

REVIEW



The political challenges of deep decarbonisation: towards a more integrated agenda

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Abstract

Adopting public policies to deliver the ambitious long-term goals of the Paris Agreement will require significant societal commitment. That commitment will eventually emerge from the interaction between policies, publics and politicians. This article has two main aims. First, it reviews the existing literatures on these three to identify salient research gaps. It finds that existing work has focused on one aspect rather than the dynamic interactions between them all. Second, it sets out a more integrated research agenda that explores the three-way interaction between publics, policies and politicians. It reveals that greater integration is required to understand better the conditions under which different political systems address societal commitment dilemmas. In the absence of greater research integration, there is a risk that policymakers cling to two prominent but partial policy prescriptions: that 'democracy' itself is the problem and should be suspended; and that more deliberative forms of democracy are required without explaining how they will co-exist with existing forms.

Keywords: Politics, Politicians, Decarbonisation, Democracy, Policy

Introduction

Climate change is a grand societal challenge *par excellence* requiring a new phase of decarbonisation that is both 'deep' (Geels et al. 2017), i.e., society-wide, and considerably more rapid (Rogelj et al. 2018) than anything that has occurred thus far. The 2015 Paris Agreement interpreted 'rapid' to mean all countries peaking their emissions 'as soon as possible' to ensure no net greenhouse gas emissions at a global level ('net zero') by the second half of this century. Unfortunately, to quote the UN Secretary-General, Antonio Guterres, the problem—climate change—is 'moving faster than we are' (UN News 2018) (see also Steffen et al. 2018). Globally, there is a significant 'gap' between current mitigation

efforts and the Paris commitments (Stoddard et al. 2021; UNEP 2018).

In political terms, deep and rapid decarbonisation is a long-term challenge: 2050 is well beyond the term of office of today's politicians, and the two temperature targets (1.5 and 2.0 °C) in the Paris Agreement effectively apply forever. Nevertheless, it also requires immediate political action, leading to a rapid and dramatic reduction in emissions. Such a sudden reduction will be politically challenging to deliver, equating to a minor revolution in how we live our everyday lives (Giddens 2009: 230; Brunner et al. 2012: 256); one which *perforce* must target and strengthen public engagement with changes to such taken-for-granted activities such as food consumption, domestic heating and personal mobility (Michaelowa et al. 2018: 282; Whitmarsh 2021), that have largely escaped wide-ranging policy interventions in the past.

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Putting in place the detailed policies required to deliver sudden and sustained reductions in emissions will require substantial societal commitment. Timing will be of the essence: if policies are adopted and implemented too rapidly, they risk triggering public backlashes (Jordan and Moore 2020), such as occurred in France (the *Gilets Jaunes*). But if they are not stringent or sustained enough, the aim of net zero emissions will remain a pipedream. Worse still, the net social cost of action could spiral if significant investments are made in so-called stranded assets such as new coal and gas-fuelled power stations (Bosetti and Victor 2011).

No country has yet found a way to navigate these difficult choices which will involve some actors that are determinedly pro-decarbonisation and some that are resolutely against it (Bernauer 2013; Mildenerger 2020; Wilkinson 2020). There are no simple historical analogues for today's politicians to follow. Yet many actors, be they broadly pro- or anti-decarbonisation, crave certainty now (Michaelowa et al. 2018: 277). After more than three decades of climate policy making, it is not a lack of scientific understanding or the relative unavailability of technological solutions that is holding society back (Hulme 2014; Stoddard et al. 2021), but the *politics* of who does what, where, when and in what order, a process which will be shaped by the exercise of political power.

One especially political aspect of these choices—short-termism—is often regarded as an inherent feature of all political systems (Giddens 2009: 73; Stoker 2014: 2; Mackenzie 2016), especially democratic ones. In democratic systems, it allegedly arises mainly because politicians must regularly secure re-election (Mayhew 1974; Keefer 2007). But voters arguably also have positive time preferences—i.e., in general, they also place a higher value on near-term benefits such as jobs and economic wealth than diffuse, longer-term benefits such as a stable climate (Victor 2011: 41; Jacobs 2016: 439). This feature can be especially pronounced during economic crises (Scruggs and Benegal 2012) and when policy cause-effect relationships are uncertain. In recent years, it has been argued that the difficulty of governing for the very long-term has been further compounded by the rise of voter apathy (Stoker 2010) and distrust (Dunlap 2014), populism (Lockwood 2018), diminished political parties (van Biezen et al. 2012), and a more consumerist style of politics that exacerbates the demand for short-term fixes (Stoker 2014: 2). These problems are not of course limited to democracies; countries exhibiting more authoritarian traits have also struggled to deliver decarbonisation at sufficient scale and speed (Hanusch 2018).

In representative democracies, the job of politicians is to confront these 'governance dilemmas' (Jacobs and Matthews 2012: 903) around who should act in relation

to net zero, by how much and by when. They are somehow expected to build societal commitment around the need for long-term action, which not only binds together countries, but also bridges the various governance levels and sectors within them (Stehr 2015), whilst remaining honest with voters about the true costs and benefits of different choices (Willis 2017). Rather unsurprisingly, when confronted with these dilemmas politicians the world over have tended to revert to the highly incremental strategy of 'kicking the can down the road in order to delay potentially difficult and costly decisions' (Vogler 2016: 158) (see also Lamb et al. 2021).

Sadly, the existing literature is ill-prepared to understand their choices, let alone indicate how different political systems should navigate them. On this important matter, the landmark reports of the IPCC are largely silent: their main purpose is to provide governments with scientific information on climate change. In general, its reports treat politicians as a recipient of research findings, not an important object of detailed study. Some disciplines, such as economics, have, however, specified what politicians should do. In 2006, the eminent economist Lord Stern (2006) published an influential report which contained very clear prescriptions, including that politicians should take the lead by adopting stable—that is, time-consistent—commitment devices (see Kydland and Prescott 1977). In their textbook form, these devices should 'discipline' politicians (Forder 2001), submitting them to oversight by independent agencies akin to central banks (Nemet et al. 2017; Nemet 2012; Brunner et al. 2012). Somewhat earlier, policy analysts such as Majone (1996) had noticed that many politicians were establishing non-majoritarian agencies, often for a number of different purposes. However, there are many other devices in the commitment toolbox which have attracted less attention: very long-term policy targets (e.g. to achieve 'net zero'); constitutional provisions; or automatic policy adjustments (indexation) (e.g. Brunner et al. 2012). Economists, however, are clear that in general, all commitment devices should be fully time consistent in all but emergency situations (Kydland and Prescott 1977: 487).

In recent decades, governments have adopted more commitment devices to fulfil their obligations under the Paris Agreement, chiefly in the form of long-term temperature and mitigation targets, but also others with more dynamic aspects such as cap-and-trade emissions trading. Unfortunately, as academics, we lack a sufficiently systematic understanding of the form in which such devices are (or are not) used in different parts of the world. This is certainly something which some disciplines—political science and policy analysis—are ideally placed to understand, given that commitment devices generally emerge from the policy process, itself a

complex, ongoing interaction between politicians, publics and other actors. Moreover, other disciplines—sociology, psychology and geography—have things to say about the precise conditions under which publics—which we define broadly to include citizens, employees, consumers and voters—perceive and/or act on climate change.

The first aim of this article is therefore to review some of the existing literatures on the relationship between politicians, publics and policies, and to identify and explore some of the main research gaps, particularly in relation to the delivery of deep decarbonisation. Throughout, we relate our claims to other, more intensively researched aspects of climate politics, such as the role of business, civil society organisations, and international organisations such as the United Nations and the IPCC. Our second aim is to identify and explore a new research agenda that draws together and integrates several important but hitherto partial disciplinary perspectives. Our expectation is that only by integrating will scholars be able to open up and explore the inner workings of different political systems (Victor 2011: 8) to understand how the collective, societal will to deeply and rapidly decarbonise emerges, is aggregated and becomes institutionalised (Tosun and Schoenefeld 2017; Fiorino 2018).

The remainder of this paper is structured as follows. The second section reviews the literatures that are the most directly relevant to our aims. The third section explores the contours of a more integrated research agenda that sheds light on the three-way interactions between publics, policies and politicians. We suggest that greater integration is desirable in order to understand the conditions under which different types of political system address societal commitment dilemmas, but we also identify obstacles that could stand in the way of a more complete understanding. The fourth and final section concludes that without more sustained integration, there is a risk that academics and policymakers fall back on two prominent, but rather partial policy prescriptions.

The politics of deep decarbonisation: existing literatures

To overcome short-term pressures, *economists* suggest that politicians should adopt commitment devices (Stern 2006; Dengler et al. 2018). Essentially, they aim to *depoliticise* deep and rapid decarbonisation by ‘buffering’ (Roberts 2010: 12) politicians from the vagaries of the electoral cycle (Brunner et al. 2012: 263), sometimes adjusting automatically without any democratic input at all (Nemet et al. 2015). As such, they aim to facilitate both national and international climate policy making.

Other disciplines have, however, highlighted other features of societal commitment that should not be

ignored. *Political scientists*, for example, have usefully revealed why many politicians—who can be defined as individuals for whom politics is both a profession and vocation, i.e. those members of society who hold or seek legislative seats and/or executive office at the national or subnational level in order to exercise influence over public policy-making (Weber 1919/1994)—are often reluctant to lead: they are overloaded by information (Jacobs 2016: 439) and continually ‘harried’ (Linz 1998: 29–30) by voters, publics and pressure groups. Having ensured their ‘electoral survival’ (Victor 2011: 66), the fulfilment of their campaign pledges over the duration of the electoral term is the next most important criterion against which voters and party leaders evaluate their performance (Mansbridge 2003). It is rather unlikely that they will invest in long-term leadership unless and until publics—and principally voters—give a clear signal, perhaps through the ballot box, that they want to be led (Wolf and Moser 2011; Willis 2018a, b). Imploring politicians to ‘show leadership’ or ‘adopt more policies/commitment devices’ is naive because it would render them ‘unresponsive’ to the demands of their most important principals—voters (Miller and Whitford 2016: 21). In fact, if depoliticisation is pushed too far, some voters may not appreciate what is happening and care less, at which point political parties will stop competing on that dimension (e.g. Cox and Béland 2013; Carter et al. 2018)). In fact, depoliticisation may even generate pernicious effects: Hay (2007: 54), for example, has argued that poorly designed commitment devices risk undermining public faith in democracy.

It is telling that two important aspects of societal commitment are repeatedly bracketed off in many discipline-specific discussions. First, in what form are commitment devices actually used and why? The existing literature is dominated by lists of potentially usable devices rather than careful empirical analysis of how they are actually used (but see, Boston and Stuart (2015) and Rosenbloom et al. (2019)), although there is a strong suspicion that commitment devices tend to be adopted by democracies in relatively weak forms with significant exit clauses built in (Nemet et al. 2017). Secondly, what are the determinants of societal commitment? Under what conditions and how do politicians show leadership? By credibly committing to reduce their own discretion? Or by adopting more climate-friendly behaviours such as using public transport? With a solid understanding of politicians’ preferences and behaviour (vis-a-vis other actors, including publics and powerful non-state actors such as business) largely absent, it is impossible to tell.

Meanwhile, the *psychological* literature on public attitudes and behaviours suggests that many individuals regard climate change as a distant threat (Brugger et al. 2015: 1031; Tvinnereim et al. 2017). Moreover, public

beliefs, concerns and behaviours in relation to climate change are substantively different from each other (Capstick et al. 2015). They vary according to economic conditions, weather events, media reporting and—especially in contexts where the issue has been politicised such as the USA and Australia—changing cues from political elites (Tesler 2018; Tranter 2013). Society-wide support for deep decarbonisation is even more variable (Bernauer and McGrath 2016). Surveys have repeatedly shown that publics are concerned about climate change and want their governments to do more about it. In fact, many would much prefer their politicians to lead (Pidgeon 2012: S89). Some publics may be quite receptive to certain framings of climate change (e.g. emphasising co-benefits such as human health) than others (e.g. emphasising the risks) (Michaelowa et al. 2018: 279; Willis 2017) (cf Bernauer and McGrath 2016: 680). In other words, publics may not necessarily always have positive time preferences (Graham et al. 2017). Recent experimental work has revealed that if the delivery of policy benefits over time can be guaranteed, voters may be willing to trade short-term sacrifices for long-term policy benefits (Jacobs and Matthews 2012: 905). System-wide (dis)trust in the ability of democracy—and specifically politicians—to deliver on such guarantees may therefore be an important, but little studied, intervening variable (Dunlap 2014; Jacobs and Matthews 2017; Smith and Mayer 2018; Povitkina 2018; Kulin and Seva 2021). Finally, there appears to be support amongst some publics around the suggestion that so-called intermediaries such as charities, businesses and NGOs should become more involved in delivering deep decarbonisation (Shaw et al. 2018; Willis 2018a, b; Cologna and Siegrist 2020).

This necessarily brief review of several existing literatures demonstrates that the relationships between policies, publics and politicians are complex and contingent. The magnitude and urgency of the climate crisis arguably demands a more integrated approach to understanding societal commitment across a variety of different political systems. One rare example is Rapeli and Koskimaa's (2021) analysis of attitudes to climate change in Finland, which revealed that politicians and other policymakers were more worried than citizens and had a higher willingness to pay to address it. They suggested that this 'opinion incongruity' (Ibid., 2) represented a significant obstacle to effective climate policy making. Another was Mildenerger and Tingley's (2017) study of the extent to which politicians, publics and civil servants share the same beliefs about climate change.

To our knowledge, only one attempt has been made to offer an integrated account of the evolving relationship between policy, politicians and publics. It characterises politicians and publics as being caught in a 'governance trap' through which both sides 'seek to attribute primary

responsibility to the other, and... neither acts in a decisive way' (Pidgeon 2012: 99). In it, Pidgeon (2012: 99) claimed that '[b]reaking out of this unfortunate stalemate' is 'probably *the* most significant challenge for climate policy-makers' (emphasis added). Since 2012, his governance trap thesis has achieved traction within the disciplines of psychology and science communication (Newell et al. 2015: 536; Lorenzoni and Benson 2014; Shaw et al. 2018). It even informed policy development in one country, the UK, which in 2008 adopted a series of binding commitment devices including long-term legal targets (the Climate Change Act) and an independent advisory body (the Committee on Climate Change). Since then, several other countries have adopted similar policy targets and oversight bodies which together seek to institutionalise farsightedness (Torney 2017, 2019).

However, whilst empirically grounded, the governance trap thesis is still rather partial; it emerged out of a review of public attitudes in relatively mature democracies, in the period to 2010. Very little is known about the other side of the equation, namely politicians' understanding of and engagement with climate change (Rickards et al. 2014: 755; Willis 2017: 212). Politicians are arguably the most 'crucial' of all decision makers (Willis 2017: 476), but paradoxically also the least well understood (see also Fielding et al. 2012; Reed 2012). Existing reviews of climate politics barely mention the term politician (Bernauer 2013; Keohane 2015). Yet as noted in the first section, politicians are expected to perform several important functions, particularly in democratic political systems (Corbett 2014). These include deliberating over and deciding on competing policy proposals in parliaments and scrutinising how well they are implemented; representing the concerns of some voters (their constituents) in parliament; providing compelling visions of the future; and building coalitions around particular policies (Linde 2018: 545). Through all these activities, elected politicians attempt to safeguard the 'continuing responsiveness of the government to the preferences of its citizens' (Dahl 1998: 1).

Yet according to Willis (2017: 214) academic accounts 'of [climate] politics and governance tend not to examine the motivations or outlooks of the [very] people who do the politics but use the terms 'governance' and 'politics' in the abstract.' Meanwhile, our understanding of how far publics (including voters) directly engage with politicians on climate issues through formal political processes (as opposed to informal ones such as consuming different products), is also surprisingly sparse (Carvalho et al. 2017; Kenis 2019).

Whilst the trap thesis remains plausible it has yet to be systematically interrogated. Research conducted since 2012 has, for example, indicated that not all politicians have felt trapped and stood back; some have led. Rather

than an unproductive ‘stand-off’ between publics and politicians (Shaw et al. 2018: 275), in recent years, the total number of mitigation policies has soared, to over 1800 globally (Fankhauser et al. 2018; Schmidt and Fleig 2018), some of which have become *more* stringent over time (e.g. Schaffrin et al. 2015; Nash and Steurer 2019). Politicians participating in the Climate Neutrality Coalition have, for example, gone further still and committed to potentially far-reaching ‘net zero’ strategies. Ten years ago, it was inconceivable to imagine such targets and policies being contemplated by mainstream politicians. But since Paris, many politicians in many political systems have become more willing to talk about and engage with climate change (Willis 2018a). Some have used rhetorical ‘cues’ to shape public attitudes (Linde 2018: 545); even rank-and-file politicians appear to enjoy more agency than is commonly supposed (Kousser and Tranter 2018). Others, whether acting nationally or through international organisations such as the World Bank, have actively countered political opposition to mitigation policies (Meckling and Nahm 2021) by engaging in indirect forms of governing, e.g. orchestrating non-state actors to act, producing more polycentric patterns of governance (Jordan et al. 2018; Ostrom 2010).

Towards greater integration

Some scholars have investigated these relationships, but in a macro-political manner (Clulow 2018; Hanusch 2018). There is, for example, an academic literature on the environmental performance of democracies versus more authoritarian regimes (Neumayer 2002). It argues that the effect of democracy on levels of political commitment to mitigate is broadly positive (Bättig and Bernauer 2009), arising from the need for elected governments to provide public goods to voters to win elections. However, it generally compares policy outputs, principally the ratification of international agreements such as the Paris Agreement (i.e., not outcomes, such as reductions in emissions) with a rather dichotomous measure of democracy (Petherick 2014) (but see Bättig and Bernauer 2009; Poloni-Staudinger 2008). In general, it does not examine the full suite of commitment devices, it focuses on policy outputs as opposed to policy outcomes, and it does not explore the dynamic interaction between publics and politicians through time; in short, it does not address the system-wide challenge of delivering deep and rapid decarbonisation (Jacobs 2011; Roberts 2010: 144).

Policy: commitment devices

One of the focal points of the dynamic interaction between publics and politicians is the policy process. In political economy, industry actors are assumed to be more inclined to invest in low-carbon technologies when

climate policies ‘protect’ their existing investments, through a process which is analogous to positive policy feedback (Jordan and Moore 2020). A good case in point is the shift from fossil fuelled to electric cars: producers are relying on governments to establish the policy conditions (and infrastructures such as on-street charging) that facilitate electrification, starting now and extending far into the future (Crabtree 2019). By contrast, carbon-intensive industries are more likely to deploy their political power to delay and/or even block ambitious mitigation policies (Mildenberger 2020; Wilkinson 2020).

One obvious first step is to develop a conceptual typology of the main commitment devices (see for example Jacobs and Matthews 2017; Schlager et al. 2021). Informed by it, fresh data could be collected to reveal which device types have been adopted within different political systems. There are already many existing databases, but often data is collected on policies rather than encompassing all the devices. For instance, the Climate Change Laws of the World database focuses on laws and in particular flagship laws (see Fankhauser et al. 2015; Eskander and Fankhauser 2020); the IEA collects data on energy and energy efficiency policies, including their constituent policy instruments; and the UNFCCC hosts platforms where non-state actors record their voluntary actions (NAZCA, Climate Initiatives Platform etc.) (e.g. Jordan et al. 2018). In general, count data is more plentiful than data on policy stringency.

Drawing together and integrating these databases would be a second valuable step, perhaps supplemented with new data on other policy types, such as those that legislate for net zero emissions and/or requiring the accelerated phase-out of old technologies (Rogge and Johnstone 2017). Crucially, as international processes unfold after Paris, there will be valuable (and foreseeable) opportunities (such as the UN stocktake) to cross-check against the devices that politicians are actually reporting in ‘real time’. All the devices could then be coded according to their scope, stringency and adoption date. This would help to understand how far they have changed over time and between a variety of different political systems—a significant contribution to the existing comparative politics literature (Madden 2014). They could also be coded in terms of how they strike an intertemporal balance between actor demands for greater policy stability (commitment) and flexibility (Brunner et al. 2012: 256; Jordan and Matt 2014; Nemet et al. 2017: 48; Tsebelis 2017; Rosenbloom et al. 2019).

For some of the devices, it may make sense to analyse all countries of the world, including the more authoritarian ones. But from an emissions perspective, it makes more sense to start with the largest emitters (the 38 OECD countries) plus the 5 BRICS countries (Brazil, Russia, India, China, and South Africa) whose emissions

are rising rapidly. Most of these are, of course, mature democracies, but even then, existing data is more plentiful for some of them than others. Given that the multi-levelled nature of governing can facilitate both credible commitment making and commitment avoidance (Ostrom 2010), sub-national dynamics are another research priority across all countries. The devices adopted by cities in transnational climate/energy networks such as the Covenant of Mayors for Climate and Energy and C40 Cities could, for example, be another point of departure (De Francesco et al. 2020).

Having selected a number of countries, more detailed work could research:

- *How devices are packaged together in different countries* (Kammerer and Namhata 2018). Given that countries have their own institutional and political traditions, new work should reveal more about how different types of politicians (e.g. ministers, rank-and-file parliamentarians, mayors, right-wing vs. left-wing) in particular settings have (not) committed themselves, and the extent to which they vary by democracy types (e.g. presidential vs. parliamentary; centralised vs. federal) (Madden 2014). With coded data on the devices covering many countries, it should be possible to undertake large-n statistical analysis. Such analyses could investigate to what degree commitment is influenced by economic (e.g. dependence on foreign trade), international (e.g. membership of international organisations), social (e.g. income inequality) or political (e.g. democratic status; type of autocracy etc.) factors (e.g. Schmidt and Fleig 2018; Tosun 2018).
- *How far national device packages reconcile actor demands for stability (time-consistent commitment) and/or flexibility (time-inconsistent commitment) over time.* For instance, it would be useful to reveal whether certain political systems rely on devices (long-term targets, regular policy evaluations by independent agencies?), and if and why they include exit clauses (e.g. the use of international offsetting (as in Norway and Sweden) or performance reviews (e.g. after 5 years—as in the UK)). From what is already known (see above), some national politicians undoubtedly are focused on the very short-term, but others have adopted devices that have a longer-term focus and/or aim to generate diffuse benefits (thus confirming the claims made by Jacobs (2016)).
- *Issues of timing and temporality.* Over what time horizon (10, 20 or 30 years into the future?), with what degree of specificity (e.g. country-wide or sector-specific?), and via what form of action (e.g. via public policy and/or the orchestration of non-state action?) do politicians commit? To what extent

have commitment devices been altered over time e.g. reflecting perhaps diverse positions/needs etc. of successive governments, or demands from business? These data could also furnish a novel measure of how far into the future each country is willing to commit itself (to 2030 or 2050?) and also when in the political process devices are most likely to be adopted (e.g. immediately after an election (Linz 1998: 35; Schulze 2021) or an environmental focusing event)?

Politicians

The relationship between publics and their political representatives (“politicians”) is an essential, defining characteristic of all democratic systems (Mansbridge 2003; Pitkin 1967). Moreover, key institutions, such as parliaments and parties, are also characterised by pronounced hierarchies between *rank-and-file* politicians (MPs, local councillors etc.) and *elite* politicians (ministers, party leaders, committee chairs etc.) (Cox 2009; Cox and McCubbins 2007; Saalfeld and Strøm 2014), with the latter being assumed to enjoy greater agency (Stoker 2014: 7). The ability of politicians to reconcile and translate the varieties of interests in the electorate and wider society into policy making—i.e., their ‘responsiveness’—has long served as a basic measure of democratic performance (e.g. Esaiasson and Narud 2013) and a predictor of re-election (e.g. Hogan 2008). A critical first step in better understanding the role of politicians in climate politics is therefore to appreciate how their own beliefs interact with their response to demands from constituents and other social actors, specifically in relation to commitment devices.

There are several directions in which new research could proceed:

- *How do politicians view voters?* One of the very first studies to address this question suggested that Australian politicians assumed that they were ahead of the public in their views and ‘that citizens do not support action on climate change’ (Fielding et al. 2012: 728) (see also Willis 2018b). Since then, the political responsiveness of politicians to publics, i.e., the extent to which voter demands are taken up by them in the course of their parliamentary work (Fernandes et al. 2019; Schaffer et al. 2021), has not been systematically examined. Existing research suggests that some politicians actively shape the issue to reflect their personal beliefs and outlook. Willis (2017), for example, has shown that in the past, UK politicians have tended to emphasise the scientific and economic aspects of climate change in their parliamentary speeches, downplaying the more social and political aspects. In effect, they ‘do not

discuss the more far-reaching implications of climate change for social and political life' (Willis 2017: 214). But there is every reason to expect deep decarbonisation to be even more challenging, perhaps cutting more sharply across traditional party alignments. This possibility could be crucial given the tight control that many parties in representative democracies have exercised over parliamentary committees (Cox and McCubbins 2007), candidate (re-)nomination procedures (Hazan and Rahat 2010), legislative agendas (Cox and McCubbins 2005) and legislative voting (Kam 2009). Thus, parties and their ideological positions ought to be considered as potentially important determinants of political responsiveness. Previous studies show that the degree to which parties and voters are able to hold representatives accountable depends strongly on the institutional contexts under which they operate (e.g. presidentialism vs. parliamentarism, electoral systems) (Carey 2009; Geese and Schwemmer 2019). Recent methodological developments offer text extraction and analysis tools to catalogue and explore publicly available data (e.g. debate protocols, committee reports, parliamentary speeches) that lends itself to the analysis of cross-national responsiveness behaviour (for an overview see Grimmer and Stewart 2013).

- *What do climate politics look like 'from a politician's perspective' (Corbett 2014: 508)?* What personal beliefs, motivations and incentives hinder and/or enable the choices that they make when they make speeches on climate change or vote on a new policy proposal? Preference formation can be viewed as a process through which politicians have intrinsic motivations (e.g. derived and internalised from previous socio-political experiences) and extrinsic motivations (e.g. re-election incentives), but operate in a field of contending forces (Burden 2007; Kingdon 1989) including party group pressures and credit claiming/blame avoiding incentives. Data could be collected via online surveys (Fielding et al. 2012) or using the more time-consuming face-to-face interviews that Willis (2020a) employed. Specific questions could, for example, probe: how important they regard their constituents' demands; what political pressures they face from industry lobbyists; and what intrinsic motivations they hold. It would be especially interesting to explore whether politicians even perceive themselves to be 'trapped'. Moreover, to what extent does the political pressure on them to commit derive from voters or, as Jacobs (2008: 219) implies, other actors—chiefly businesses—who are 'highly attentive' (Jacobs 2016: 441) to the threat of immediate losses, but do not need to

seek re-election (see also Lindblom 1977)? As elite surveys usually suffer from low response rates and interviews can be notoriously difficult to set up, background data on MPs could be collected as proxies for their intrinsic motivations. Such data can be used to assess the degree to which their preferences result in (individual) climate change-related policy activity specifically in parliament(s) but also on social media.

- *What actually changes when politicians commit to deep decarbonisation?* This is a crucial but largely unanswered question. After all, an important goal of commitment devices is to create and/or empower new political constituencies favouring deeper decarbonisation (Brunner et al. 2012: 267; Jordan and Moore 2020). One obvious reason to undertake such work is to understand better how far the demands that politicians pick up on in their parliamentary work are reflected in the adoption of new/the ongoing refinement of existing commitment devices (Powell 2004). One wonders, however, whether the development of new forms of governance across many levels (polycentricity) has provided politicians (and possibly also publics) with new opportunities to navigate governance traps or a stealthier means to evade them through engaging in symbolic action (Howlett 2014; Geden 2016; Willis 2017). Secondly, to what extent do rank-and-file politicians affect the behaviour of elite politicians and the media through the activities of parties? Whether elite politicians respond will depend on how far their demands align with other career-related goals, including (of course) the quest for high political office (Kam 2009). As elite politicians tend not to respond to unsolicited questionnaires, it is worthwhile deploying other methods such as policy analysis or interviews (see above).

Publics

As noted in the second section, existing research mainly focuses on public attitudes to climate change in general, and behaviour change initiatives specifically, with the aim of achieving greater 'private-sphere engagement' through changing consumer practices (Hoppner and Whitmarsh 2011: 61). Less research has been conducted on how their attitudes and/or behaviours relate to different forms and ambition levels of climate policy (Bernauer 2013). What is especially unclear is how far publics are personally committed to acting/leading on climate change and what expectations they hold about governance traps and politicians' ability—and credibility—to unlock them.

In more democratic systems, it is widely assumed that the public sphere offers untapped opportunities for publics to question, challenge and debate climate change in

ways that unlock governance traps and strengthen democracies (Carvalho et al. 2017: 129; Jacquet 2019) (cf. Hibbing and Theiss-Morse 2002). In recent years, the public sphere has arguably become more diverse and interconnected with the use of democratic innovations such as citizens' juries and climate assemblies in many countries. But do such innovations really allow previously disengaged publics to become more engaged? And does this in turn really translate into (further) societal commitment to deep decarbonisation, or the subtle recalibration of an existing governance trap? That is certainly one conclusion that some observers have drawn (Elstub et al. 2021).

However, the relationship could conceivably cut the other way. There is also evidence that deliberations could temper enthusiasm for climate proposals and thus the potential for the goals of deliberative democracy and decarbonisation to come into conflict (Boulianne et al. 2018). And even if the recommendations from more deliberative exercises favour deeper and faster decarbonisation, challenges may arise if political systems are reticent about and/or struggle to respond positively and quickly to what emerges from them (Elstub et al. 2021). In other words, anti-political attitudes and behaviours within democratic systems may make the work of elected politicians more difficult 'and responsive government and coherent public policy all but impossible' (Clarke et al. 2016: 4). Finally, amidst all the animated discussion of democratic innovations in mature democracies, it should be borne in mind that the way politicians and publics interact in more authoritarian political systems that generate relatively high emissions, has attracted very little sustained research interest.

There is in other words ample room for new work on how publics view and interact with politicians within and across different political systems. For example:

- *To what extent (and on which matters) are public views and expectations of climate change aligned with those of politicians?* Clearly, those issues on which views are not aligned are potentially at greater risk of being 'trapped'. But what is the true extent of the (non) alignment? Where there are gaps in understanding, existing surveys could be relatively easily adapted with new questions. If there are adequate resources, new surveys with large-scale representative samples of publics could be commissioned. The existing literature could also (as suggested by Cao et al. 2013) be advanced by employing policy experiments (Jacobs and Matthews 2012) to explore the conditions in which publics are prepared to address particular commitment dilemmas. At present, the existing literature relies upon publics' general awareness of issues and/or their demands for
- *How do publics perceive their own agency and responsibility and/or trust in politicians and democracy?* This could be elicited via surveys, but also using focus groups and one-to-one interviews. Together, these methods could explore the extent to which perceptions of governance traps (or, for that matter, of (elite) politicians) are related to their perceived ability to act, or to other motivations (e.g. to externalise responsibility to act—a motivation, that is mainly ascribed to politicians (e.g. Howlett 2014)). Importantly, they could investigate whether publics even want to lead (e.g. through grassroots or civil society organisations) (Wolf and Moser 2011) or prefer to be led by others. If the latter, should it be green politicians such as Al Gore, charities or charismatic business leaders such as Elon Musk and Jeff Bezos?
- *How do publics' view the role and design of commitment devices to address governance traps?* As noted above, economists tend to view the design and selection of the devices as a matter primarily for experts and elite politicians to determine. But as deep decarbonisation encroaches on more sensitive areas of daily life, it is more likely that publics will expect (or be asked) to become more directly involved. Yet the existing literature does not provide a complete picture of citizen preferences for different decision-making procedures (e.g. representative vs direct forms of participation; elected officials vs. expert bodies, etc.) (Beiser-McGrath et al. 2021; Bertson 2022). For example, how willing are voters to 'discipline' themselves (Roberts 2010: 144) via the adoption of commitment devices, or do they ultimately prefer the freedom to constantly change their mind? If publics genuinely desire greater external 'discipline', what procedures should be used to select commitment devices (standard or more deliberative ones?), how flexibly should they be applied, and what should happen if they are overshot, or if external conditions suddenly change (cf. Kydland and Prescott 1977: 487)? Willis (2020b) argues that politicians should initiate an honest debate with publics about these choices and formalise the outcome in a 'social contract' which lays out who should do what, where and when. By contrast, Jacobs and Matthews (2017) used survey experiments to reveal empirically that publics in the US prefer commitment devices that more heavily constrain politicians to those that do not. If publics would like traps to be confronted,

then how? (e.g. via fixed institutional rules (Kyland and Prescott 1977); via changes in policy discourse e.g. to emphasise co-benefits (Willis 2018a); via new communication strategies (e.g. Carvalho et al. 2017); or by intermediary groups (e.g. Shaw et al. 2018))? These questions, which are of a fundamental nature, could be explored in more deliberative settings such as mini-publics or even assemblies (Jacquet 2019). They could bring to the fore fundamental questions such as whether publics prefer, broadly speaking, strategies of politicisation or strategies of depoliticisation (Pepermans and Maesele 2016: 481), and whether deliberation possibly even tempers public enthusiasm for some climate proposals. If the aim is ultimately to arrive at some form of 'social contract', then perhaps they should involve publics *and* politicians.

Conclusions

Most countries have pursued decarbonisation by greening their energy supply systems. Deep and rapid decarbonisation on the other hand necessitates intervening in all sectors - a fundamentally more complex governance challenge which could eventually touch all areas of public and private life (see, e.g. Geels et al. 2017). As such it is very likely to provoke issues and choices that are of an even more political nature than the first thirty years of climate policy making, centring on the relationship between publics (including voters), policies (including commitment devices) and politicians. The existing literatures on these three dimensions have, for various reasons, tended not to speak to one another.

The term 'governance trap' is helpful in the sense that it attempts to offer a more integrated picture, but it should be refined and empirically tested against the rapidly changing landscape of policy and governance post-Paris. Our impression, informed by previous empirical work, is that what is emerging post-Paris is the result not of a single, static 'trap', but rather a situation in which many actors—including but not limited to politicians and publics—are engaged in a more subtle but nonetheless unproductive dance of partial commitment. Societal commitment to some salient matters (such as to achieve net zero relatively far into the future, e.g. 2050) is being locked into place, albeit via only a sub-set of the potentially available commitment devices.

In this paper, we have set out several ways in which a more integrated account of societal commitment could be developed. One way to connect the dots would be to select one of the three dimensions outlined in the previous sections, for example politicians, and explore the interactions with the other two. Another would be to employ a 'nested' research design (Liebermann 2005) that selects certain types of political system for analysis and then subjects them to more detailed scrutiny. We fully

expect that it will be challenging to integrate different disciplines, as well as different methods, data sources and research designs. Some integration could be achieved relatively quickly and cost-effectively: existing work could, for example, be reviewed much more systematically than we have had the space to accomplish in this paper. For other, more complex integration tasks that involve the collection of new data or the refinement of existing theories, new resources will have to be unlocked, language barriers overcome, and disciplinary boundaries carefully navigated. Even securing access to some of the actor types identified above could be challenging; politicians for example, are notoriously difficult to study (Boswell et al. 2019). However, politically disenfranchised publics may be just as unwilling to respond to invitations to undertake surveys or join focus groups.

Nevertheless, we believe that there are potentially valuable insights to be generated by working towards a more complete view of the politics of climate change, centring on the relationship between publics, politicians and policies. Without it, there is a risk that societies—and especially democracies—cling to two common but partial policy prescriptions. The first is that 'democracy' itself is the problem—that the urgency of the problem is too great, and society should become more authoritarian or at least adopt more authoritarian policy interventions such as bans on frequent flying or daily meat consumption (Shearman and Smith 2007; Beeson 2010). A particularly extreme version of this policy prescription has been promoted by eminent scientists such as James Lovelock (Hickman 2010) and Jim Hansen (Adam 2009), i.e., that democracy should somehow be put on hold. But there are potentially other less extreme versions which rely on strategies of active depoliticisation, e.g. handing over significant policy powers to unelected agencies or circumventing parliamentary debate by using secondary legislation to enact more stringent policies.

The second is to invest in 'more democracy' (Stehr 2015: 450; Fiorino 2018; Stevenson and Dryzek 2014; Dengler et al. 2018). Smith (2014), for example, assumes that democracies suffer from 'myopia' (on the tendency for voters to be focused on the short-term, see also Nordhaus 1975) and uses this to build a normative case for democratic innovations such as deliberative mini-publics and climate assemblies, without fully explaining how they will function alongside existing systems (and tools) of representative democracy (Niessen 2019). It is a genuinely open question as to whether publics really yearn for 'more' (deliberative) forms of democracy¹ or

¹Whilst acknowledging the point made by deliberative democratic theorists such as Mansbridge (2003) who suggest that what is really needed are deliberative systems of democracy which encompass (but are not limited to) deliberative tools such as mini public.

simply want existing forms to function better (Clarke et al. 2016: 5; Stoker and Hay 2017; Kuyper and Wolkenstein 2019).

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Authors' contributions

AJ, IL and JT designed the research and led the writing; JES, LG, JK, ELS, BM and SGS contributed additional ideas and text. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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