hierarchies between mitigation and other public policy goals

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became more apparent, often at times of crisis, this provided scope for researchers to start to identify specific tensions between policy goals and how they might be reconciled. On a related note, one of the key suggestions from this chapter is that capacities to make effective mitigation policy can build through time – not in any linear sense – but in the sense of accumulated experiences of 'doing' mitigation. At the start of this phase capacities to deliberate a range of policy alternatives, and to adjudicate between different interests articulated in policy debates, were very limited. As experiences of the politics of making choices grew further deliberative capacities emerged. One example being the decision in the UK to design legally binding emissions reduction budgets that would be very hard to overturn by subsequent governments and to build further deliberative capacities, in the form of the Committee on Climate Change.

What this chapter also reveals is that a reasonably wide variety of political approaches to mitigation had emerged, in different countries at points in time. This, in turn, suggests politicisation in terms of the presence of choice between approaches to mitigation and types of policies. Although notions of co-benefits between mitigation and other public policy areas were less well rehearsed or understood in this early phase of making choices, on balance market-led policy choices tended to reward large-scale actor groups, whilst relatively more state-led approaches tended to encourage wider distributions of the benefits of mitigation. This phase produced some early evidence that it was possible to design policies, like FiTs or green industrial policies, with the intent not only to contribute towards emissions reduction but also to redistribute the benefits of sustainable change. Such choices demonstrate politicisation in terms of social interaction – concentrated on balancing the delivery of social goals and/or on including more citizens within energy systems. This important subject of policy design and outcomes, the different potential social (and distributional) implications, and how they recreate the politics of mitigation is explored in more detail in Chapter 6.

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