Do Minipublics Enhance Effective Democratic Decision-Making?

Evidence from Climate Assemblies

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Framework paper

Abstract

Democracies face structural barriers to effective decision-making on long-term and contested issues. Climate change is a paradigmatic case where electoral incentives, partisan competition, and media pressures often discourage ambitious and effective action. Minipublics, such as citizens' assemblies, promise to enhance democratic capacity for effective decision-making because they allow informed deliberation shielded from electoral pressures.

This framework paper asks whether and under what conditions citizens' assemblies fulfill this promise by synthesizing four empirical and one theoretical article on climate citizens' assemblies. To interpret the articles' findings, the paper integrates perspectives from public policy, public choice, and normative theory conceptualizing effective decision-making.

The findings show that climate assemblies consistently proposed more ambitious climate policies than governments. Their endorsements can increase public support for unpopular policies, though not more than endorsements from other trusted actors. Receiving more information about minipublics slightly increases their perceived credibility and persuasiveness. Assembly recommendations had causal impact on decision-making by shifting power balances and accelerating action, but this has been the exception. In most cases, they had no such impact. Meaningful impact occurred mainly where political leaders delegated authority and actively supported the process.

Overall, climate assemblies can counteract some perverse incentives in democratic decision-making but also serve as window-dressers. Their impact is highly conditional. Political context and leadership may matter more than design alone. Citizens' assemblies therefore offer limited but real potential to strengthen effective democratic decision-making. The central question that emerges is how minipublics can be made less dependent on the will of elected politicians, who remain constrained by enduring systemic pressures.

“We can discuss things calmly and in a completely normal way, but we simply can’t get them across the political finish line, because the same questions always arise: ‘What will the media echo be? What will my next party congress think? When are the next state elections?’ [...] This isn’t an accusation; it’s a structural description.”

Robert Habeck, as German Vice Chancellor and Federal Minister for Economic Affairs and Climate Action, 2021–2025

1 Introduction

Democracies face structural barriers to effective decision-making on salient issues where viable policy options conflict with electoral and partisan incentives (Canes-Wrone et al., 2001; Jacobs, 2016; Ogami, 2024; Weaver, 1986). This dissertation is driven by a broader interest in how democracy can better accommodate effective decision-making.

Democracies have performed well in delivering basic services, such as responding to public health risks, providing education, and sustaining peace (Baum & Lake, 2003; Hegre et al., 2001). Electoral accountability, free media, and civil society create strong incentives to address immediate tangible problems (Besley & Burgess, 2002).

However, democracies struggle with long-term or complex problems, especially when benefits of political action are distant, powerful interest groups stand to lose influence and benefits (Jacobs, 2016; MacKenzie, 2021). Perverse incentives[1] for decision-makers can lead to systematic neglection or symbolic, ineffective action, allowing problems to intensify, systematically undermining democracies' capacity for effective decision-making (Canes-Wrone et al., 2001; Kerr, 1975; Newig, 2007).

Many strategies have been proposed to address perverse incentives, such as political short-termism, caused by electoral, partisan, and media pressures. They typically include ways of changing the rules of the game to align actor and system goals, or delegating responsibility to more independent actors and institutions that do not face the same pressures of elected politicians (Boston, 2021; Buchanan & Tullock, 1962). However, delegation to independent institutions, such as courts, central banks, or expert councils, can raise concerns about democratic legitimacy (Majone, 1999).

Deliberative minipublics have been posited as a legitimate independent institution to complement representative democracy (Curato et al., 2021; Reuchamps et al., 2023; van Reybrouck, 2016; Walkenhorst & Schuppert, 2025; but see Lafont & Urbinati, 2024). Minipublics convene diverse groups of randomly-selected citizens who typically recommend policy measures after intense learning and deliberation on a selected issue. Citizens' assemblies, a minipublic sub-type, have gained special attention over the last decade, particularly since high-level assemblies in Ireland helped address contentious issues of abortion and same sex marriage (Farrell & Suiter, 2019). In these cases, politicians had widely recognized that these issues required policy change but were wary that decisions would cause public backlash among their constituents. Citizens' assemblies allowed decision-makers to manage risks of blame by delegating some responsibility to a "representative" body of citizens who, compared with referendums, are well-informed and discussed the implications of different policy options.

In theory, minipublics are well-posited to address contentious long-term issues like climate change because their participants are not constrained by electoral and partisan pressures, and their policy recommendations can equip elected politicians with sufficient legitimacy or pressure to act (Escobar & Elstub, 2025; Smith, 2024; Willis et al., 2022). The Irish success

[1] In public choice theory, perverse incentives arise when an incentive structure leads rational actors to behave in ways that are counterproductive to the intended objectives of the system, e.g. Kerr (1975).

cases sparked the imagination of scholars and practitioners working on climate change, who highlighted their potential democratic advantages and contributions to improved decision-making. This led to a wave of citizens' assemblies on climate change, called Climate Assemblies (CAs), with 20 national and over 170 local cases documented mostly in Europe over the past several years (KNOCA, n.d.).

Hence, minipublics promise to enhance democratic capacity for effective decision-making by counteracting the electoral and partisan pressures that constrain decision-makers, and CAs provide an issue-specific, paradigmatic example to examine whether they can deliver. To date, this is far from empirically established and many arguments cast doubt on minipublics' capacity to meaningfully change democratic policymaking (Decker, 2021). For example, minipublics typically only assume an advisory capacity in decision-making processes, leaving their policy impact up to decision-makers who remain bound by institutional pressures (Escobar & Elstub, 2025; Font et al., 2018). Additionally, scholars have raised questions such as why decision-makers should be more responsive to a minipublic than to the voting mass-public or affected special interest groups resisting change (Goodin & Dryzek, 2006).

Against this backdrop, the aim of this dissertation is to contribute to studying whether, and under what conditions, deliberative minipublics enhance democracies' capacity for effective decision-making. I do so by examining the effects of citizens' assemblies on climate politics, paying particular attention to whether and how they can address systemic challenges politicians face in decision-making on the long-term issue of climate change.

This framework paper is structured as follows. The theoretical background section conceptualizes democracies' capacity for effective decision-making and provides a reference point for interpreting the dissertation's findings (2.1). It examines when and why democracies have previously overcome similar obstacles in climate mitigation without minipublics (2.2). It then reviews theories on how minipublics and CAs might enhance democratic capacity for effective climate decision-making and derives the research questions guiding the cumulative dissertation and this framework paper (2.3). Section 3 summarizes the articles and methods. Sections 4–7 present the empirical findings, examining the climate ambition of CA recommendations relative to government policy (4), their effects on public opinion (5) and political decision-making (6), and strategies to enhance their impact (7). Section 8 concludes by assessing what these climate-specific findings imply for minipublics' broader potential to strengthen effective democratic decision-making, discussing future developments and research directions. The annex includes all articles.

2 Theoretical background

2.1 The puzzle of effective decision-making

My dissertation is driven by a broader interest in how democracy can better accommodate effective decision-making. This can be a difficult endeavor given the inherent normativity and plurality in conceptualizing what effective decision-making is. Different strands of literature have addressed this issue under a range of labels, including policy effectiveness, policy capacity, problem-solving capacity, and epistemic quality of decisions (see below). I offer here a brief and necessarily incomplete selection of central ideas in the literature to serve as a

reference for interpreting the results of the dissertation considering three different perspectives. I will refer to them as normative, public policy, and public choice perspectives.

Normative perspective. Normative democratic theorists have introduced an epistemic notion of objective effectiveness: For Estlund (2003), effective decisions are those that are, by some independent, quasi-objective standards, factually and normatively better than others (e.g., more just, or more aligned with the common good, even after considering efficiency). Such decisions dominate others along multiple inter-subjectively accepted evaluative dimensions. Hence, social decision procedures may be evaluated by their tendency to favor relatively better or worse decisions (Estlund, 2003). This notion is often implied by scholars concerned with environmental and climate governance. They typically assume that effective climate mitigation is generally factually and normatively superior to ineffective decision-making or inaction, due to the predicted catastrophic harms of climate change and the misalignment between those responsible and those harmed (e.g. Gardiner, 2006; Lenton et al., 2019). However, one may contend that practically relevant decision options rarely dominate their alternatives unambiguously. To avoid reliance on quasi-objective standards, many epistemic and deliberative democracy theorists make procedural arguments. Some reason, for example, that good and effective decision-making is a product of knowledge diversity, deliberation, or the famously "unforced force of the better argument" (Landemore, 2013; Min & Wong, 2018).

Public policy perspective. In more empirically-oriented frameworks of public policy and policy design, effectiveness is often conceptualized in instrumental, problem-solving terms, i.e. the degree to which a policy achieves stated objectives and addresses the underlying problem (Bali et al., 2019; Mukherjee & Bali, 2019). A closely linked strand centers on *policy capacity*, meaning the preconditions for effective decision-making. Wu et al. (2015) differentiate between analytical, operational and political capacities at the individual, organizational and system level, including access and skill to process relevant knowledge, legitimation capacities, and public trust. In the evidence-based policy and knowledge utilization literature, effective decision-making is conceptualized through responsiveness to high-quality evidence and learning, including updating of objectives (Baron, 2018; Gade, 2023).

Understanding effective decision-making as problem-solving—achievement of stated objectives—is intuitively plausible, yet complex. There may be competing objectives, nested hierarchies of objectives with intermediate objectives resting on factually wrong causal assumptions, and doubts concerning the truthfulness, ambiguity, or completeness of *stated* objectives. Newig (2007), for example, points out that even symbolic legislation can be effective if decision-makers' objectives are purely political, such as removing a salient issue from the agenda. However, such objectives are seldomly stated publicly.

Public choice perspective. Early rational choice models conceptualized political actors as balancing goals of office, votes, and policy (Strøm, 1990), and subsequent empirical work showed that the imperative to obtain and retain office frequently overrides substantial problem-solving considerations (Müller & Strøm, 1999). A substantial body of research demonstrated that democratic institutions create perverse incentives that push elected officials towards behaviour that impairs effective decision-making, such as symbolic action, blame avoidance, and postponing costly reforms (e.g., Jacobs, 2016; Newig, 2007; Weaver, 1986). One strategy to

assess whether an intervention—like a climate assembly—has improved democratic capacity for effective decision-making is to analyze whether the intervention abated such undesirable behaviors or, at least, altered their underlying systemic incentives. Therefore, I briefly present established mechanisms that systematically impair effective decision-making in democratic systems.

One prominent mechanism is *symbolic politics*, in which office-holders adopt highly visible but largely ineffective measures that signal concern without altering underlying conditions, which can constitute both elite manipulation and societal self-deception, when citizens are willing to be deceived to avoid inconveniences such as behavioral change (Dwyer, 1990; Edelman, 1974; Newig, 2007). Research on *blame avoidance* similarly demonstrates that politicians are often motivated by avoiding voter punishment for unpopular actions rather than by seeking credit for popular ones (Hinterleitner, 2017; Weaver, 1986). One strategy of blame avoidance is to keep certain issues off the agenda. Office-holders avoid immediate political risks while allowing underlying problems to intensify (Mansbridge, 2012). Research on *pandering* shows that elected officials may deliberately select inferior policies that align with uninformed public opinion or short-term media incentives, particularly if they face strong political contenders, elections are close, and voters are unlikely to learn about the benefits of the superior decision (Ashworth, 2012; Ashworth & Shotts, 2010; Canes-Wrone et al., 2001; Canes-Wrone & Shotts, 2004; Maskin & Tirole, 2004; Prat, 2005). Research on *strategic opposition* and *blame-seeking* demonstrates that oppositional actors and coalition partners have electoral incentives to mobilize against unpopular, though perhaps effective, decisions to benefit from backlash, even if decisions are close to their own position (Dewan & Spirling, 2011; Flinders & Hinterleitner, 2025; Fortunato, 2019; Patterson et al., 2025; van Well, 2025). More recent work on *political short-termism* somewhat integrates these strands by demonstrating that electoral incentives systematically discourage investments with long-term payoffs (Jacobs, 2016; MacKenzie, 2021). As Ogami's (2024) review shows, electoral cycles, competitive pressures, voter preferences and interest group opposition frequently lead politicians to defer costly policy investments in areas such as climate change, infrastructure, and pension reform, particularly when benefits materialize beyond the current term.

2.2 When do democracies adopt effective climate mitigation policy?

This dissertation focuses on the paradigmatic issue of climate change, in which mitigation efforts often involve high short-term costs and intangible, distant and dispersed benefits—or avoidance of higher costs—making it particularly susceptible to mechanisms of ineffective decision-making. In that sense, instances of effective decision-making in climate mitigation suggest that systemic barriers have been overcome, which invites closer examination. Indeed, contrary to the theory and evidence I have presented so far, many democracies have adopted effective climate policies significantly reducing greenhouse gas (GHG) emissions (Hoppe et al., 2023; Stechemesser et al., 2024). Without claiming completeness, this section provides a selection of empirical explanations framed around the conditions that shape decision-makers' motivations when adopting climate policy.

Research shows that some democracies succeeded because their economic and political structures mean that ambitious climate policy is less politically costly and fewer veto-players exist (Driscoll, 2021; Madden, 2014; Tobin, 2017). For example, Levi et al. (2020) find that

carbon pricing is more frequently implemented in jurisdictions depending less on fossil fuels, and where public beliefs in human-made climate change are high. Moreover, effective climate policy does not always entail a classic long-term policymaking structure, with high immediate costs and long-term, dispersed benefits. Most sustained GHG emission reductions have occurred in the energy and heating sector, where transition, at some point, was less costly and more profitable for businesses and consumers than in the transport sector (Lamb et al., 2022).

Multi-level governance structures have been conducive (Kreienkamp et al., 2022). In the EU, for example, decision-makers face weaker electoral and partisan pressures than at the national level. Several major coal-dependent countries—such as Poland, Estonia, Bulgaria, Germany, and the Czech Republic—were subjected to substantial carbon prices under the EU Emission-Trading-System, frequently despite their earlier resistance (Levi et al., 2020).

Strong institutionalized governance frameworks comprised of legislated long-term targets, carbon budgets and independent advisory bodies can partially insulate climate policy from day-to-day partisan swings and help signal credible continuity relevant for private investments (Kreienkamp et al., 2022; Lockwood, 2013). Such institutional frameworks allow incumbents to shift blame to legal mitigation requirements while risky agenda-setting of unpopular issues and policies is shifted to advisory bodies free from electoral pressures and regular policy cycles provide opportunities for climate policy entrepreneurs to employ political pressure (Pfeffer et al., 2021).

Political ideology may explain why parties prioritize policy-seeking behavior (Ogami, 2024). For example, Tobin (2017) found left-wing governments to be conducive to ambitious climate policy, though the fuzzy-set qualitative comparative analysis cannot establish causality.

Sometimes climate action has been aligned with vote-seeking objectives. Favorable conditions, including successful political activism, high issue salience, and reframing, have led to discourses and states of public opinion where, at least signaling, ambitious climate action promised electoral success (Carter & Jacobs, 2014; Schwörer, 2024). In the EU, party competition alongside Greens' electoral successes has indirectly pushed non-Green governing parties to increase climate mitigation efforts (Clegg & Galindo-Gutierrez, 2025). However, electoral competition tends to be detrimental if the strong contender is not pro-climate. Research shows, aligning with pandering theory, that governments are more likely to make long-term (climate) policy investments when there is low electoral competition, i.e. relatively high certainty of re-election (Ogami, 2024).

Finally, policy design likely plays a role in that it shapes (perceived) costs among voters and veto-players. For example, empirical survey research finds that salience of costs strongly shapes public support for carbon pricing (Bakaki & Bernauer, 2017; Carson et al., 2025; Drews & van den Bergh, 2016). Many countries have used incremental mechanisms to increase the price of carbon, allowing consumers and business to adapt and reducing visibility of incurred costs.

In sum, empirical evidence suggests that democracies can overcome barriers to effective decision-making on long-term issues. This can occur when decision-makers perceive action as beneficial, due to intrinsic motivation (e.g., ideology) or extrinsic motivation (e.g., political conditions align policy with vote-seeking behavior); or when political costs are reduced, for

example because political responsibility is shifted or hidden, voters barely perceive policy costs by nature, disguise, or incremental mechanics (also see Boston, 2021).

2.3 Deliberative minipublics and climate assemblies

Scholars and practitioners engage with participation processes not only because they, promise democratic legitimacy, but also because they are expected to enhance effective decision-making, for instance via integrating diverse knowledge, fostering conflict resolution, or allowing decision-makers to shift responsibility to avoid blame (Glucker et al., 2013). Large-n case survey analyses show that participatory governance can help to address environmental problems, with intense deliberation being significant for tackling long-term issues and environmental versus economic interest representation for short-term issues (Jager et al., 2020; Rose et al., 2025).

Deliberative minipublics as a specific type of democratic innovation have garnered particular interest, as they are designed to approximate the considered judgments of the broader public (Curato et al., 2021; Fishkin, 2009). They typically involve groups of citizens selected through sortition—often using stratification to mirror key demographic characteristics of the population—who are invited to learn about, deliberate on, and formulate recommendations for complex public issues. Although minipublics vary in format (e.g., citizens' juries, citizens' assemblies, deliberative polls), they share core design features that theorists argue are conducive to normatively and factually robust collective will-formation (Beauvais & Warren, 2019; Reuchamps et al., 2023): diverse composition, balanced expert and information input, facilitated deliberation, and the articulation of collective recommendations. The rationale for minipublics rests on the idea that ordinary citizens, when given adequate time, information, and an insulated, non-adversarial environment, can produce judgments that are more reflective, informed, and public-regarding than those generated through mass surveys or electoral contestation (Fishkin, 2009; van Reybrouck, 2016).

Climate assemblies (CAs) represent a recent and particularly prominent application of the minipublic model to the domain of climate governance (Escobar & Elstub, 2025; Smith, 2024). These citizens' assemblies bring about 80 to 200 randomly selected citizens together to deliberate on climate mitigation and adaptation measures, often over multiple weekends and with input from diverse experts and propose advisory policy recommendations to parliaments or governments. A core hypothesis is that CAs can enable more ambitious and ultimately more effective climate decision-making, leading to more reductions in greenhouse gas emissions (Smith, 2024; Willis et al., 2022)[2].

This hypothesis implies theoretical assumptions that structure this dissertation. I sketch these rather bold assumptions briefly, before addressing conflicting theories and empirical findings more elaborately in the following sections. In theory, CAs propose more ambitious climate policy than governments because they do not face electoral and partisan constraints (Willis et al., 2022). Although advisory, ambitious CA recommendations can impact political decision-making, for instance by encouraging hesitant politicians, giving them opportunities to legitimize action, breaking political conflicts, reducing the influence of fossil fuel interests, or putting

[2] A related hypothesis not addressed in this dissertation is that CAs will foster more just climate decision-making, due to the inclusion and empowerment of a diverse citizenry.

public pressure on decision-makers (Howarth et al., 2020). They are also expected to indirectly influence decision-making by boosting public support for climate policy (Fesenfeld et al., 2025). Theory posits that minipublics can serve as a trusted information source to the wider citizenry, given their unique status as body of non-partisan, independent, well-informed peers (Warren & Gastil, 2015). However, research on the societal and decision-making impacts of minipublics has produced mixed results, calling for more insights into what explains such impacts and how they may be strengthened (Geissel & Michels, 2023; Pogrebinschi, 2023). Hence, this dissertation addresses the following research questions:

1. To what extent do CAs recommend more ambitious measures than government policy?
2. To what extent do CA endorsements increase public support for tangible climate policy?
3. To what extent do CA recommendations have impact on political decision-making?
4. What factors explain the varying impact of CAs on political decision-making?
5. How may political and societal impacts of CAs be increased?

3 Articles and methods

I addressed these research questions in five articles using a variety on qualitative and quantitative methods (Tab. 1), with a supplementary sixth article making a methodological contribution.[3] Article 1 examines question 1 and 3 based on an original methodological framework utilizing strategies of Bayesian process tracing to assess documents and expert data, resulting in quantitative and qualitative results (supplementary article 6). Article 2 and 5 study question 2 and 5 using (factorial) online survey experiments and statistical analysis. Article 3 and 4 address question 5 based on a theoretical thought experiment and qualitative expert interviews.

[3] This supplementary article is under review at the European Journal of Political Research and requires major revision after two positive reviews and one critical review.

Tab. 1. Articles of the dissertation

Article no.	Article title	Research question addressed	Methodological approaches
1	Citizens' assemblies can lead to more ambitious climate policy, but it's been rare	1, 3, 4	Process tracing, expert interviews, expert surveys, desk research, descriptive statistics
2	Building Support for Carbon Tax Policies: Does the Source of an Endorsement Matter?	2	Online survey experiment, statistical analysis
3	Political embedding of climate assemblies. How effective strategies for policy impact depend on context	5, (4)	Thought experiment, concept development
4	Setting the agenda for climate assemblies. Trade-offs and guiding principles	5, (4)	Expert interviews, qualitative content analysis
5	Boosting messenger credibility and persuasiveness. Empirical tests and a theoretical framework of source attributions	5, (2)	Factorial online survey experiment, statistical analysis

4 Do CAs propose ambitious climate policy? (Article 1)

4.1 Background

Several theoretical arguments suggest that citizens deliberating in CAs may support more ambitious climate policy than governments (MacKenzie & Caluwaerts, 2021). Random selection insulates participants from electoral and partisan constraints, allowing preferences to be expressed more freely and potentially counteracting short-termism in representative systems. CAs are also less exposed to direct lobbying than governments or parliaments (Willis et al., 2022). From a psychological perspective, intensive learning and deliberation may foster more reflective reasoning, greater alignment between values and policy judgments, and stronger consideration of the common good, future generations, and non-human others (MacKenzie, 2018). However, some question whether citizens will in fact endorse ambitious climate measures (Averchenkova & Ghilan, 2023). Surveys and polls often show limited public support for tangible and costly policies despite high general concern about climate change (Bakaki & Bernauer, 2017; Carson et al., 2025; Drews & van den Bergh, 2016).

Systematic empirical evidence on whether CAs are more ambitious than governments remains scarce. Although journalists, practitioners, and scholars frequently cite striking individual recommendations—such as the proposed ban on domestic flights with rail alternatives from the French Convention Citoyenne pour le Climat—most claims are anecdotal (Smith, 2024). The only systematic study to date compares policy instruments rather than ambition directly: examining CAs in ten EU member states, Lage et al. (2023) find a higher proportion of sufficiency and regulatory measures in CA reports than in governments' National Energy and Climate Plans, but do not compare recommendations to corresponding policies.

4.2 Key findings

Article 1 of this dissertation was the first study to directly test the degree to which CAs promote more ambitious climate policy than governments by directly comparing each recommendation with corresponding policies. It examined 488 recommendations from five national-level and one state-level CA in Western Europe—Austria, France, Germany, Scotland, the United Kingdom (UK), and Berlin. Two coders compared recommendations to government policy based on a corpus of 410 documents, predominantly official response documents to assemblies, policy documents (e.g., laws, decrees, strategies, reports), government websites, press releases, and news articles.

Strikingly, my co-authors and I found that most CA recommendations were more ambitious than government policies—and almost none were less ambitious (Figure 1). This pattern held across all six cases. Of the 490 recommendations examined, 328 (67%) were more ambitious than current policy, 132 (27%) were roughly comparable (neither less no more ambitious), and only a single recommendation (0.2%) was less ambitious. For 29 recommendations (6%), data was insufficient or climate ambition was not applicable as evaluative criterion.

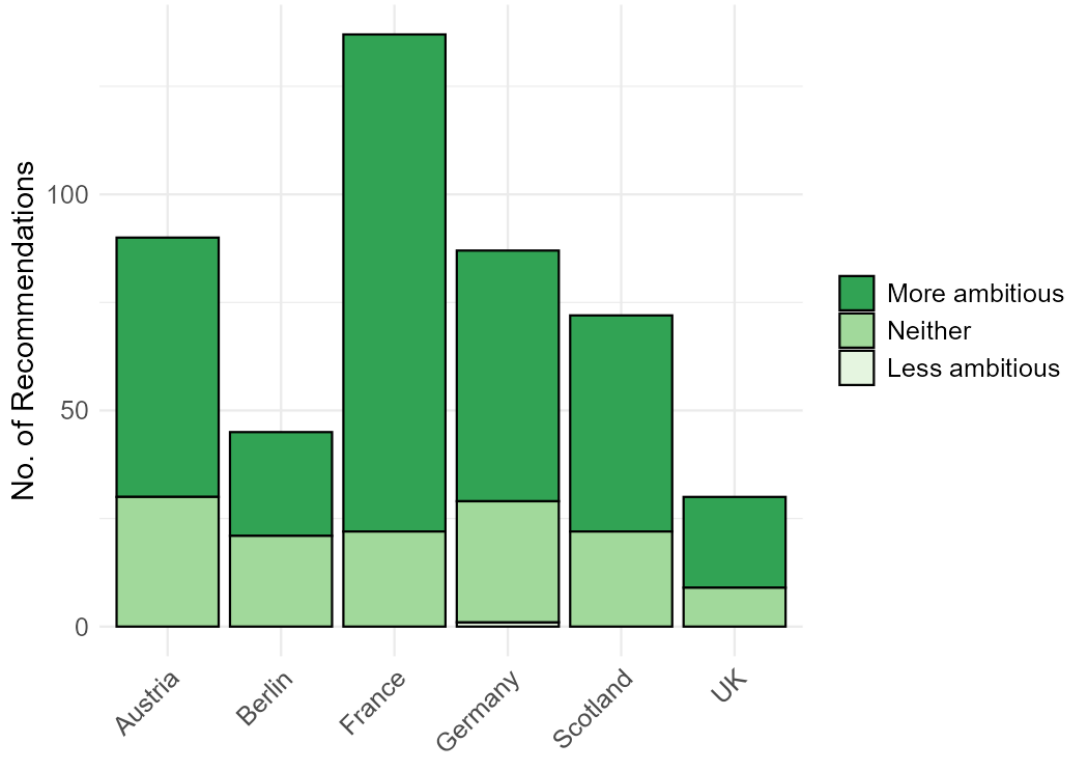

Fig. 1. Citizens' assembly recommendations were more ambitious than government policies. Figure shows the absolute number of recommendations that were more, or less ambitious than government policy, or neither, by case. Source: Pfeffer et al. (2025) (Article 1)

"More ambitious" recommendations explicitly went beyond the status quo, either by introducing new measures or strengthening existing ones, ranging from highly disruptive proposals (e.g., banning domestic air travel or retrofitting all homes by 2030) to incremental steps such as promoting localized living. Recommendations coded as "neither" largely reiterated existing policy, differing only marginally or rhetorically. Only a single "less ambitious"

recommendation appeared, from the German assembly, which generally rejected carbon capture and storage in favor of relying exclusively on natural carbon sinks.

4.3 Discussion

Our evidence clearly supports that CAs endorse more ambitious climate policies than governments. This fulfills the first necessary condition of the hypothesis that CAs can enable more effective climate decision-making, leading to more reductions in greenhouse gas emissions. It raises the question whether these ambitious recommendations have causal impact on decision-making (section 6).

It remains unclear which mechanisms drive higher citizen ambition (Císař et al., 2025). While the absence of electoral and partisan pressures may explain differences between citizens and politicians, it does not account for the consistent opinion shifts observed during minipublics. Understanding why citizens change their views matters for the legitimacy of CAs. Some attribute these shifts to learning and deliberation—factual information, normative reflection, and argumentative exchange—while critics question informational balance and point to social influence effects (Newig, 2025, in press). Remit framing also matters: when tasked with proposing "solutions," participants are unlikely to recommend less ambitious action and may omit contested measures, as seen with carbon taxation in the French assembly (Rozencwajg et al., 2025).

This study has limitations. Our ambition measure is a coarse three-point scale focused on climate policy action and does not capture stringency, expected emissions impact, or political disruptiveness.

5 Do CAs boost public support for climate policy? (Article 2)

5.1 Background

Public support shapes the adoption of climate policy in democracies, yet effective measures such as carbon pricing often face resistance when perceived as costly or restrictive (Drews & van den Bergh, 2016; Groot & Schuitema, 2012; Maestre-Andrés et al., 2019), sometimes provoking large-scale backlash, as in the Yellow Vest protests in France or demonstrations in Mexico (Anisimova & Patterson, 2025). Anticipating such reactions, elected officials frequently hesitate to advance new policies (Willis, 2020), which can further entrench public opposition (Kousser & Tranter, 2018).

This raises the question of how support for effective climate policy can be increased. Research on policy design finds greater support for pull over push measures, fairness and effectiveness, and lower costs (Drews & van den Bergh, 2016). Meta-analyses show that behavioral, informational, and normative messages can shift consumption and policy support (van der Linden & Goldberg, 2020), though effects are modest, policy attitudes are relatively resistant, and no intervention type consistently outperforms others (Rode et al., 2021).

Theory emphasizes source credibility in persuasion (Druckman & McGrath, 2019; Hodges, 2019), suggesting minipublics may be effective peer messengers because they combine informed deliberation and perceived interest alignment, unlike politicians or advocacy groups

with vested interests (Warren & Gastil, 2015). Evidence shows that minipublic messages can improve factual beliefs, may overcome motivated reasoning (Gastil et al., 2023; Már & Gastil, 2020) and, in some cases, shift policy attitudes or increase acceptance, though results are mixed (Boulianne, 2018; Goovaerts et al., 2025; Ingham & Levin, 2018a, 2018b).

Few studies directly compare message sources in climate policy persuasion. A conjoint experiment shows that policy packages from expert commissions—and in Germany also from citizens' assemblies—are preferred over those from governments (Fesenfeld et al., 2025), but such research designs capture relative preferences rather than persuasive effects. Thus, major gaps remain regarding which sources can increase support for costly climate policies.

5.2 Key findings

Article 2 tests preregistered hypotheses on whether endorsements of a carbon tax from different sources affect public support, using three U.S. survey experiments and one German study (2021–2024). Respondents were randomly assigned to endorsements from a citizens' assembly, government, environmental NGOs, scientists, or no source, or to control a condition without persuasive endorsement but key policy information. Drawing on source-credibility and motivated-reasoning theories, we expected endorsements—especially from minipublics and scientists—to increase support. The 2021–2022 studies tested a costly tax (≈$50 monthly household costs), while the 2024 study examined a redistributive version benefiting low-income households and funded by high-income households (39).

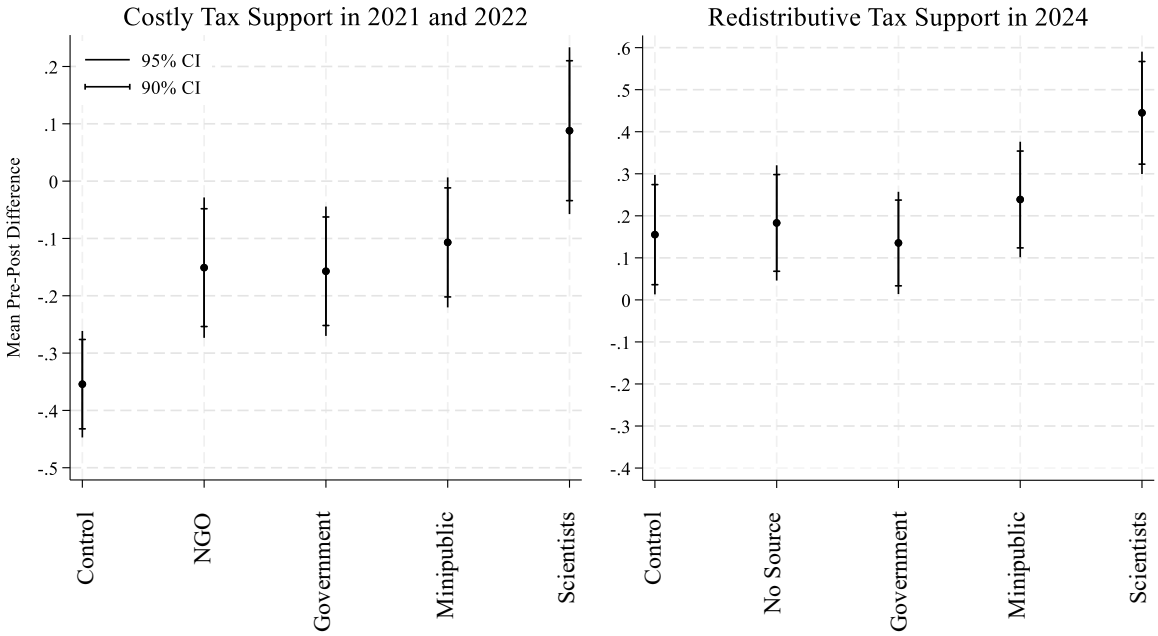

Fig. 2. Larger average effects of scientist endorsements. Figures show the average difference between pre- and post-treatment measurement of policy support for indicated years. Control groups are informed about key policy features. The scientist endorsement was not included in the 2021 study. We pre-registered directional hypotheses. *Source*: Ársælsson et al. (2025) (Paper 2)

In short, baseline support was higher for the redistributive than the costly tax. Exposure to tax costs reduced support, while information on redistribution increased it. Endorsements of a

costly tax from *any* source raised support and reduced opposition, whereas endorsements of a redistributive tax polarized opinions, increasing both support and opposition, canceling out a main effect. Scientist endorsements produced the largest average effects. Aside from this exception, endorsement effects did not differ meaningfully across sources (Fig. 2).

5.3 Discussion

In experimental settings, CAs can increase public support for effective but unpopular climate policies, potentially facilitating policy adoption. However, minipublic endorsements were no more persuasive than those from governments, environmental NGOs and less effective than scientist endorsements, suggesting limited added value of costly CA processes for public persuasion. While governments may be less likely than minipublics to promote unpopular policies publicly, scientists and NGO do so frequently.

Findings must be interpreted cautiously, as experiments cannot capture real-world amplification dynamics around focus events, elite discourse, and shifting social norms (Pidgeon et al., 2003). Minipublics may have distinctive potential to shape elite discourse due to their representational character and common-good orientation, though national-level CAs have so far attracted limited public attention (Elstub et al., 2025; Smith, 2024) (but see the case in France in article 1). Future research may test combinations of congruent and conflicting endorsements from multiple sources to better approximate real-world political communication and advance scientific insight into consensus messaging (Kousser & Tranter, 2018).

Theoretically, source cues mattered little for persuasion, except for scientists, somewhat challenging models that emphasize source effects (Druckman & McGrath, 2019). Although scientists were perceived as most credible in our data, credibility alone does not fully explain persuasion, as governments were seen as least credible yet not less persuasive than NGOs or minipublics. Consistent with prior research (Boudreau & MacKenzie, 2014; Bullock, 2011; Chaiken, 1980; Chaiken & Maheswaran, 1994), substantive arguments appear more influential than source cues for personally relevant issues like carbon taxation (also see article 5 for a theoretical discussion).

6 Do CAs impact political decision-making, and why (not)? (Article 1)

6.1 Background

Climate assemblies have consistently proposed more ambitious climate policy than governments (article 1) and may boost public support for effective, unpopular climate policies (article 2). But does this translate into more ambitious climate policy decisions?

Theory suggests several pathways through which minipublics might influence decision-making (article 3), including breaking political deadlock, legitimizing contentious decisions, reducing policymakers' uncertainty about public reactions, or generating public pressure (Goodin & Dryzek, 2006; Howarth et al., 2020; Vrydagh, 2022). Critical voices, however, argue that minipublics often serve as symbolic "window dressing," with elites selectively adopting only recommendations that align with prior preferences (Decker, 2021; Font et al., 2018), and question why decision-makers should respond more to minipublics than to the broader electorate (Goodin & Dryzek, 2006).

Empirical evidence on policy impact remains limited, results mixed, and most research does not establish causation (Ainscough et al., 2025; Courant & Reber, 2025; Duvic-Paoli, 2022; Elstub et al., 2021; Galván Labrador & Zografos, 2023; Giraudet et al., 2022; Linde, 2023; Lorenzoni et al., 2025; Torney et al., 2020). Smith (2024), in his recent comparative analysis of several national CAs explicitly warns that a policy decision aligning with a recommendation does not itself demonstrate causation.

Theory highlights three overarching determinants of impact: context, design, and recommendation characteristics (article 3). Evidence shows that alignment with policymakers' preferences, implementation costs, political culture, and perceived minipublic legitimacy can condition uptake (Dryzek & Tucker, 2008; Font et al., 2018; Vrydagh & Caluwaerts, 2020; Wells et al., 2021). Design features—such as agenda scope, participant selection, information provision, and follow-up—may also matter. For example, the broad remit of Climate Assembly UK fragmented small-group deliberation which weakened perceived representativeness of results among public officials, limiting its impact (Elstub et al., 2021).

6.2 Key findings

Article 1 offers the first comparative, counterfactual analysis of whether—and to what extent—CA recommendations influence political decision-making. As outlined above, it examines five national and one state-level climate assembly in Western Europe (Austria, France, Germany, Scotland, the United Kingdom, and Berlin), assessing the policy impact of 488 recommendations. The study draws on more than 400 documents and 76 expert interviews and surveys, including with ministry officials involved in policy formulation. To identify causal effects, it employs a counterfactual design informed by Bayesian theory that asks what would have occurred had the assemblies not taken place and traces the mechanisms through which recommendations did—or did not—affect policy decisions (method developed in supplementary article #6).

In sum, we found that recommendations did impact policy decisions but mainly in a single case (France), where one in three recommendations had impact, though often after weakening the original proposal. In three cases, we observed no and in two only minimal impact (Fig. 4a). Exceptionally strong power delegation and political leadership in the French case can explain these differences between assemblies.

Recommendations impacted decisions most frequently by adding substantial elements to existing or planned initiatives ("enriching impact") or by reinforcing momentum behind them, for example by encouraging policymakers or accelerating administrative action ("fortifying impact") (Fig. 4c). Sometimes, recommendations introduced novel ideas not previously debated by policymakers ("innovating impact") or helped break political deadlock, e.g. by shifting the power balance between ministries or stakeholders ("political impact"). We found no evidence that recommendations stopped policy plans ("inhibiting impact") or fundamentally changed government positions ("shifting impact"). Recommendations without impact were ignored or rejected by government or parliament ("no uptake") in about six out of ten instances, whereas in four out of ten cases, they lacked impact because they added little beyond existing or planned policy ("no addition") (Fig. 4b).

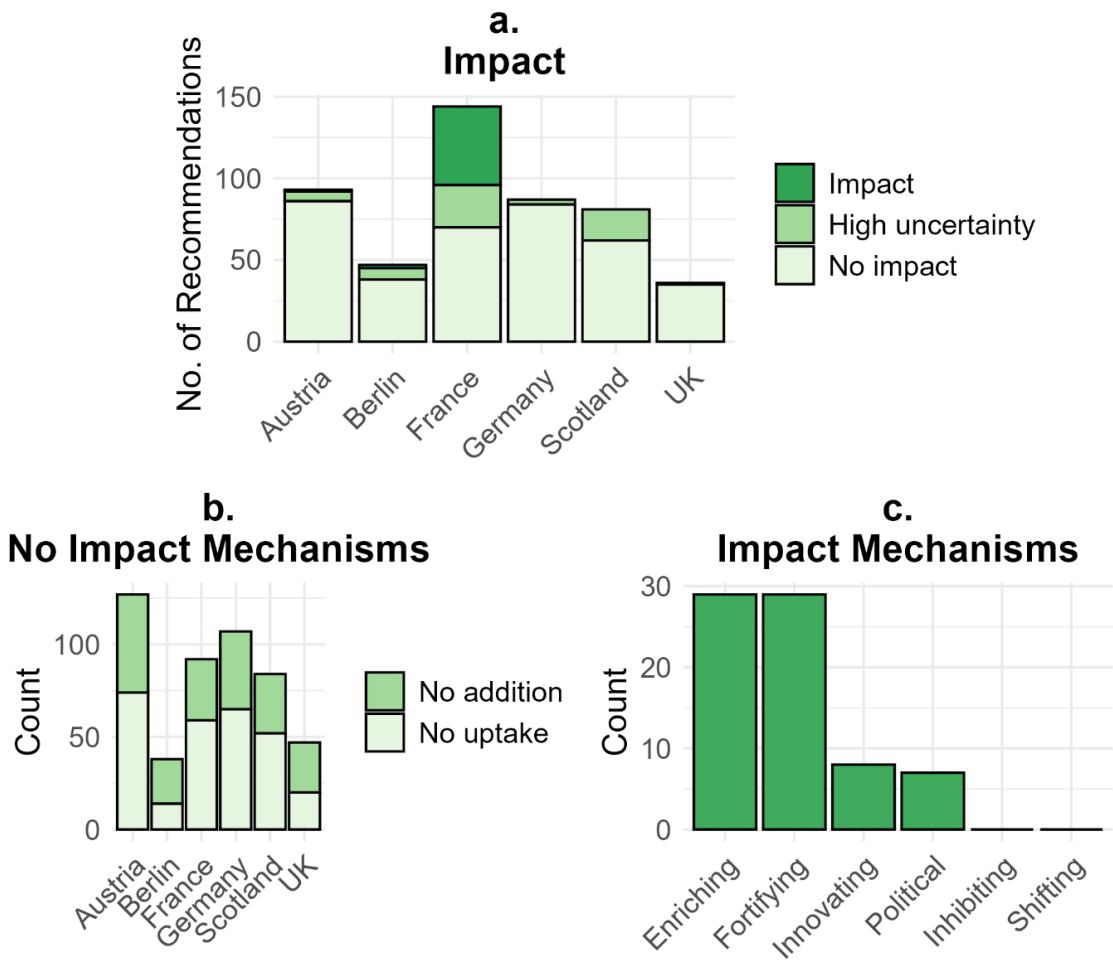

Fig. 4. Impact of citizens' assembly recommendations on climate policy decisions. Panel a. displays the number of recommendations with impact, no impact, and high uncertainty by case. Panel b. and c. show the frequencies of impact mechanisms for recommendations without impact by case and with impact across cases. Mechanisms may occur simultaneously. *Source:* Pfeffer et al. (2025) (Paper 1)

The analysis indicates that the French case stands out because political leaders granted the CA an unusually strong mandate. The President publicly framed it as a co-governance body whose proposals would be forwarded to Parliament or a referendum "without filter," and thus CA participants received strong legal support to write adoptable recommendations. The President further instructed the government to draft new legislation based on the CA recommendations. This led to exceptional media attention and public pressure, as well as NGO and opposition scrutiny. The high-level sponsorship—combined with resulting public pressure—enhanced the assembly's leverage in policymaking.

Elsewhere, leadership was weak, fragmented, or absent, and assemblies were delegated only advisory or advocacy roles. Germany's assembly, a civil-society initiative without institutional anchoring, struggled to influence decision-making. The UK assembly, though parliamentary, lacked government buy-in. Austria's government-initiated assembly became politically polarized and contested within the government coalition. Scotland's CA, initiated by Parliament rather than the government, was viewed as externally imposed. Berlin's assembly had minimal

impact. Originating from a citizens' initiative, it was used mainly by a single minister to pressure and coalition partners and embedded in a policy process with competing stakeholder input.

6.3 Discussion

Our rich evidence aligns with multiple competing theories about minipublics' decision-making impact and shows the moderating effects of contextual factors . Our evidence strongly supports critical views of minipublics being mere window-dressers, with policymakers using them to signal responsiveness and inclusion, and to showcase their hitherto unnoticed policy actions, without, however, substantially changing anything (Elstub & Khoban, 2023). This need not imply that policymakers intentionally plan this up front. Our evidence also reiterates that participation outputs are often re-interpreted and weakened later in the policy process, with lobby interests exerting their power (Boswell, 2016).

On the other hand, we also found compelling evidence supporting bold claims about minipublics including that they can break political deadlocks, reduce the power of opponents to policy change, accelerate policy action, or introduce novel ideas and have them adopted. In France, the CA went along with a remarkable shift in public discourse (cf. discussion on article 2): The CA arose from the partly violent yellow vest movement sparked by a fuel tax to address climate change and culminated in salient public discourse around how government was not sufficiently taking up the sometimes extremely disruptive climate policy measures of the CA (Courant & Reber, 2025).

Political context, particularly the motivations and behaviors of the most powerful political state and non-state actors, are the strongest predictors (moderators) of minipublic impact (article 3). While minipublic design may play a foundational role in ensuring process legitimacy and output quality it appears insufficient for decision-making impact.

Optimistic theory posits that minipublics can enhance effective democratic decision-making by shaping the incentives for and the behavior of decision-makers (article 3, Willis et al., 2022). We find partial evidence of that, but it is more common that decision-makers shape the design and prospects of minipublics. The agenda-setting, political relevance and mandate, follow-up processes, and bindingness of ad-hoc advisory minipublics are dependent on decision-makers who remain constrained by the same institutional demands minipublics try to address. This dependence on exceptional political will raises the question whether minipublics should instead be granted institutionalized authority alongside electoral institutions (Ainscough & Willis, 2024; Courant, 2022; Gastil et al., 2019; Goldberg et al., 2024; Lafont & Urbinati, 2024), as reflected, for instance, in the proposal to replace the UK House of Lords with a sortition-based chamber (Adu, 2025).

7 How to increase the political and societal impact of CAs? (Articles 3, 4, and 5)

Extant theory and research, along with the evidence I present here, demonstrate minipublics' *potential* for enhancing effective decision-making (e.g. Beauvais & Warren, 2019). Yet, the varied and limited impact of CAs on public opinion and political decision-making raises the question of how their impact may be increased. This dissertation makes contributions in three

areas: it theorizes more thoroughly how political context shapes the conditions for minipublic impact and how strategies to enhance impact must respond to this context (article 3); it zooms in on the crucial issue of agenda-setting to help navigate trade-offs of design choices (article 4); and it examines whether minipublics' (and other messengers') capacity to affect public opinion can be boosted by telling people more about them (article 5).

7.1 Political embedding (Article 3)

A recent strand of minipublic literature examines how they are embedded in existing governance systems to assess "which forms of [formal and informal] institutionalization are desirable and productive" (Bussu 2022, p. 136). Article 3 extends the concept of embeddedness by adding a *political* dimension. It shows that minipublic effects depend not just on their institutional placement but on how political actors—with their interests, strategies, and power relations—strategically use and position them within existing power dynamics. Introducing the concept of *political embedding*, my co-author and I argue that designers must anticipate how governments, opposition parties, interest groups, and the public will interact with a minipublic, and then tailor commissioning, framing, inclusion of actors, and publicity accordingly. Using a thought experiment, the article demonstrates that strategies often assumed to enhance impact—such as broad publicity or government commissioning—work differently across (climate) political contexts. For example, mass publicity may be essential when a CA aims to pressure an inactive government but could be unnecessary or even risky when government fears public backlash. The article systematizes falsifiable impact mechanisms (e.g., empowering supporters, breaking deadlocks, constraining opponents) and clarifies when they are plausible or not. It offers more realistic theory and practical guidance for designing minipublics that can shape policy in the real world.

7.2 Agenda-setting (Article 4)

Article 4 contributes to the minipublic literature by clarifying how agenda-setting choices can shape the ability of climate assemblies—and minipublics more broadly—to achieve several, sometimes competing objectives, including policy impact. It shows that agenda design is not simply a technical step but a strategic one, involving trade-offs between system-supporting aims (e.g., producing politically actionable proposals) and system-disrupting aims (e.g., challenging dominant paradigms). By distilling expert insights into ten guiding principles, the article provides practitioners with a concrete, evidence-informed toolkit for developing agendas that are both legitimate and impactful. It highlights, for example, how narrowing the scope can increase chances of uptake, how openness may foster transformative ideas, and how political context should guide these decisions. In doing so, the article advances broader theoretical debates on embeddedness (article 3) by demonstrating that impact hinges on aligning agenda choices with political opportunities, actor constellations, and the intended role of the minipublic.

7.3 Knowing more about the messenger (Article 5)

Article 2 demonstrated that endorsements of unpopular, costly climate policy can enhance public support for such policy but also that a minipublic was not more persuasive than other sources. One explanation is that few people are familiar with minipublics. Source credibility theory suggests that sources can increase their persuasive power by presenting themselves as

trustworthy (Bolsen et al., 2019). Therefore, article 5 tested whether telling respondents more about why minipublics, an NGO, or scientists are trustworthy and legitimate increases the persuasiveness of their carbon tax endorsements and their perceived credibility. Through five survey experiments in the US and Germany, we exposed respondents to several source attributions that cover a broad range of favorable source traits, such as competence, impartiality, consensus, or similarity. We found that providing additional information about the messenger modestly increased perceived credibility and persuasiveness, though the effects were generally small (≤ .16 SD). These effects were most consistently detectable for the minipublic, but less reliable for scientists or an NGO. Highlighting that minipublic's were informed by a multi-disciplinary range of scientists or were impartial strengthened its credibility and persuasive power. Learning more about minipublics also helped prevent those initially opposed to a carbon tax from losing trust in the minipublic. Overall, the results offer limited support for the idea that minipublics can function as trusted information sources *because* of their unique qualities (Warren & Gastil, 2015). Moreover, while prior debates highlight the usefulness of signaling scientific consensus (Bayes et al., 2020), it produced little persuasive gain here, whereas emphasizing multi-disciplinary expertise proved more effective. The article contributes to the broader persuasion literature by underscoring how challenging it is to meaningfully boost source credibility and persuasion. It further proposes a theoretical framework to systematize and guide future research considering scope conditions.

8 Concluding discussion

This dissertation asked whether, and under what conditions, deliberative minipublics enhance democracies' capacity for effective decision-making. To this end, I examined the effects of citizens' assemblies on climate politics, paying particular attention to whether and how they can address systemic challenges politicians face in decision-making on the long-term issue of climate change.

The dissertation found that CAs recommended more ambitious climate policy than governments (article 1); that CA endorsements of unpopular, costly climate policy can boost public support but not more than endorsements from an NGO and the government, and less than those from a consortium of scientists (article 2); that telling people more about minipublics can slightly increase their persuasive power (article 5); that CA recommendations impacted decision-making leading to more ambitious climate policy including through breaking deadlocks and accelerating action, but largely in one out of six cases, and consistently strong evidence of window-dressing; that the variation of decision-making impact between cases is mainly explained by the political context, particularly the extent of political leadership and power delegated to the CA (article 1); that, in theory, decision-making impact may be increased by anticipating how governments, opposition parties, interest groups, and the public will interact with a minipublic, and then tailoring design choices like commissioning, framing, inclusion of actors, and publicity accordingly (article 3); and that agenda-setting choices for minipublics entail trade-offs and should be aligned with political opportunities, actor constellations, and the intended role of the minipublic (article 4).

To what extent do these findings on climate political impacts allow inferences about minipublics' aptitude to enhance democracies' capacity for effective decision-making? I will

consider the three perspectives introduced in the theory section 2.1. From the public policy perspective (Bali et al., 2019; Mukherjee & Bali, 2019), CAs' contributions to more ambitious climate policy decisions align with contributions to effective decision-making given that states have clearly stated objectives to reduce GHG emissions. However, we did not systematically examine how effective decisions were with regards to their implementation (e.g., through assessing stringency or expected GHG emission reductions). For example, some decisions may appear highly ambitious while being almost impossible to implement (Dwyer, 1990). Moreover, climate policy inaction frequently stems from competition between stated objectives. Hence, CAs may have contributed to effective decision-making on climate change while simultaneously undermining it for other objectives.

From the normative perspectives (Estlund, 2003; Gardiner, 2006), this would nonetheless count as contribution to effective, or even good decision-making due to the posited general superiority of climate action over inaction. Still, one should consider principles of proportionality when assessing trade-offs between objectives for specific decisions.

Evaluations from the public choice perspective are ambivalent. The dissertation found clear evidence of instances where CAs counteracted perverse incentives at odds with effective climate action, for example by shifting the power-balance between short-term special interests and long-term general interests or by dramatically changing the discourse from decision-makers having to justify climate action (i.e., fuel taxation) to having to justify non-adoption of ambitious CA proposals. At the same time, we found strong evidence of CAs not altering decision-maker behavior, suggesting that CAs did not (sufficiently) influence system incentives. In most general terms, the evidence shows that minipublics can change political system incentives, and political system incentives can shape minipublics. While optimistic theorization, emphasizes the first mechanism, the latter mechanism may be more prevalent, at least for the current model of ad-hoc advisory minipublics. In sum, I would argue that minipublics have made positive contributions but measured against the grand ideals of effective decision-making and the bold tone some proponents strike up, their contributions have not been all that great.

Do we expect too much from minipublics if we want them to change the system, as Escobar and Elstub (2025) have argued? Maybe yes. Yet the findings in this dissertation (particularly article 1) suggest that giving them more power can make a meaningful difference. This calls for more experimentation and research on different forms of institutionalization (Courant, 2022). While recent survey research indicates that most people do not prefer granting exclusive decision-making power to minipublics (Goldberg et al., 2024), one can imagine ways in which they share power alongside traditional electoral institutions. Ideas include sortition-based second legislative chambers, veto, delay, or agenda-setting powers for minipublics, initiation rights via citizen initiatives, and permanent integration into sectoral governance regimes (Disselkamp et al., 2025; Gastil et al., 2019; Pfeffer et al., 2023). This could force decision-makers to somewhat shift responsiveness from powerful special interests and an often uninformed, volatile mass public to a more informed, reflected minipublic—although some democratic theorists challenge whether that would be desirable (Lafont & Urbinati, 2024), and empirical studies caution that there is no "magic bullet" of institutionalization (Goldfrank et al., 2025).

Readers should note the limited scope of this dissertation. Future research should examine minipublics' contributions to effective decision-making beyond climate politics. Moreover, the overall democratic value of minipublics ought to be assessed along multiple dimensions going beyond effective decision-making (e.g. Curato & Böker, 2016). Current trends of democratic backsliding raise the question of whether minipublics can bolster democratic resilience, e.g. trust in institutions and democracy? Evidence points to a potential dilemma between policy impact and system trust: System trust increases when recommendations are honored but decreases when not (Goovaerts et al., 2025). A trade-off arises if impact is publicly misperceived, as was the case in France: Public pressure, a narrative criticizing that the French government was not implementing CAs recommendations, both increased policy impact but also led to the public perception that the CA was a failure. From a comparative perspective, the French CA was, by far, the most successful one in terms of decision-making impact but also resulted in the, by far, most salient discourse of discontent (Courant & Reber, 2025; Smith, 2024), which according to experimental research reduces system trust. However, we should be careful with generalization. This dramatic misperception of impact may be an outlier, explained by political context and conflictive political culture in France. It is, after all, quite remarkable that the French president, despite this public discontent, continued to promote and use citizens' assemblies.

In sum, can minipublics enhance effective democratic decision-making by counteracting electoral, partisan, lobby, and media pressures on elected politicians? The findings of this dissertation draw a nuanced picture of potential, of partial success, and of partial failure. Minipublics can break political deadlock or shift the power balance in favor of long-term general interests in some cases but often remain largely symbolic window-dressers. Their capacity to enhance effective decision-making largely depends on elected politicians who remain constrained by system incentives. This draws attention to the question of how minipublics' reliance on elected politicians can be reduced while ensuring that they are productively embedded in decision-making. These findings constitute a considerable leap in the empirical backing of opposing theories and provide a deeper understanding of moderating mechanisms that explain why some minipublics have impact while others do not. Whether minipublics become meaningful democratic institutions or remain episodic gestures will depend on the willingness of decision-makers to experiment with institutional designs that allow citizen deliberation to not only complement but sometimes constrain and correct electoral politics.

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Annex

Article 1

Citizens' assemblies can lead to more ambitious climate policy, but it's been rare

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Abstract

Democracies face barriers to addressing climate change, as institutional incentives push elected politicians towards short-termism. An unlikely coalition of actors has promoted climate citizens' assemblies as a remedy. These assemblies convene randomly selected citizens who, after structured learning and deliberation, develop policy recommendations. Theoretically, absence of electoral and partisan pressures allows citizens to endorse ambitious policies, which can legitimize or pressure politicians to act. Yet whether citizens' assemblies actually cause more ambitious political decisions remains contested. Analyzing 488 recommendations from five national and one state-level assembly, we find that citizens consistently proposed more ambitious climate measures than existing government policy. Recommendations advanced policy decisions—e.g., by accelerating existing initiatives or breaking political deadlocks between ministries—but mainly in a single case, where one in three recommendations had impact. In three cases we observe no and in two only minimal impact. Strong power delegation and political leadership can explain these differences.

Keywords

mini-publics; impact; climate change; participation; governance

Main

Climate change exposes a core dilemma of democracy: how to tackle persistent and long-term crises when system incentives push politicians toward demonstrating immediately visible successes[1–4]. While a number of climate policies have achieved major emission reductions[5], structural challenges remain. Electoral cycles, voter preferences, powerful special interests, and the absence of future generations systematically hinder effective long-term policymaking[1]. Attempts to introduce ambitious climate policies have repeatedly triggered public backlash—as observed in France, Mexico, or Germany[6,7]. Polarization entrepreneurs have used climate discourses to intensify societal division and advance their strategic interests[8]. These dynamics have amplified concerns that ambitious climate action risks voter loss and strengthens right-wing populism[9], ultimately threatening liberal democracy[10,11].

In light of these structural democratic constraints, scholars and policymakers have turned to citizen participation and deliberation as a potential remedy[12–14]. Indeed, participatory governance, particularly deliberation, has contributed to addressing long-term environmental problems[15]. More recently, an unlikely coalition of actors—including conservative and progressive political parties, climate experts like the IPCC, and activists like extinction rebellion—has promoted a new political institution, hoping that it can address climate change more effectively: climate assemblies[16,17].

Climate assemblies are a more recent sub-type of minipublics[18], particularly citizens' assemblies, dealing with climate-related issues[19]. Citizens' assemblies are designed to represent a larger population—such as that of a nation or province—by assembling 80–200 randomly selected citizens to discuss a political issue. Participants learn about the issue from multiple experts, deliberate across several sessions in facilitated small groups, and typically deliver advisory policy recommendations to governments or parliaments[20].

In theory, citizens' assemblies are expected to propose more ambitious climate policy because they are not constrained by structural incentives politicians face—they do not have to worry about re-election or party lines[4]. Moreover, proponents argue that citizens' assemblies can give politicians a "social mandate" providing them with legitimacy and courage or put them under sufficient pressure to act on ambitious recommendations[21–23].

Survey research and polls, however, often reveal that citizen support for tangible, costly climate measures is limited, even if general support for climate action is high[24–26]. This casts doubt on whether citizens' assemblies will in fact propose ambitious climate policy[27]. Furthermore, citizens' assemblies have been criticized for lacking impact on political decisions, and being mere "window dressing" events where political elites, at best, "cherry-pick" to adopt those recommendations they previously supported and ignore others[28–30]. This raises the question of whether climate assemblies will actually impact decision-making.

Most evidence on climate assemblies' ambition remains anecdotal with researchers referring to individually striking recommendations such as a ban of domestic flights in France[31–33]. Lage and colleagues[34] found that climate assembly reports contained a higher proportion of sufficiency and regulatory policies than National Energy and Climate Plans reported to the EU by their governments. However, the study did not compare individual recommendations with corresponding policies.

Although many studies discuss the policy impact of climate assemblies—with mixed conclusions—few have rigorously addressed whether these assemblies *cause* changes in policy decisions[31,33,35–40]. Some research examined single cases in depth, such as the French Convention Citoyenne pour le Climat, and found that its policy impact was greater than commonly believed, although researchers did not systemically analyze the impact of individual recommendations[41]. Looking at two smaller local citizens' juries in the UK, Wells and colleagues[42] found that they, at best, created momentum around pre-planned policies, whereas Ainscough and colleagues state "no clear cases of climate assemblies increasing policy ambition"[37] in the UK. Smith recently presented a comparative account of multiple national-level climate assemblies without, however, establishing causality when it comes to the policy impact of their recommendations. He cautions that "[j]ust because a climate assembly makes a recommendation that later appears in policy does not mean that it is the assembly that caused the change."[16] Similarly, Duvic-Paoli highlights the difficulty of determining whether "policy would have been any different without the citizens' assembly"[35]. Overall, it remains unclear whether the mixed findings reflect valid variation in assemblies' influence or simply methodological limitations—particularly the lack of systematic, counterfactual assessment.

This research provides the first comparative, counterfactual assessment of whether, and to what extent, citizens' assemblies lead to more ambitious climate policy decisions at the level of individual recommendations. We examined five national-level and one state-level climate assembly in Western Europe—Austria, France, Germany, Scotland, the United Kingdom (UK), and Berlin—comparing each recommendation's climate ambition with corresponding government policy and tracing its policy impact across 488 recommendations. The analysis draws on over 400 documents and 76 expert interviews and expert surveys, including with ministry officials responsible for policy formulation. To establish causality, we adopt a counterfactual approach asking what would have happened had the assemblies not taken place, and identify the mechanisms through which their recommendations did—or did not—shape policy decisions[43].

Were citizen recommendations more ambitious than government policy?

Strikingly, we found that climate assembly recommendations were almost always more ambitious than current government policy, or neither more nor less ambitious. This finding was consistent across all six cases (Figure 1). Out of 488 recommendations in total, 328 (67%) were more, 132 (27%) neither less nor more, and only 1 (.002%) less

ambitious. For 29 (6 %) recommendations, the data was insufficient to make an assessment.

Fig. 1: Citizens' assembly recommendations were more ambitious than government policies.

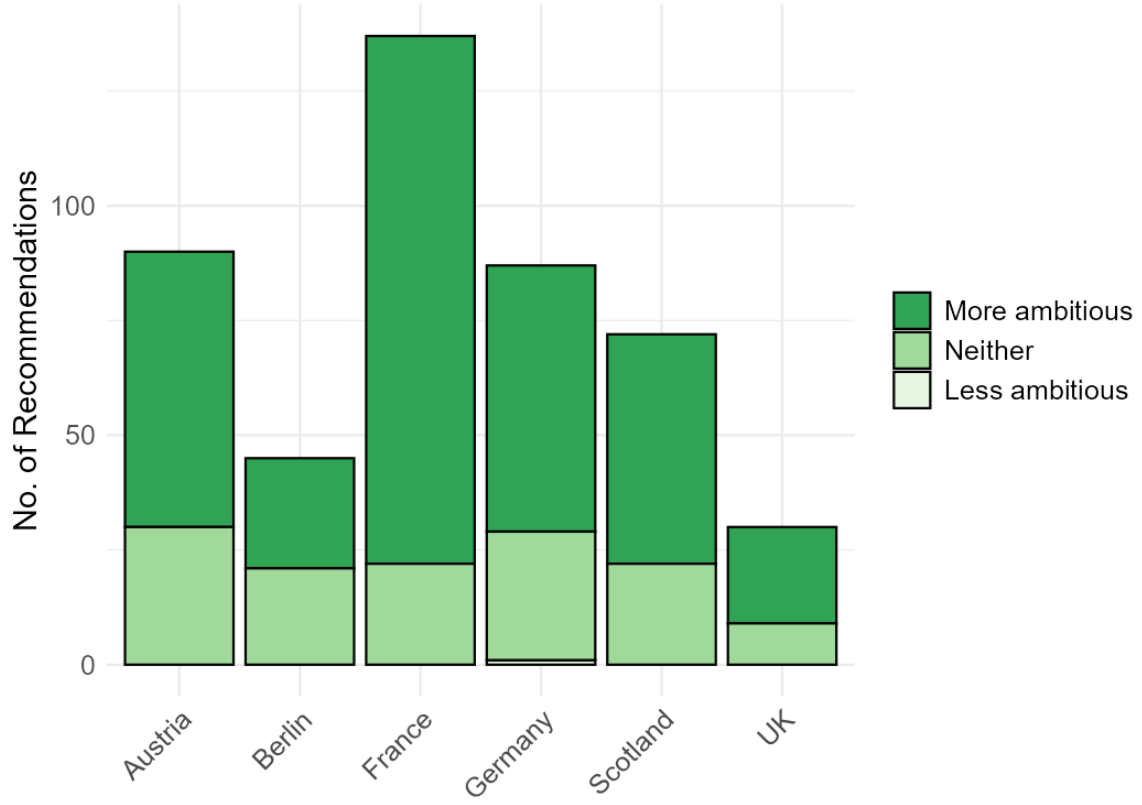


Figure shows the absolute number of recommendations that were more ambitious, or less ambitious than government policy, or neither, by case.

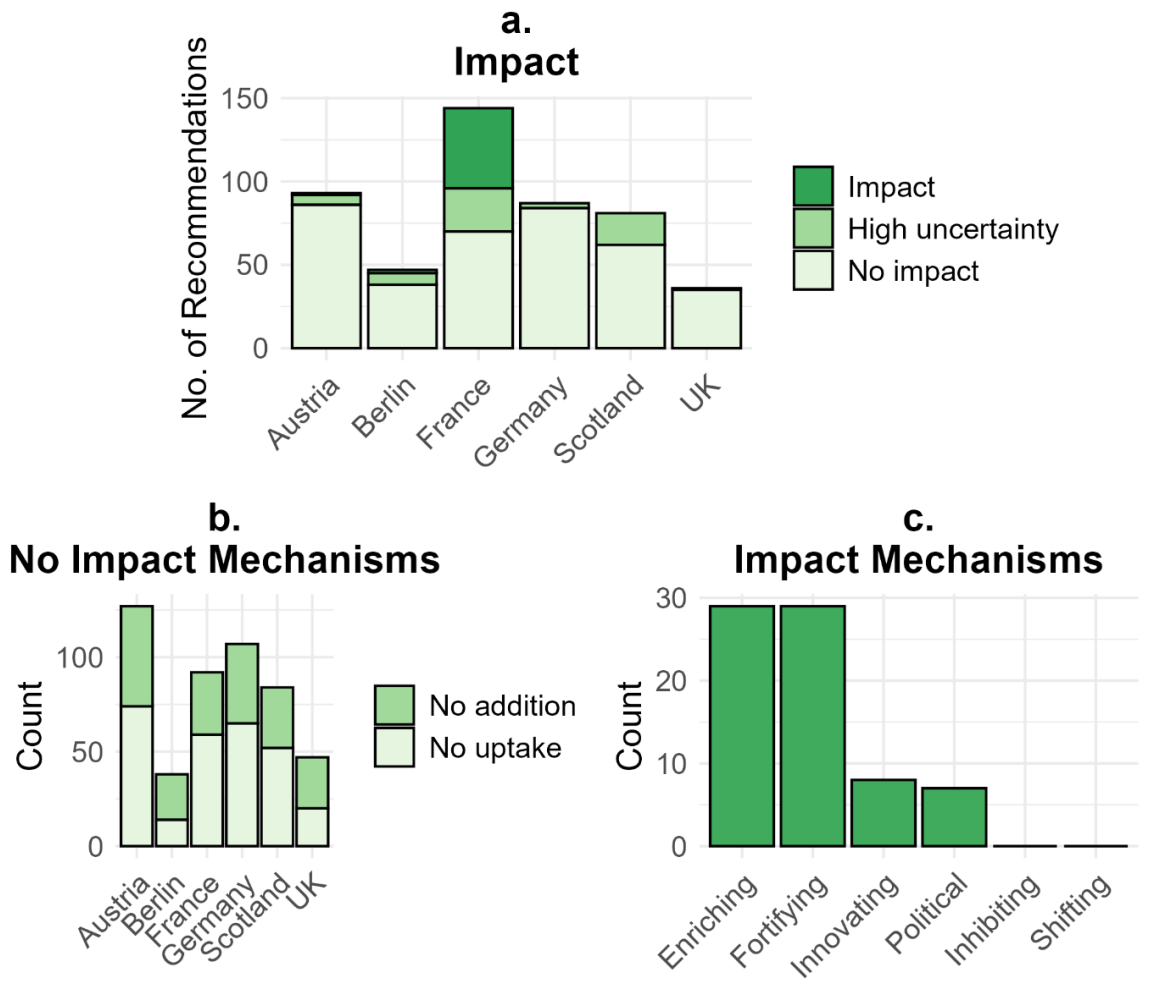
Recommendations in the "more ambitious" category clearly demanded of governments or parliaments to act beyond the status quo, for instance, by enacting new policies or tightening or expanding existing ones. These recommendations ranged from highly disruptive—e.g., banning domestic air travel (FR73) and retrofitting all homes by 2030 (AUT14)—to more incremental measures—e.g., raising public awareness about the benefits of localized living (SCT43).

Recommendations in the "neither" category were similar in ambition to existing policy—differences were either vague, minor, or reflected only a rewording or repackaging of what already existed. Recommendations in the "less ambitious" category were clearly weaker, or narrower in scope than current policy. The single recommendation in this category occurred in the German assembly and generally rejected the use of carbon capture and storage (CCS) technologies, while favoring "natural carbon sinks such as peatlands and trees" [GER20][44–46].

Did citizen recommendations impact climate policy decisions?

Most assembly recommendations were more ambitious than existing policy, but did they influence political decisions? We found evidence of such causal impact, though with strong variation between cases (Figure 2a). In half of the assemblies—Germany, Scotland, and the UK—none of the recommendations causally translated into political decisions, and in Austria and Berlin, only 1 (1%) and 2 (4%) recommendations, respectively, resulted in decisional changes that would not have occurred without the citizens' assembly. In France by contrast, 48 (33%) recommendations showed this kind of policy impact. For 62 recommendations (13%) across cases, evidence was insufficient or contradictory, placing them in the "high uncertainty" category.

Fig. 2: Impact of citizens' assembly recommendations on climate policy decisions



Panel a. displays the number of recommendations with impact, no impact, and high uncertainty by case. Panel b. and c. show the frequencies of impact mechanisms for recommendations without impact by case and with impact across cases. Mechanisms may occur simultaneously.

Examining recommendations without impact**,** we distinguished between those ignored or rejected by government or parliament ("no uptake") and those that added little beyond existing or planned policy ("no addition") (Figure 2b). Both mechanisms could occur simultaneously as recommendations often included distinct sub-recommendations. Overall, 284 recommendations (57%) fell into the "no uptake" and 211 (43%) in the "no addition" category—with 63% and 57% in the "no addition" category in Berlin and the UK, and 36–42% in the other cases[47]. In many cases, government response documents largely repackaged already existing or planned policies, framing them as in line with a recommendation without introducing any substantive changes. The Berlin government, for instance, stated that 43 of the 47 recommendations were fully or partially taken up in subsequent policy amendments whereas we found that only two had causal impact.

For recommendations with impact, we examined the causal mechanisms through which they altered political decisions (Figure 2c). Most frequently, recommendations added substantial elements to existing or planned initiatives ("enriching impact") or reinforced momentum behind them, for example by encouraging policymakers or accelerating administrative action ("fortifying impact"). Both mechanisms occurred 29 times each. In eight cases, recommendations introduced novel ideas not previously debated by policymakers ("innovating impact"), and in seven cases, recommendations helped break political deadlock ("political impact"). We found no evidence that recommendations stopped policy plans ("inhibiting impact") or fundamentally changed government positions ("shifting impact").

One example of significant impact is the recommendation on land take (artificialization) in the French case (FR87). The resulting law provides, among other things, that France must achieve net zero land take by 2050 and halve its land take rate compared to the previous ten years. According to experts, the land take recommendation suddenly turned a long-lost battle into "a won interministerial decision (*arbitrage*)," (I8) strengthening the government "against opposition from mayors and businesses" (I4) and moving the debate "forward by ten years" (S1).

Another expert stated:

> I noticed that for a number of proposals, the fact that they were proposed […] by the Citizen's Convention—sometimes they were older ideas that already existed—[…] really allowed for a strong acceleration effect. [...] It allowed us, the Ministry of Ecological Transition, to win policy battles (*arbitrages*) that we probably would have lost against the Ministry of Economy. (I11)[48]

While impactful in terms of altering political decisions, many recommendations were weakened before adoption[36]. For example, the French assembly recommended to ban domestic flights where a rail alternative under four hours exists, but the final decision was limited to routes with alternatives under two-and-a-half hours, which only covered a few routes. Ministerial experts acknowledged that most recommendations had been diluted, yet emphasized their importance, arguing that "they were the first in many areas

to shift the boundaries of what is considered normal" (I4) and that "you can see it as a glass half empty or half full" (I9).

Why did some assemblies have impact whereas others didn't?

The variation in impact across cases raises the question of why some climate assemblies influenced policy decisions whereas others did not—and why the French assembly stands out so clearly[49]. Our explanation draws on expert interviews and contextual knowledge gained through desk research. (See Supplement A for elaborate case narratives.)

The analysis strongly suggests that what sets the French case apart are the unusually high levels of political leadership and power delegated to the climate assembly. Levels of power delegation[50] refer to informal, discursively shaped ascriptions—over which political leaders exert considerable influence through public framing and engagement.

In France, the President granted the climate assembly a "co-governance" role[50], expecting it to produce legislative proposals that he would transmit to Parliament or a referendum "without filter". This high-level endorsement and "quasi-legislative mandate"[35] gave the assembly unparalleled political weight. It drew exceptional media attention and public scrutiny from NGOs, journalists and opposition parties, which intensified as the government diluted and rejected parts of the assembly's recommendations. Moreover, the President instructed the government to draft a new law based on the assembly's recommendations. This approach reversed the logic observed in other cases, such as Berlin, where citizens' recommendations were expected merely to supplement existing plans or drafts. This political leadership, paired with public pressure, also helped tip the power balance in some backstage negotiations among public officials. Finally, to ensure legal feasibility and coherence of assembly recommendations, citizens were supported by a team of legal experts. This technical assistance may have increased the recommendations' usefulness for policymakers and the persuasiveness of their communication in the final report.

In all other cases, political leadership was either limited or fragmented across government actors with insufficient individual power. The level of power delegation[50] was to "advise", or to merely exert "communicative influence" through advocacy (Germany).

The German assembly lacked policy impact largely because it was a civil-society initiative without institutional anchoring or political sponsorship, launched shortly before a national election to influence the next government's coalition agreement. The UK assembly, by contrast, was a parliamentary process with limited government engagement and was primarily intended to "help Parliament hold the government accountable." In both cases, the initiators failed to secure meaningful commitment from those with the authority to act. The Austrian assembly was initially supported by both parties of a coalition government—consisting of Conservatives and Greens—but quickly came to be seen a Green-Party project with the Conservatives openly criticizing it as

unrepresentative. The Scottish assembly, though procedurally advanced and formally commissioned by the government, was initiated by Parliament, leading some government actors to see it as externally imposed.

The Berlin assembly had extremely limited impact. The Green climate and mobility minister responsible for commissioning the process used it as a tool to pressure coalition partners through a strongly worded commitment to "comply or explain". The assembly was integrated into a formal policy revision process and, amid parallel expert and stakeholder participation processes, struggled to provide input of added value to policymakers.

Why did some recommendations have impact whereas others didn't?

Only one in three recommendations impacted decisions in France. This calls for explanations at the recommendation level. Interviewees identified several reasons why individual recommendations lacked impact or were diluted.

Opposition from interest groups, ministries, and parliamentarians was the most frequently mentioned explanation (I1, I8, I9, I4). As one expert put it, the impact of recommendations "[..] solely depended on whether the opposition was sufficiently violent and strong enough for us to drop them—to some extent, a lot, completely, or not at all." (I4)

Other factors related either to practical barriers or substantiated political opposition. Practical barriers included cases where recommendations lacked novelty, or decisions had already been made but rather lacked implementation (I11); incompatibility with constitutional or EU frameworks (I11); and the vagueness of certain recommendations (I2). Political opposition was attributed to "false good ideas"—shared goals but disagreement on means (I2)—as well as perceived unfeasibility or radicalism (I7), clashes with political realities (I6), and trade-offs that the assembly had not considered or assessed differently (I6). Some interviewees criticized that economic and business perspectives were insufficiently represented in the information provided to citizens (I13, I7), which lend legitimacy to oppositional arguments such as unconsidered trade-offs.

Discussion

Citizens' assemblies consistently proposed more ambitious climate measures than their governments—a striking finding that warrants explanation. Several mechanisms may account for this pattern[51–54]. Mere exposure to facts and pro-environmental arguments can shift participants' attitudes [55], while deliberation tends to align policy preferences with underlying values such as inter-generational fairness[56]. Compared with politicians, the absence of electoral and partisan constraints allows citizens to express their preferences more freely[4]. Social influence among assembly members fosters opinion convergence[57]. Critics have raised concerns about potential biases in the selection of experts and information provided to citizens[58,59]—an issue yet to be thoroughly empirically examined. We believe the framing of the remit to be significant: when

citizens are asked to propose "solutions" to the climate crisis, it would be counter-intuitive to suggest less ambitious action. Instead, citizens can deliberately omit measures they oppose from their report, as was the case with carbon taxation in France[60]. Note that ambition was reported lower in Finland's climate assembly, where citizens were tasked to evaluate government proposals rather than draft their own and received less information about the gravity of the crisis[61].

Proponents of citizens' assemblies see them as a remedy to electoral and partisan constraints discouraging politicians from adopting ambitious or contentious measures[12,52]. Our analysis confirms that assemblies can indeed prioritize policies typically shunned by elected officials. In France, recommendations advanced climate policy by adding momentum, expanding existing plans, breaking political deadlocks, and introducing novel ideas. Yet, such influence remains exceptional, occurring mainly when political leaders delegate genuine authority and actively support the process. Often, governments engaged in "window-dressing"—signaling responsiveness without substantive change—or diluted recommendations. These findings suggest that the capacity of advisory citizens' assemblies to overcome partisan and electoral constraints —within the current model of ad-hoc initiated advisory assemblies—depends on specific scope conditions, notably political leaders' willingness to take the risk of entrusting power to randomly-selected citizens. This dependence on exceptional political will raises the question whether minipublics should instead be granted institutionalized authority alongside electoral institutions[62–66], as reflected, for instance, in the proposal to replace the UK House of Lords with a sortition-based chamber[67].

That many recommendations reiterated existing policies suggests shortcomings in process design. Future assemblies should engage policymakers more systematically to ensure participants understand ongoing policy debates—without constraining their independence or creativity. Research has shown that both politicians and citizens prefer minipublics in which they deliberate together[63,68–70].

Assembly design is often emphasized as essential for shaping process legitimacy, knowledge processing, and recommendation qualities[17]. While design choices may form the basis for policy impact, our comparative analysis suggests that even a sophisticated design, such as in Scotland, is not sufficient for policy impact. Instead, political context factors appear to be stronger predictors of assemblies' policy impact[22].

Readers should note several limitations of our study. Our data capture assemblies' impact on decision-making, not longer-term implementation. Future research could assess policy ambition more precisely by quantifying the effectiveness of individual recommendations in reducing greenhouse gas emissions. Since our study began, additional national-level climate assemblies have been convened, whose inclusion might refine or extend our conclusions. Moreover, findings may not generalize to local processes, where political dynamics and knowledge requirements differ. Future quantitative analyses could test recommendation-level explanations of impact. Importantly, broader assessments of citizens' assemblies should consider their wider democratic effects beyond their influence on decision-making.

In sum, citizens' assemblies can lead to more ambitious climate policymaking, though such outcomes remain rare and have occurred only where political leadership and delegation of authority were strong. Realizing their potential may require granting them greater institutional power, reducing dependence on elected officials who remain constrained by party politics, media spectacle, and electoral incentives. This would require a broader societal debate about the institutions and mechanisms that constitute a legitimate representative democracy.

Online methods

Cases

We analyzed five cases from what has been termed the "first wave"[17] of national-level climate citizens' assemblies in Europe, and one sub-national case. While the cases bear strong similarities regarding key internal design features characterizing citizens' assemblies—sortition, number of participants, duration, scope, learning and information provision, deliberation, outputs—they varied regarding their political context and external design—that is how they were connected to conventional political institutions and processes[19,22] (Table 1). We chose cases where the recommendations had been published at least one year prior to the start of the analysis to ensure sufficient response time.

Tab. 1: Case overview

Citizens' Assembly	Place	Year	Initiator/ Commissioner	Role
Convention Citoyenne pour le Climat	France	2019—2020	Government	Propose legislation/regulation
Climate Assembly UK	United Kingdom	2020	Parliament	Help parliament to hold government accountable
Scotland's Climate Assembly	Scotland	2020—2021	Parliament/ Government	Inform government decision making
Bürgerrat Klima	Germany	2021	Civil Society	Influence coalition agreement
Klimarat der Bürgerinnen und Bürger	Austria	2022	Citizenry/ Government	Inform government decision making
Berliner Klimabürger:innenrat	Berlin, Germany	2022	Citizenry/ Government	Inform policy process; foster public support

Tab. 1. continued

	Duration	Number of participants	Budget
FR	7x 2.5 days	150	€4,500,000
UK	3 weekends + 3 online sessions	108	£520,000
SCT	7 weekends	105	£1,400,000
GER	4x 8hrs + 8x 3hrs	160	€1,900,000
AUT	6 weekends	100	€2,000,000
BER	7 work sessions	100	€450,000

Source: Own based on Knowledge Network on Climate Assemblies[71].

Analytical framework and measurement

To measure the ambition of recommendations relative to government policy, we used a three-point-scale. Recommendations were coded as "more ambitious" when they called on governments or parliaments to act beyond the status quo—for example, by introducing new legislation or administrative measures, or by strengthening or broadening existing policies. They were coded as "less ambitious" when they were clearly weaker, or narrower in scope than current policy. When recommendations were similar in ambition compared with existing policy—differences were either vague, minor, or reflected only a rewording or repackaging of what already existed—they fell into the "neither" category. Recommendations were compared to policy documents reflecting the state of corresponding policy decisions at the start of the assembly (see Data section).

To measure impact, we assessed the effect of individual citizens' assembly recommendations on collective decisions in public policy and administration (policy decisions)[43]. These included legislation, cabinet decisions, administrative decisions, and, in Germany, the coalition agreement, but not positions of individual political actors without the capacity to make collectively binding decisions. The analysis covered short- to mid-term effects. Assemblies were typically succeeded by a period of administrative and political activity and follow-up inquiries. The impact analysis ends when these activities ceded, varying between approximately one and three years after the assembly.

Many studies on policy impact fail to establish causality because they only assess the uptake of recommendations by comparing them with policy documents[72,73]. To assess causal impact, we employed a counterfactual approach, asking whether the corresponding policy decisions would have been identical had the citizens' assembly not taken place. In other words, a recommendation was considered impactful only if it could be regarded as a necessary condition for a specific policy decision to have been made at that time. For each recommendation, we analyzed policy documents before and after the process. Additionally, we conducted expert interviews and expert surveys explicitly asking counterfactual questions, and demanding elaborations on causal mechanisms.

Following the logic of Bayesian process tracing[74,75], coders heuristically assessed the probability of all evidence at hand, given that the hypothesis of "impact" was true and given that the alternative hypothesis of "no impact" was true—that is all alternative explanations of a political decision[74–76]. If one probability clearly exceeded the other, the recommendation was coded correspondingly, and if not, it was coded as "high uncertainty". Both impact and ambition were coded by two coders for each recommendation, and the coding team deliberated on critical cases in regular meetings.

This context-sensitive analytical framework manifested in coding patterns summarized in Table 2. "Impact" was coded when an expert confirmed it with little doubt regarding the validity and credibility of the statement[77]. A combination of multiple consistent pieces of evidence could also be sufficient to code impact, even if each piece would have been insufficient individually. For example, impact was coded given near identical textual congruence between a recommendation and a policy decision paired with novelty—the recommendations' idea had not been politically discussed before—and extremely low political and financial costs. In France, the fact that a new law (known as *Loi Climat et Résilience [n° 2021-1104]*) was drafted based on the citizens' assembly recommendations presented a context increasing the probability of impact. "No impact" was coded when a recommendation did not substantially differ from prior policy decisions, no policy change was observed, experts confirmed lack of impact, or when policy change in line with a recommendation was observed but no further or only extremely weak evidence was observed. In most contexts, a government response which framed a policy decision as in line with a recommendation was considered as such extremely weak evidence. "High uncertainty" was coded given contradictory expert statements, serious doubts about the credibility or validity of an expert claim, or suggestive but insufficient evidence. Using the same data sources, we further differentiated between impact mechanisms defined in Table 3.

Supplement B provides a data file containing all results and explanations for each code and Supplement C the corresponding code book. In this paper, we refer to individual recommendations using the country code and PROPOSAL_ID variable, e.g., FR89 for CASE = "france" and PROPOSAL_ID = 89. Figures were created using RStudio. (See Supplement D for R-code reproducing them.) Chat-GPT 4.1-mini, 4o and 5 were used for translating French and German to English in the results data set.

Our explanation of impact is based on expert interviews and desk research utilizing diverse data sources including policy documents, news articles, peer-reviewed and non-peer-reviewed scientific publications, and materials provided by the Knowledge Network on Climate Assemblies (KNOCA). We employed analytical tools of qualitative content analysis, process tracing within cases and comparison between cases[78,79].

Citizens' assembly reports often include both actionable policy recommendations and broader guideline statements, such as the principle that climate mitigation serves the general public interest and should take priority over special interests (Germany)[32]. Our analysis focuses on policy recommendations, as the direct policy impact of abstract

guidelines is difficult to track given that they could be applied to almost any political decision.

Tab. 2: Measuring impact of citizens' assembly recommendations

Impact	• Expert confirmation of impact of sufficient validity and credibility • Multiple consistent pieces of evidence of individually limited validity or credibility
High uncertainty	• Contradictory evidence (e.g., opposing expert statements) • Expert confirmation of highly limited credibility or validity • Suggestive but insufficient evidence
No impact	• Absence of novelty or policy change • Expert confirmation of non-impact of sufficient validity and credibility • Presence of novelty and change but limited suggestiveness of impact and no further evidence • Single piece of evidence of limited validity/credibility (e.g., public government statement of uptake)

Tab. 3: Impact mechanisms

Impact	Impact mechanism	Definition
No impact	*No uptake*	The recommendation was ignored or rejected.
	No addition	Recommendation-related decision(s) already existed or would have been identical had the citizens' assembly not been.
Impact	*Fortifying impact*	The recommendation had impact by encouraging policymakers in their prior positions leading to a change in collective decisions and/or accelerating the further development of existing plans.
	Enriching impact	The recommendation had by adding substantive elements to existing or planned policy.
	Political impact	The recommendation had impact by enabling a collective decision where conflict previously prevented a decision.
	Innovating impact	The recommendation caused the adoption of a novel idea which had not been seriously considered by policymakers before.
	Shifting impact	The recommendation had impact by changing the direction of a collective decision—i.e., relevant policymakers collectively altered their position.
	Inhibiting impact	The recommendation had impact by making policymakers abandon previously planned policy.

Source: Adapted from AUTHORS[43] and Vrydagh[73].

Data

Documents. For each recommendation, we collected information about the state of corresponding political decisions before and after the assembly. In total, we considered 410 documents, predominantly official response documents to assemblies, policy documents (e.g., laws, decrees, strategies, reports), government websites, press releases, and news articles. (See Supplement E for a list of documents.)

Expert interviews and surveys. We collected data from 76 experts across all six cases, with Table 4 summarizing the number of expert interviews (56) and expert survey responses (20) per case. The number of interviews includes nine written correspondences. We soke experts holding political insider knowledge about the impact of assembly recommendations. Depending on context, these included civil servants responsible for coordinating a political response to the assembly or from specialized units responding to select recommendations, elected politicians, negotiators of the German coalition agreement, and individuals involved in the organization of the assembly (see Table 4). In total, we reached out, multiple times, to over 450 experts. (See Supplement F for a list of interviewed experts, including those from the French case referenced in the results sections.)

Tab. 4: Interviewed and surveyed experts

Case	Interview	Survey	Roles
Austria	8	2	a, b, c, d
Berlin	6	2	a
France	14	(2)	a, c, f, g, h
Germany	10	10	e, i, j, k
Scotland	6	2	c/m, n/m, l, o
United Kingdom	10	4	c, p, q, r, s

Table displays the number of expert interviews and expert survey responses, and the roles held by experts: a = ministry official, b = chancellery official, c = member of parliament, d = government advisor, e = civil-society commissioner, f = technical informant, g = journalist, h = governance committee, i = coalition agreement negotiator, j = employee of c, k = employee of i, l = anonymous, m = stewarding group, n = political scientist, o = secretariat, p = academic advisor (incl. expert lead), q = climate change committee, r = shadow minister, s = parliamentary official. The two survey responses in France came from experts who were later also interviewed.

Expert interviews were semi-structured, held online or in-person, and lasted between 30 and 90 minutes. Interviewers inquired about experts' involvement in the process and reliability of their impact knowledge. Experts were informed of the counterfactual understanding of impact. If an answer was ambiguous, interviewees explicitly asked whether a decision would have been identical had the assembly not taken place. Interviewees also asked about causal mechanisms leading to impact and lack thereof, with the mechanisms in Table 3 being part of the interview guide. Finally, experts were questioned about explanations for impact and lack thereof. Interviewers were alert to

possible social desirability issues but reported high-levels of openness, with very few exceptions.

Selected experts could also participate in a survey. Similar to the interview, experts were asked about their area of expertise, based upon which they answered questions about the impact and impact mechanisms of each recommendation lying in that area. The items informed respondents about the counterfactual understanding of causal impact. Each item additionally included and open field to leave comments. At the end, experts responded to open questions about the reliability of their knowledge, and additional knowledge about other recommendations. (See Supplement G for an exemplary survey.) All interview partners and survey respondents gave their informed consent.

Supplementary materials

Supplementary materials are available within the Open Science Framework: https://osf.io/ah6n4/overview?view_only=fd332ef25fa74af6ab3d5b4243e8290a

Data availability

Data will be made available at reasonable request to the corresponding author.

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Article 2

Building Support for Carbon Tax Policies: Does the Source of an Endorsement Matter?

Scientists Boost Carbon Tax Support

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ABSTRACT

Public opposition toward carbon tax policies has led to political backlash, and extant theory does not provide clear guidance as to which, if any, policy endorsements can increase support. Using multiple message sources, we tested the effectiveness of costly and redistributive carbon tax policy endorsements across three waves (2021-2024) of preregistered survey experiments in the United States ($N > 6000$), plus one in Germany. Results show that endorsement of a costly carbon tax can reduce backlash and increase support, while promotion of a redistributive tax policy had a polarizing effect. Compared to endorsements delivered by the government, an environmental NGO, a deliberative "minipublic", or no specified source, those attributed to scientists were the most persuasive. Contrary to predictions from deliberative and peer-effects theory, we found limited evidence of greater impact from a minipublic endorsement. Our conclusion considers the practical and research implications of these findings for public communication on climate policy.

SIGNIFICANCE STATEMENT

Public resistance to carbon taxes can threaten effective climate action. Whether and which communicators can build support for policies that impose costs or sanctions on citizens remains unclear. This study tested whether different sources of climate change tax endorsements—scientists, governments, NGOs, and citizen panels—can affect public opinion in the U.S. and Germany. Despite significant research and concern about science skepticism, we found that endorsement by scientists was consistently more effective than the other sources. Furthermore, we found little evidence that a scientist endorsement was less effective among supporters of the Republican Party. By identifying which endorsements reduce backlash and boost support, this research offers practical guidance for designing more effective public messaging about carbon taxes.

INTRODUCTION

Effective climate change policies, such as carbon pricing and taxation, often face public resistance when perceived as costly for consumers and constraining one's personal liberty (1–3). Though rare, this has led to climate policy backlashes from mass publics, like the Yellow Vest Movement in France or heated protests in Mexico (4). In the face of such opposition, elected officials hesitate to promote new policies (1, 5). Political leaders' reluctance, in turn, may reinforce public opposition (6).

Climate policy skepticism, however, is far from inevitable. Meta-analyses show that behavioral and normative messages can shift consumption habits or even support for climate policies (7, 8), though policy support is more resistant to change than disbelief in climate change itself (9). Still, researchers disagree about which messages, messengers, and contexts yield the most change (10, 11). For example, a study on immigration messaging found no effect differences across statements attributed to a Republican governor or a local resident (12). A comprehensive review concluded that the effect of climate messaging depends largely on both one's preexisting attitudes/behaviors and the credibility of the message source (13).

The broader theoretical backdrop for this study concerns the science of persuasion (14). Many models suggest that credible sources can influence public opinion (15, 16), unless their messages threaten preexisting beliefs (17). Others contend that the strength of the argument itself matters more than the messenger (18–21). For example, one study found that arguments increased support for the 2015 Paris Agreement on climate change more than source cues from the business sector or environmental NGOs (20).

The general public commonly sees scientists as credible sources, but science skepticism—particularly on polarizing issues like vaccination and climate change—remains a widely recognized concern (22, 23). A substantial body of literature suggests that scientists may struggle to bolster policy support and confront climate change skepticism, especially among conservatives and supporters of the Republican party in the US (24, 25). Having scientists explain their consensus view on climate change to the public may fall flat owing to preexisting biases that resist such messages, even if recipients understand the value of science (13, 26, 27).

We examine the role of source cues in part because some civic reforms have introduced a new kind of messenger. By generating messages via a novel assembly of peers, "deliberative minipublics" have been successful in influencing voters about a variety of public policies, including environmental regulations (28) even for audiences that should be most resistant to persuasion (29). The rapid proliferation of minipublics on climate policy are premised on such potential influence (30–32). Bodies like the 2020 Climate Assembly UK and the 2020 Convention Citoyenne pour le Climat held in France may have direct policy impact (33, 34), and they can transform the microcosm that participates in a climate assembly (35).

When it comes to public opinion, however, does a minipublic's endorsement carry more weight than that of more conventional sources like scientists, governments, or NGOs? On the issue of carbon taxes, in particular, few empirical tests of relative source effects exist. A study asking respondents to rank policy options found that an "expert commission" increased preference for both introducing and not introducing various mitigation policies more than if the government proposed such policies (36). One study of climate change and GMO policy priority found limited if any differences in increased support for "policies to reduce climate change" across messages from government agencies and corporations (37, 38). Still, many questions remain unanswered, including which sources are most effective in influencing public support for policies that impose *direct financial costs* on individuals.

To explore the practical significance of varied message sources, we tested preregistered hypotheses about the impact of a pro-carbon tax message in a series of three survey experiments in the US, plus one in Germany, between 2021 and 2024. In brief, we predicted that all message sources (minipublic, government, NGO, and scientists) would boost public support for carbon tax policies relative to a control group or an endorsement with no specified source. Following deliberative democratic theory, we also anticipated stronger effects for the minipublic's endorsement compared to conventional sources, with scientists being the second most effective messenger. Finally, we anticipated that politically conservative respondents would demonstrate resistance to any pro-tax message, with the exception of the nonpartisan minipublic messenger. (See all preregistered hypotheses in Supplemental Information ["SI"] A.)

In our online surveys, respondents randomly assigned to different experimental conditions read endorsements of a carbon tax randomly attributed to one of the different sources. In the 2021 and 2022 surveys, these endorsements advocated a tax policy acknowledged to be costly (i.e., about $50 extra in monthly household expenses). Given the potential importance of affordability in policy evaluation (39), the 2024 survey concerned endorsements of a redistributive tax (i.e., financially beneficial for low-income households but funded by high-income households). For simplicity, we focus on the results in the US for carbon tax support ($N \leq 6{,}077$). Endorsement effects on willingness-to-pay also followed comparable patterns except for relative source effects (see SIs) and details below. SI H shows that our cross-national survey in 2021 found similar results in Germany.

RESULTS

Support and opposition to carbon tax policies

We begin by describing baseline support for a climate change tax using a pre-treatment measure of support: "To limit climate change, some have proposed a Carbon Tax on products that cause greenhouse gas emissions. This tax would increase the cost of some goods and services that a typical household purchases. Do you SUPPORT or OPPOSE adopting such a Carbon Tax?" Table 1 shows that about 42% were in favor, 25% undecided, and about a third opposed the tax, with a stark variation across political affiliation that follows the same pattern as previous studies (24, 25).

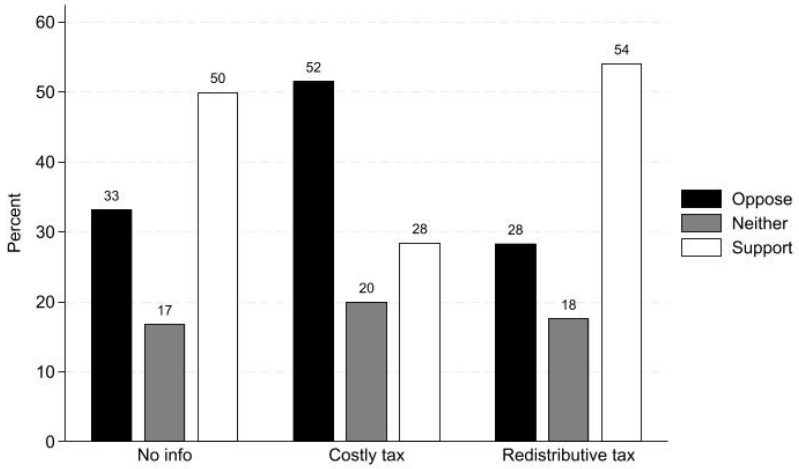
Table 1: Polarized carbon tax policy support and opposition (2021-2024)

	Political Affiliation			
Response	Dem.	Ind.	Rep.	Total
Support	65%	29%	22%	42%
Neither	23%	38%	21%	25%
Oppose	12%	33%	57%	33%
N	2747	729	2505	6077

Note: Figure shows all respondents' support of a carbon tax on products that cause climate change, measured pre-treatment. Respondents self-identified with the Democratic Party (Dem.), Republican Party (Rep.) (including leaners), or independent/other (Ind.).

The 2024 survey included three control groups with different post-treatment measures of tax policy support. One, received the same question as pre-treatment (see above); another learned the carbon tax "…would cost the average consumer about $50 extra each month"; and the last group was told the "…tax would financially benefit low-income households and is funded by high income households." Figure 1 shows the distribution of responses among these three groups in 2024. A majority supported the redistributive tax (54%), whereas most respondents (52%) opposed the costly tax. (See detailed results of pre- and post-treatment measures in SI C.)

Figure 1: Stronger support for a redistributive than costly tax (2024)

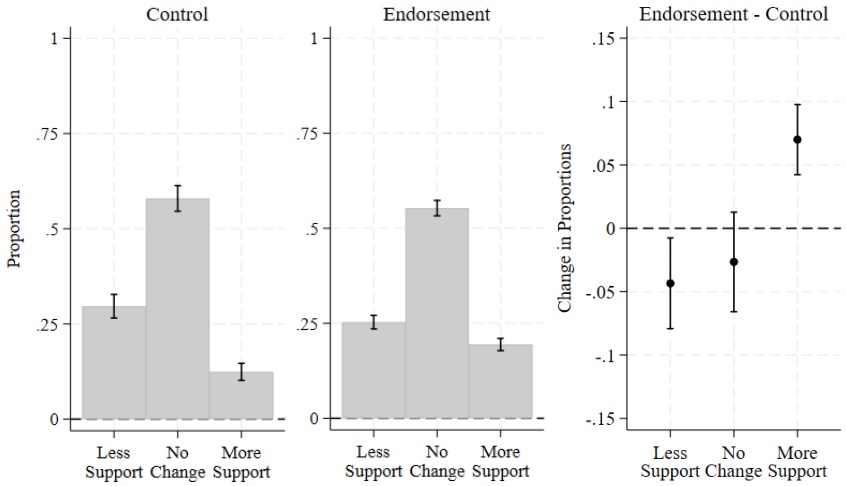


Note: Figure shows percent support for a carbon tax among control group respondents (measured after reading a placebo text). The "No info" group didn't receive any information about the tax policy, while the "costly" and "redistributive" tax groups learned key details.

Does the endorsement of a carbon tax increase support?

To test the effectiveness of policy supportive messaging, we examined whether reading an endorsement from *any* source boosted support for the *costly* version of the carbon tax. Figure 2 shows the results for post-treatment versus pre-treatment support. After seeing no endorsement of the policy, learning in the post-treatment question that the tax would cost $50 per month led to a backlash (i.e., decreased support relative to the pre-treatment baseline). About 30% of the control group respondents became more dismissive of the policy proposal. Reading an endorsement reduced that backlash by about four percentage points ($p = .015$), though a majority (approx. 55%) in both treatment and control groups did not change their mind either way. Finally, we observe 7 percentage points more support ($p < .001$) in the endorsement group compared to the control group. Taken together we find a significant effect of endorsement (in 2021-2) compared to an active control group ($\beta = .09$, $p < .001$) that reduced backlash and increased support (see SI D).

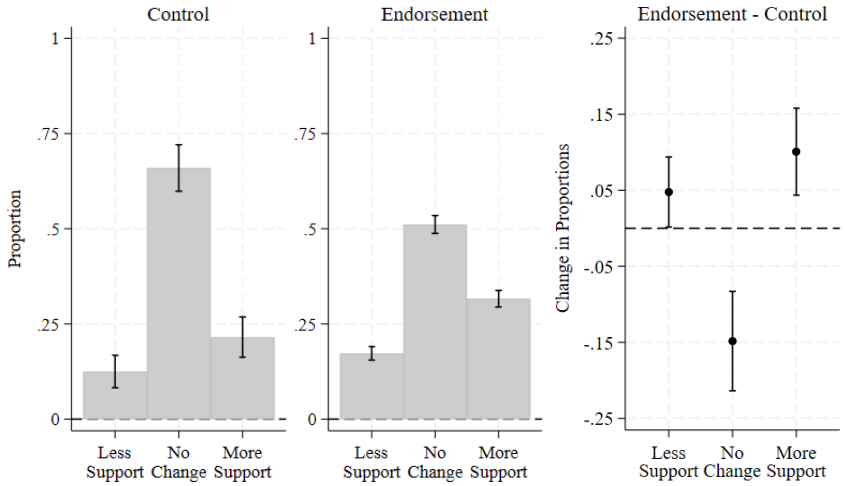
Figure 2: Endorsement of a costly tax increased support and decreased opposition (2021-22)



Note: The left and center panels show proportion of change in attitudes for the control and endorsement groups. "Less support" indicates respondents who moved at least one category from "extreme support" toward "extreme opposition" and vice versa for "More support." "No change" indicates the proportion of respondents who were unaffected by either the active control (learning that the tax would cost $50 per month) or the endorsement text attributed to a source. The righthand panel displays the estimated difference in these respondent groups. Spiked lines represent 95% confidence intervals.

Figure 3 shows that endorsing a *redistributive* tax policy had qualitatively different effects. Among the active control group—who learned that the tax would "financially benefit low-income households" and "is funded by high income households"—we observe more respondents increase their support (22%) than decrease (13%). Furthermore, exposure to an endorsement of the redistributive tax leads to a polarizing effect, with 32% of respondents becoming more supportive and 17% becoming more opposed to the carbon tax. Compared to the control group, opposition increased by about 5 percentage points on average ($p = .07$) and support by about 10 percentage points ($p = .002$). We also observed that among those reading an endorsement, significantly more (49%) changed their response compared to (34%) in the active control group ($p < .001$). Nonetheless, the polarizing effect of endorsements cancelled each other out, as we observed no overall difference in mean policy support between the control group and those who read a brief statement in support of the redistributive carbon tax (see SI D).

Figure 3: Endorsement of a redistributive tax had a polarizing effect on policy support (2024)



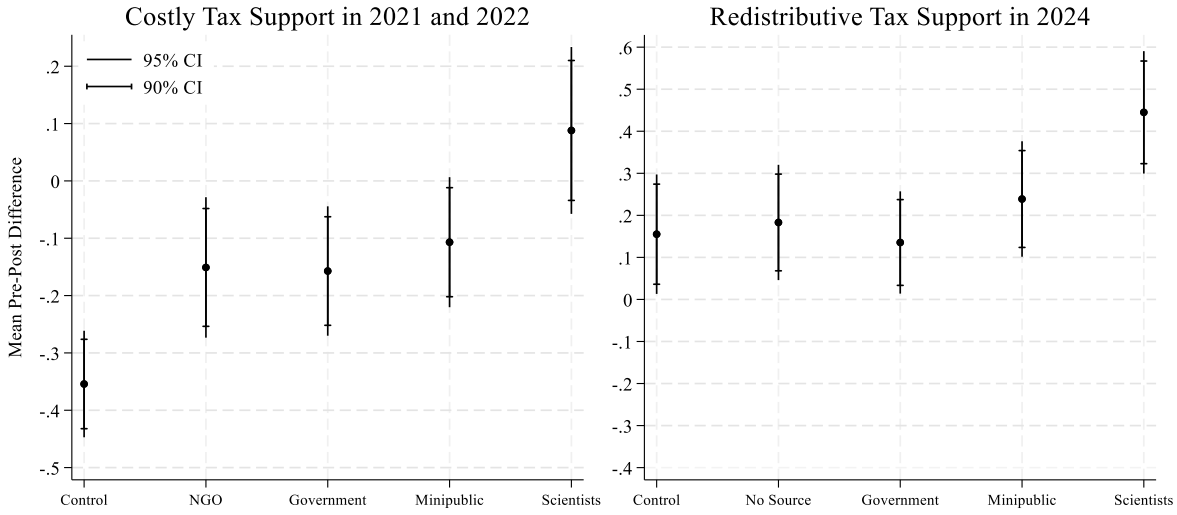
Note: The first two graphs show proportion of change in attitudes for the control and endorsement groups respectively. "Less support" are respondents who moved at least one category from "extreme support" to "extreme opposition", and vice versa for "More support". "No change" indicates the proportion of respondents who were unaffected by either the active control (learning that the tax would be redistributive) or the endorsement text attributed to a source. The third graph displays the estimated difference in these three proportions. Spiked bars represent 95% confidence intervals.

Are some sources more effective than others?

Having established that endorsement messages matter, we compared the relative impact of the different messengers. We compared sources directly across the experiments they appeared in. There were no differences in effects across the government, NGO and minipublic sources in the first two surveys combined ($p \geq .82$), nor between a government or minipublic message in 2022 and 2024 ($p = .69$). The scientist endorsement, however, was significantly more effective compared to the government ($p < .001$) and minipublic ($p = .01$) across the latter two surveys. In the 2024 survey on the redistributive tax, we found that the scientist endorsement was more effective than a message without a source ($p = .039$).

In terms of effects of endorsement across our studies, results reflect the findings above, i.e. small effects and somewhat larger for scientist endorsements (see Figure 4). In the 2021 survey, only the endorsements attributed to a minipublic had a statistically significant effect ($\beta = .10$, one-sided $p = .03$). In the 2022 survey, all endorsers (i.e., minipublic, government, NGO, and scientists) had a significant impact ($\beta = .10, .12, .14, .16$, respectively, $p \leq .003$). In the 2024 survey, however, only the endorsement from scientists had an average post-treatment policy support greater than the control group ($\beta = .09$, $p = .05$).

Figure 4: On average larger effects of a scientist endorsement



Note: Figures show the average difference between pre- and post-treatment measurement of policy support for indicated years. Control groups are informed about key policy features. The scientist endorsement was not included in the 2021 study. We pre-registered directional hypotheses.

We predicted the minipublic would have the greatest impact on respondent attitudes owing to its use of a deliberative microcosm of the public, but found little to bolster that claim. Only if we focus solely on our 2021 study do we find supportive evidence for its effectiveness relative to alternative sources. Then, the minipublic significantly outperformed endorsements from environmental NGOs (post-hoc Tukey one-sided $p = .04$). Conversely, we found more evidence that endorsement by a consortium of scientists had a larger effect than other sources or no source (see SI E).

Can some sources sway opponents more effectively?

Following previous research and extant theory,(29) we tested whether partisan political identity moderated the effect of a minipublic endorsement. We expected that a minipublic endorsement would have a greater impact on Republican respondents, whose pre-treatment responses showed strong opposition to the carbon tax (see Table 1) compared to Democrats.

We began by checking whether an endorsement, regardless of source, proved more influential with Republicans or Democrats. Pooling the 2021-22 surveys on the costly tax policy, we did not find consistent evidence that endorsement had a greater effect on Democrats or Republics. First, the difference in treatment effect size on policy support was close to zero. However, an endorsement had a significantly smaller effect on willingness to pay among Republicans compared to Democrats ($\beta = -.09$, $p = .04$). For the redistributive tax in the 2024 survey, Republicans increased their support on average more than did Democrats, but the difference was again very close to zero and statistically not significant. The effect on WTP was very small and the difference between Democrats and Republicans not statistically significant.

When focusing on the minipublic endorsement, we found no statistically significant moderation of treatment effects on policy across party identification; albeit a muted greater influence on Republicans compared to Democrats in 2024 ($\beta = .06$, $p = .37$). However, contrary to our hypothesis, we found a statistically smaller impact on Republicans' willingness to accept a costly tax in 2021 and 2022 ($\beta = -.14$, $p = .01$) but not a redistributive tax in 2024.

Exploratory analysis reveals no evidence to suggest Republicans were *less* receptive to a scientist endorsement than Democrats. Rather, most of the data points in the opposite direction. In our 2024 study, the effect of the scientist endorsement was on average larger for Republicans than Democrats ($\beta = .12$, $p = .11$). Separately, the 2024 endorsement had no effect on Democrats ($\beta = .04$, $p = .54$) but a significant effect on Republicans ($\beta = .17$, $p = .01$). Furthermore, the average scientist endorsement effect on Republican policy support was consistently larger than any other source's effect on Democrats. Across all sources, we found similar effects of endorsement on partisans (see SI F).

DISCUSSION

Willingness to pay for climate mitigation has grown over the past decade, owing partly to the increasing visibility of climate change's direct impacts (2, 7). However, public resistance toward climate mitigation policies persists (1). Addressing the climate crisis with the urgency it demands requires identifying effective messaging strategies that can heighten public awareness and support for policy action.

Our comparison of alternative message sources came amidst a wave of Citizens Assemblies on climate change (30, 31) and lingering concerns about the effectiveness of scientists as communicators (13). A series of surveys found that an endorsement of a costly tax can reduce backlash and increase policy support, but these endorsements polarized opinions on a redistributive tax. The first finding shows that recent global evidence of the effectiveness of climate messages not only applies to abstract policy support but also tangible, even costly, measures (40). The polarization effect presents a novel insight awaiting replication elsewhere.

We found little evidence to suggest that sources added much to the endorsement's impact, except if that source were a consortium of scientists. Surprisingly, despite concerns about political polarization and climate science skepticism among Republicans (41), we found that the endorsement had a comparable effect across party lines. In fact, a scientist endorsement of a redistributive tax significantly influenced Republicans' tax support, but not that of Democrats). Given concerns about people's ignorance of evidence-based argumentation, these findings offer some encouraging news for climate and science communication efforts.

The minipublic in our study did not perform as well as deliberative advocates of Citizens Assemblies might have hoped (31, 42, 43). Though there was some evidence that a minipublic message can increase policy support and that it might be more persuasive than an NGO, often its influence was comparable to any other source—or even an endorsement attributed to no source. One might point out that minipublics are the least well-known source among this study's respondents. Minipublics remain relatively rare in the US compared to Europe or the UK (44). By using a brief treatment text and a hypothetical minipublic, our surveys lacked the gravity that may come from deliberative minipublics that have real-world stakes and influence (45, 46). Thus, future research would have greater ecological validity if it timed such a test to coincide with an actual minipublic and referendum, particularly in countries familiar with these deliberative forums (47).

Our results offer a nuanced challenge to influential models of persuasion (13) that stress the importance of message sources, particularly when it comes to shaping policy support. Indeed, compelling evidence has already cast doubt on the prominent concern that citizens blindly follow their party when forming policy opinions—at least when they also receive substantive policy information (18, 19). Our findings may be in line with classic works (15, 48) showing that source cues tend to matter on issues of low personal relevance while substantial arguments are more important on issues of higher personal involvement, such as carbon taxation.

Subsequent studies on the effectiveness of alternative message sources might also consider more detailed exploration of the endorsement itself, such as by varying the type of information and strength

of arguments (21). Moreover, testing combinations of conflicting and aligned endorsements from multiple sources may better reflect real-world political communication and advance our scientific understanding on consensus messaging (6). The alternative carbon tax schemes elicited such different responses to warrant systematic variation in the nature of the proposed climate policy and its frames (38). If such studies employ larger samples, this will also permit estimating sub-group variations with more precision, which our research suggests may be small—yet possibly substantively important. Such studies should also continue to mine broader models of persuasion (14) to understand the cognitive and/or affective mechanisms underlying endorsement effects. Finally, longitudinal research will be necessary to determine whether the effects of repeated endorsements endure over time, particularly in modern information environments polluted with misinformation (49–51).

MATERIALS AND METHODS

Full replication materials (data and code) will be accessible at OSF (link made available before publication) in addition to details provided in preregistrations, 2021 (https://osf.io/dav3b), 2022 (https://osf.io/zpswu), and 2024 (https://osf.io/y3mer).

Ethics statement

The protocols for all studies in the current work were approved by the Duke Kunshan University Institutional Review Board. Participants were informed of their participation in this study, that it was not required, and that they could withdraw at any time. At the beginning of the survey, respondents were made aware of the possibility that they might be misled and provided with inaccurate information before learning further details at the end of the survey.

Experimental setup

We employed pre-post survey experiments. Respondents answered a series of questions, read or listened to a short text (average ~75 seconds read), then answered some of the same questions again (DVs), before finally answering demographic questions. In 2021 and 2022,[1] treatment group respondents read an endorsement of a flat carbon tax ("costly tax" in the article) to limit climate change. In 2024, the endorsement was for a redistributive tax scheme. Both endorsement messages informed respondents that their country was currently not meeting their climate target and action was needed. Next, the source proposed a carbon tax, arguing that it would effectively reduce emissions to help meet climate targets and reduce harms to future generations. For the costly tax scheme in 2021 and 2022, it apprised readers that said tax would incur monthly extra costs for average consumers (about $50 or 37€). In 2024, respondents in the treatment groups were provided with the following details about the redistributive tax: "The amount of tax paid would vary by household income because the tax revenues are given back as rebates. Those with an annual income over $250,000 would pay an extra $100 per month, whereas those with moderate incomes would pay no net tax. Households below the poverty line would receive about $60 in rebates each month." The treatment text closes with a short quote endorsing the tax despite its short-term costs (see SI B).

We varied the treatment text source, with respondents randomly assigned to one of four groups—a control group (N≈2000, all years) or a message from a minipublic[2] (N≈1100, all years)[35], the federal government (N≈1000, all years), an environmental advocacy group (N≈650, the "Sierra Club" in the US in 2021 and 2022; and "Fridays for Future" in Germany in 2021), a consortium of scientists (N≈800 in 2022 and 2024), and an endorsement without a source (N≈450 in 2024) (see SI G).

[1] Democratic president Joe Biden held office in the US throughout this survey, from 2021-2024.
[2] We collected larger minipublic samples for separate studies reported in other publications.

Respondents in the minipublic treatment group also received randomly assigned short texts (1-4) that described their features. Minipublics are relatively unknown among the general public. Analysis of the effect of these "source attributions" on persuasiveness shows very small, if any, effects (results described in other publications; see SI B).

The control groups were randomly exposed to a placebo text, either a verbatim BBC news article about "Brexit" or a verbatim statement about democratic decline by scholars in the US (German versions slightly adjusted; see SI B).

To test the endorsement effect, we utilized an active control group who learn a key detail about the policy. In 2021 and 2022, the post-treatment versions of the dependent variables (see below) included the following information: "…that would cost the average consumer about $50 extra each month." In 2024 the additional text was: "This tax would financially benefit low income households and is funded by high income households."

Measurements

To measure carbon tax support, we included two measures. First, a question asked whether respondents support the tax: "To limit climate change, some have proposed a Carbon Tax on products that cause greenhouse gas emissions. This tax would increase the cost of some goods and services that a typical household purchases. Do you SUPPORT or OPPOSE adopting such a Carbon Tax for the US?" (branched, with follow up about the level of support, range 1-7). Next, we asked about the willingness to pay (WTP), i.e. "How much is the most you are willing to pay in extra household costs per month to limit the negative consequences of climate change?" (single item). Options ranged from $0 to $120 or more (0-13).

To measure political identity (moderator in H3) we asked respondents "Generally speaking, do you usually think of yourself as a Democrat, a Republican, an independent, or none of these?" followed by "Would you call yourself a strong Democrat/Republican or a not very strong Democrat/Republican" and finally "Do you think of yourself as closer to the Republican Party or to the Democratic Party?" Responses were coded as 1 if respondents identified with or leaned towards the Democratic Party, 2 if they neither identified nor leaned towards either party, and 3 if they identified with or leaned towards the Republican Party.

See survey instruments attached to our preregistrations for further details about measurements, including copies of the survey instruments (see links above).

Participants

Power analysis was conducted using data from pre-tests (data not included in this study). Our goal was to obtain .8 power to detect a small to moderate effect size of ~.2 SDs at .05 alpha error probability.

Participants were recruited in the US by Qualtrics in 2021 and 2022, but Prolific in 2024. Respondents were remunerated according to the standard rate of these services. The survey was administered using Qualtrics software. Just over 6,000 respondents were recruited in total. The samples were stratified by age, education, and political party in 2021 and 2022; and gender and political affiliation in 2024[3] (see SI G).

We also collected a separate sample from Germany in 2021 of about 1500 respondents, stratified by age, gender, and education. Results are comparable to the US in 2021 (see SI H).

[3] We stratified by party affiliation in the US to ensure sufficient representation for detailed subgroup analysis reported in other studies.

Survey respondent attentiveness is a growing concern among scholars, in particular in self-administered on-line surveys (52, 53). We use factual manipulation checks to ensure respondents were attentive and exposed to treatment (54). Across all studies, we included two factual manipulation checks and excluded from analysis those who failed either one. In 2022 and 2024, respondents who failed a manipulation check were redirected to re-read the treatment text and were allowed to continue if they passed the manipulation check a second time. We also included attention checks in 2022 and 2024 where respondents were terminated from the survey (before treatment) if they failed.

Analysis

In the main paper we present results using our direct measure of policy support (see above) but provide analysis of willingness to pay in SIs. Our independent variable is coded as 0 for control group and 1 for treatment group (i.e. which source was presented). Our dependent variables are the difference between post-treatment and pre-treatment measure of a) carbon tax support and b) willingness-to-pay. We test the main effects for H1 and H2 and moderation for H3 (see SI A for full list of hypotheses). For H1, we test the statistical difference in pre- vs. post-treatment means between the control and treatment group. For H2 we use ANOVA and post-hoc Tukey test to evaluate differences in effects across message sources. For moderation, we test the differences in pre- vs. post-treatment means, across categories/levels of pre-treatment measure of the [MODERATOR], between control and treatment group. Our analyses (main effects and moderation) utilize weighted regressions using coarsened exact matching (age, gender, and education) to ensure balance between the control and treatment groups. For all regressions, we use robust standard errors (hc3). We report standardized beta coefficients in the paper.

We present unweighted results in Table 1 and Figure 1. Figures 2 and 3 present percent (unweighted) and confidence intervals (CIs) where the dependent variable has been split into three categories comparing respondents' results between the pre-treatment and post-treatment measurement: 1) negative change, 2) no change, and 3) positive change. Furthermore, they show CIs from a test of proportions. Figure 4 shows unweighted means and CIs.

SUPPLEMENTARY INFORMATION

Supplementary information is available within the Open Science Framework: https://osf.io/xrg3p/overview?view_only=a0b2d4551be74b868ebed722598a3f86

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Article 3

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Political embedding of climate assemblies. How effective strategies for policy impact depend on context

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A B S T R A C T

Scholars and practitioners discuss how to increase the policy impact of climate assemblies (CAs) noting that their proposals tend to be more ambitious than government policy. CAs comprise groups of randomly selected citizens (minipublics) who deliberate on climate policy issues. We argue for greater focus on how political actors strategically use CAs and suggest welcoming some of this strategic use. We propose that CAs, and minipublics more generally, need *political embedding*. That means, minipublic designers should first consider how political actors will likely interact with a process given their interests and political context, and subsequently make deliberate use of strategies to foster objectives like policy impact. Using a thought experiment, we then demonstrate that the effectiveness of such political embedding strategies to promote CAs' policy impact depends on political context. Our analysis shows that the impacts of mass publicity, commissioning actors, inclusion of perspectives, and strategic framings vary with the constellation of interests of climate political actors. This exercise challenges sweeping statements about optimal CA and minipublic design, contributing to more realistic theorizing. Considering political embeddedness will help democratic reformers assess potential models for minipublic institutionalization more accurately.

1. Introduction

Deliberative minipublics on climate change—citizen participation methods based on random selection of participants and intense deliberation—have become increasingly popular. In the past few years and in Europe alone, national governments and NGOs have invested millions of euros in these so-called climate assemblies (CAs) (KNOCA, n.d). Many scientists and practitioners hope that CAs can drive progressive climate policy partly because participants do not face the same institutional constraints as politicians, such as concerns about re-election and career progression (e.g., Willis et al., 2022).

Researchers have studied the policy impact of CAs (Wells et al., 2021; Weber, 2023; Hoffmann, 2023), and the factors moderating their impacts (e.g., Elstub et al., 2021a; Torney, 2021), aiming to design more effective processes in the future. However, past research has been criticized for formulating overly simplistic theories (Boswell et al., 2022). Context variables have received little systematic attention, particularly those describing the political context (but see Ainscough and Willis, 2024; Lewis et al., 2023; Setälä 2021). Scholars rarely discuss what different constellations of actors and their political agendas mean for the prospects of CAs. This is striking, considering that it is often argued in quite a straightforward manner that CAs can have *political effects* like breaking deadlocks or reducing influences of lobby groups (Willis et al., 2022). This neglect of political agendas and context might lead to simplistic beliefs about the (in)effectiveness of CA designs.

Our aim is to build more nuanced and useful scientific theory explaining the (lack of) policy impact of CAs, and minipublics more generally, ultimately contributing to more effective and politically embedded processes in the future. We do so by demonstrating how the effectiveness of strategies to promote CA policy impact depends on political context using a thought experiment. Next to academic scholars, this paper speaks to all practitioners who are, in some way, involved in minipublic and CA design and framing. These can include civil servants, politicians, professional service providers, civil society representatives, and academics (Elstub and Escobar, 2019, Section III; Pfeffer forthcoming 2025).

After sketching the extant literature on minipublic policy impact (Section 2.1), we conclude that a strategic political usage of minipublics

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is a ubiquitous fact and can even be desirable (Section 2.2). We then argue for strategic political embedding of CAs (Section 2.3). Political embedding means that minipublic designers first consider how political actors will likely interact with a process given their interests and political context, and subsequently make deliberate use of strategies to foster their objectives. In this paper, we focus on political embedding of CAs to enhance policy impact – specifically progressive climate policy impacts.[1] Hence, the paper is written from the perspective of those aiming for progressive climate policy to address the dangerous risks climate change poses to societies (Lenton et al., 2019; Magnan et al., 2021; Rising et al., 2022). (Despite this instrumental framing, our analysis promises insights for minipublics independent of policy substance – see discussion.)

In Section 3, we introduce our analytical approach, main concepts, and assumptions. Our thought experiment in Section 4 demonstrates how effective strategies for promoting CA policy impact vary across different climate political contexts. We focus on four strategies of political embedding related to minipublic design and communication: initiation and commissioning, inclusion of perspectives, strategic framing, and publicity. Our analysis challenges prevailing, overly general statements about the determinants of minipublic policy impact. For example, while mass public attention might be necessary for policy impact in one context, its effects could be unclear in another. We raise questions about impact mechanisms yet unaddressed in extant theory.

2. Minipublic impact, political usage, and political embedding

Deliberative minipublics convene representatively selected groups of ordinary citizens discussing political issues. They are provided with balanced information, may hear experts and stakeholders, and ultimately decide upon a collective outcome such as recommendations (Smith and Ryan, 2014). To date, most minipublics have an advisory role to elected officials, and some have been connected to public referendums (Setälä 2021). In this paper we focus our analysis on advisory minipublics. Citizens' assemblies are one form of minipublics characterized by a relatively large number of participants (typically about 80–160) and long deliberation times spreading several weeks (Reuchamps et al., 2023). Climate assemblies (CAs) are citizens assemblies on climate-related issues (Boswell et al., 2022). Here, we sketch the state of the art of research on minipublics more generally before diving into a thought experiment within a climate political context.

2.1. Policy impact and its determinants

There is little robust and systematic knowledge about the policy impact of minipublics and CAs (Jacquet and van der Does, 2021; Jacquet et al., 2023). Present evidence suggests that they can sometimes have direct impact on policymaking, that the extent varies between cases but is generally rather low, and mostly limited to supporting existing government plans—e.g., by providing momentum or reducing policymakers' uncertainty (Weber, 2023; Hoffmann, 2023; Vrydagh and Caluwaerts, 2020; Wells et al., 2021). Stronger policy impacts, such as breaking deadlocks, shifting positions or introducing innovative ideas, appear exceptional (Weber, 2023; Vrydagh and Caluwaerts, 2020). In this paper, we focus on direct impacts on policymaking, although other impacts should also be considered when assessing the overall value of minipublics (e.g., discursive, or democratic impacts) (e.g., Curato and Böker, 2016; Jacquet and van der Does, 2020).

Limited evidence suggests several determinants of impact for minipublic proposals, which can be categorized into context, design, and proposal factors. Font et al. (2018) found that proposal and context variables were the strongest predictors of the impact of participatory processes, including minipublics. Predictors include the degree to which a proposal aligns with policymakers' previous positions and existing policy, the economic costs associated with implementation, and the quality dimensions of proposals, such as their usefulness for policymakers (Weber, 2023; Vrydagh and Caluwaerts, 2020; Wells et al., 2021; Font et al., 2018). Although less systematically tested, political culture, particularly perceptions of the legitimacy of minipublics, is expected to moderate their policymaking impacts (e.g., Dryzek and Tucker, 2008).

Minipublic designs have been argued to affect policymaking impact, because they can influence the nature and quality of proposals, perceived minipublic legitimacy, minipublic awareness and relevance among policymakers, and the political dynamics surrounding it (e.g., Elstub et al., 2021a). Internal dimensions describe how deliberations in minipublics are organized – e.g., participant selection, agenda framing and scope, information provision, or deliberation times (Boswell et al., 2022). External design dimensions refer to the multiple ways in which minipublics are connected to conventional policymaking structures and processes—e.g., their commissioning body, purpose framing, timing, or follow-up. Design, particularly external dimensions, is related but not equal to our concept of political embedding (Section 2.3).

2.2. Political usage of minipublics

In this paper, we focus on how political actors strategically interact with minipublics. It has been acknowledged that minipublics operate within a system fueled by political interests and power struggles, and that impact primarily hinges on them (e.g., Parkinson, 2006). However, this is rarely discussed focally in scientific publications (but see Courant, 2022; Lewis et al., 2023; Hendriks, 2006, 2009).

While scholars adopting a deliberative democracy lens on minipublics tend to be suspicious of political actors' interests and strategic actions (Hendriks, 2009), we argue that it is important to embrace political usage of minipublics. Minipublics have traditionally been viewed as an antidote to strategic actions in electoral democracies. Their value is often portrayed as allowing political communication shielded from politics. Hence, political uses of minipublics are seen as reprehensible, and co-option is scented whenever political actors are closely coupled to a process (Hendriks, 2016). Against this background, we argue that deliberative scholars ought to embrace political usage of minipublics, not only because it is a ubiquitous fact, but also because it is desirable (also Hendriks, 2009). If political actors do not attempt to make strategic use of a minipublic, it is probably because they believe the process is politically irrelevant, which in turn makes it politically irrelevant, and unlikely to have any notable systemic effects. We think this is undesirable.

For conceptual clarity, *political usage* can entail but is not equal to co-option or manipulation. While political usage of minipublics refers to *all* strategic action by an actor toward specific political goals, co-option or manipulation are specific strategic actions to steer minipublic deliberations and their outcomes to an illegitimate degree. For illustration, consider two cases of political usage that are *not* known to have been manipulated: In the frequently cited Irish success case, political actors strategically used a minipublic to address a contentious abortion issue (Farrell and Suiter, 2019). In Berlin, a minister of the Green party used a climate assembly to pressure coalition partners toward more progressive climate policy, partly through making strongly worded promises to 'comply or explain' (Weber, 2023). Political usage is often exercised through minipublic design and communication strategies constructing

[1] As scholars concerned with democracy and the climate crisis, we believe a note on normativity is due. We explicitly treat social action to mitigate and adapt to climate change as normatively desirable, while acknowledging that there will always remain some tension with the value of open-endedness in democratic processes. We do not think any 'progressive climate policy' is necessarily desirable. Some policies may be seen as unfair, ineffective, illegitimate, and so on. We hope that good democratic processes will favor progressive climate policies of higher intersubjective value over those of lower value. In this paper, we treat progressive climate policy as generally desirable, for simplicity.

the role and political relevance of a process. We contend that, from a democratic reformers' perspective, the question ought not be how to prevent political usage of minipublics, but how to enable political usage that effectively enhances system performance while limiting the risk of undue manipulation and co-option (cf. Batory and Svensson, 2019).

While we endorse political usage of minipublics, extant scholarship cautions us that enthusiastic attempts to democratization and radical change often get co-opted by political elites, resulting in mere window-dressing without meaningful disruption of power imbalances, dominant worldviews, and entrenched policy practices (Bua and Bussu, 2023; Boswell, 2016; Blue, 2015; Blue and Dale, 2020; Fung and Wright, 2003; Elstub and Khoban, 2023). Commissioners of participation often exert strong influence over processes, e.g., by setting and framing agendas and selecting experts and information (Pfeffer, 2024). Aware of this, organizers of recent European CAs have experimented with governance structures by varying which actors are involved in agenda-setting, and with how much power (Pfeffer forthcoming, 2025). Moreover, once policy proposals enter traditional politics, they are often watered-down, cherry-picked, or re-interpreted during decision-making and implementation (Font et al., 2018; Boswell, 2016; Galván Labrador and Zografos, 2023). Hence, political embedding must consider follow-up mechanisms fostering accountability and scrutiny, to countervail power asymmetries favoring well-organized lobby interests later in the policy process (Boswell, 2016; Galván Labrador and Zografos, 2023; Fung and Wright, 2003).

2.3. Political embedding of minipublics

The view that political usage of minipublics can both enhance and undermine their value is related to the concept of embeddedness in participatory governance (Bussu et al., 2022; Ainscough and Willis, 2024; also see 'coupling', Hendriks, 2016). For Bussu et al. (2022), "embeddedness […] provides a means for assessing which forms of [formal and informal] institutionalization are desirable and productive" (p. 136). The authors differentiate between a temporal, spatial, and practice dimension to capture varieties regarding when, where, and how participation processes are connected to actors and institutions in political systems and governance contexts. We propose to add the dimension of political embeddedness.

Adopting a *political embeddedness* perspective means analyzing how political actors interact with participatory processes considering their motivations, strategies, and (power) relationships within a political context, and assessing the resulting effects (like Hendriks, 2006). The act of *political embedding* refers to the deliberate use of strategies to foster the objectives of a participatory process considering how political actors will likely interact with the process in a given context. Such strategies of political embedding can entail design choices, communication approaches, and other activities. While political embedding overlaps with minipublic design, it is not identical; political embedding emphasizes the strategic consideration of political actors' motivations and anticipated behaviors and includes activities beyond design. In this paper, we focus on the political embedding of CAs to achieve the objective of policy impact.

Political embedding of minipublics and CAs requires an understanding of how such processes affect dynamics between political actors, i.e. their political impact mechanisms. Advocates of minipublics have made bold claims about their potential to break political deadlocks, limit the influence of the fossil fuel lobby, enhance public support for policy change, or challenge governments (Willis et al., 2022; Hammond, 2020; Howarth et al., 2020). However, these claims (or hypotheses) are often backed by little substantial empirical evidence. Previous research has not thoroughly theorized the contexts in which these mechanisms are plausible or identified the relevant actors and their political usage of the minipublic as implied in the causal mechanisms. Developing these theoretical aspects is crucial because they inform about the impacts we can (not) expect from minipublics and CAs in different contexts, the challenges they may face, and the strategies of political embedding that might address these challenges.

In sum, advocates posit minipublics' potential for strong policy-making impacts through political mechanisms, but current evidence suggests such impacts have been exceptional. They depend on political interests with political actors making strategic use of minipublics, e.g., through design and communication strategies. We argue that political embedding is needed to enhance minipublics' policymaking impact. Surprisingly, the ways in which political contexts—constellations of actor interests, strategies, and relationships—affect the policy impact of national- or state-level minipublics is understudied.

Hence, we are interested in i) how the political context of minipublics determines which political impact mechanisms are plausible and thus ii) which strategies of political embedding are effective to enhance policy impacts (Fig. 1). We focus on contexts of climate policy and CAs, as they have attracted particular scientific and societal attention and form the center of this special issue. Therefore, we ask: *How does the political context of Climate Assemblies moderate the effectiveness of political embedding strategies to enhance impacts on climate policy?*

3. Analytical approach

3.1. Thought experiment

To address our research question, we conduct a thought experiment. Thought experiments are a well-accepted analytical tool in various scientific fields ranging from physics to political theory (Stuart et al., 2018; Brownlee and Stemplowska, 2017). As Brownlee and Stemplowska note,

> "they can (1) expose a contradiction, (2) undermine a key premise, (3) reveal a conflation of concepts or principles, or (4) highlight the counterintuitive implications of an argument. In positive terms, they can (1) demonstrate the consistency or coherence of a set of principles/concepts, (2) highlight congruities and similarities between different claims, (3) reveal the scope of the application of a given principle, and (4) bring forth intuitions not previously considered, amongst other things." The authors define a thought experiment as "a multi-step process that involves (1) the mental visualization of some specific scenario for the purpose of (2) answering a further, more general […] question about reality" (Brownlee and Stemplowska, 2017, p. 25).

For our analysis in Section 4, we proceed as follows: Operationalizing political context, we first introduce four different scenarios of climate politics, each highlighting an ideal typical political barrier to progressive climate policy (Fig. 2). For each context scenario, we then examine the plausibility of several political impact mechanisms (Table 1) and the effects of a selection of political embedding strategies on CA policy impact. Finally, we compare how the effects of political embedding strategies differ across political contexts, i.e., how some strategies are promising in one political context but not another (Table 2). Before we begin this thought-experimental analysis, we outline our key concepts and assumptions.

3.2. Concepts and assumptions

(Progressive) impact on climate policy is a key objective of many CA practitioners (Averchenkova and Ghilan, 2023) and serves as our dependent variable. Here, progressive climate policy impacts broadly refers to collective political decisions (partly) caused by a CA that are more ambitious than existing government policy. Progressive climate policy impact implies that CA proposals are both more ambitious than government policy and have impact on policy decisions. In our scenarios, we assume the first condition is given—i.e. that CAs will produce ambitious recommendations on climate issues, and political actors anticipate this. On average, this seems to be an appropriate assumption

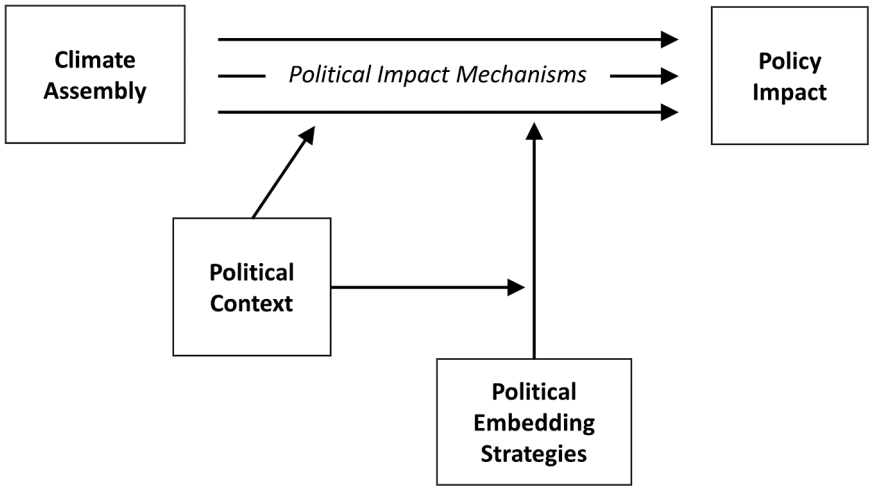


Fig. 1. Analytical Perspective.

(Weber, 2023; Hoffmann, 2023; Lage et al., 2023), although future research should revisit this and investigate scope conditions. Hence, we assume that the stronger the impact of CAs on public policy decisions, the more progressive climate policy will become. We therefore assume that political actors supporting progressive climate policy change aim at enhancing CA policy impact, and vice versa.

Context, for us and in the most general sense, refers to variables that constitute the main barriers to policy change in a given policy subsystem on a given issue (Pfeffer, 2024). These can include political barriers like lacking government motivation, conflict within government, influential lobby interests, lack of voter support and government wariness of public resistance, but also non-political barriers such as limited administrative capacities, bureaucratic inefficiencies, limited knowledge, lack of co-ordination, and so on (also see Jordan et al., 2022). Given the importance of political will for CA policy impact (Section 2.1), we focus on the politics dimension of context as the focal interest of this paper. We operationalize this political context through scenarios in Section 4.

Political impact mechanisms refer to models hypothesizing a causal chain that explains how minipublics lead to policy impact—progressive climate policy change—by altering the strategic behavior of relevant political actors. Hence we exclude mechanisms that only focus on minipublics' internal processes and outputs, such as the argument that CAs foster progressive climate policy because they may be more rational, just, or future-regarding than conventional political actors (e.g., MacKenzie and Caluwaerts, 2021). Such mechanisms do not explain how minipublic outputs become collective political decisions. We derived a list of political impact mechanisms from the literature on deliberative minipublics and classic dynamics in public policy processes (e.g., Goodin and Dryzek, 2006; Dryzek et al., 2019; Beauvais and Warren, 2019; Howarth et al., 2020; Weible and Sabatier, 2018) but formulate them in more abstract terms to increase their analytical value and transferability (Table 1). We also spell out more detailed sub-mechanisms as falsifiable hypotheses to invite future empirical scrutiny as many mechanisms lack testing (Ryan, 2023).

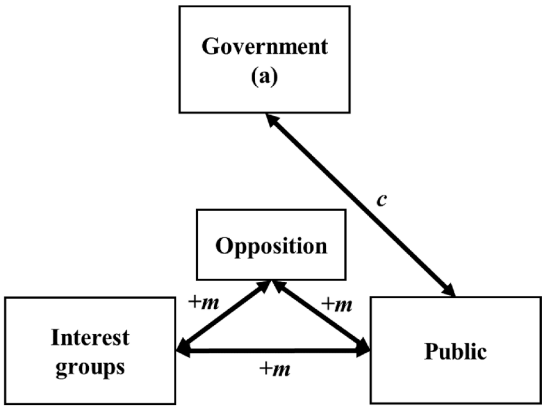
Minipublics may lead to policy change by pressuring and *challenging those in power* to alter their policy positions (e.g., Hammond, 2020), for example by demanding more ambitious climate policy like a ban on domestic flights in France (CCC, 2021, pp. 252–262) or a speed limit on highways in Germany (Bürgerrat Klima 2021, p. 48). Minipublics might facilitate policy decisions by *reconciling conflicts* (or breaking deadlocks) (e.g., Setälä 2017), for example by proposing new solutions that are more acceptable to conflicting parties due to their substance, or by providing actors with an opportunity to avoid losing face. Minipublics may foster policy change by *constraining the power of opponents* to change (e.g., Willis et al., 2022), for example by reducing the direct influence of fossil fuel lobby interests or limiting oppositional groups' capacity and/or willingness to mobilize, be they elected or non-elected. It may, for instance, be less easy to mobilize against "what citizens want" compared to "what government dictates". It may also be less convincing for opponents to mobilize if they were somehow included in the process. Minipublics may facilitate policy change by *empowering supporters* of change, for example by providing them with political resources to legitimize their decisions and persuade others, or by reducing their uncertainties over how their policy decisions will be received in public (Goodin and Dryzek, 2006; Howarth et al., 2020). Finally, minipublics may facilitate policy change by *persuading the public*, for example by altering public discourses, changing public attitudes, or limiting the risk of public backlashes (Niemeyer et al., 2018; Warren and Gastil, 2015) – although there is conflicting evidence on whether people change their attitudes based on minipublic information (cf. Ingham and Levin 2018a, 2018b; Már and Gastil, 2021; Gastil et al., 2023; Boulianne, 2018; Esaiasson et al., 2016). Our analysis will demonstrate that some mechanisms can occur simultaneously and may interact synergistically, while others interact in an antagonistic way.

Political embedding, in our analysis, refers to the deliberate use of strategies to enhance policy impact of a CA considering how political actors will likely interact with the process in a given context. Such strategies can entail deliberate choices along numerous dimensions of minipublic design and communication (see Smith, 2022; Curato et al., 2021a for lists of design features). To operationalize political embedding in our thought experiment, we focus on four dimensions: *initiation and commissioning, inclusion of perspectives, strategic framing, and publicity*. While we consider these dimensions important, we do not claim they have the most explanatory power for policy impact. Our goal is to show how effective strategies for policy impact depend on context, using these dimensions as examples. We will also discuss design dimensions that may not depend on context later (Section 4.3).

- **Initiation and commissioning** has been argued to affect policy impact (Hoffmann, 2023; Pfeffer forthcoming, 2025). Government commissioning may increase policy impact compared to parliament, or civil society commissioning (Hoffmann, 2023), but commissioner constellations are complex (Boswell et al., 2022). Commissioning by single ministries has been argued to reduce policy impact because other affected ministries were not integrated (Weber, 2023).
- **Inclusion of perspectives** refers to the selection of information provided to minipublics (Curato et al., 2021b) but also to whether and how different actors are integrated in the process (cf. Hendriks, 2006). Integration can range from merely being informed to providing testimony, being involved in process governance and even

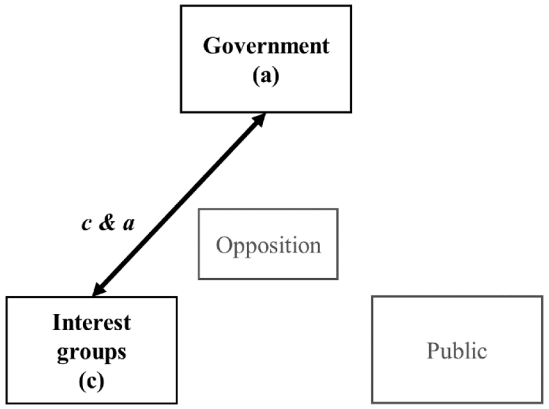
A. Overcoming government hesitance

A unitary government agrees that the consumption of animal-based products needs to be reduced significantly to decrease animal-based greenhouse gas emissions. However, the government is worried that political measures will face strong public resistance and will be exploited by the opposition resulting in a major loss of voter support. Moreover, the well-organized farmers' association has signaled to mobilize against any major policy changes. The public tends to sympathize with farmers, especially smallholders. Environmental groups support government plans.



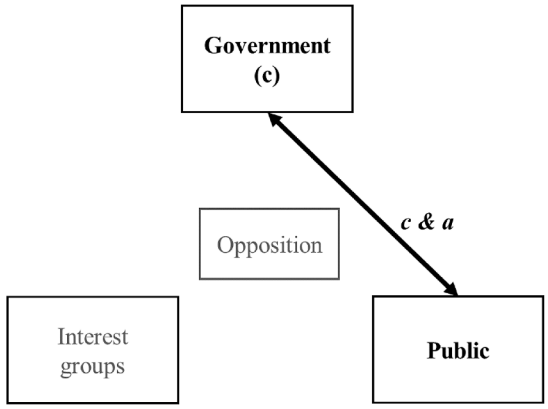
B. Steering collaborative governance

An energy ministry plans tightening regulation in the power sector to accelerate the transition towards carbon neutrality. Environmental groups are in favor but demand more while large energy companies oppose the plans. This policy subsystem has a history of collaborative policymaking and trustful personal relationships. The ministry depends on collaborations with energy companies on other matters, like heating and private investing in new technologies. Government wants to avoid accusations of being ideologically biased and a threat to the economy.



C. Overcoming government deadlock

Two parties in a coalition government are in conflict over a set of climate measures including stricter speed limits on highways. The conflict has led to deadlock. The greens support stricter climate measures while the conservatives oppose them. Public opinion is slightly in favor of green positions but polarized. Conservatives fear voter loss if they supported climate measures and believe that vetoing a speed limit will increase their approval rates.



D. Challenging government (in)action

A unitary government assigns low priority to saving greenhouse gas emissions. A majority of citizens is generally concerned about climate change when questioned, but it is not ranked among the top issues that citizens find most important, and there is no salient discourse in the mainstream media. The environmentally concerned minority in the opposition and environmental advocacy groups have not been able to mobilize their supporters to pressure the government demanding more climate action.

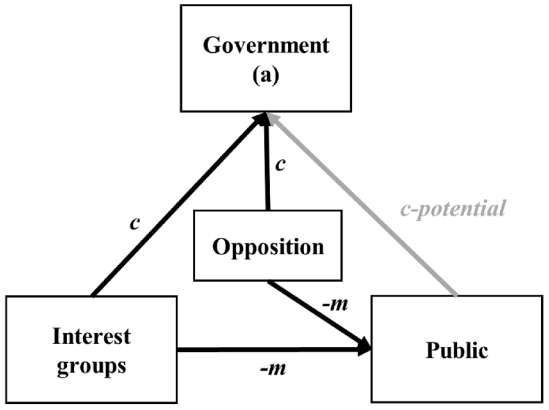


Fig. 2. The political context of Climate Assemblies: Ideal-typical scenarios of climate politics.
Note: Panels on the right display actor constellations of scenarios ***A*** to ***D***, highlighting relationships of particular importance for explaining barriers to progressive climate policy. Symbols: ***c*** denotes conflict between and within actor groups with regards to their political goals, while ***a*** stands for alignment. ±***m*** displays high or low capacities of actors to mobilize against (or for) policy change.

Table 1
Hypothesized political impact mechanisms of minipublics.

Political impact mechanism	Sub-mechanism hypotheses
Challenging those in power	• Demanding more ambitious (climate) policy • Pressuring through mobilization and media attention
Reconciling conflicts	• Providing novel compromise solutions • Providing opportunities to avoid losing face
Constraining the power of opponents	• Limiting opponents' capacity/willingness to mobilize • Reducing (fossil fuel) lobby influence
Empowering supporters	• Providing opportunities to legitimize policy action (e.g., blame shifting) • Reducing uncertainties (e.g., testing waters)
Persuading the public	• Increasing/reducing public support/opposition • Altering public discourse

Table 2
Comparing political embedding strategies between contexts.

Political embedding	Scenario			
	A. Overcoming government hesitance	B. Steering collaborative governance	C. Overcoming government deadlock	D. Challenging government (in)action
Initiation and Commissioning	Responsible ministry	Responsible ministry	Inter- or supra-ministerial	Opposition / Citizens / Automatic
Inclusion of perspectives	Potential mobilizers	Conflicting actors (interest groups)	Conflicting actors (politicians)	Less relevant (or government)
Strategic framing	Obtain will of the people	Independent jury	Independent jury / Support government	Hold government accountable
Publicity	Unclear effects	Not necessary	Unclear effects	Necessary

taking part in deliberations. Recent developments have seen more active integration of politicians and stakeholders into minipublic deliberations (e.g., Harris et al., 2023; Bergk et al., 2022). This raises the question of where to ultimately draw the conceptual boundary for minipublics, given that lay-citizen participation is their definitive characteristic.

- **Strategic framing** includes the political role and relevance assigned to a minipublic as well as communication strategies to utilize its results for political purposes. For example, roles ascribed to CAs have included supporting governments in their climate action efforts, supporting parliament in holding government accountable, or affecting coalition negotiations and resulting agreements (Pfeffer forthcoming, 2025).
- **Publicity** has generally been argued to be decisive for policy change (Newig, 2004) and to favor more just transitions (Newell et al., 2022). Minipublic scholars and practitioners have argued for more public attention to increase minipublics' policy impact and democratic value (Elstub et al., 2021b; Rountree and Curato, 2023).

4. Analysis

4.1. Operationalizing political context: ideal type scenarios

We operationalize the political context along several basic dimensions, inspired by theories of the policy process (Weible and Sabatier, 2018): involved actor groups, their goals and strategies regarding progressive climate policy, their relationships and main lines of conflict, and their power over policy decisions. The power over policy decisions can include formal but also informal dimensions such as responsivity of formal powerholders to other actors like interest groups, or voters, or the capacity of actors to mobilize opposition or support. In line with classical thinking on democratic systems (e.g. Lijphart, 1968; Dahl, 1971; Jones and Baumgartner, 2012) and works on participatory governance (e.g. Meadowcroft, 2004), we differentiate between four actor groups: government, (parliamentary) opposition, interest groups, and the public. This allows us to capture basic power struggles among actor groups with defined legal characteristics in many democratic systems. These actor groups may be in conflict or aligned with regards to their policy goals and strategies. There can also be conflict and alignment *within* actor groups to which we point if they are relevant for explaining barriers to policy change. Listing all possible combinations of these few variables would already yield an overwhelming number of political contexts. Hence, we confine our analysis to a selection of four scenarios that we believe are theoretically and practically relevant – albeit with no aspiration of being fully representative of the population of possible contexts.

Our scenarios of climate political contexts emphasize four ideal types of *political barriers to progressive climate policy*. These ideal type scenarios are neither meant to mirror single empirical cases in their full complexity nor to be fantastic imaginations. Rather they represent commonly occurring realistic but simplified thought experimental situations that help to expose contradictions or reveal the limits of certain theories and hypotheses. The narratives built around ideal type barriers mainly serve an imaginative function.

Fig. 2 displays narratives and illustrations of our four scenarios. The barrier in scenario *A* is characterized by government fearing public resistance to progressive climate policy and a high capacity of oppositional actors to mobilize against the government and its plans. In scenario *B*, a ministry has to manage conflicting organized interests amid a history of collaborative policymaking and future dependence on large companies opposing progressive climate policy. The barrier in scenario *C* is characterized by conflict between greens and conservatives within a government coalition, and in scenario *D*, advocates of progressive climate policy aim at challenging government inaction.

4.2. Thought-experimental analysis

4.2.1. A. Overcoming government hesitance

4.2.1.1. Political impact mechanisms. In scenario *A* (Fig. 2), the main barrier to progressive climate policy change is governmental fear of public resistance and mobilization capacities of oppositional actors – farmer groups and elected opposition. Political impact mechanisms (Table 1) that plausibly address this barrier are empowering political supporters (here government), constraining political opponents (here interest groups, and elected opposition), and persuading the public. Less plausible are mechanisms challenging those in power, and reconciling conflict.

Future research should investigate relations between impact mechanisms, and their necessity and sufficiency for policy impact (Schneider and Wagemann, 2012). For example, reducing uncertainty for government appears necessary for progressive climate policy in scenario *A*, and might even be sufficient. CA proposals can act as test balloon reducing uncertainty. A lack of oppositional mobilization and public resistance might be sufficient for government action. It is unclear whether public persuasion or reductions in oppositional capacity/willingness to mobilize are necessary or sufficient for that.

4.2.1.2. Political embedding. **Initiation and commissioning.** In scenario *A*, it is plausible that the ministry responsible for food policy would initiate and commission the process. Involving other ministries increases transaction costs with little added value if there is no conflict within government. Commissioning by parliament might reduce oppositional capacity to criticize the process as being manipulated by

government (even if unfoundedly). However, if government cannot control the process, they may be less interested in it and more hesitant in their strategic framing prior to the process.

Inclusion of perspectives. Including the perspectives of potentially mobilizing actors—farmers and elected opposition—may be a successful strategy to reduce their mobilization capacity/willingness. A common strategy of actors unfavorable of minipublic outcomes is to criticize process integrity. Amid exclusion of affected groups this criticism is valid, while inclusion limits its persuasiveness. Sometimes, included groups even become less willing to criticize the process if they participated (Newig et al., 2018). Whether and how to include potentially mobilizing actors in minipublics beyond providing short testimony, and to what effects, is a question for further research.

Strategic framing. The CA purpose may be framed as obtaining the informed will of the people on a contentious issue. Government might then strategically communicate that: "Most people want this."; "We should follow what the people want."; "The CA has heard farmers and opposition and made fair proposals"; "The opposition is wrong." etc. However, there would also be counter frames such as "Why listen to a focus group?"; or "There was only 100 participants".

Publicity. Whether mass public attention of a CA is conducive to progressive climate policy in scenario *A* is unclear and depends on the type of publicity and causal mechanisms unfolding. The main barrier to progressive climate policy in this scenario is governmental fear of oppositional mobilization and public resistance. One plausible impact mechanism is that the CA reduces oppositional willingness and/or capacity to mobilize. Thus, the CA would foster progressive policy by limiting negative mass publicity and avoiding to wake sleeping dogs (Newig et al., 2018). On the other hand, positive publicity might help to persuade (relevant groups of) the public or limit backlash. While there is some experimental evidence of such effects (cf. Ársælsson et al., 2024; Ingham and Levin 2018a, 2018b; Esaiasson et al., 2016; Boulianne, 2018), this requires high levels of public attention which has been rare to date and is understudied (see Elstub et al. in this special issue). Finally, high levels of mass publicity tend to correlate with conflict and negative rather than positive messages, and we do not know whether CAs can break through this.

4.2.2. B. Steering collaborative governance

4.2.2.1. Political impact mechanisms. In scenario *B* (Fig. 2), the main challenge to progressive climate policy is to manage relationships in collaborative policymaking – specifically to mediate conflict between business and environmental groups while empowering the ministry to take a stand. Government is criticized by all, leans toward environmental groups but intends to maintain a good relationship with businesses and seeks to avoid being perceived as one-sided. Political impact mechanisms that plausibly address this barrier are, empowering political supporters, and constraining political opponents. Challenging government, persuading the public, and reconciling conflict are less plausible.

Reconciling conflict through the CA is less plausible because the conflict occurs between interest groups. That is at least if we consider the way we conceptualized minipublics reconcile conflict, through providing opportunities to avoid to losing face or new compromise solutions: 'Avoid losing face' does not apply to interest groups in the way it applies to conflicting political actors circumventing public perceptions as losers. Moreover, new compromise solutions are unlikely if there are hard material conflicts of interests between business and environmental groups. Hence, a CA in scenario *B* mostly supports progressive climate policy by giving government opportunities to legitimize their decisions towards the interest groups (and media). Policy proposals may be met with higher acceptability by interest groups, if they originate from the CA as compared to the ministry. This limits risks of being accused of ideological bias and related framings.

4.2.2.2. Political embedding. **Initiation and commissioning.** In scenario *B*, the only plausible initiator and commissioner is the responsible energy ministry. Including more ministries would only increase coordination costs and have little added benefit.

Inclusion of perspectives. In scenario *B*, strong inclusion of those conflicting and affected groups that government seeks to maintain good relations with appears necessary, as weak inclusion or exclusion would likely lead to discontent. CAs ought not replace the democratic and epistemic benefits of established structures of collaborative governance, such as regular exchange between interest groups, mutual trust-building, and knowledge integration (Ansell and Gash, 2008). Again, future research should investigate possibilities of integrating collaborative governance and minipublics.

Strategic framing. The CA purpose may be framed as citizens acting as an independent jury to resolve conflict in a fair process. The ministry might then strategically communicate that: "All interests were heard."; "Citizens proposed a fair compromise."; "The ministry will now follow the citizens." etc.

Publicity. For the CA to be framed as central and legitimate institution within the policy subsystem in scenario *B*, relevant conflicting actors must be aware of it. Mass public attention beyond the subsystem does not appear necessary to support government in taking a stand amid conflicting interests. Yet, publicity might be conducive for interest groups' acceptance of the CA.

4.2.3. C. Overcoming government deadlock

4.2.3.1. Political impact mechanisms. In scenario C (Fig. 2), the main barrier to progressive climate policy change is deadlock between Greens and Conservatives in a coalition government. The main impact mechanisms plausibly addressing this barrier is reconciling conflict. Given there is some willingness to compromise, the CA may propose compromise solutions and/or provide opportunities to avoid losing face. Such mechanisms may be sufficient conditions for policy change. If, however, at least one veto player is fundamentally unwilling to compromise on the issue at stake, then such mechanisms are less plausible.

4.2.3.2. Political embedding. **Initiation and commissioning.** To reconcile conflict within government, it may be most effective when all conflicting parties collaboratively initiate and commission the CA. If only one ministry, say the climate ministry led by the Green party, was to commission the process, then Conservatives may view it as a "Green project", and CA recommendations may be treated as "just another proposal from the climate ministry". Hence, inter- or supra-ministerial initiation and commissioning may be most effective. If, however, at least one conflicting party is unwilling to compromise or expects to lose, then initiation of a collaborative CA is unlikely (Pfeffer forthcoming, 2025). Here, new mechanisms for initiating CAs are necessary – e.g., rights for the opposition or citizens, or 'automatic' mechanisms triggering initiation under conditions of deadlock (Pfeffer forthcoming, 2025; Setälä 2017). While such mechanisms are conducive to political responsiveness, more generally, they are not *necessary* in scenarios where majorities have an interest in running a CA (like in scenario *A*).

Inclusion of perspectives. Similar to scenario *B*, scenario *C* likely necessitates inclusion of conflicting actors. Here, this means some inclusion of politicians. Upon receiving minipublic proposals, politicians sometimes question whether citizens considered all arguments, especially if they oppose the proposal. While this is a more general issue requiring attention, it appears particularly pressing in scenario *C*. One strategy to abate this problem is directly involving politicians in minipublic deliberations. There is some experience of this practice, although researchers have mostly focused on whether politicians dominate deliberations, and less on attitude changes of politicians, or political effects and policy impact (but see Harris et al., 2023).

Strategic framing. The CA purpose may be framed as citizens acting as an independent jury to resolve conflict in a fair process. Approval of such a framing by all conflicting parties seems important to increase the likelihood that CA proposals will be accepted as compromise. Governments may prefer not to publicly communicate internal conflict. In that case, they might internally agree on a conflict reconciliation function and publicly communicate that government consults citizens on difficult issues. Strategic communication will depend on the main political impact mechanisms that apply. For example, to avoid losing face, conflicting parties may communicate: "Citizens appreciated arguments of both parties and proposed a fair compromise"; "This is not about party politics, and who won or lost, but about governing our country responsibly".

Publicity. We do not know whether reconciling conflict through a CA is more, less, or equally likely given high or low public attention. Mass public attention can exacerbate deadlock because conflicting parties have more to lose if they give up their position. However, public attention can also increase pressure to break a deadlock and pressure to take up the CA proposal.

4.2.4. D. Challenging government (in)action

4.2.4.1. Political impact mechanisms. In scenario *D* (Fig. 2), the main barrier to progressive climate policy change is a general lack of government interest in climate action. Political impact mechanisms that plausibly address these barriers are challenging powerholders, persuading the public, and empowering supporters. Reconciling conflict and constraining the power of opponents are less plausible.

The underlying government motivation and political context explaining inaction play an important role in assessing how likely progressive climate policy change through public pressure is. We can expect little from a CA given a government that assigns little importance to climate change or even questions its anthropogenic nature and/or given government constituency that is unconcerned. For scenario *D*, we may assume that progressive climate policy change through public pressure is possible.

4.2.4.2. Political embedding. **Initiation and commissioning.** It is unlikely that government initiates a CA that challenges government, although not impossible. Government may falsely anticipate not to be challenged or willing to bear the anticipated degree. This may have been the case for the French CA. The likelihood and conditions under which political actors (in)correctly anticipate minipublic outcomes is a fundamental question for positive and normative theory that has received little attention. For CAs, we may assume that political actors by now generally anticipate progressive climate policy. Hence, in scenario *D*, it is unlikely that a CA will be initiated from within the political structures of the state.

In the past, civil society groups have initiated CAs as means to raise awareness, create momentum and/or challenge governments. While such initiatives are certainly not generally doomed to fail, they do run the risk of being ignored by elites if they are not somehow coupled to empowered spaces of policymaking or cannot mobilize sufficient public pressure (Hendriks, 2016; Hoffmann, 2023). CAs initiated by civil society might have a higher chance of impact at the local level, as they could be too close and visible to ignore. However, for national level contexts, like in scenario D, new mechanisms allowing, for example, (parliamentary) minorities or citizens the initiation of CAs within state structures appear necessary (see discussion).

Inclusion of perspectives. The inclusion of specific perspectives seems less relevant if challenging government is the focal impact mechanism. Confrontation between high-profile government actors and CA citizens may increase media attention and help mobilization. It is unclear how such a situation could be 'designed' as government actors will have little incentive to engage with the assembly. In a scenario where persuasion of government actors is conceivable, designers may attempt to engage them.

Strategic framing. The CA purpose may be framed as holding government accountable to will of the people. Oppositional groups may strategically communicate: "Government does not take citizens seriously."; "Citizens want government to do more.".

Publicity. A high level of publicity is a necessary condition for policy impact in scenario *D*. As mentioned earlier, only few CAs have received a high level of media attention. However, once a CA set in scenario *D* has reached a critical threshold of attention and political relevance, its chances to gain and maintain high levels of attention may be higher than in some other scenarios because conflict has a high media value and mobilization of advocacy groups (Hendriks, 2006) and public protest also hinges on critical thresholds and feedback dynamics (e.g., González-Bailón et al., 2011).

4.3. Comparing political embedding strategies between contexts

Our analysis suggests that the effectiveness of political embedding strategies for policy impact differs between contexts questioning sweeping statements about minipublic design (Table 2). While in scenario *A* and *B*, initiation and commissioning by a single responsible ministry are most plausible, in scenario *C* inter- or supra-ministerial commissioning is necessary. In scenario *D*, mechanisms allowing oppositional, citizen or automatic initiation are required.

Political context also affects whom to include in CA processes. Analysis suggests to include actors potentially mobilizing against policy change in scenario *A*, and conflicting actors in scenario *B* (business and environmental groups) and scenario *C* (green and conservative politicians). In scenario *D*, including specific perspectives seems less relevant.

Strategic framing of CA purposes varies, as well. In scenario *A*, the CA is positioned to publicly communicate that government plans align with the will of the people. In scenario *B* and *C*, the CA is used as an independent jury to reconcile conflict. And in scenario *D*, the CA serves to hold government accountable.

Finally, a lack of publicity is frequently used to explain limited policy impact. Our theoretical analysis suggests that whether publicity bolsters policy impact might vary with context, as it seems to only be necessary in scenario *D*. In scenario *B*, publicity might not be necessary, and in scenario *A* and *C*, its effects are theoretically ambiguous.

To demonstrate our argument that effective strategies for enhancing minipublics' policy impact depend on context, we focused on illustrative dimensions of political embedding. However, many minipublic design features are of importance in all contexts. These include design choices ensuring process integrity because perceived process legitimacy often is a pre-condition for policy impact. Another example of design features likely increasing impact irrespective of context are accountability mechanisms like commitments to respond to minipublics and follow-up processes. In sum, our analysis suggests that some strategies to promote policy impact of CAs and minipublics more generally are always worth pursuing while other strategies are effective in one but not another context.

5. Discussion and conclusion

CAs may facilitate progressive climate policy by proposing more ambitious measures and altering policy decisions through various mechanisms such as supporting hesitant governments or breaking political deadlocks (Willis et al., 2022). Yet, such policy impacts have been limited for past processes (Wells et al., 2021; Weber, 2023; Hoffmann, 2023). Scholars and practitioners brood over strategies to enhance the policy impact of CAs (Smith in this special issue). We have argued that they ought to pay more attention to how political actors make strategic use of CAs. We propose that CAs, and minipublics more generally, require *political embedding*. That is, minipublic designers should first consider how political actors will likely interact with a process given

their interests and political context, and subsequently make deliberate use of strategies to foster minipublic objectives. Strategies of political embedding can entail design choices, communication approaches, and other activities.

Based on a thought experiment, we then contended that the effectiveness of political embedding strategies to promote CAs' policy impact can depend on political context, at least in theory. We operationalized political context as ideal type actor constellations constituting barriers to climate policy change. For example, in contexts where government inaction is to be challenged, high levels of mass publicity appear necessary for policy impact, whereas in other contexts the effects of mass publicity are unclear. Similarly, commissioning a CA by an entire government or multiple ministries might enhance impact where they are in dispute. However, single ministry commissioning is more plausible where the ministry is managing stakeholder conflicts within a policy subsystem. Through this exercise, we challenge sweeping statements about the right choices for CA and minipublic design and contribute to building more nuanced theory.

Our analysis reasserts that disruptive minipublics will likely remain an exception as long as there are no institutionalized initiation mechanisms or rights for (parliamentary) minorities, citizens, or some other less partial actor (Pfeffer, 2024; Setälä 2017). Future research should investigate the legitimacy, functionality, and legality of such initiation rights and mechanisms in more detail. For example, minipublics could be integrated into the governance architecture of policy subsystems making them a recurring mandatory step in a policy cycle (Schatz et al., 2024). One could also ponder whether to legally define situations that automatically trigger or allow minority initiation of a minipublic, e.g., if government is in deadlock, if policy targets are not met, or if a policy discourse is dominated by misinformation. However, to avoid that such 'unwanted' minipublics are simply ignored by an unwelcoming government (Pfeffer, 2024), they would have to be paired with public pressure and media attention, follow-up processes supporting accountability, recognition and scrutiny (e.g. Boswell, 2016), referendums (e.g. Gastil and Knobloch, 2020), or be equipped with decision-making or veto power themselves (e.g. Gastil et al., 2019).

We wrote this paper from a perspective of those aiming for progressive climate policy change. Despite this instrumental framing, our analysis holds insights independent of policy substance, and might just as well be transferred to contexts where political embedding of minipublics is used to resist instead of promote policy change. Our analysis generally portrays ways in which political actors might use "informed citizen judgments" of a minipublic against other political actors deviating from minipublic positions. Hence, the underlying normative question is whether, or under which conditions and by which standards, this enhances or undermines democratic system performance (Curato and Böker, 2016; Beauvais and Warren, 2019).

A risk is that if only one side repeatedly uses minipublics against the other side (and wins), then that other side will try to delegitimize minipublics, undermining their democratic potential lastingly. But is it likely that minipublics always favor one side? We do not think so. While deliberation might have a tendency toward progressive attitude change (Gastil et al., 2010), minipublics often produce pragmatic outcomes that trespass party positions. Moreover, no party is aligned with "informed citizen opinions" on every issue. If initiation rights ensure that minipublics can be used by different groups whenever they believe to be "on the side of the citizens", they will more likely come to be seen as a legitimate instrument in the political game.

The inclusion of perspectives in minipublics requires more attention. Whether and how businesses and different interest groups (dis-)engage with CAs and minipublics will shape resulting public discourse and the prospects for and nature of policy impact (Hendriks, 2006). We suspect that engaging affected actors is key for bolstering minipublics' quality of proposals, legitimacy, and policy impact, and avoiding that powerful lobby actors simply sidestep minipublics by relying on their direct access to policymakers behind closed doors (Hendriks, 2006, p. 584).

We believe that strategic framing by political leaders can have significant effects as they possess notable power over assigning political relevance to processes. This, in turn, shapes media attention, interest group engagement, and impact expectations. However, leaders might be hesitant in assigning too much relevance to minipublics as they cannot be certain about the outcome. Time will tell whether they become more or less daring with experience.

One shortcoming of our analysis and extant literature is that most CA impact mechanisms are unidirectional hypotheses. Scholars concerned with climate action should consider whether CAs could also undermine progressive climate policy, even if their proposals are ambitious and the process maintains integrity. It may, for instance, be argued that pacifying effects of CAs forestall more disruptive future policy changes.

Our analytical choice of working with four actor groups – government, opposition, interest groups, and the public – is deliberately simplified and reflects empirical reality only to some degree. The literature on high-carbon regime resistance often theorises these groups as intertwined and, at times, incoherent and unstable blocs (e.g. Ford and Newell, 2021). For example, incumbent actors from government and industry (but also trade unions) who seek to stabilize existing (unsustainable) regimes are conceptualized in opposition to niche actors who challenge existing structures (Geels, 2014; Price, 2020). Empirical work inspired by our scenarios will have to adapt their conceptualization of actor groups accordingly.

With this paper we speak to actors who can somehow influence minipublic and CA design and framing but we do not address the micropolitics of CA governance, i.e., who is (or ought to be) involved and with how much power (Carrick, 2022; Pfeffer forthcoming, 2025). The micropolitical dynamics within governance bodies can depend on how those involved interpret their roles, the culture of contestation, or the capabilities of actors to renegotiate power (Holdo, 2024; Lowndes and Paxton, 2018; Elstub and Escobar, 2019, Section III). Civil society actors can play a vital role in contesting entrenched worldviews and policy rationales allowing for more openness to new perspectives in agenda-setting and the selection of information and experts (Pfeffer forthcoming, 2025).[2]

Finally, while we focused only on policy impact, adopting a political embeddedness perspective will also yield more realistic estimations regarding other democratic impacts. The direction and degree to which minipublics influence public discourse, democratic trust and legitimacy, policy attitudes, power asymmetries, and so on, will depend on how political elites choose to strategically interact with them. Hence, thinking about political embeddedness is particularly important when assessing models to institutionalize minipublics more permanently within democratic systems (e.g., Courant, 2022). The challenge, in our eyes, is to build institutions that enable and incentivize desirable political usage of minipublics fostering democratic system performance while limiting risks of manipulative usage undermining democratic values (cf. Batory and Svensson, 2019).

CRediT authorship contribution statement

Janosch Pfeffer: Writing – original draft, Methodology, Conceptualization. **Jens Newig:** Writing – review & editing, Conceptualization.

[2] However, this does not mean that processes led by civil society are always more disruptive. Zeitfogel et al. (2024) found that CAs organized by civil society were not using substantially different framings (e.g., less technocratic, more disruptive) than a CA commissioned by parliament. If civil society actors must fear to be ignored when being too radical, they might strategically constrain themselves. Hence, empowering civil society actors in CA and minipublic governance within state structures may be more productive than decoupled civil society led processes.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

No data was used for the research described in the article.

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Setting the agenda for climate assemblies. Trade-offs and guiding principles

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ABSTRACT

Citizens' assemblies on climate change are increasingly popular to support democratic decision-making. Such Climate Assemblies (CAs) convene representative groups of citizens formulating policy proposals after hearing experts and deliberating intensely. CAs may help addressing climate policy issues more effectively partly because their members need not worry about re-election. CAs' effectiveness depends on their design such as the issues chosen (or not chosen) for deliberation. Agenda-setters exert substantial power by selecting certain issues and by choosing framings that benefit some solutions over others. In this paper I ask: What characterizes agendas that are suitable and legitimate for deliberation in CAs? The aim is to support practitioners in making informed agenda choices for CAs by providing a list of ten widely accepted guiding principles based on expert interviews, policy documents, and information gathered from the Knowledge Network on Climate Assemblies (KNOCA). The paper systematically discusses trade-offs of various agenda choices in the light of different CA rationales. Results show that those with system-supporting rationales tend to favour narrower agendas tailored to political demands aiming to increase immediate policy impact; those with system-disrupting rationales prefer more open agendas allowing citizens to challenge existing political practices and worldviews. Results support earlier arguments that distinctions of entire deliberative processes in either top-down or bottom-up are too simplistic and that a tool-box approach is more useful. Insights appear relevant for debates of deliberative minipublics more generally. Future research should investigate whom to involve in setting CA agendas and with how much power.

Key policy insights

- Effective agenda design hinges on rationales on how to achieve assembly objectives which depend on authorities' ambition for climate action.
- Given high ambition, system-supportive rationales aiming for policy impact favour narrower agendas tailored to demands of the policy process but risk low transformativeness.
- Given low ambition, system-disruptive rationales aiming to challenge established practices and worldviews favour more open agendas but risk low impact if assemblies are not politically embedded or able to mobilize opposition groups.
- Assembly designs are seldom purely supportive or disruptive but often hybrid.
- Agenda-setting has many dimensions allowing for productive combinations of disruptive and supportive elements tailored to contexts.

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1. Introduction[1]

Citizens' assemblies on climate change are becoming increasingly popular as a tool to support democratic deliberation and decision-making. In the past five years, such Climate Assemblies (CAs) were convened at the national level in European countries like Ireland, France, the UK, Scotland, Spain, Denmark, Finland, Austria, Germany, and Luxembourg.[2] CAs convene a representatively selected group of lay-citizens to deliberate on possible solutions and pass on their proposals to policymakers. CAs consist of sixty to two-hundred participants from diverse backgrounds that receive multidisciplinary scientific input and may hear affected groups before intensely deliberating in small groups across multiple sessions spreading several weeks. Many hope that CAs can drive more ambitious, just, and effective climate policy (e.g. Dryzek & Niemeyer, 2019; Ejsing et al., 2023; Niemeyer, 2013; Willis et al., 2022), partly because CA members do not have to worry about re-election or their political career when it comes to taking a position on hot issues (Willis, 2020). In particular, they do not have to serve a special constituency which may expect specific policy priorities that are not in line with climate protection. By signalling public support CAs can provide policymakers with a 'social mandate' offering opportunities to legitimize policy change (Howarth et al., 2020). In an exemplary case in Ireland, citizens' assemblies were able to facilitate collective decision-making on thorny issues like abortion and same-sex marriage (e.g. Farrell et al., 2019).

While most CAs share common features like sortition and high-quality deliberation, their design differs substantially, for example in the ways they are connected to conventional decision-making structures (Boswell et al., 2022; Smith, 2023). Effective design is crucial if CAs are to play a productively embedded role in democratic systems (Bussu et al., 2022) and drive ambitious climate policy (Wells et al., 2021). One among many important design decisions is setting the agenda for a CA. By selecting which issues (not) to discuss, and how to frame these issues, agenda-setters exert strong influence over the nature of deliberations and the political impacts of CAs (Elstub et al., 2021; Schattschneider, 1977).

Practitioners, such as commissioners or process designers, face difficult trade-offs when making agenda decisions. For example, is it more important to constrain the agenda tightly in order to enable structured deliberations that are more likely to result in climate policy proposals policymakers will take up, or to leave the agenda open, empowering citizens to discuss solutions that may challenge dominant unsustainable practices and agendas? Disagreement and confusion over the 'right' design choices largely stem from different objectives and rationales CA practitioners and academics adopt (see Hammond, 2020).

This paper addresses these confusions and enables more informed CA design choices that may enhance the effectiveness of future CAs. Its aim is to support practitioners in choosing suitable and legitimate agendas for CAs by providing a list of ten widely accepted guiding principles, and systematically discussing trade-offs of various agenda choices in the light of different rationales and contexts. The insights are based on expert interviews, and information gathered from the Knowledge Network on Climate Assemblies (KNOCA) as well as policy documents related to CAs in Europe. The focus is on national-level CAs, although many insights may be relevant for deliberative minipublics more generally, and at other levels of political authority.

In the next section, I cover theoretical backgrounds including different contexts and rationales related to CAs. This is followed by details of the conducted expert interviews, in section 3. In section 4, I present my results in the form of ten guiding principles and discuss the trade-offs of related agenda choices. I close by discussing the findings and pointing out avenues for further research.

2. Theoretical backgrounds

2.1. Climate assemblies

CAs are a special form of deliberative minipublic. Deliberative minipublics are participatory processes that are characterized by random selection of lay-participants, provision of balanced information, and facilitated small-group deliberations which culminate in a collective output, such as policy proposals (Smith & Setälä, 2018).

[1]This article is informed by an earlier and less detailed version by the author aimed at a non-scientific audience, see Pfeffer (2022).
[2]See https://knoca.eu/national-climate-assemblies/.

Participants are typically encouraged to adhere to communicative norms of deliberation, such as equality, justification of arguments, or respect of and openness to others and their views (e.g. Gutmann & Thompson, 2009; Thompson, 2008). Citizens assemblies are a special form of minipublic characterized by a relatively large number of participants and long deliberation times (Smith & Setälä, 2018). CAs are citizens' assemblies on climate-related issues (Boswell et al., 2022).

Several scholars argue that CAs can foster progressive climate policy, for example because deliberation in CAs fosters long-term thinking and increases willingness to pay for climate measures (MacKenzie & Caluwaerts, 2021); CA members do not have to worry about re-election; CAs systematically integrate expert knowledge; CAs limit the influence of fossil fuel lobbyists (Willis et al., 2022); or CAs alter public discourse (Dryzek & Niemeyer, 2019). Moreover, past CAs have repeatedly proposed measures that are more ambitious than current government policies (Hoffmann, 2023; Lage et al., 2023; Weber, 2023), such as a ban of domestic air travel in France if train alternatives exist.[3]

The effects of CAs on policymaking depend on their design. While CAs share many design features like the random selection of participants or intense deliberation, they also differ considerably in the way they are connected to conventional decision-making structures (Boswell et al., 2022). In Scotland, for example, the CA was commissioned by government who were legally required to respond to the final report within six months. In Germany, the CA was initiated by a civil-society actor with no formal commitments to respond by political actors.[4] The agenda of CAs is one important design feature that has received little attention.

2.2. Climate assemblies and agenda-setting

Agenda-setting, according to Barbara Sinclair, is 'the process through which issues attain the status of being seriously debated by politically relevant actors' (1986, p. 35). Roger Cobb and Marc Ross note, '[a]genda conflicts are not just about what issues government chooses to act on; they are also about competing interpretations of political problems and the alternative worldviews that underlie them' (1997, pp. 3–4). Hence, agenda-setters exert substantial power over public policymaking (Schattschneider, 1977).

Deliberative minipublics like CAs can have an agenda-setting function in the cycle of public policy processes (see Dahl, 2008/1989; Gastil & Richards, 2013 for ideas), e.g. by selecting issues to be discussed by elected officials as is practiced in East-Belgium (Niessen & Reuchamps, 2019). However, this is not what I refer to as agenda-setting in this paper.

Here, agenda-setting for CAs refers to setting the boundaries and guidelines for deliberations within the deliberative minipublic. Agenda-setting includes the choice of a general issue for deliberation, the framing of the process including the formulation of a remit, and the selection of sub-themes (or even proposals) to discuss or not discuss (i.e. constraining deliberation) (also see Barisione, 2012). In this study, I focus on the content and not the process of agenda-setting. That is, I do not address who should have the authority to initiate CAs, and set agendas, or how such processes should be designed (see Brancaforte & Pfeffer, 2022; Courant, 2022; Lang, 2008; and the discussion on this). I only address what agenda-setters, regardless of who they are, should generally consider.

Only few studies have addressed the agenda-setting for deliberative minipublics (Barisione, 2012; Blue, 2015; Bua, 2012; Courant, 2022; Lang, 2008; Parkinson, 2006). Parkinson (2006, Ch. 6) found that tightly set agendas following a bureaucratic-instrumental rationale to 'solving a delineated problem' can imply preference assumptions that many deliberating citizens do not share. Parkinson (2006) argues, the more open the agenda the more legitimate the process. Political elites can also exert strong influence over minipublic agendas, up to the point of co-option. That means, there have been incidences where participatory processes were used to legitimize decisions that had in fact already been taken (as summarized by Bua, 2012). Elite control over agendas has also led to the adoption of technocratic and economic framings in minipublics (on climate change), omitting various dimensions of justice (Barisione, 2012; Blue, 2015). On the other hand, constraining

[3]See https://www.lemonde.fr/en/les-decodeurs/article/2023/05/26/france-s-short-haul-domestic-flight-ban-a-measure-lacking-substance_6028097_8.html.
[4]See footnote 2.

agendas in minipublics may be necessary to enable high quality deliberation and arrive at decisions (Lang, 2008). Parkinson (2006, Ch. 6) noted, the more open the process, the more vague are the outcomes, and the less likely practical solutions and policy impacts. Finally, Elstub et al. (2021) found that a large scope – a high number of issues to be covered by the minipublic – has reduced the policy impact of the UK CA, because it led public officials to doubt whether all participants had sufficient time to work on each issue. They also argued that it may be more difficult to hold policymakers accountable regarding their response to CAs, if the number of recommendations is too high. This would make it easier for policymakers to cherry-pick recommendations, meaning they select only those that are in line with their preferences (Font et al., 2018).

A number of practical guides exist to support practitioners in setting the agenda for minipublics (Carson, 2018; Pfeffer, 2022; Rourke, 2014). These practical guides are useful but do not address trade-offs in a systematic way, and tend to carry the either system-disruptive or system-supportive perspective of the author (see next section). This short recap foreshadows that practitioners face difficult trade-offs when making agenda decisions.

2.3. Climate assembly contexts and rationales

When discussing CAs, individuals hold divergent rationales and contexts in mind (Averchenkova & Ghilan, 2023; Bussu & Fleuß, 2023; Hammond, 2020; Rangoni et al., 2021; Sandover et al., 2021). This can lead to disagreements or misunderstandings over the roles CAs ought to play or how to design them effectively. I will introduce a number of common contexts and rationales to help limit misunderstandings. They will serve as the analytical framework to which I refer when discussing the trade-offs of agenda decisions.

The climate political context refers to widely shared informed beliefs about the main barriers to climate action (including both mitigation and adaptation). These barriers may include a lack of government motivation, internal government conflicts, powerful lobby interests impeding climate action, government hesitance due to fear of public resistance and voter loss, entrenched worldviews and paradigms conflicting with climate action, or insufficient governmental capacities (knowledge, time, money) (also see Jordan et al., 2022; Rickards et al., 2014). This list is exemplary and by no means exhaustive, and barriers may coexist simultaneously.

One can distinguish between two ideal-typical rationales of CAs with regards to climate change (Hammond, 2020).[5] A *system-supporting rationale* primarily aims to support policymakers in addressing climate change, assuming a context where influential policymakers are generally willing to act. This rationale highlights the importance of cooperation and working toward agreement or even consensus to generate collective power to act (Partzsch, 2017), and the need to design processes aligning with political and administrative requirements to increase the uptake of proposals. A *system-disrupting rationale*, on the other hand, underscores the need for conflict, public attention, and pressure, along with more open deliberations that challenge dominant practices and paradigms in policymaking. This rationale often assumes a lack of willingness to act among policymakers and emphasizes needs for fundamental systemic transitions that would not occur through system-supporting approaches. The system-disruptive rationale often goes along with an emphasis of emancipatory objectives seeking to empower citizens, particularly marginalized groups, in democratic decision-making. It is crucial to recognize that these are ideal-typical rationales underlying individuals' attitudes towards CAs and their design, and not descriptions of real CA cases.

Still, these rationales *are* often used to make rather black-and-white distinctions between deliberative processes, labelling them either top-down (i.e. supportive) or bottom-up (i.e. disruptive). When analyzing real cases, this distinction does not hold because many deliberative processes contain both system-supportive and system-disruptive elements (Bussu & Fleuß, 2023). The French CA, for example, was initiated top-down on behalf of the President but simultaneously gave members high degrees of freedom in developing their

[5]Next to climate-related rationales, there are many democratic and political objectives. Scholars have produced a rich literature proposing criteria for assessing whether minipublics like CAs 'improve' democracies, Warren (2017), including whether they generate factually informed preferences, Mansbridge et al. (2012), enhance critical scrutiny in public discourse, Curato and Böker (2016), lead to tangible political or societal consequences, Dryzek (2010). Educational objectives, endorsed by many politicians, aim to (re-)connect elites and citizens by sensitizing citizens about the complexities of political work, increasing knowledge, and promoting civic values. Political actors often have strategic objectives, such as gaining voter popularity or suppressing opposition. Some are critical of CAs, either based on well-reasoned arguments (e.g. lack of electoral legitimization and accountability mechanisms), Lafont (2019), or simply because they are potentially threatening their power.

own ideas.[6] This facilitated the adoption of disruptive proposals such as changing the constitution to make ecocide a crime. Hence, the distinction of system-supportive and system-disruptive rationales is useful in analyzing deliberative processes but only if applied to single elements as opposed to the entire process. In doing so, the ideal-type distinctions can "be used as a 'toolbox' that allows for flexible design and combination in democratic processes" (Bussu & Fleuß, 2023, pp. 150–151). In this spirit, I will use it throughout the paper to highlight trade-offs of various agenda choices.

3. Methods

I conducted 14 semi-structured expert interviews between February 10, 2022 and April 22, 2022. Experts were recruited from the Knowledge Network on Climate Assemblies (KNOCA). Expertise was defined as previous experience with organizing, commissioning, studying, or advising CAs. I selected the experts as to ensure diversity regarding their role(s), their location, their gender, and their rationales.

The interviewed experts have served as commissioners, public officials, process advisors, academic researchers, organizers and facilitators, and advisory activists.[7] They have been involved in CAs in at least 14 different countries and at supra-national levels. 12 of 14 experts live in western Europe, and one each in Australia and the United States. 5 experts were female. 2 experts pre-dominantly adopted system-disrupting perspectives.

The interviews were semi-structured with the objective of developing a checklist of aspects for commissioners to consider when setting the agenda for CAs. First, I posed an open question asking experts for such aspects. Subsequently, I asked experts whether they agreed or disagreed with a list of further aspects and asked them to explain their selection. I previously collected these aspects together with two political science students who are members of a German organization advocating for and advising policymakers on CAs. This list of aspects and the interview guide were reviewed by the KNOCA chair. To surface underlying assumptions and theories, and to understand diverging answers, I asked experts to explain their answers, or invited them to respond to conflicting answers given by their anonymized peers. For validation, all experts had the opportunity to comment on the preliminary results; and the results were presented to scientific and non-scientific peers at the KNOCA annual meeting 2022, and the 2022 annual conference of the European Consortium for Political Research (ECPR).

The interview recordings were transcribed and analyzed in MAXQDA following established procedures of qualitative content analysis (Mayring, 2014). The data was coded according to the aspects to consider when setting the agenda, experts' support or opposition toward the aspect, and their explanation and discussion points. Similar explanation and discussion points were categorized inductively. I developed the guiding principles presented in this paper by recursively incorporating the expert responses. Toward the last interviews, theoretical saturation was reached in the sense that experts did not provide novel themes or meanings, i.e. explanations or discussion points, and agreed with conclusions I proposed (Glaser & Strauss, 1967; Hennink et al., 2017).

The results were supplemented by information gathered from KNOCA[8] – a European Network gathering knowledge and facilitating exchange on CAs – as well as policy documents related to CAs in Europe. KNOCA provides information on all national-level European CAs, hosts learning calls, and publishes research reports. I sought this information to validate and illustrate arguments made by interviewed experts. This was facilitated by the author being a contributing member of KNOCA and possessing extensive knowledge of their published information and CAs in Europe previous to the research. I point to supplementary information in footnotes. All online resources were last checked September 22, 2023.

4. Results: guiding principles for setting the agenda of climate assemblies

Table 1 summarizes my findings in the form of guiding principles with trade-offs presented as commentary by system-supporting and disrupting rationales (see last paragraph in theory section). In the following sections, I explain and discuss each principle and the commentary more elaborately.

[6]See https://knoca.eu/france-citizens-convention-on-the-climate/.
[7]As many experts have taken on multiple roles and worked on assemblies in multiple countries, it is difficult to provide precise characterizations.
[8]See https://knoca.eu/about-us/.

Table 1. Guiding principles for agenda-setting in climate assemblies.

Guiding principle	Supporting view	Disrupting view
Scope. All participants have sufficient time to develop recommendations, understand consequences, and provide justifications.	• Narrower scope increases policy impact	• Wider scope allows space for challenging dominant agendas
Authority. The target authority has sufficient power to act on proposals of the selected agenda.	• Necessary to allow for policy impact	• Constrains deliberation to powerholders' agendas
Societal relevance. The issue is important for citizens.	• Less important for policy impact through bureaucratic pathways	• Important to gain public attention and spark discourse, and to empower citizens
Political relevance. Policymakers see a need for change on the issue.	• Increases policy impact	• Constrains deliberation to powerholders' agendas
Receptiveness. Policymakers welcome citizen input on the selected agenda.	• Increases policy impact • Uptake rules and interactions increase receptiveness	• Policymakers tend to favour low risk issues • Public pressure increases receptiveness
Timing. There is an opportunity to affect change.	• Alignment with policy processes increases policy impact	• Minipublic as window opening event
Dilemmas. Clear trade-offs must be made.	(No difference)	
Legitimacy. The agenda is seen as legitimate by most groups.	• Aiming for consensus is democratically desirable • Perceived procedural legitimacy increases policy impact	• Conflict can spark public attention and provoke critical discourse • Need for consensus prevents more transformational agendas
Openness. Citizens are not unjustly constrained by the agenda.	• Constrained agenda necessary for useful proposals	• Citizen empowerment through more openness
Resource efficiency. Societal benefits of citizen deliberation on the selected agenda outweigh invested resources.	(No difference)	

Source: Adapted and extended from Pfeffer (2022).

4.1. Scope

All participants have sufficient time to develop proposals, understand consequences, and provide justifications.

Here, the scope is understood as the (inverted) time a participant is given to deal with a proposal. In other words: a larger scope means less time. The scope is a function of the number of issues and proposals to be discussed during the process, the complexity or knowledge intensity of these issues and proposals, the overall deliberation time, and the structure of deliberations such as the division of labour between participants. Understanding scope in terms of time per proposal highlights that it can be subject to design. For example, a CA covering multiple sectors may still ensure sufficient deliberation time per proposal if the number of proposals is limited from the outset, as was practiced by the German assembly on nutrition.

Finding the 'right' scope of a CA is a frequently discussed issue (e.g. Elstub et al., 2021). To date, most CAs have had wider scopes. They often developed up to or over 100 proposals on issues spanning from renewable energy to food and agriculture or housing simultaneously (e.g. France, Scotland, UK, Austria, Germany).[9]

[9]See footnote 2.

The Finish climate assembly provides an example of a narrower scope where participants were asked to appraise 14 policy proposals developed by the government (Kulha et al., 2022).

Experts interviewed for this research have pointed to potential advantages and disadvantages of both narrower and wider scopes (see Table 2). Generally, the merits of narrower scopes tend to overlap with objectives of system-supporting rationales while advantages of wider scopes rather reflect concerns of system-disrupting rationales.

By definition, narrower scopes allow participants more time to go into depth when developing proposals, understanding consequences, and providing defensible justifications. For wider scopes, spectators may (rightfully) question whether all participants had sufficient time to do so. Elstub et al. (2021) found that the policy impact of the CA UK was impeded due to its large scope. Public officials doubted the representativeness of recommendations because the CA UK divided members into subgroups to cover more ground. This resulted in very small numbers of members working on each recommendation with little exchange across subgroups. Additionally, the authors argued that a large number of recommendations undermines the policy impact because policymakers are less likely to be held accountable when disregarding one controversial proposal out of one-hundred compared to one out of ten. In other words, a smaller number of proposals may reduce the likelihood of cherry-picking[10] (Font et al., 2018). Interviewees think that narrower scopes are more likely to lead to actionable proposals with policy impact because they go along with rationales of system-supporting deliberation and closer coupling of CAs to policy processes. Assemblies with wider scopes run the risk of producing proposals that are less relevant or useful for policymakers.

While potentially less relevant for policymakers, wider scopes may allow participants more freedom to discuss issues they are most concerned about and develop new or less conventional policy ideas that challenge entrenched attitudes and practices, and dominant agendas. Narrower scopes risk closing down discussions and restricting participants illegitimately. They may be more likely to accommodate thinking in (sectoral) silos and less likely to foster the consideration of structural or systemic changes. Finally, narrow scopes may be seen as inefficient considering the substantial amount of resources invested in CAs.

While some of the disadvantages mentioned above are an inherent trade-off between breadth and depth other risks can be abated by taking further action. For example, organizers can counteract silo thinking by making deliberate choices on framing and information provision.

4.2. Authority

The target authority has sufficient power to act on proposals of the selected agenda.

When concerned with system-supporting objectives like policy impact, interviewees suggested to limit the agenda to only those issues where the target authority (e.g. the federal government) has jurisdictional power to work toward the adoption and implementation of proposals. That is because authorities tend to discard proposals outside of their jurisdiction as can be observed in government responses to CAs. On many issues, however, decision-making and implementation powers are dispersed across jurisdictions, e.g. levels, and ministries. In such circumstances, experts advise to draw responsible actors into the CA process early on to secure their buy-in and make later adoption and implementation more likely. Moreover, past CAs, like the French, have explicitly asked authorities to lobby for change at other political levels such as the European Union[11], to which the French government responded by sketching the state of negotiations.[12]

Other interviewees advised against limiting the agenda to issues where target authorities possess jurisdictional power. They argued that environmental problems often transgress political boundaries which prevents conventional political structures from dealing with such problems effectively. CAs, in this view, may counteract this weakness of current political structures. Interviewees were also concerned that limiting the agenda to

[10]Cherry-picking means that sponsors only adopt those proposals that fit their pre-existing agendas.
[11]See the French CA, for example: https://propositions.conventioncitoyennepourleclimat.fr/objectif/mieux-prendre-en-compte-les-emissions-de-gaz-a-effet-de-serre-liees-aux-importations-dans-les-pollutions-europeennes/.
[12]https://www.ecologie.gouv.fr/suivi-convention-citoyenne-climat/?id_rubrique=4#affiner, PT 9.1.

Table 2. Potential (dis)advantages of wider and narrower scopes for CAs.

	Advantages	Disadvantages
Narrower	• More actionable and considered proposals • Higher policy impact	• Less issues to be covered • Restricting participants illegitimately • Less consideration of systemic change • Silo thinking
Wider	• More issues to be covered • More open to citizen relevancies • Accommodating new and unconventional ideas	• Less depth and lower trustworthiness • Less relevant or useful for policymakers • More cherry-picking

target authorities' jurisdictions will close down deliberation on more structural and systemic changes. Again, these perspectives rather overlap with goals of system-disruption.

4.3. Societal relevance

The issue is important for citizens.

Societal relevance can be defined subjectively or objectively (inter-subjectively). In subjective terms societal relevance refers to issues that citizens perceive as important to them. Other issues are important for societies in objective terms, for example because they (will) affect the well-being of a large number of people (even though they are not at the top of people's minds). Presumably, such issues are likely to become important to citizens once made aware of the problem's magnitude and how they are affected by it.

Some interviewees said that choosing issues of societal relevance facilitates the recruitment of participants, increases their information seeking and engagement in deliberations which ultimately bolsters the internal quality of CA processes. Others, however, have reported about CA cases of high internal quality even though the issues discussed appeared rather boring or disconnected from people's daily lives at first sight. They stressed the importance of framing to emphasize an issue's relevance. A risk is that too few citizens from the random sample will volunteer to participate if the topic is not relevant for them undermining the representativeness of the assembly. Moreover, when concerned about systemic impacts, interviewees highlighted that issues of societal relevance are more likely to receive higher levels of public attention.

That an issue for a CA is of high perceived importance to citizens seems to be more important if either empowering citizens and increasing the systems responsiveness to citizens' relevancies are major objectives, or if reaching high levels of public attention and influencing public discourse are among the main goals. If, however, direct policy impact through bureaucratic and political pathways secluded from salient public discourse is the main objective, relevance to policymakers appears more important than relevance to citizens. What policymakers and citizens find important may or may not align and is highly dependent on context.

4.4. Political relevance

Policymakers see a need for change on the issue.

Interviewees strongly agreed that the policy impact of CAs likely increases when policymakers see a general need for action on the issue. CAs are argued to be particularly useful where conventional decision-making structures have not been able to address a problem effectively. Examples include issues that are in political deadlock, issues that are 'too hot to handle' (Willis, 2020) because politicians anticipate risks of backlash or may lose face, or issues where politicians have conflicts of interest.

From a system-supporting perspective on CAs, considering political relevance is highly important when setting the agenda. When prioritizing system-disrupting objectives, less emphasis is put on political relevance.

From this perspective, CAs are welcomed when they elevate marginalized agendas instead of reinforcing discourses and solutions of those that already hold powerful positions.

4.5. Receptiveness

Policymakers welcome citizen input on the selected agenda.

Receptiveness refers to policymakers' more general attitudes regarding citizen participation and their willingness to take CA proposals seriously on the selected agenda issue. If policymakers are not supportive of the idea of citizen input, the political impact of an assembly is likely to be low. Receptiveness can differ between issues as the responsible policymakers holding the attitudes may differ and the nature of the issue – e.g. its salience – may affect receptiveness. Ensuring both receptiveness and relevance of an agenda poses a challenge as policymakers tend to be less willing toward citizen input on highly salient issues if they perceive a risk of unfavourable outcomes – e.g. proposals that challenge their agendas or past actions. David Farrell has criticized the Irish government of assigning citizens' assemblies to 'rather daft issues'.[13] This points to the question of who ought to have the right to initiate CAs (see discussion).

If receptiveness is low, e.g. because a CA was *not* initiated by those in power, policy impact may be higher if rules are in place on how decision makers must respond to proposals or if the assembly sparks heightened media attention and public pressure, which has been the exception. But even if powerholders commission a CA, receptiveness may still pose a challenge. It is worthwhile considering the actor constellation in the empowered political space as governments, administrations and parliaments are not unitary. On a given issue, some powerful actors may be highly receptive to CA input while others are not. Under such circumstances, strategic actions might be required to increase support among skeptics or put pressure on them, if the objective is that the CA has policy impact. Some interviewees note that policymakers and public officials unfamiliar with CAs often become less suspicious and more favourable of the process if they have opportunities to directly experience the assembly and meet participants.

4.6. Timing

There is an opportunity to affect change.

Interviewees agreed that commissioners should consider how the timing of a CA may affect its impacts (see also Zahariadis, 2007). One should avoid running a CA when decisions on the issue have already been taken. Foreseeable windows of opportunity include recent or upcoming policy processes, elections, or related events with news value like political summits or heat waves.

When aiming for immediate policy impact, it seems particularly important to align a CA with policy processes and timelines of policymakers in charge of the issue. From a system-disrupting perspective this is less important because CAs are rather seen as tools to open a window of opportunity or spark discussion on marginalized issues for which no ongoing policy processes exist.

Some noted that CAs should not be held shortly before an election because a new government that does not support the CA (results) has an opportunity to ignore its proposals.[14] Contrarily, a civil society organization in Germany commissioned a climate assembly with the aim to affect elections and policy in the coalition agreement between newly elected parties. While the impact of this CA was limited[15], the beginning of a legislative period is often a window of opportunity for policy change. Whether it can also be a window of opportunity for CAs remains to be investigated and is likely moderated by many other factors.

[13] https://www.irishtimes.com/opinion/we-may-have-overdone-it-on-citizens-assemblies-1.4803375.
[14] Unexpected early elections have interfered CA impacts in Spain and the city of Berlin.
[15] It is unlikely the process impacted the elections due to low media attention. Regarding policy impact, there are many overlaps between the CA results and the coalition agreement but expert interviews and informal conversations with involved policymakers revealed that these overlaps were not caused by the CA. The coalition agreement rather reflected a pre-existing policy consensus between the coalition parties independent of the CA.

4.7. Dilemmas

Clear trade-offs must be made.

Many interviewees strongly emphasized that CAs should be focused on those aspects of issues where trade-offs between values and interests arise. Most past assemblies have led to long wish lists of proposals that do not explain how measures are to be prioritized or financed. This provides little guidance to policymakers as it does not indicate whether citizens are willing to accept higher taxes, debts, or budget cuts elsewhere.[16] A citizens' assembly on diets in Germany was recently asked to limit their number of proposals to nine, explicitly stating the aim to force citizens to discuss their priorities.[17]

Some said that the issue given to a CA should not be too technical because citizens may get overwhelmed and are not competent enough. Others strongly disagreed with this statement saying that no political issue is too technical for a CA. They pointed to successful cases of deliberative minipublics on genetic engineering as examples. Further clarification revealed that below the surface of these contradictory statements lies surprisingly little disagreement. Whether or not an issue is too technical depends on how it is framed, i.e. what the specific aspects of the issue are that citizens are asked to give advice on. It is less useful to ask citizens for advice on questions of technical optimization regarding a value (e.g. What type of electricity mix yields the lowest consumer prices?). A diverse group of experts can legitimately provide better answers, here. Citizen advice is useful when asked about which values matter to them (e.g. prices, distributive fairness, emissions, etc.) and how to balance these values on a particular policy issue (also see Renn et al., 2007). To sum up, CAs can deal with complex technical information but should be focused on producing actionable proposals on issues where societies face difficult dilemmas on how to act.

4.8. Legitimacy

The agenda is seen as legitimate by most groups.

A concern among interviewees and deliberative theorists is that CAs will be manipulated to serve the interests of the sponsors, especially those in political power (also see Bua, 2012). Such practices would likely undermine trust in CAs and potentially its sponsors. Therefore, many interviewees support the idea that a wide range of different social groups and interests accept (or even support) the CA and its agenda from the outset. However, interviews also showed that a fear of conflict and bad publicity can lead sponsors to choose agendas that are less relevant. Holding CAs on issues of low political and societal relevance undermines system-supporting as well as system-disrupting objectives.

Satisfying all interests when setting the agenda for a CA is likely an exception. Practitioners have used at least two strategies to address this difficulty. The first is to be transparent in the choices made, and to provide defensible justifications. Beyond that, processes like the Scottish Climate Assembly[18] brought different political and social groups together to deliberate on the agenda.

From a system-disrupting perspective, acceptance by most groups may or may not be desirable depending on context. A civil society sponsor may want to demonstrate widespread support to gain recognition in empowered political spaces (as was the case for the German CA). On the other hand, conflict may increase the news value of the assembly and its proposals thereby increasing its wider impacts.

4.9. Openness

Citizens are not unjustly constrained by the agenda.

[16]Processes like participatory budgeting address such trade-offs by design. This may be one of many reasons why participatory budgeting proposals achieve higher degrees of implementation compared to other processes, see Font et al. (2018).

[17]See Mehr Demokratie, nexus, IPG, and ifok. (2023, p. 7). Deliberative Committees in Belgium have also begun to limit the number of recommendations, see https://www.bertelsmann-stiftung.de/en/our-projects/democracy-and-participation-in-europe/shortcut-archive-1/shortcut-9-deliberative-committees-a-new-approach-to-deliberation-between-citizens-and-politicians-in-brussels.

[18]See https://www.gov.scot/publications/scotlands-climate-assembly-operations-administration-arrangements/pages/10/.

Interviewees stressed that citizens should never lose their sense of ownership of the process and their recommendations. Citizens may lose their ownership if they feel that the agenda is too constrained or if they feel that the agenda is leading them toward recommendations desired by the sponsor. This would not only be normatively illegitimate but can also undermine the perceived legitimacy of the process and thereby reduce a CA's policy impact, or even lead to adverse effects for the sponsor.

Still, sponsors with system-supporting objectives can have defensible reasons for constraining the agendas to issues that are most politically relevant. Being transparent and allowing space for citizens to scrutinize and add to the agenda not only reduces the risk of citizens losing their sense of ownership but also increases the normative legitimacy of the process. From a system-disrupting perspective, one would prefer to give more freedom to citizens in setting the agenda. The Ostbelgien-Model, for instance, allows citizens to set their own agenda (see Niessen & Reuchamps, 2019). Experience with CAs in Denmark suggests that citizens should be supported with expert information when given the opportunity to choose their agenda (Brancaforte & Pfeffer, 2022). However, citizens in assemblies are not a unitary mass. They may experience conflict over the choice of agenda items. Then, the issue is how to decide. Majority vote? Hope of consensus? Include whatever is suggested? The German assembly on nutrition includes minority statements in their final reports to highlight issues of disagreement.[19]

4.10. Resource efficiency

Societal benefits of citizen deliberation on the selected agenda outweigh invested resources.

Organizing a CA requires investing a considerable amount of money and time, including that of the participants, as they often run for more than 6 weeks and engage more than 100 citizens. Therefore, some interviewees noted that citizens' assemblies should only focus on big agenda issues, that is on issues where the assembly is likely to deliver societal benefits large enough to outweigh its costs. When planning to organize a citizens' assembly, sponsors are well-advised to ask themselves whether less resource intensive alternatives to CAs exist (e.g. citizens' juries) that would deliver similar benefits (Boswell et al., 2023).

It is, of course, difficult to identify (or even quantify) all the societal benefits a CA can deliver on a given issue. At least heuristically, practitioners can ask how big the problem is – e.g. how many people are affected, how many material and immaterial costs is it causing and projected to cause? – and what degree of problem abatement can be expected due to the CA given the way the agenda is framed and constrained – e.g. what kind of proposals might result, how effective would such proposals be, how likely are they to be implemented or to cause disruption via public pressure?

5. Conclusion and discussion

While setting the 'right' agenda does certainly not guarantee a success, a CA is unlikely to be an effective tool for democratic deliberation and decision-making with a poorly set agenda. Results underscore that design choices for CAs require making trade-offs between objectives connected to different rationales. Hammond's (2020) distinction in system-supportive and system-disruptive rationales has proven useful to cluster different theories of change related to CAs. Those assuming that government is generally willing to act on climate change but requires support from CAs tend to see benefits in designing narrower agendas fitting ongoing policy processes and political demands, which can come at the expense of constraining deliberations and only lead to incremental policy changes. Those assuming government is unwilling to act or unwilling to instigate the levels of systemic transformations needed to meet climate targets tend to favour agendas that are less constrained by political imperatives, allowing more space to challenge existing institutions, actors, and paradigms. This, however, risks that the immediate impact on policymaking might be low (Figure 1).

Note that most interviewees in my sample tended toward system-supporting rationales, although many considered both perspectives. The extent to which this is representative of the expert population is unknown. A

[19]See Mehr Demokratie et al. (2023).

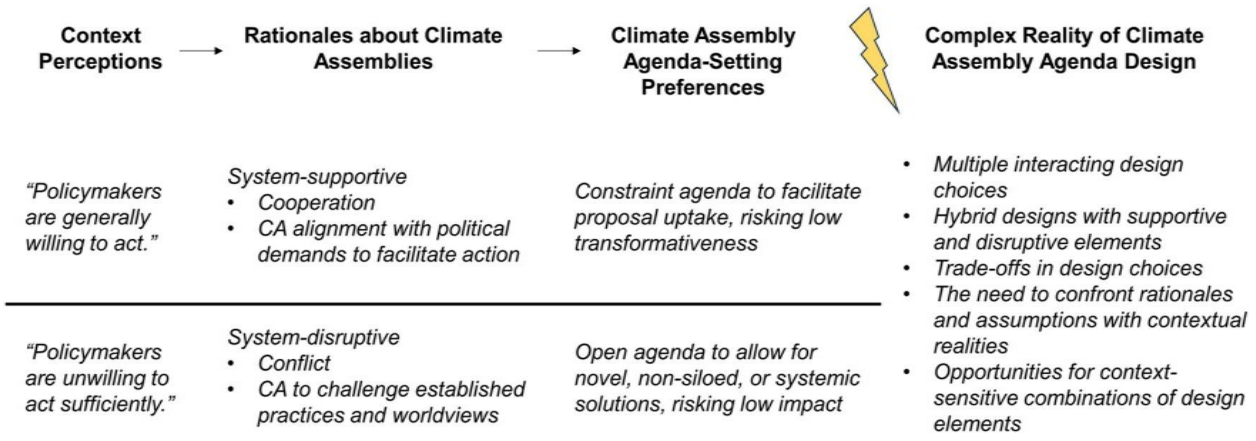

Figure 1. Setting the agenda for climate assemblies: facing complex realities.

higher share of activists in the sample might have led to different framings and evaluations of trade-offs. Moreover, the paper presents expert beliefs about causal relationships between CA designs and effects. This allows for theory development and deriving hypotheses, but not for testing their validity and effect sizes.

Beyond CAs, the insights of this paper may inform debates on minipublic purposes and agenda designs more generally. System-supportive and -disruptive rationales and trade-offs are not limited to climate practitioner contexts but appear in wider scholarly works on deliberative practices (Böker, 2017; Caluwaerts & Reuchamps, 2016; Courant, 2022; Curato et al., 2021; Curato & Böker, 2016; Harris, 2019; Jacquet & van der Does, 2020; Ravazzi, 2023). Paper results support arguments by Bussu and Fleuß (2023) that simple distinctions of top-down and bottom-up citizens' assemblies are not useful because real cases are mostly hybrid. Following them, I analyzed single elements of assemblies to assess whether they facilitate rather top-down (system-supportive) or bottom-up (system-disruptive) objectives. Such fine-grained analyses can 'be used as a "toolbox" that allows for flexible design and combination in democratic processes' (Bussu & Fleuß, 2023, pp. 150–151), allowing practitioners to make better decisions. Thus, future studies should analyze how different elements of minipublics interact. One could compare cases where political sponsors retain full agenda control (CA Finland) to cases where citizens have full control (East-Belgium) and hybrid cases (CAs Denmark, Scotland) (see last paragraph).

For practitioners having to make agenda choices, the elephant remains in the room: Amid all the trade-offs, what are the 'right' decisions? I suggest the answers are not purely subjective. Rather, practitioners should reflect their assumptions and confront them with their political context. As Bussu et al. (2022) have suggested with the concept of 'embeddedness', a normatively productive role for a participatory process depends on the elements that a 'good' democratic (sub-)system is lacking (also Bächtiger & Goldberg, 2020). Is the system characterized by political deadlock that leads to aggravations of untreated problems (Mansbridge, 2012), then a productive CA role may be an instrumental one with a tight agenda aimed at breaking this deadlock. Does the system lack responsiveness to public concerns or is there a general unwillingness for climate action in government? A more disruptive agenda providing space to challenge those in power may be more desirable in this case. Importantly, climate political contexts are more complex and diverse than sketched here.

So far, I have neglected to ask how realistic it is that CAs can fulfil system-disruptive functions, at all. Without further institutionalization, disruptive minipublics may only be an exception (Courant, 2022). After all, minipublics will only be initiated if those with the power to initiate them expect to benefit sufficiently. Governments are unlikely to set agendas that challenge themselves. To embed CAs more productively within climate governance, one could introduce initiation rights for citizens (e.g. if a threshold of signatories is surpassed), or 'automatic' initiation mechanisms (Setälä, 2017) (e.g. if governments fail to meet their climate targets). Still, governments may simply ignore such unwanted CAs, unless they generate high levels of public attention and pressure – which has been the exception for past assemblies. Therefore,

new initiation mechanisms would have to be paired with other provisions that either increase the accountability of those in power toward the assembly (e.g. through certain requirements to respond), or with processes shifting decision-making power to citizens like follow-up referendums, as practiced in Ireland (Farrell et al., 2023) or Oregon (Gastil & Knobloch, 2020).

Finally, more research is needed on the procedural dimensions of CA agenda-setting, such as whom to involve in agenda decisions and with how much power (for a start, see Pfeffer, forthcoming). The governance structures of past CAs have varied considerably (Carrick, 2022). In Scotland, a stewarding group comprised of stakeholder representatives, members of parliament, civil servants, participation experts, and climate scientists set the remit.[20] In Denmark, CA members actively contributed to shaping the agenda, and members of the German assembly on nutrition chose the sub-themes for deliberation themselves.[21] And in Finland, the CA was constrained to assess several proposals formulated by government.[22] These differences matter as actors vary in their interests and knowledge. For example, policymakers and civil servants know what is politically relevant, timely, and within their authorities – knowledge that CA members typically lack. However, politicians are also driven by concerns about re-election and career progression – restraints that CA members do not need to worry about. Future research should investigate the possibilities of designing embedded CA processes that both allow for productive disruptions while being sufficiently tailored to policy processes to have immediate impacts on policymaking (see Courant, 2022 for a conceptual start).

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Ethics approval

In accordance with the procedural instructions of Ethical Review at the authors' home institution, a formal review was deemed unnecessary because all research participants gave informed consent in both oral and written form, topics discussed were non-sensitive, and the highly educated participants were familiar with expert interviews.

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Data availability

The data that support the findings of this study are available on request from the author. The data are not publicly available due to their containing information that could compromise the privacy of research participants.

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[20]See footnote 17.
[21]See https://knoca.eu/denmarks-climate-assembly/, and footnote 18.
[22]See https://knoca.eu/finlands-citizens-jury-on-climate-actions/.

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Article 5

Boosting Messenger Credibility and Persuasiveness. Empirical Tests and a Theoretical Framework of Source Attributions

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Abstract

How can science communicators and political actors bolster the persuasive power of their messages? Existing theory highlights the importance of source credibility, based on research that contrasts low- versus high-credibility sources. However, whether emphasizing positive traits can enhance a given source's credibility and persuasiveness remains unclear. We test this empirically and develop a theoretical framework of source attributions to guide future research. In five pre-registered survey experiments in Germany and the United States between 2021 and 2024 ($N \approx 2{,}900$), respondents read a carbon tax endorsement from one of three sources—scientists, a non-governmental organization (NGO), or a minipublic—and were randomly shown up to four source attributions highlighting favorable traits, such as impartiality. Learning more about the messenger sometimes increased source credibility and persuasiveness, but the effects were small ($\leq .16$ *SD*). Effects were consistently significant for the minipublic but less conclusive for scientists and an NGO. Emphasizing minipublics' epistemic quality and impartiality boosted their persuasiveness and credibility. Learning more about minipublics also prevented those initially opposing a carbon tax from losing trust in minipublics. Furthermore, while many studies suggest that signaling scientific consensus can be effective, it yielded minimal persuasive benefits, whereas highlighting multi-disciplinarity showed greater promise. Overall, our findings demonstrate the difficulty of directly enhancing source credibility and persuasiveness, especially on a personally important policy issue and when audiences also receive relevant substantial information. We present a theoretical framework that systematizes types of source attributions, emphasizes scope conditions, and formulates hypotheses for future research.

Keywords: source credibility, persuasion, outcome favorability, mini-publics, science communication

Scholars argue that the effects of political messages depend on the message source (Bolsen et al., 2019; Druckman & McGrath, 2019; Hodges, 2019), particularly amidst growing partisan polarization (e.g., Druckman et al., 2013; Groenendyk & Krupnikov, 2021). Extant theory predicts that credible message sources are more persuasive than those lacking expertise and trustworthiness (Chaiken, 1980; Pornpitakpan, 2004). Political actors, science communicators, and advocacy groups, therefore, may seek communication strategies that present themselves as trustworthy experts to increase the impact of their messages.

Considerable research has identified characteristics of persuasive message sources (e.g., Ismagilova et al., 2020; Ou & Ho, 2024), and two prominent source features are having relevant expertise and a broader trustworthiness (e.g., Willemsen et al., 2012). Many studies have examined the credibility and persuasiveness of different sources (e.g., Flanagin et al., 2020), but scholars have given scant attention to strategies for boosting trust and influence for a given source, with existing findings being mixed (e.g., Pirolli et al., 2009; Xu et al., 2021).

In this study, we tested whether the credibility and persuasiveness of message sources can be increased by highlighting source characteristics such as expertise or impartiality. We test this across three message sources, each of which endorsed a costly or redistributive carbon tax to address climate change.

In five waves of pre-registered survey experiments conducted in the US and Germany, respondents were randomly assigned one of three source conditions—scientists, an environmental non-governmental organization (NGO), or a deliberative body of citizens called a "minipublic." Respondents were shown up to four different favorable features attributed to their assigned source, including topical expertise, scientific consensus, impartiality, and/or similarity. We then tested whether a greater number of attributions, or specific types, increased source credibility and the persuasiveness of the source's message endorsing a carbon tax.

Findings showed that favorable characteristics attributed to the message source could increase source credibility and persuasiveness significantly, albeit only to a small degree. The evidence of such effects was more consistent for minipublics, less so for scientists and NGOs. Highlighting the impartiality and epistemic quality of minipublics

were most effective at enhancing credibility and persuasiveness. We also found evidence showing that more information about a minipublic can prevent those opposing its tax endorsement from losing trust in the source. Results barely support the claim that messages about scientific consensus increase credibility and persuasiveness; however, when a source featured scientific multi-disciplinarity, it was slightly more persuasive.

Building on our findings and extant research, we then propose a theoretical framework to guide future research on directly manipulating source credibility and persuasiveness. The framework systematizes different types of source attributions, highlights scope conditions, and formulates hypotheses.

Theory and Hypotheses

Credible sources can add to the persuasive force of a message (e.g., Druckman & McGrath, 2019), but scholars debate their importance compared to the message content (cf. Dür, 2019; Hodges, 2019). Theory predicts that sources: (a) matter more than message content for issues of low importance to recipients and vice versa (e.g., Petty & Briñol, 2008); (b) can be perceived as trustworthy without having much expertise and vice versa (Willemsen et al., 2012); and (c) either spark directional or accuracy motivated reasoning (Druckman & McGrath, 2019). Thus, the theory of source credibility is largely *conditional*, making it difficult to predict the direct impact of a given combination of a source and message on target audience (Druckman, 2022). Furthermore, it is not clear how the theory of source credibility helps predict which factors can boost said credibility. As P. J. Collins et al. (2018, p. 1) argue, despite the widespread assumption that source credibility increases persuasion, "much remains to be established concerning what factors influence source reliability."

When studying attributes that enhance source credibility and persuasiveness, prior research often compares messengers at opposite ends of a trait spectrum (e.g., high vs. low expertise). For example, Geiger et al. (2022) found that support for climate policy increased when individual advocates were seen as caring for the average person (vs. not caring) and sharing recipients' environmental values (vs. not sharing their values), whereas expertise alone had no effect. Such designs are valuable for foundational theory, but they are less applicable to situations where communicators aim to enhance

the credibility and persuasiveness of a specific source, such as themselves or their organization.

Indeed, Xu et al. (2021, p. 1355) argue that "little is known about how strategic message design can influence perceived source credibility." They tested three types of messages by a governmental health agency aimed at enhancing perception of expertise, trustworthiness, and goodwill, but found limited, if any, evidence of increased credibility and persuasiveness regarding vaccination. Hohenberg and Guess (2023), on the other hand, were able to manipulate experimentally the credibility of a mock news outlet, which increased its persuasiveness somewhat on politicized issues. Thus, further research is warranted to understand what shapes source credibility and persuasiveness.

A new wrinkle in this debate comes in the form of a novel type of source. Some argue that the public will view deliberative minipublics as uniquely credible because of their design features (Warren & Gastil, 2015). Minipublics employ a relatively representative group of citizens (peers) who listen to experts and stakeholders before deliberating and providing near-consensus recommendations (Curato et al., 2021). A large body of research shows that information provided by minipublics can persuade citizens who read it (e.g., Gastil et al., 2023; Suiter et al., 2020). Research has also shown that minipublics can improve policy knowledge more amongst those who were previously less informed, suggesting they can induce an accuracy motivation (Már & Gastil, 2020).

In contrast, scientists and other knowledge specialists are often perceived as having more relevant expertise than other sources, though sometimes people assign them less trustworthiness and/or goodwill (Willemsen et al., 2012). These countervailing forces may limit the effectiveness of scientists as communicators. By contrast, NGOs might occupy a space between the laypersons in minipublics and scientific experts. This includes civic organizations like the Sierra Club that are accountable to their members but consult experts to develop and evaluate policy stances.

Message recipients' attitudes toward a messenger can be shaped by their preexisting support for a messengers' policy position—a phenomenon known as outcome favorability (e.g., Esaiasson et al., 2016). Scholars of procedural fairness and persuasion emphasize the importance of studying counter-attitudinal messages, as the acceptance of unfavorable outcomes (sometimes called a "loser's acceptance") is vital for

democratic stability (Werner & Marien, 2022). This is also important because counter-attitudinal messages can spark motivated reasoning, whereby biases make recipients accept only information aligned with their priors (Tormala & Petty, 2004; Zaller, 1992), sometimes through questioning the credibility of the information source (Druckman & McGrath, 2019). Reading positive source attributions before a counter-attitudinal message may be especially effective in counteracting such source derogative reasoning. In contrast, source attributions may be less influential for pro-attitudinal messages, as recipients may engage in less scrutiny of the source, or because the message itself already provides enough cues to judge the source's credibility.

Thus, we hypothesize that providing citizens with further (positive) information about a given source will increase its credibility and persuasive force in three respects. (See Supplement A for verbatim pre-registered hypotheses.)

> H1. The more source attributions respondents are exposed to, (a) the higher respondents' perceived credibility of the source and (b) the more persuasive the source's messages.
>
> H2. Exposure to each individual source attribution (a) increases respondents' perceived credibility of the source and (b) increases the persuasiveness of the source's messages.
>
> H3. The effect of source attributions on source credibility will be moderated by outcome favorability, such that the credibility effects are larger for those who were previously opposed to the policy that the source endorses.

Data and Methods

Samples

We tested these three hypotheses in four pre-registered online survey experiments for a minipublic, plus one for scientists and an NGO. The minipublic studies included three samples recruited via Qualtrics (US N = 473 and German N = 505 in 2021; US N = 493 in 2022) and one sample via Prolific (US N = 413 in 2024). An additional 2024 experiment randomly assigned respondents to messages from scientists (N = 752) or an NGO (N = 767) and came from a US sample recruited via Prolific. Qualtrics samples were stratified

by age, gender, and education, with US samples also stratified by party affiliation. We stratified the Prolific sample by gender and party affiliation.

To ensure sufficient exposure to the experimental treatment in the 2021 surveys, two factual manipulation checks (Kane & Barabas, 2019) were used. We excluded respondents who failed either check, which reduced the final sample to 238 in Germany and 239 in the US. For the 2022 minipublic replication study, an early attention check was added, and respondents who failed it could not continue. Two more manipulation checks followed the treatment: Those who failed initially were required to reread the treatment before retaking the checks. The two 2024 surveys implemented a pair of attention checks—one before and one after the treatment, and we removed those who failed both. Manipulation checks followed the 2022 protocol. (For detailed sample demographics, see Supplement C.)

Survey design

We utilized a pre-post experimental design to increase precision while avoiding consistency effects (Clifford et al., 2021). Respondents first answered a series of questions to establish baseline measures of the dependent variables. After exposure to the textual treatment, they answered the same initial question set again.

Respondents read an endorsement text in which either a minipublic, a group of scientists, or the Sierra Club proposed a carbon tax for their country to address climate change. This message told respondents that their country was not reaching its own climate targets and recommended an effective Carbon Tax purported to reduce substantially the negative effects of climate change. (For details on the treatment, see Supplement B.)

The proposed tax scheme was described as either costly or redistributive. For the costly tax, respondents learned that it would increase the average consumer's monthly expenses by about 37€/$50. For the redistributive tax, they learned that the tax would incur costs for high-income households but protect—and even benefit—middle- and low-income households. For the experiments including the minipublic condition, the costly tax was used in 2021 and 2022, and the redistributive tax was used in 2024. For

the scientists and NGO experiment conducted in 2024, respondents were randomly assigned to see one of the two tax schemes.

Experimental treatments: source attributions

Depending on the source, respondents were randomly assigned to see one of sixteen possible combinations of four source attributions presenting the source in a favorable light, as shown in Table 1. For each source attribution, respondents had a fifty percent probability of seeing it, so respondents saw anything between zero to four attributions. This design resembles a 2^4 factorial survey experiment, which provides more statistical power for detecting main effects (Auspurg & Hinz, 2015; L. M. Collins et al., 2009). (See next section for power calculations.)

For the minipublic, attributions highlighted the process' high-quality information (variable name = "*epistemic quality*"), its inclusion of pluralistic political viewpoints ("*diverse perspectives*"), its political neutrality ("*impartiality*"), and the fact that its members were randomly selected ordinary citizens with whom a respondent might identify ("*identification*"). These attributions constituted stronger treatments than those used in prior research on minipublic design features (e.g., Már & Gastil, 2021), as they drew more explicit connections between those features and claims related to credibility or legitimacy. For the consortium of scientists, attributions stressed the amount of research they considered ("*number of studies*"), the professional qualifications of the experts ("*prestige*"), their consistency with a broad scientific consensus regarding climate change and policy recommendations ("Consensus"), and the consortium's academic diversity ("*multi-disciplinarity*"). For the NGO, attributions emphasized the organization's topical focus ("*relevance*"), diverse network ties ("*collaboration*s"), track record of prior effectiveness ("*impact*"), and orientation toward the common good ("*anti-elitism*").

Whereas most theoretical models of source credibility distinguish between a capability dimension (e.g., expertise or competence) and a motivational dimension (e.g., shared values and goals or goodwill), these conceptualizations vary considerably in nuance (e.g., Fiske & Dupree, 2014; Geiger et al., 2022; Warren & Gastil, 2015; Willemsen et al., 2012). In practice, messenger efforts to gain a recipient's trust often provide information about multiple credibility dimensions. We distinguish different dimensions

of credibility in their measurement (see Table 1 below). Our source attributions are based on both theoretical dimensions and prevalence in real-world communication practices (e.g., the Sierra Club website or news articles). They are associated with theoretical dimensions such as expertise and competence (e.g., *epistemic quality*, *prestige*, *impact*, *relevance*), goodwill, care, and value alignment (e.g., *impartiality*, *identification*, *collaboration*, *anti-elitism*), knowledge and reporting bias (e.g., *number of studies*, Consensus, *multi-disciplinarity*), or political input legitimacy (e.g., *diverse perspectives*).

Table 1. Source attributions used in experimental treatments

	Minipublic
Epistemic quality	Before making recommendations, the Citizens' Assembly heard from scientists who study the ecological, social, and economic consequences of policies addressing climate change. After hearing these facts, the participants made their own ethical judgments about different policy options.
Diverse perspectives	Interest groups and partisan politicians presented their opinions before the Citizens' Assembly. This helped participants consider the conflicting views of groups most affected by climate policies.
Impartiality	The participants were not representatives of a political party or interest group. Because they did not have to worry about being re-elected or paid, they made their decisions freely and independently.
Identification	The random selection of the Citizens' Assembly brought together ordinary people who will be affected by the government's decisions on climate change, just like you and everyone else. You, too, could have been one of the 160 selected participants.
	Scientists
Number of studies	The scientists assessed more than a thousand scientific articles published in the last decade to provide a comprehensive summary of what is known about climate change, and how to respond.
Prestige	The group is comprised of leading climate and policy experts from the most prestigious research institutions in the world, such as Harvard and Stanford University.
Consensus	The results represent a scientific consensus on climate change. The vast majority of scientific experts agree on these findings and recommendations.
Multi-disciplinarity	The group of scientists consists of experts from multiple disciplines that represent diverse perspectives on ecological, social, and economic consequences of these policy proposals.
	NGO
Relevance	Founded in 1892, the Sierra Club is the largest and most enduring grassroots environmental organization in the United States with millions of members.
Collaboration	Working with other partner organizations, nonprofits, campaigns, and businesses, the Sierra Club has built a diverse, inclusive movement that represents the American public.
Impact	From winning passage of the Clean Air and Endangered Species Acts to putting over 281 coal plants on the path to replacement with clean energy, the Sierra Club has an unmatched record of success.
Anti-elitism	The Sierra Club aims to defend everyone's right to a healthy world by fighting powerful special interests and putting pressure on self-interested and short-sighted politicians.

Dependent measures

We measured source credibility and persuasiveness concerning climate change attitudes as the difference between post- and pre-treatment responses. To measure source credibility, we took five items relating to different theoretical dimensions that prior research has shown can be independent (Fiske & Dupree, 2014; Geiger et al., 2022; Warren & Gastil, 2015; Willemsen et al., 2012): "*trustworthiness*" (general), "*competence*" (capability), alignment with "*personal interests*," alignment with the general "*public interest*", and for the minipublic only, "*political trust*" (legitimacy) (Table 2). To test the persuasiveness of the carbon tax endorsement, we measured six climate attitudes: "*tax support*," "*willingness to pay*," "*tax effectiveness* ," "*tax fairness*," "*majority opinion*," and "Climate change consequences." We measured *tax fairness* in the 2024 samples only.

Variables were measured using branched questions (Table 2) (Schaeffer & Dykema, 2020). *Competence*, *personal interests*, *public interest*, *tax support*, *tax effectiveness* , *tax fairness* and *majority opinion* were measured on 7-point scales ranging from -3 to +3; *cc consequences* on a 6-point scale ranging from -2.5 to +2.5; *trustworthiness* on a 4-point scale ranging from 1 to 4; *willingness to pay* was measured using 14 categories ranging from 0 = "$0/0€" to 13 = "More than $120/120€". *Political trust* is a score calculated by taking the mean of five items measured on a 5-point scale ranging from 1 to 5 ($\alpha > 0.85$). Respondents were also asked whether they trusted minipublics with the responsibility to advise the public, advise public officials, set priorities, make decisions on top-down-selected issues, or make decisions on self-selected issues. (For descriptive statistics, see Supplement C.)

Table 2. Credibility and persuasiveness items measuring dependent variables

Dependent variable	Survey item
Credibility	
Trustworthiness	On the issue of climate change, how OFTEN do you think you can trust {THE SOURCE} to do what is right?[1]
Competence	Do you think {THE SOURCE} is competent or incompetent when it comes to climate change policy?
Personal interests	Compared to your own views, do you think {THE SOURCE} would have similar or different views when it comes to climate change policy?
Public interest	On the issue of climate change, do you think {THE SOURCE} represents the general public interest or not?
Political trust	How much would you TRUST or DISTRUST a Citizens' Assembly on climate change that had the following responsibilities? (5 items: advise voters, advise public officials, set priorities, make decisions on given issues, make decisions on self-chosen issues).
Persuasiveness	
Tax support	To limit climate change, some have proposed a Carbon Tax on products that cause greenhouse gas emissions. Do you SUPPORT or OPPOSE adopting such a Carbon Tax for [Germany/the US]?
Willingness to pay	What is the most you would be willing to pay in **extra household costs per month** to limit the negative consequences of climate change?
Tax effectiveness	Do you think a Carbon Tax is an effective or ineffective policy to address climate change?
Tax fairness	To address climate change, do you think a Carbon Tax is a fair or unfair policy?
Majority opinion	Do you think most people in [Germany/the US] support or oppose a Carbon Tax on products that cause greenhouse gas emissions?
CC consequences	Do you think that climate change will have negative effects on people's daily lives or not?

Note: We used branched questions, e.g., a respondent who indicated support for/opposition to a carbon tax was then asked whether they slightly, moderately, or extremely supported/opposed it.

Note that pre-treatment, a substantial proportion of respondents answered "I don't know" for NGO *trustworthiness*, *competence*, and *personal interests*, effectively reducing

[1] For the minipublic, this question was preceded by: "Next, we want to know what you think about a new kind of public meeting called the "CITIZENS' ASSEMBLY". Citizens' Assemblies have recently gained attention in the media. They are made up of randomly-selected citizens who carefully study policy issues and then present their findings to policy makers and the wider public."

statistical power. For NGO *trustworthiness* (the condition with the lowest sample size), our study has 80% statistical power to detect a standardized regression coefficient of β = 0.13 for an individual attribution effect. For minipublic *political trust* (the condition with the maximum sample size), that coefficient is β = 0.07. We therefore report effect sizes alongside statistical significance. We also repeated the NGO analysis after performing a constant-value imputation but did not find meaningfully different results (see Supplement G).

Moderation

To measure *outcome favorability*, we calculated a mean score of the standardized pre-treatment measures of *tax support*, log-transformed *willingness to pay*, *tax effectiveness* , *majority opinion*, and *cc consequences* (all $\alpha > 0.8$). *Outcome favorability* is a standardized measure ranging from -2.4 to +2.5. Post-hoc, we also tested moderation by tax scheme, tax support certainty, initial source credibility, party identification, and gender using interaction terms. We found little, if any, robust evidence of moderation (see Supplement E).

Analytic method

We analyzed the data following standard procedures for factorial survey experiments (Auspurg & Hinz, 2015). To test the three hypotheses, we ran linear regression models for each dependent variable for each source. All dependent variables were standardized (i.e., $M = 0$, $SD = 1$). For the minipublic, we pooled data from four samples. Analyzing minipublic samples separately did not yield substantially different results (see Supplement D). To test Hypothesis 1 (number of attributions), we also pooled samples across sources. Whenever samples were pooled, we used a mixed model with the sample as random effect. The tax scheme (costly vs. redistributive) and source were added as covariates, where they varied. To determine statistical significance, we used one-sided significance tests for our pre-registered directional hypotheses.

For Hypothesis 1, a variable ranging from 0 to 4, indicating the number of source attributions a respondent read, was used as predictor. (We did not find compelling evidence suggesting non-linear relationships—see Supplement F.) For Hypothesis 2, a dichotomous variable indicating whether a respondent was exposed to a particular

attribution was used as predictor. For each model, all source attributions and all possible interactions between attributions were included in the model to increase the precision of estimates (Auspurg & Hinz, 2015). The individual attribution variables were effect coded with 1 indicating exposure and -1 for non-exposure, following standard practice for factorial designs (L. M. Collins et al., 2009). Therefore, the effect of seeing an attribution compared to not seeing it is twice the standardized beta coefficient, which is what we report as effect size.

We tested whether source attributions had positive effects among respondents with high *outcome favorability* but not low *outcome favorability* (according to our verbatim hypotheses preregistered in 2024 but not in 2021 and 2022; see Supplement A). For this analysis, we cut the *outcome favorability* score at the median to create a binary measure, then followed the same procedure as for the main effects. The data was analyzed and visualized using RStudio.

Across our multiple dependent variables, we conducted many tests, thereby increasing the expected number of false positives. For that reason, we calculated additional Holm-Bonferroni corrections (also known as Holm corrections) of *p*-values to account for this (Holm, 1979). For Holm corrections, researchers define a family of significance tests to test a single hypothesis. The null hypothesis is rejected if at least one out of multiple tests turns out significant. In other words, Holm corrected *p*-values refer to the error rate of finding just one false positive in the whole family of tests.

Results

H1: Number of attributions

We hypothesized that the more information respondents received about the information source, the more credible (H1a) and persuasive (H1b) they would perceive that source. Pooling all the sources, seeing more attributions had significant positive effects on source credibility and persuasiveness on seven out of ten dependent variables (one-sided tests for positive effects). The only non-significant effects were on post-treatment measures of *willingness to pay*, *cc consequences*, and *tax fairness* (see Figure 1).

For the minipublic condition, we found six significant positive effects—on *tax support*, *tax effectiveness* , *majority opinion*, *political trust*, *personal interests*, and *public interest*. For scientists, we found significant positive effects on *tax effectiveness* and *competence*. For the NGO, we found no significant positive effects, although some effect sizes were similar to the other sources. There was one borderline significant negative effect of *tax fairness* (two-sided test). After Holm corrections by hypothesis and source (each panel in Figure 1), we still found significant effects on credibility and persuasiveness overall (*tax effectiveness* , *political trust*, and *competence*) and for the minipublic (*majority opinion* and *political trust*). All effect sizes ranged from -0.07 to 0.1 *SD* per additional attribution.

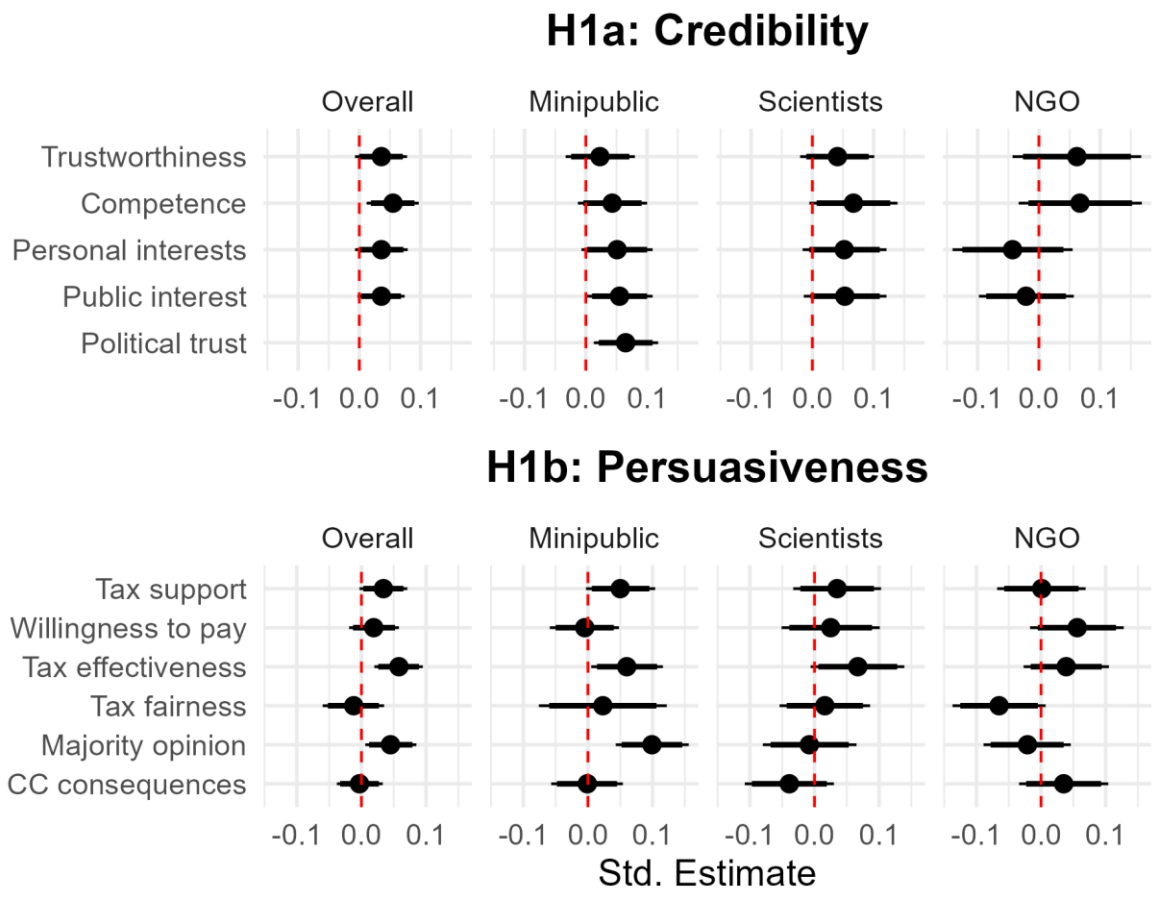

Figure 1. Effects of the number of attributions on source credibility and persuasiveness

Note: Figure displays the effect of the number of source attributions, ranging from 0 to 4, on credibility and persuasiveness overall and for each source. Graphs show standardized beta coefficients and 90%- and 95%-confidence intervals of linear (mixed-effects) regression models.

H2: Individual attributions

We hypothesized that exposure to each of the four individual source attributions would increase source credibility and persuasiveness. For the minipublic, we found five significant positive effects on credibility and four on persuasiveness out of 44 tests in total (Figure 2). Of those, four were from reading the *impartiality* attribution (on *tax support*, *tax effectiveness*, *majority opinion*, and *personal interests*), three were from learning about the *epistemic quality* of the minipublic (*majority opinion*, *political trust*, and *competence*), and two were from the *identification* attribution (*political trust* and *public interest*). We found no significant effects for attributing *diverse perspectives* to this source. After Holm correction by attribution and hypothesis (i.e., credibility or persuasiveness), the effects of *impartiality* (*tax effectiveness*) and *epistemic quality* (*majority opinion*) remained significant, which indicate that both attributions could boost persuasiveness.

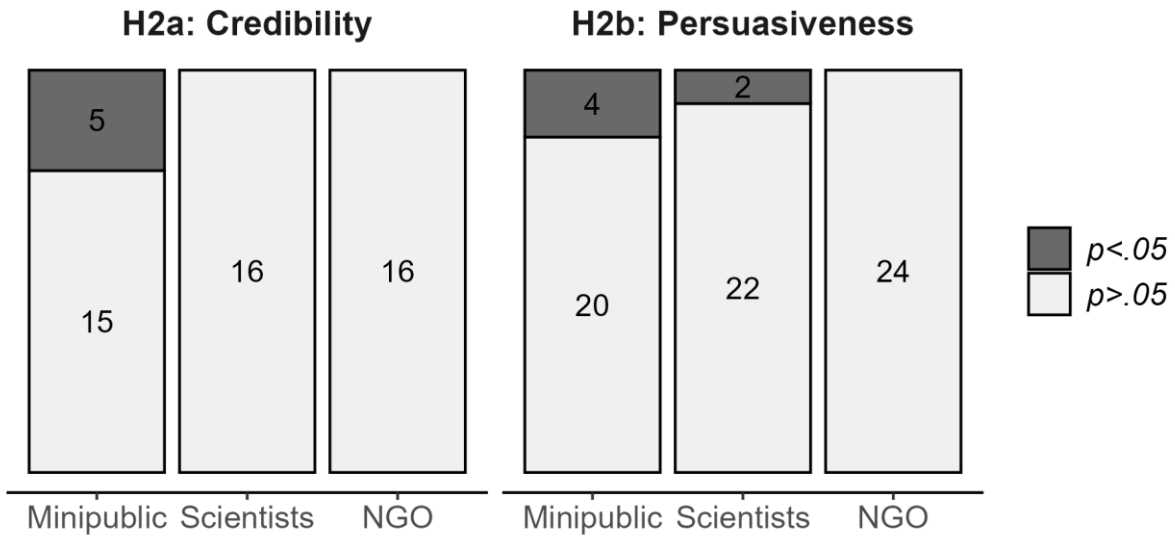

Figure 2. Effects of individual attributions on source credibility and persuasiveness

Note: The figure displays the frequencies of statistically significant and nonsignificant tests by source. It summarizes results from 124 models testing effects of four source attributions on five variables of credibility (four for scientists and the NGO) and six climate attitudes.

For scientists, out of 40 tests in total, we found no significant effects of source attributions on credibility, and we found only two positive effects on persuasiveness (*consensus* on *tax effectiveness*, and *multi-disciplinarity* on *majority opinion*). The *multi-disciplinarity* attribution had three additional borderline significant effects increasing

persuasiveness (*tax support*, *willingness to pay*, and *tax fairness*). There were no significant effects after Holm corrections.

We found no significant effects of source attributions for the NGO. Some effect sizes were similar to those observed for the other sources. Against expectations, the *anti-elitism* attribution showed a borderline significant negative effect on *majority opinion* (two-sided t-test). Across groups, effect sizes were very small, ranging from -0.13 to 0.16 *SD*. (Supplement D contains figures and tables showing the results for each model.)

H3: Moderation by outcome favorability

Overall, we observed significant *outcome favorability* effects across all credibility measures. For example, among respondents opposing a carbon tax before treatment, the perceived *competence* of the sources endorsing such a tax decreased by -0.17 *SD* on average (all sources pooled). Among supporters of a carbon tax, *competence* perceptions increased by 0.29 *SD*. We hypothesized that exposure to source attributions would diminish such *outcome favorability* effects. More specifically, we expected that source attributions would have a positive effect on credibility among those with low but not those with high *outcome favorability*. We also referred to them as "*tax opponents*" and "*tax supporters*" of the carbon tax endorsement.

In line with this hypothesis, we found that for the minipublic the number of attributions had a significant positive effect on four of the five credibility variables among *tax opponents* (all but *trustworthiness*; see Supplement D, Figure 5). All effects remained significant after Holm corrections. Sizes of significant effects ranged from 0.09 to 0.12 *SD* per additional attribution. By contrast, there were no significant effects among *supporters* of the tax endorsement. The hypothesized moderation was pronounced in three of the four minipublic samples. For example, we found that reading more information about the minipublic prevented political trust erosion among *tax opponents*. This effect occurred in the 2021 German and the 2021 and 2024 US samples but not for the 2022 US sample, where it was almost reversed (see Figure 3).

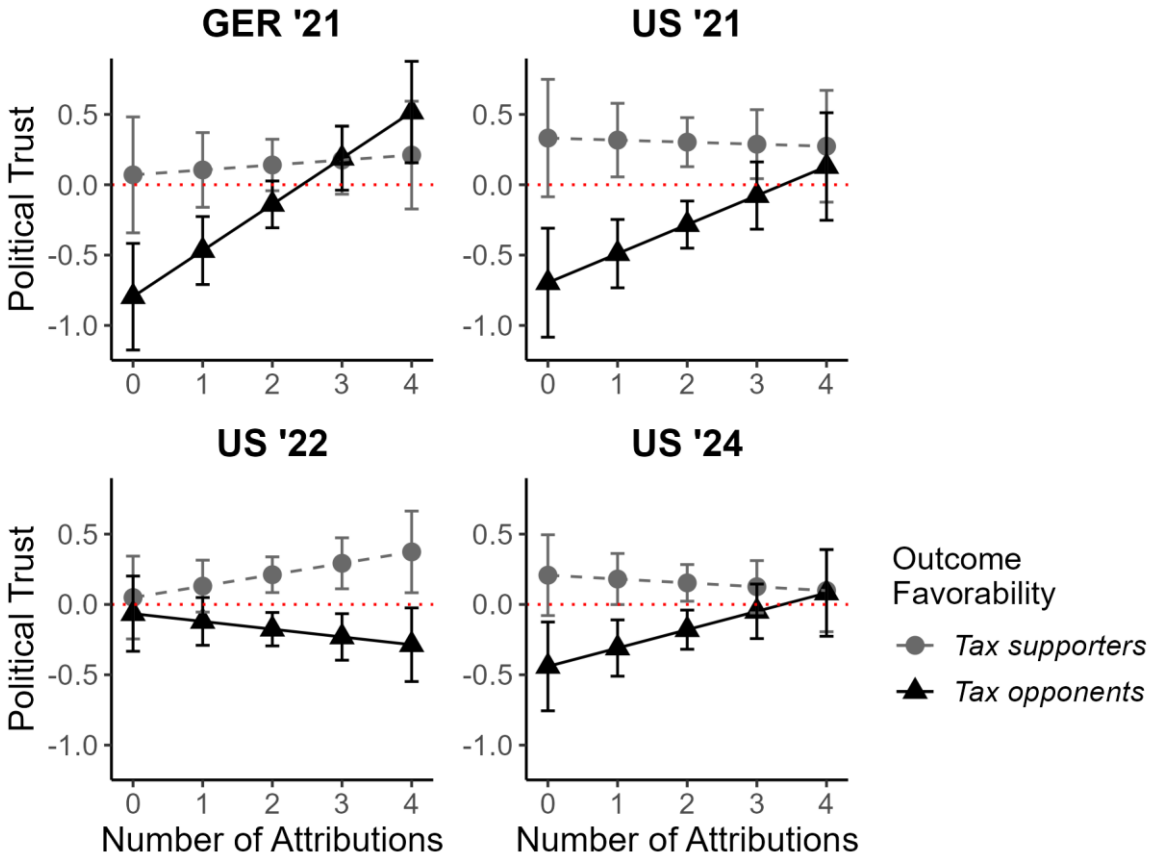

Figure 3. More information about a minipublic prevented a loss of source credibility among tax opponents

Note: Figure shows the predicted effect of the number of attributions on *political trust* in minipublics, depending on *outcome favorability* for four samples. *Political trust* is a standardized score calculated from five Likert-scale items. *Outcome favorability* is a standardized score calculated from climate attitudes measured before treatment—e.g., tax support and willingness to pay. Respondents below the median are depicted as *tax opponents*, while those above are *tax supporters*. Values are predicted from linear regression models. Whiskers represent 95%-confidence intervals.

For scientists, we found no significant effects among *tax opponents* but one significant positive effect among supporters (*competence*, 0.10 *SD*). This effect did not remain significant, however, after Holm corrections. We found no significant effects for the NGO. The effect sizes ranged from -0.09 to 0.12 *SD* without a clear pattern concerning *outcome favorability*.

We also tested whether individual attributions were more effective among *tax opponents* than *supporters*. For the minipublic, we found that six of 20 tests were

significant among *tax opponents*, but also four of 20 among *supporters* (see Figure 4). Effect sizes ranged from -0.15 to 0.30 *SD*. With three significant positive effects, the *epistemic quality* attribution was particularly effective in boosting credibility among *supporters* (*political trust*, *trustworthiness*, and *competence*), whereas the Diverse Perspective attribution had a significant negative effect (*political trust*). Among *tax opponents*, three positive effects were observed for *impartiality* (*competence*, *personal interests*, and *public interest*), two for *identification* (*political trust* and *public interest*), and one for the *epistemic quality* attribution (Personal interest). After Holm corrections by attribution and *outcome favorability*, two effects of the *impartiality* attribution among *tax opponents* and two effects of the *epistemic quality* attribution among *supporters* remain significant.

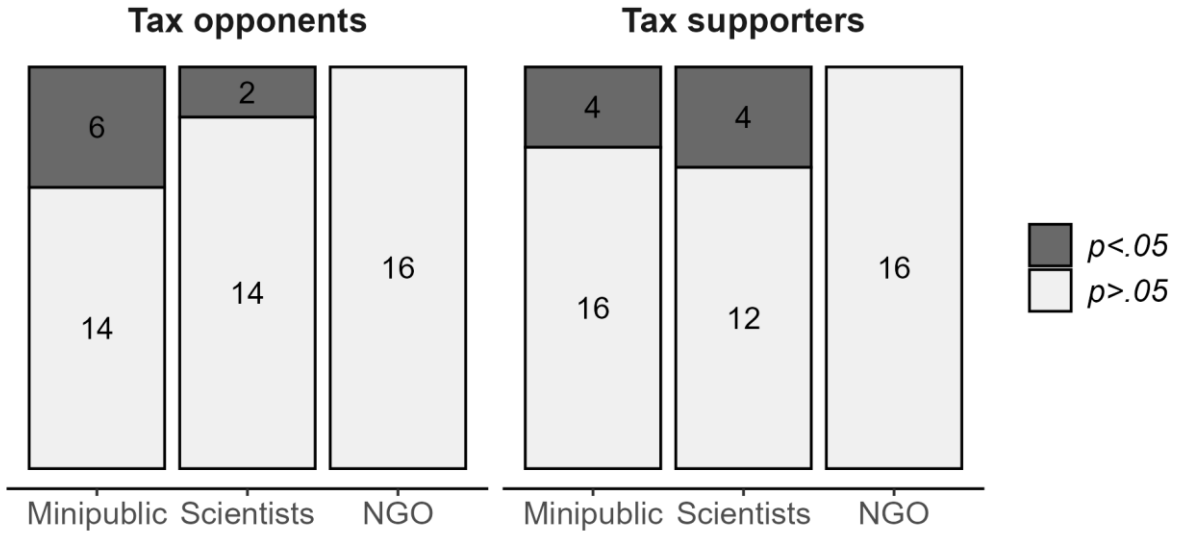

Figure 4. Individual attribution effects on source credibility by outcome favorability

Note: The figure displays the frequencies of statistically significant and not significant tests. It summarizes results from models testing effects of 4 source attributions on 5 variables of credibility (4 for scientists and the NGO). T-tests were one-sided for positive estimates. *Outcome favorability* is a score based on the pre-treatment measures of climate attitudes. Respondents below the median are displayed as *tax opponents*, those equal or above as *tax supporters*.

For scientists, we observed two significant effects of individual attributions among *tax opponents* and four among *supporters*. Effect sizes range from 0.16 to 0.22 *SD*. Among *tax opponents*, both significant effects were found for the Consensus attribution (*trustworthiness*, and *public interest*). Among *supporters*, two significant effects were

observed for the *multi-disciplinarity* (*competence*, and *personal interests*) and one each for the *number of studies* (*competence*) and *prestige* attribution (*trustworthiness*). After Holm corrections, one effect for the *multi-disciplinarity* attribution remained significant among *supporters*.

We found no significant effects for the NGO, but three effects were larger than 0.20 *SD*, ranging from 0.21 to 0.30 *SD*. They were borderline significant and occurred among *tax opponents*. These effects were for attributions of *collaboration* (*trustworthiness*), as well as *impact* and *anti-elitism* (both on *competence*).

Summary of Findings

Pooling all the samples, we found that exposure to more source attributions can increase source credibility and the persuasiveness of a source's carbon tax endorsement. This is in line with our first hypothesis, though the effect sizes were small throughout. Effects were most consistently significant for the minipublic. The evidence was less conclusive for scientists and the NGO, although we found some effects of similar size.

Regarding the second hypothesis, which predicted effects from exposure to individual attributions, we found that the *impartiality* and *epistemic quality* attributions may increase minipublics' persuasiveness and perhaps credibility. The *identification* attribution might also increase credibility. The *diverse perspectives* attribution was least effective, and may even have adverse effects in some cases. For scientists, we found very limited evidence of attribution effects, and for the NGO, we found none. Highlighting scientific *multi-disciplinarity* had the most consistent positive effects on persuasiveness.

We found only partial support for our third hypothesis, which held that source attributions would increase credibility among respondents unfavorable of the carbon tax but not those previously in favor of it. We observe *outcome favorability* effects, meaning that respondents opposing a carbon tax pre-treatment lost trust in the sources endorsing such a tax while supporters increased their trust. Exposure to source attributions diminished this effect for the minipublic—but not for scientists nor the NGO. Learning more about the minipublic prevented respondents unfavorable of the endorsed tax from losing trust in the source.

Individual attributions, however, had positive effects among both *tax opponents* and *supporters*. We found the *impartiality* attribution to be effective in boosting minipublic credibility among opponents of the tax endorsement, and the *epistemic quality* attribution among *supporters*. The *multi-disciplinarity* attribution increased scientist credibility among *tax supporters*. Finally, there was some suggestive but insignificant evidence of individual attributions increasing NGO credibility among *tax opponents*.

Source Attributions Framework

Extant theory emphasizes the importance of source credibility for persuasive messaging (Druckman & McGrath, 2019; Hodges, 2019) which is largely supported by research comparing high vs. low credibility sources (e.g., Bolsen et al., 2019; Geiger et al., 2022). This suggests that communicators can boost the effectiveness of their messages by presenting themselves as credible. Yet our evidence shows that diverse information about three different sources had limited effect on source credibility and persuasiveness. These findings extend but also echo previous studies (Már & Gastil, 2023; Xu et al., 2021). Given the limited empirical research and the relatively fragmented theory on how sources' credibility and persuasiveness *change*, we build on extant work (e.g., Collins et al., 2018; Geiger et al., 2022; Druckman & McGrath, 2019), as well as the design and findings of the present study, to propose a theoretical framework for guiding future research on source attributions.

Conceptualization and Typology. We begin by providing a conceptualization and typology of source attributions. Source attributions are ascriptions that convey information about the people involved, what they do, their track record, and their relations—what might be called source composition, practices, performance, and relations. Each type of attribution can include various dimensions (see Table 3 for a summary). For composition, we suggest that information about similarity, diversity, competence, and power are key dimensions. Citizens are more likely to rely on information from people who are like themselves; represent a broad group of people; who have meaningful expertise; and/or are likely to be influential considering their power.

Table 3: Types and Dimensions of Source Attributions

Composition	Process	Performance	Relations
Similarity – does the source reflect people's values or social identity?	*Rigor* – what's the quality and quantity of the evidence?	*Reliability* – how consistently correct / effective are the outputs?	*Evaluation* – how do groups of people / institutions perceive the source?
Diversity – does the source represent the population / a diverse group of people?	*Scope* – what's the range of perspectives and values considered during the process?	*Impact* – does the source consistently influence policy / outcomes?	*Comparison* – how does the composition, process, or performance compare to other sources?
Competence – does the source possess expertise?	*Deliberation* – was dialogue guided by fair exchange or position(s) of power?	*Orientation* – on average, does the output align with groups / lean in an ideological direction?	*Network* – who does the source collaborate with?
Power – does the source have power, e.g. economic, political, social etc.?	*Consensus* – what's the level of consensus reached by participants / how conclusive was the evidence?		*Independence* – is the source dependent on funding or in some way directly influenced by another entity?

Note: Table displays types of source attributions in columns and subordinate dimensions in rows.

Process describes how a source produces the information it provides or the conclusion it arrives at. Key features include rigor, scope, deliberation, and consensus. Citizens are more likely to rely on information that derives from a process that was thorough by examining rich and expansive materials; considered a wide scope of perspectives and values; was deliberative in that the "unforced force of the better argument" dominated instead of power; and a consensus was reached or the evidence was conclusive (ideally, no alternative hypotheses possible).

Performance dimensions indicate the source's past influence or issue positions. Key features include reliability, impact, and orientation. People are more likely to rely on sources who are consistently correct, influence outcomes or others, and reflect valued personal or public positions.

Source attributions can also convey information about relational dimensions. Key features of relational attributions include evaluation, comparison, network, and independence. People are more likely to rely on sources that either one's own group or people in general perceive as credible; that have more attractive composition, process, and performance compared with other sources; who collaborate with trusted institutions and sources; and are independent of others. These features can be understood as second-order attributions (or heuristics), because they capture outcomes that scholars commonly theorize to follow from first-order attributes. For example, most people trust a source because it possesses relevant expertise. Conversely, telling people that a source is considered credible by most people might boost its credibility, even without explicitly mentioning expertise (cf. Jachimowicz et al., 2018). Thus, we hypothesize that providing information about relational attributes can boost source credibility and persuasion.

Expected Outcomes. First, we expect that more, compared to less, source attribution information has a greater effect on source evaluation and persuasion. Indeed, this is what we found in this study. On average, more source attributions lead to larger effects on credibility and persuasion. Only one test out of 41 revealed evidence to suggest that learning more decreased persuasion.

Next, we expect larger effects when source attributions are directly related to measured outcomes, i.e., credibility dimensions. For example, competence as an attribution—information on whether experts were involved—is most likely to influence the perception of a source's competence. Similarly, relational evaluations of a source are most likely to influence evaluations of that same outcome. For example, if someone learns that most people *trust* a source, we expect it to increase their own *trust*. Also, we expect that information that the source is widely recognized or has a track record of producing policies that benefit most people increases the probability of it being perceived as having good intentions (goodwill). That's not to say that any type of source attribution can't influence other, less related, outcomes, only that it's less likely.

Thus, we expect source attributions to, on average, have greater effect on source credibility than persuasion. Our results provide only partial support for that conjecture. We did find that more attributions consistently improved credibility compared to

boosting persuasion, but individual source attributions had more consistently an effect on persuasion rather than credibility.

Following extant theory on source credibility (Hohenberg & Guess, 2023; Pornpitakpan, 2004; Wilson & Sherrell, 1993) we hypothesize that persuasion is mediated by an increasingly favorable evaluation of a source. For example, learning that one's social group is represented within the source or its process, leads to a greater personal interest alignment evaluation which in turn leads to a higher probability of accepting endorsement. However, as. Collins at al. (2018) suggest, the boundaries between attributions to the source and the message might not always be clear. For example, learning that the source considered substantial and reliable evidence might be viewed as a strong argument in favor of the message but not viewed as a common practice by the source.

Scope Conditions. This raises the issue of scope conditions of both the effects of source attributions and messages—i.e., information about source and substance—on source credibility and persuasion (Kumkale et al., 2010). First, it is useful to distinguish pathways of indirect and direct effects (Fig. 5). Direct effects are source attribution on source credibility (1a) and message on persuasion regarding a message-related outcomes (1b). Note that source attributions are in fact persuasive messages toward the related outcome source credibility, making path 1a a specific subset of 1b. Indirect effects are source attribution on persuasion, via source credibility (2a), and message on source credibility, via outcome favorability (alignment with priors) (2b).

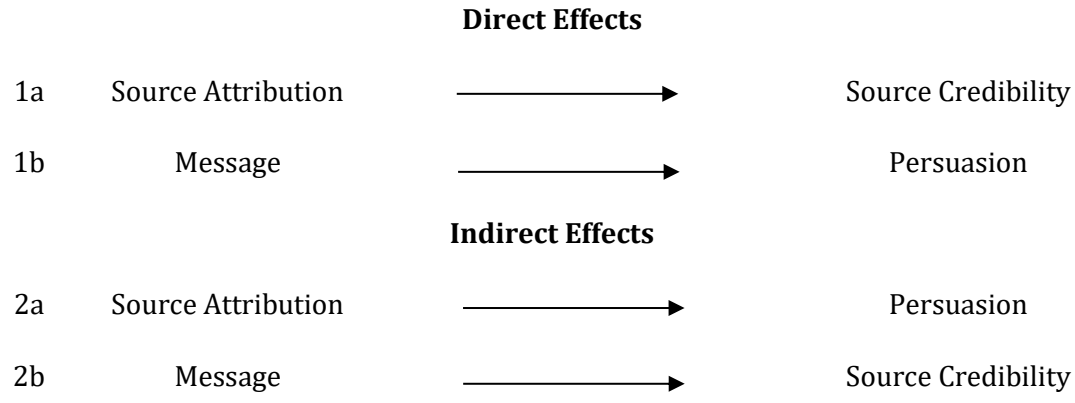

Figure 5. Pathways of Source Attribution and Message Effects

Pathway 2a, source attribution on persuasion via changed source credibility, is of key interest in our experiment. Effectiveness of this pathway necessitates that source

matters for persuasion on an issue, in the first place.[2] Extant research and theory identify factors that moderate when sources matter, including issue importance, and confidence in own judgments (Druckman & McGrath, 2019; Chaiken, 1980; Kumkale et al., 2010). Generally, if people are confident in their own judgements on an issue and the issue is important to them, they tend to rely less on sources. Confidence in own judgment can hinge on extent and qualities of prior knowledge and attitudes, issue complexity, and availability and relevance of substantive information. The more prior knowledge and the more consolidated prior attitudes are, the more confident the recipient is in their own judgement, and the less they will rely on source cues relative to arguments.[3] The more complex the issue, the lower recipients confidence in their own judgements, the stronger their reliance on sources. Finally, availability of substantive information can raise recipients' confidence, decreasing their reliance on sources, *if* that information is relevant. Relevant information is intelligible, previously unknown or unavailable (novel), and strongly matters for updating a specific prior outcome (e.g., level personal costs caused by a policy matter for policy support and fairness, but not or differently for effectiveness). Prior knowledge and information novelty are, of course, two sides of the same coin.

If sources matter for persuasion on an issue, we expect source attributions to affect persuasion (2a), if they change source credibility (1a). Considering the structural equivalence of pathway 1a and 1b, we can derive scope conditions for source attribution effects on source credibility from persuasion theory. As outlined above, the more confident recipients are in their evaluation of a source, the less effective source attributions will be. Hence, the less prior knowledge about and the less consolidated prior attitudes towards the source, and the more relevant—novel and substantially persuasive—source attributions are, the stronger their effect on source credibility.

Moreover, we expect alignment with prior attitudes to moderate direct effects of source attributions and messages (1a, 1b). Yet there are conflicting theories. According to the

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[2] Except if source attributions were to simultaneously increase the importance of source for persuasion through priming.

[3] In that case, theory predicts that recipients will be more resistant to alter their prior beliefs and attitudes, in general.

"directional motivated reasoning" thesis, one could expect smaller effects if recipients' priors conflict with the attribution or message (Druckman & McGrath, 2019). However, this contradicts the novelty hypothesis because information that misaligns with prior beliefs and attitudes about a source or topic constitutes a type of novel information, which has more potential to change priors. Our evidence shows that source attributions can reduce credibility backlash among those misaligned with the source's position (outcome favorability). We found more consistent effects for the widely unknown minipublic, suggesting that the novelty of source attributions (or unconsolidated prior source credibility) *or* specific features of the source played a key role (persuasive strength of source attributions).

Additionally, expectations about a source's position are important and unexpected positions present a strong case of information novelty (Benegal & Scruggs, 2018; Bolsen et al., 2019). We think position expectations can interact with prior source credibility, the strength of the message or source attribution, and alignment with the prior position. If a source's position is opposite to what one expected, and one trusts that source, this can be highly persuasive, even if the source's position misaligns with one's prior position, because one may assume that the trusted source will have good reasons for departing from its usual position, even if these reasons are unknown. In that case, we would expect little or even negative persuasion effects from additional, perhaps unconvincing or distracting arguments and source attributions (2a, 1b). If, on the other hand, a source's position is unexpected, misaligns with one's position, and one has little or uncertain prior trust in the source, then one is unlikely to be persuaded and one's trust in the source might drop. In such a case, additional source attributions or arguments may have a positive effect on persuasion and credibility (1a, 1b, 2a, 2b).

Finally, persuasion effects (1b, 2a) hinge on the general malleability of the outcome variable of interest. For example, research shows that belief in human-made climate change is more frequently changed than policy opinions (Rode et al., 2021). We suspect the malleability of beliefs and attitudes to decrease with their consequentiality for an individual. Consequential variables may affect recipients' personal freedoms and behavior, such as support for costly policies, or challenge fundamental values or identities. Recipients may be ready to update their belief about the effectiveness of a policy yet remain opposed to it for other reasons, like costs or unfairness. Strength of

prior beliefs and attitudes, issue importance, confidence in own judgements may all strongly correlate with or predict malleability.

Future Research. We provide a framework that distinguishes between types and common dimensions of source attributes and clarify multiple hypotheses about when we expect source attributions to be effective. To better isolate the types of effects and mechanisms in play when manipulating source attributions, we suggest that researchers try to clearly distinguish between types and dimensions of attributions and directly measure or manipulate scope conditions. In that effort, we suggest that studies manipulate attributions and messages separately (but within the same study) and sequentially. Including a no-source message can also help. Mediation analysis can be useful in identifying mechanisms and requires designs where effects of attributions and messages are not measured concurrently. Moreover, studies could test whether negative source attributions have stronger effects on trust and persuasiveness than positive attributions (e.g., Bolsen & Druckman, 2018; Germann, 2025).

Discussion

We found some but limited evidence that source attributions can increase source credibility and persuasiveness of a pro-carbon tax message. Several factors may account for the limited effectiveness. Recipients were concurrently exposed to source attributions and a substantial message, and the message appeared more important than source attributions for both substantial judgements about the carbon tax (persuasiveness) and source credibility (cf. Dür, 2019; Hodges, 2019).[4] We think this occurred because the tax issue was important to recipients (Chaiken, 1980), and the information provided about the cost of the tax to consumers was simple and relevant, allowing them to have confidence in their own judgements. As for source credibility, positional alignment on an important issue may simply present stronger information

[4] Prior attitudes towards the endorsed carbon tax (outcome favorability) were a much stronger predictor of source credibility than source attributions; Results presented in another publication showed that a pro-carbon tax message increased support for a costly tax but knowledge of the source did not add much persuasive power, except if the source were scientists.

about the source than information about its composition, process, performance, or relational features.

Source attribution effects were most consistent for the minipublic. Two broad mechanisms may explain this. First, recipients were mostly unfamiliar with minipublics and, thus, source attributions presented novel information. Second, source attributions may have been more persuasive for the minipublic compared with scientists and the NGO. This would align with theory arguing that minipublics are more credible sources than conventional political communicators *because* of their innovative features (Warren & Gastil, 2015). However, our respondents perceived scientists as the most credible source by far, before and after treatment, which speaks in favor of the first mechanism.

We concluded earlier that positional alignment with a source was more important for source credibility than source attributions (outcome favorability). However, learning more about the novel minipublic source alleviated outcome favorability effects. It helped prevent erosion of trust among those who were initially unfavorable toward the minipublic's carbon tax endorsement, including trust in its potential political responsibilities (i.e., advising, agenda-setting, decision-making). This is a remarkable finding considering how existing democratic systems produce winner-loser gaps and partisan polarization regarding trust in political institutions and satisfaction with democracy (Anderson et al., 2005). This suggests that minipublics may, indeed, serve as legitimate political institutions and are trusted sources *because* of their innovative features (Warren & Gastil, 2015). Still, the small effect sizes only provide weak support and align with mixed findings from prior research on the effects of informing people about a minipublic's design features (Germann, 2025; Jacobs & Kaufmann, 2019; Már & Gastil, 2021; Paulis et al., 2024; Pow, 2021; Pow et al., 2020; Waterschoot et al., 2025).

Our treatments tested the effects of realistic source attributions with high external validity but did not clearly separate effects of different types and dimensions of source attributions as we present them in the subsequent framework. Still, certain combinations of attribution dimensions were effective. First, it is noteworthy that two of the most consistently effective attributions were similar. Both the minipublic *epistemic quality* and the scientific *multi-disciplinarity* attribution combined cues about scientific expertise (*competence*) with knowledge (or value) diversity regarding considered consequences (*scope*).

Turning to minipublics, informing people about their *impartiality* and *epistemic quality* proved most effective. Both messages highlight the *independence* of minipublic judgements, paired with either a relational *comparison* to politicians and interest groups or information about *competence*. Interestingly, emphasizing *impartiality* upheld credibility among those who did not share the minipublic's viewpoint, whereas highlighting *epistemic quality* increased credibility among supporters of the tax endorsement. This suggests that initial supporters of a carbon tax might have been concerned about the minipublic's expertise. Among initial *tax opponents*, the *impartiality* attribution might have ameliorated source derogation, such as via beliefs in political bias, or elite manipulation.

We observed very limited effects of source attributions on scientist credibility and persuasiveness. While consensus messaging has been central to science communication strategies, several studies—including our own—challenge its efficacy in directly shifting policy-related attitudes (Rode et al., 2021; Tschötschel et al., 2021; van der Linden et al., 2015; van der Linden et al., 2017; van Stekelenburg et al., 2022; Većkalov et al., 2024). Our data, however, suggests that highlighting scientific *multi-disciplinarity* might be more effective to bolster policy persuasiveness. The *multi-disciplinarity* attribution increased perceived *majority opinion*, *tax support*, *willingness to pay*, and *tax fairness*, whereas the scientific consensus message only increased perceived *tax effectiveness*.

Conclusion

Theory suggests that mass communicators can boost the persuasiveness of their messages by presenting themselves as credible. However, research that tries to directly manipulate source credibility and persuasiveness of a given source is surprisingly slim. Our results from three sources endorsing a carbon tax show that it is possible but challenging and suggest strong dependence on scope conditions such as information novelty, recipients' confidence in their own judgements, and issue importance. We present a framework of source attributions to systematize future theory and research that actively accounts for scope conditions and separates different types of source information.

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Supplementary Materials

Supplementary materials are available within the Open Science Framework: https://osf.io/dxpk9/?view_only=c645b6604dfc44a4830eb7b022419e9f

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The data that support the findings of this study are available from the corresponding author, [J.P.], upon reasonable request. All data and code are available for peer review.

Use of AI Tools

ChatGPT-5 was used for minor language editing of the manuscript and to assist in writing efficient R code.

Ethics Approval

The experiments reported in this study were approved by the Office of Research Protections at Penn State University [STUDY00017955], and the Institutional Review Board at Duke Kunshan University [2021KM057; 2022KM074; 2024KA026].

Supplementary Article 6

How to measure the causal impact of participation processes on policy decisions

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Abstract

Participation processes (PPs) are often promoted as tools to improve public policymaking, yet their causal impact on policy decisions remains inconsistent. Existing research on policy impact has faced criticism for lacking methodological rigor, transparency, and comparability, impeding knowledge cumulation. This paper addresses these gaps by providing methodological guidance for assessing the causal impact of PPs on collective decisions in public policy and administration. Drawing on established theories of causality and (Bayesian) process tracing, we introduce a counterfactual approach that asks whether a decision would have occurred without the PP. We outline fundamental principles and practical steps for delineating, and operationalizing key concepts, assessing the strength of evidence, and addressing uncertainties. An exemplary application to the Berlin Climate Citizens' Assembly reveals that only a small share of its proposals influenced policy decisions. The few impactful proposals support theories that deliberative mini-publics can drive policy change by encouraging policymakers, enriching policies, and breaking deadlocks. However, about half of the proposals had no impact due to overlapping with existing or planned policies, exposing inefficiencies in mini-public design. Involving policymakers in mini-public processes might enhance their impact on policy decisions but could compromise their independence.

1 Introduction

Participation processes (PPs) are becoming increasingly popular to support democratic decision-making (e.g. OECD, 2020). Collaborative stakeholder dialogues or citizen-centered formats like deliberative mini-publics are convened not only to bolster inclusiveness and procedural justice, but also to improve collective decisions in public policy and administration (Beauvais & Warren, 2019; Glucker et al., 2013; Newig et al., 2023). Scholars and practitioners hope and argue, for instance, that PPs enable courageous decision-making on contentious issues, break political deadlocks, boost the epistemic quality of decisions, or lead to more socially just or future-oriented decisions (e.g. Farrell & Suiter, 2019; Glucker et al., 2013; Newig et al., 2018; Willis et al., 2022).

Positing that PPs improve policy decisions assumes that they achieve causal impact on collective decision-making. However, such impacts on policy decisions and the methods to

assess them vary widely (Section 2), with some widely use methods criticized for inadequately addressing causality (Jacquet & van der Does, 2021; Vrydagh, 2022).

While small-n case studies use rigorous in-depth analyses with qualitative data (e.g., Koontz, 2005), large-n studies rely on statistical inference controlling for confounding factors (e.g. Newig et al., 2023). However, critics highlight frequent methodological flaws, such as overreliance on textual overlap between PP outputs and policies without proving causation (Jacquet & van der Does, 2021; Vrydagh, 2022). Additionally, the literature faces challenges like methodological intransparency, lack of comparability, vague hypotheses, and insufficient evidence to infer causality (e.g. Hendriks, 2023, pp. 49–50; Ryan, 2023). Although numerous frameworks differentiate PP impact types (e.g. Rowe & Frewer, 2004), there is little guidance on causal analysis, operationalization, and uncertainty management when assessing policy impact.

The resulting dearth of comparable and robust knowledge is a serious problem considering that states and NGOs spend millions on participation each year. It has also left a massive scientific gap as robust data on PPs' policy impact at the micro-level should be the basis upon which to study the complex determinants of impact on a larger quantitative and comparative scale. Extant limitations in operational transparency impede knowledge cumulation and scientific progress (Newig & Rose, 2020; Ryan, 2023).

To enhance methodological rigor, transparency, and comparability, we present a clearly delineated method to assess the causal impact of participation processes on collective decisions in public policy and administration (hereafter called policy decisions). We provide guidance on how to delineate, define, and operationalize key concepts, evaluate pieces of evidence regarding their strength to infer causality, deal with uncertainties, and offer coding examples.

Utilizing established ideas of causality and (Bayesian) processes tracing (Collier, 2011; Fairfield & Charman, 2017; Goertz & Levy, 2007; Mahoney & Barrenechea, 2019), we propose following a counterfactual approach (also see Pickering, 2022). We demonstrate the method's usefulness by applying it to the exemplary case of the Berlin Climate Citizens' Assembly, finding that its causal impact on policy decisions was much lower than suggested by policy documents and government responses.

This exercise demonstrates that our counterfactual approach provides a realistic and defensible assessment of the extent of impact on policy decisions. It enables robust hypothesis testing within a well-defined area of theory, generates exploratory insights through original data collection and in-depth analysis, and creates data sets that serve as a foundation for future quantitative and qualitative research on determinants of policy impact (or its absence).

In Section 2, we sketch the state of the art in assessing PPs' policy impact, before defining and delineating the key concepts in Section 3. Section 4 introduces our counterfactual approach to causal inference including a step-by-step analytical model. Drawing on approaches from (Bayesian) process tracing, we delve into the operational details of

measuring impact in Section 5, including the critical question of what constitutes sufficient evidence to infer causality. In section 6, we address dealing with uncertainty. Throughout these methodological sections, we highlight illustrative examples from our case application. In Section 7, we then apply our method to this exemplary case. Before concluding, we discuss the weaknesses of the approach in Section 8.

2 State of the art

Past research has studied the policy impact of PPs via single and small-n case studies (see Newig, 2021 for a database) as well as large-n studies drawing on large databases based on expert interviews, documents, and/or scientific literature (e.g. Beierle & Cayford, 2002; Font et al., 2018; Gastil et al., 2017; Newig et al., 2023; OECD, 2020; Pogrebinschi, 2023; Rosener, 1982).

Findings vary greatly. Some scholars observe a limited policy impact of democratic innovations, drawing on their practical experience and research (e.g. Geissel & Michels, 2023), and pointing out that many processes are decoupled from actual decision-making (Hendriks, 2016). Other scholars find higher levels of policy impact (e.g. Font et al., 2018). For example, a meta-study found that of 143 PPs with a tangible output, 93 led to political decisions that strongly matched the PP's proposal, 69 of which were eventually implemented (Challies et al., 2021). According to a study by the OECD (2020), 76% of 55 deliberative processes aiming at policy impact resulted in the implementation of more than half of their recommendations.

Part of the observed differences in findings can be explained by variations in the types of PPs studied – ranging from stakeholder participation to participatory budgeting to citizens' assemblies; or by contextual factors – e.g., the level of governance, pre-existing conflicts, or cultural, demographic and economic settings (Beierle & Cayford, 2002; Delli Carpini et al., 2004; Koontz, 2005; Newig et al., 2023). Moreover, studies may exhibit familiar biases in case and sample selection (Banks et al., 2015; Spada & Ryan, 2017).

However, differences in findings of policy impact also arise because methods to assess policy impact vary widely across the mentioned studies. Overall, it appears that too little attention has been given to transparent conceptual delineation and measurement of policy impact. For example, with regard to the aforementioned OECD report finding impact in 76% of cases, Hendriks (2023) critically noted that such "astonishing success rates [...] should make us alert as to what is exactly being counted, here" (p. 60).

Therefore, we need to take a closer look at the multitude of methods used to assess the policy impact of PPs (Abelson & Gauvin, 2006). While often considered the 'gold standard' of establishing causality, field experiments have not yet been conducted on governance processes (John, 2022). Therefore, scholars have been relying on observational methods.

Studies comparing larger numbers of cases are typically correlational as practices like causal process tracing and counterfactual reasoning to establish causality are labor intense

and require in-depth data. Quantitative, correlational studies relying on statistical methods encounter challenges in isolating the effects of PPs from confounding influences.

Some correlational studies, however, have controlled for potential confounders quite convincingly. In a paradigmatic study analyzing 1,816 public hearings, Rosener (1982) found substantial and significant impacts of citizen input on policymakers' approval rates for decisions, independent of agency staff recommendations. This rigorous design was enabled by the repetition of nearly identical procedures and systematic documentation of citizen input, staff recommendations, and policy decisions. A meta-analysis of 305 decision-making processes in Western democracies showed that PPs significantly influenced environmental decisions (Newig et al., 2023). Using regression analysis, this study also included non-participatory processes as reference groups to explain differences in policy outcomes and controlled for agency positions. Robust correlational studies allow researchers to infer that PPs can, on average, have an impact on policy. However, they are unable to establish a causal link between the outputs of individual processes and specific policy decisions, which robust qualitative approaches can achieve.

Qualitative approaches, typically case studies, often use process tracing (implicitly or explicitly) to establish causality between a PP and political or administrative decisions through in-depth understanding of causal mechanisms. In such studies, a counterfactual baseline is established by analyzing actor interests, in particular those of policymakers, to assess what would have happened in the absence of a PP. In certain case constellations, a causal effect, or lack thereof, can be established quite obviously, for example when citizen initiatives stop a planned project (e.g. Caldwell, 1976), or when unambiguous evidence shows that policy decisions were made without considering PP input (e.g. Kochskämper et al., 2018).

Between these extremes of obvious impact and lack thereof, however, assessing causality is less trivial and the field would benefit from a shared framework that supports transparency and comparability of causal claims. Many studies have gauged the impact of PPs by comparing the content of their outputs or proposals with subsequent policies. In their systematic literature review of mini-publics' policymaking impacts, Jacquet and van der Does (2021) found that 105 out of 131 studies used this "congruence" approach based on textual overlap. However, congruence is a poor measure of causal impact because it measures correlation, not causation. In particular, it fails to consider whether policy decisions would have been identical had the PP never happened (Vrydagh, 2022) (but see Young & Tanner, 2023 for a sophisticated, context-sensitive approach given rich data). The method we propose builds on Vrydagh (2022) who recently advanced the congruence approach by incorporating prior policy plans into the analysis and triangulating results with expert interviews. However, there remain critical blind spots, particularly in providing guidance for robust causal inference, transparent measurement, and dealing with uncertainty.

3 Assessing impact of PPs on policy decisions: Delineating and defining core concepts

3.1 Participation process

Based on Newig et al. (2018), *we define PPs as processes "that engage actors from the private sector, civil society, and/or the public at large, with varying degrees of communication, collaboration, and delegation of decision power to participants"* (p. 273). Our method is tailored for PPs without full decision-making power that produce tangible governance outputs (Jager et al., 2020), which we will refer to as policy proposals. PPs can entail expert advisory councils, deliberative mini-publics, stakeholder platforms and more. In our example, the Berlin Climate Assembly formulated 47 policy proposals addressed at the Berlin government, such as making Berlin's inner city a carbon-emission-free mobility zone by 2030. Our methodological approach aims to evaluate the impact of each proposal.[1] As PPs are heterogenous, researchers should carefully and transparently attribute their case(s) to a family of processes for which results may hold some external validity.

3.2 Policy decisions

Policy processes are complex and messy. Therefore, research reports must transparently delineate the dependent variable to enhance comparability and valid interpretation. Our method focuses on assessing impacts on collective decisions in public policy and administration (policy decisions).[2] They can, for instance, manifest in legislation, cabinet decisions, administrative decisions, or government programs (Figure 1).

[1] See Supplements for a reflection on the unit of analysis.
[2] See Supplements for a distinction between direct and indirect impact.

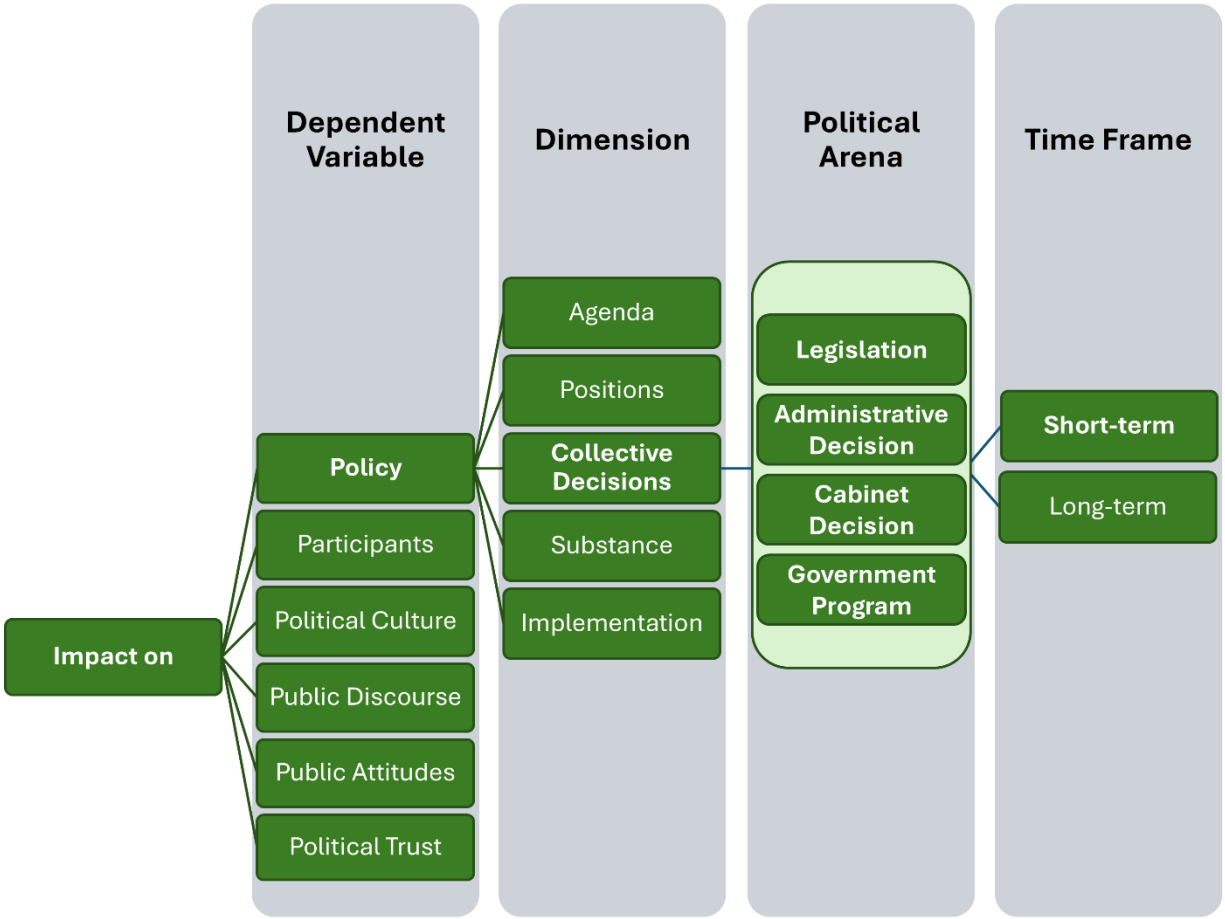

Figure 1. Conceptual delineation of policy decisions

Note: The figure depicts the scope and exemplary application of the method by delineating the dependent variable (bold) from closely related concepts. While our exemplary application focuses on short-term impacts in the specified arenas, the fundamental methodological principles outlined in this paper are also applicable to long-term impacts on collective decisions in other arenas.

3.2.1 Dependent variable

We start by highlighting our focus on policy impact as opposed to, for example, impacts on public discourse, political culture, PP participants, or other relevant impacts noted in the literature (e.g. Rowe & Frewer, 2004).

3.2.2 Dimension

PPs may influence policy processes along multiple dimensions, such as: the problems and policy options reaching the political *agenda*; the *positions* of individual policy actors; the *collective decisions* of multiple actors in a political arena; the *substance* of policy (e.g. ambition, effectiveness, justice, disruptiveness); the *implementation* of collective decisions[3].

[3] Note that the term implementation is used with different meaning in several studies of PP impact (cf. Font et al., 2018; Jager et al., 2020; OECD, 2020; Vrydagh, 2022). We reserve the term implementation to

The method focuses on the impact of PPs on *collective decisions* in public policy and administration. We will therefore use the terms "policy decision" and "collective decision" interchangeably. For our purposes, *we define collective decisions as publicly proclaimed agreements that are collectively binding among relevant political actors in a political arena of a political community*. These agreements are collectively binding in a political (or sociological) but not necessarily legal manner.

Note that by focusing on collective decisions, our quantitative results overlook several other theoretically relevant impact dimensions and cannot capture the full complexity of policy processes (Font et al., 2016). For instance, a PP that created novel awareness for a problem among policymakers, initiated a serious debate about a novel solution (*agenda dimension*), or altered multiple policymakers' *positions* on an issue but did not lead to a collective decision will be interpreted as having had "no impact" (on policy decisions). At the same time, a PP proposal that led to a new law will count as impactful, even if that law is not properly *implemented* or ineffective in reaching its goals (*substance dimension*).

This underscores the importance of either systematically or exploratively collecting more data on such variables and reporting triangulated results. Nonetheless, we believe that a narrow focus on collective decisions is more than justified given how significant this dimension of impact is for multiple hypotheses.

3.2.3 Political arena

Collective decisions are made by relevant actors in a variety of political arenas of a political community. A political community is the population or political territory for which collective decisions are primarily intended to apply, such as the State of Berlin in our example. Decisions are made and proclaimed in multiple arenas including parliaments, ministries and administrations, cabinets, and bodies deciding upon government or coalition programs. Relevant actors are those who directly determine the (non-)realization of collective decisions. Relevant actors can differ between arenas and can sometimes only be identified ex-post.

3.2.4 Time frame

Scholars have conceptually differentiated between short-term and long-term impacts (e.g. Chess & Purcell, 1999; Vrydagh, 2022). We suggest reporting the analyzed time after PP proposals were published but are wary of rigid standardization as appropriate time frames can be context specific. In an analysis of six climate citizens' assemblies, we generally observed follow-up processes such as written responses, internal administrative exchanges, and parliamentary discussions and inquiries. After some time, such activities had faded out and policymakers lent their attention to other matters. Hence, scholars may operationalize "short-term" as the first iteration of policy processes and policymaker

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how it is commonly used in the fields of public policy and administration, e.g., in models of policy stages or policy cycles. For us implementation refers to actions aimed at achieving the contents of prior collectively-binding decisions by authoritative actors in public policy and administration (cf. van Meter & van Horn, 1975). Hence, we do *NOT* use the term implementation to describe the adoption of PPs' outputs (e.g., policy proposals) by public authorities through a collective decision (cf. Vrydagh, 2022).

activities in which proposals could have been taken up. The end of a short-term time frame may also be set by political disjunctions like elections.

While, in our exemplary case, we focus on short-term impacts, the fundamental principles of the method are also applicable to longer-term impacts. Long-term impacts are theoretically and practically relevant. Public officials often rely on older documents and ideas when opportunities or needs for policy action arise, and we have found suggestive evidence of longer-term impacts in our exemplary data.

4 An analytical model for determining causal impact

4.1 The counterfactual approach

We encourage researchers to be more explicit and transparent about their analytical strategies to establish causality. Some studies fail to consider whether policy decisions would have been the same without the PP, for instance, because a policy change had already been planned independently or demanded by other actors. Therefore, it is essential to consider a counterfactual world of policy decisions to avoid overestimating the policy impact of PPs.

The counterfactual approach is tied to thinking about causality in terms of necessary conditions (Goertz & Levy, 2007; Mahoney & Barrenechea, 2019). The question to be asked is relatively simple: Was the PP a necessary condition for a specific policy decision to occur, at this time? This implies the counterfactual question: Would the policy decision have occurred, in this substance, at this point in time, if the PP had not been? Scientific progress requires transparent reporting on how researchers have constructed their counterfactuals, and methodological discussions surrounding the quality and practicality of different approaches (see Mahoney & Barrenechea, 2019).

4.2 An analytical model

Our analytical model aims to assess the causal impact of each policy proposal $P(i)$ of the PP on policy decisions. i denotes the identifier of a proposal. In our example of the Berlin Climate Assembly, the fifth proposal $P(5)$ demands making public transport more attractive through increasing cleanliness, timeliness, and security personnel. In our analytical model (Figure 2), we differentiate three time points: the release of PP proposals at $t1$, the time $t0$ before the release, and the time $t2$ after the release. $PD(t0, i)$ refers to policy decisions relating to proposal $P(i)$ that existed prior to the release of the PP proposals. $PD(t2, i)$ refers to proposal-related policy decisions after the PP. The proposal-related counterfactual policy decisions after the process are denoted as $CPD(t2, i)$. Below, we present the logic of our analysis in four steps.

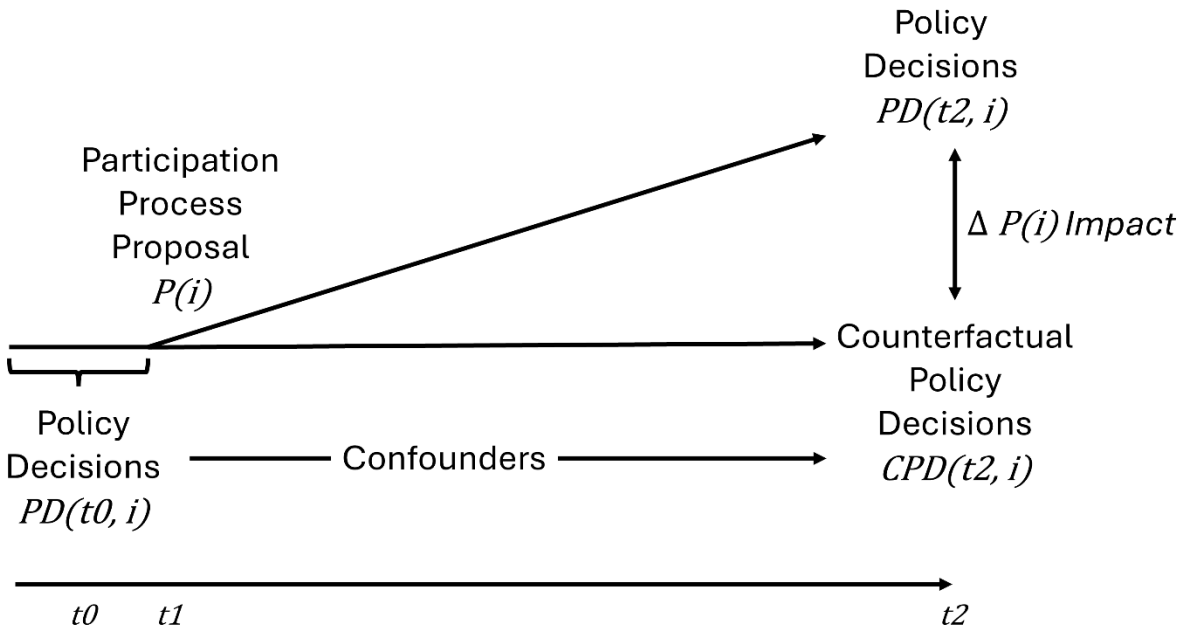

Figure 2. Analytical model for determining causal impact on policy decisions

Note: Figure displays the analytical model for inferring causality. i denotes the identifier of a specific policy proposal made by a participatory process, while t refers to time.

4.2.1 Step 1: Novelty? PD(t0, i) ↔ P(i)

We first analyze whether policy decisions *PD(t0, i)* in line with proposal *P(i)* already existed prior to the PP. If this is the case, meaning that *PD(t0, i)* and *P(i)* are fully congruent, we may conclude that there was no novelty, hence no impact. If, however, the proposal *P(i)* deviates from existing decisions *PD(t0, i)*, we move to the next step.

4.2.2 Step 2: Change? PD(t0, i) ↔ P(i) ↔ PD(t2, i)

We compare the proposal *P(i)* to the policy decisions after the process *PD(t2, i)*. If there are no overlaps between *P(i)* and *PD(t2, i)*, this suggests that there was no uptake, hence no impact. If we find overlaps between *P(i)* and *PD(t2, i)*, we validate whether there are indeed changes between *PD(t0, i)* and *PD(t2, i)* that are in line with the content of the proposal *P(i)*. If this is the case, we need to construct the counterfactual *CPD(t2, i)* to investigate whether there is sufficient evidence for causal impact.

4.2.3 Step 3: The counterfactual CPD(t2, i)

The counterfactual represents our estimate of proposal-related policy decisions that would have been made had the PP not taken place. To construct the counterfactual *CPD(t2, i)*, we propose triangulating a document analysis of the existing and planned policy decisions prior to the PP with expert interviews and expert surveys in which researchers ask counterfactual questions, and inquire about causal mechanisms (cf. Vrydagh, 2022) (see respective sections below). Asking experts about their expected counterfactual logically implies controlling for confounding impacts such as general trends in the policy system or demands

by other policy actors. However, before concluding that a *P(i)* had impact, we propose validating this by asking experts directly about potential confounders.

We do not construct the counterfactual by writing a narrative, counterfactual policy text, or by extrapolating quantitative data. Rather, a counterfactual in our approach consists of qualitative evidence such as an expert statement confirming that *P(i)* was necessary for *PD(t2, i)* because, for instance, it encouraged policymakers to act on a contentious issue where they had been hesitant, or because a substantial element was added to the decision.

4.2.4 Step 4: Impact? PD(t2, i) ↔ CPD(t2, i)

The last step is therefore implicit in the construction of the counterfactual and is more theoretical: To analyze whether there was impact, we compare the policy decisions after the PP *PD(t2, i)* with their counterfactual *CPD(t2, i)*. The difference Δ between both is then the causal impact of the PP. Like Vrydagh (2022), we conduct this analysis using an impact matrix. Readers find the matrix from our exemplary application in the supplements.

4.2.5 Managing risks of false negatives

The step-wise process implies that we do not conduct a full counterfactual analysis for each proposal. Doing so would be extremely labor intensive, inefficient and difficult due to the time constraints and limited number of knowledgeable experts. However, there is a risk of failing to detect proposals that had a causal impact (false negatives). Consider a case, for example, where prior policy plans *PD(t0, i)* would have been abandoned in *CPD(t2, i)* had proposal *P(i)* not been. In such a case, the document analysis might not yield evidence of novelty or change. In fact, *P(12)* in our example case, which affirmed prior plans to stop further elongating a highway, presented such a case.

We manage this risk by beginning each expert interview with an open question asking whether the expert knows of *any* proposal with impact. We expect that the reliability of this approach will be higher when the number of impactful proposals is low because experts are more likely to know and recall exceptional impacts. We further expect the reliability to increase with the number of questioned experts and, more specifically, the cumulative comprehensiveness of their knowledge – i.e., the degree to which the pool of experts can credibly assess the impact of all proposals as opposed to only some proposals from selected policy fields.[4]

5 Measuring impact on policy decisions

We now address how to measure impact on policy decisions in practice. We differentiate between measures of impact, impact degree, and impact mechanism, further developing categories introduced by Vrydagh (2022) (Figure 3). By applying fundamental concepts of

[4] In other words, the probability of a false negative, here meaning the probability of *not* finding convincing expert evidence of impact $\sim E_E$, although the hypothesis H that there was impact is true, also depends on the researcher's background information regarding the pool of expert knowledge they have reached I_E: $P(\sim E_E | H I_E)$.

(Bayesian) process tracing to studying PPs' policy impact, we identify typical pieces of evidence that are sufficient and/or necessary for inferring causality.

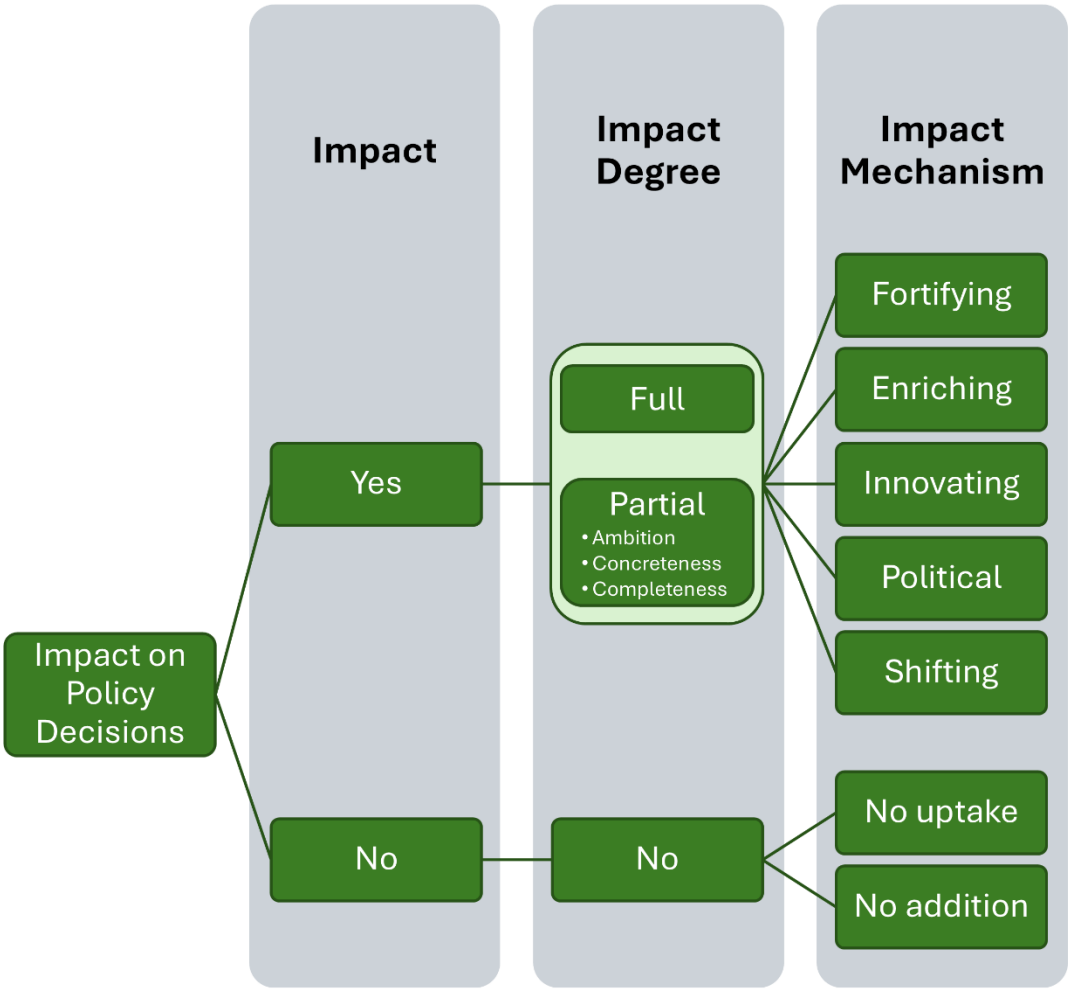

Figure 3. Conceptualizing impact on policy decisions

Note: Figure displays the conceptualization of impact on policy decisions. For PP proposals with impact, we differentiate full and partial impact. Partial impact can occur on the three dimensions ambition, concreteness, and completeness. For proposals with impact, we differentiate five mechanisms, for those without, two.

5.1 Measuring impact: What is sufficient evidence?

What evidence do researchers need to infer that a PP proposal had a causal impact on a policy decision? How strong, for example, is the evidence if a process organizer states the PP was a success, if a government praises certain recommendations, or documents show that policy changed in line with recommendations?

The process tracing literature (e.g. Collier, 2011) differentiates between four ideal types of evidence: 1. Straw-in-the-Wind, 2. Hoop, 3. Smoking-Gun, 4. Doubly-Decisive. These evidence types differ depending on whether they are necessary and sufficient for inferring causality. In the Bayesian perspective (Fairfield & Charman, 2017), a piece of evidence falls

into one of the four categories depending on how likely it is to find under different assumptions. More specifically, researchers ask how likely the evidence E_i is to find given that one hypothesis is true – here: $H =$ *"Impact: Proposal P(i) caused policy decision PD(t2, i)"* – , compared to how likely the same evidence is to find given that the rivalry hypothesis is true – here: $\sim H =$ *"No Impact: Proposal P(i) did not cause policy decision PD(t2, i)"*–, given the researchers' contextual background information I. This background information includes knowledge such as how comprehensive the search for evidence was. Formally, this can be written as the likelihood ratio[5]:

$$\frac{P(E_i|HI)}{P(E_i|\sim HI)}$$

Straw-in-the-Wind evidence is suggestive of impact but (almost) just as likely to find when there is no impact: $P(E_i|HI) \cong P(E_i|\sim HI)$. Examples include praise of the PP and its proposals by politicians, promises that proposals will be considered, or media reports of uptake. Such evidence is neither necessary nor sufficient for inferring causality.

Hoop evidence is necessary but not sufficient to infer impact. The likelihood to find Hoop evidence given impact is $P(E_i|HI) \approx 1$, but it is also "too" high given no impact: $P(E_i|\sim HI) \geq "Too\ high"$. Hoop evidence, in our framework, are novelty and change, which must both be present simultaneously. Note that novelty and change being necessary for impact means, in turn, that the absence of either one is sufficient to infer there was no impact (see step 1 and 2 in the previous section).

Smoking-Gun evidence is highly indicative of impact because it is extremely unlikely to find when there is no impact: $P(E_i|\sim HI) \approx 0$. However, it is also quite difficult to find such evidence when there is impact: $P(E_i|HI) = "Medium\ to\ Low"$. Hence, it is sufficient but not necessary. An example is the presence of multiple valid, credible, and consistent confirmations of impact by different experts[6] (also see Fairfield & Charman, 2017, section 3).

Doubly-Decisive evidence is necessary and sufficient to affirm causal impact because it is likely to find when there is impact $P(E_i|HI) = "Medium\ to\ High"$ and unlikely "enough" to find when there is no impact $P(E_i|\sim HI) \leq "Low\ enough"$. This type of impact is most relevant in research practice. An example includes a valid confirmation of impact by a credible expert through an interview or survey. Moreover, certain combinations of multiple consistent evidence pieces can be sufficient, even though they would not suffice on their own (see section 6).

[5] While we endorse thinking about causality and process tracing through this Bayesian lens (as in Fairfield & Charman, 2017), we stick to the simplified heuristic of the four evidence types (or tests), and to concepts of necessity and sufficiency (as in Collier, 2011) as opposed to assigning continuous numeric probabilities, because we belief this is easier to apply in research practice.

[6] See Supplements for operational notes on credibility and validity.

In sum, *to infer that a PP proposal had impact, either Smoking-Gun or Doubly-Decisive evidence must be present*, *while Hoop evidence is necessary but not sufficient, and Straw-in-the-Wind evidence is neither necessary nor sufficient* (Table 1).

We envision productive methodological discussions to evolve around the likelihoods researchers assign to finding certain pieces of evidence given their background information, such as their data collection methods and the credibility of sources. Typical interrogations could include: "Given no impact, is the likelihood of finding this expert confirmation really "low enough", considering the incentive of your expert to untruthfully report impact?", when suspecting a false positive for Doubly-Decisive evidence; or "Given impact, is the likelihood of finding novelty and change really near 1, given your patchy data collection?", when suspecting a false negative for Hoop evidence. Finally, pieces of evidence do not always fall neatly into one of the four ideal type categories, as they sit on continuous scales of probability. We will deal with instances of uncertainty and the concept of contributory impact in section 6.

Table 1. Sufficient and necessary evidence for inferring causal impact on policy decisions

		Sufficient evidence for inferring causality?	
		No	*Yes*
Necessary evidence for inferring causality?	*No*	**1. Straw-in-the-Wind** • Political praise of PP and proposals • Political promises of consideration • Uncredible reports of impact • Reports of uptake	**3. Smoking-Gun** • Multiple valid, credible, and consistent expert confirmations of impact
	Yes	**2. Hoop** • Simultaneous presence of novelty and change	**4. Doubly-Decisive** • Single valid and credible expert confirmation • Hoop evidence + innovative proposal + uptake with identical wording in $PD(t2, i)$ + low decision costs
Inference		*No Impact*	*Impact*

Source: inspired by Collier (2011); see Pickering (2022) for a similar preliminary ideas.

Note: The table displays four types of evidence with examples, depending on whether they are necessary and sufficient to infer causal impact of a PP proposal $P(i)$ on a policy decision $PD(t2, i)$. The evidence type is characterized by how likely the evidence is to find given that there was impact but also given that there was no impact. Straw-in-the-Wind evidence is almost equally likely to find if there was impact but also no impact making it insufficient and unnecessary. The likelihood of finding Hoop evidence given impact is near 1 but is also "too high" given no impact, making it necessary but insufficient. The likelihood of finding Smoking-Gun evidence when there was impact is "medium to low" and near 0 given no impact making it sufficient but unnecessary. The likelihood to find Doubly-Decisive evidence is "medium to high" given that there was impact and "low enough" given no impact, making it sufficient and necessary.

5.2 Measuring impact degree

Theory and empirical observations suggest that full adoption of PP proposals is less likely than watered down or cherry-picked adoption because the latter allow policymakers to communicate responsiveness while mitigating or ignoring aspects challenging their preferences (Font et al., 2018). Following Vrydagh (2022) and Font et al. (2018), we measure impact degree with three categories: no impact, partial impact, and full impact. Impacts are considered partial when proposals are altered along at least one of three dimensions, i.e., ambition, concreteness, and completeness (Table 2).

Table 2. Impact degree

Impact degree	Definition
No impact	The proposal *P(i)* had no impact on *PD(t2, i)* (see Table 3).
Partial impact	Given impact, the policy decision *PD(t2, i)* follows the intent of proposal *P(i)* but differs in • ambition, and/or • concreteness, and/or • completeness (selective uptake of elements).
Full impact	Given impact, all main ideas of proposal *P(i)* were taken up in the policy decision *PD(t2, i)*, without alteration in intent, ambition, or concreteness.

5.3 Measuring impact mechanisms

Theories posit different impact mechanisms for PPs (e.g. Goodin & Dryzek, 2006; Pfeffer & Newig, 2025; Vrydagh, 2022; Willis et al., 2022). We measure a selection of such mechanisms to test what PPs have achieved and what to expect from them in the future. Table 3 displays the definitions of different mechanisms (cf. Vrydagh, 2022). Note that impact mechanisms can occur simultaneously.

Table 3. Impact mechanisms

Impact	Impact mechanism	Definition
No impact	*No uptake*	The proposal *P(i)* had no impact on policy decisions *PD(t2, i)* because it was ignored and/or rejected.
	No addition	The proposal *P(i)* had no impact on policy decisions *PD(t2, i)* because a proposal related decision *PD(i)* already existed in *t0*, or because the identical decision would have been taken at *t2* had the PP not been (i.e., $PD(t2, i) = CPD(t2, i)$).
Impact	*Fortifying impact*	The proposal *P(i)* impacted policy decision *PD(t2, i)* by encouraging policymakers in their prior positions and/or creating momentum for further development of existing plans.
	Enriching impact	The proposal *P(i)* impacted policy decision *PD(t2, i)* by adding substantive elements to existing or planned policy.
	Political impact	The proposal *P(i)* enabled the making of policy decision *PD(t2, i)* where conflicting positions of relevant policymakers previously prevented a decision.
	Innovating impact	The proposal *P(i)* led to a new policy decision *PD(t2, i)*, which adopts a novel idea that had not been seriously considered in policymaking before.
	Shifting impact	The proposal *P(i)* challenged a previously held majority position among relevant policymakers and changed the direction of a policy decision *PD(t2, i)* by making relevant policymakers alter their position.
	Inhibiting impact	The proposal *P(i)* impacted policy decision *PD(t2, i)* by making relevant policymakers abandon a previously planned policy decision.

Source: adapted from Vrydagh (2022).

Given no impact, we differentiate between 'no uptake' and 'no addition'. While 'no uptake' indicates limited political responsivity, 'no addition' suggests some redundancy and inefficient PP design because the participants spent valuable time discussing an already planned or decided policy issue – although there can be value in, for instance, validating policy plans or allowing participatory resistance.[7]

Given impact, we differentiate between fortifying, enriching, political, shifting, innovating, and inhibiting impact (cf. Vrydagh, 2022). Fortifying impact encourages policymakers or

[7] Considering our conceptualization of impact, our category 'no addition' partly overlaps with Vrydagh 's (2022) category of 'continuous influence'. This demonstrates our more conservative but, we argue, more valid approach to impact (also see section 6.2 on contributory impact).

provides momentum for existing plans. It occurs, for instance, when policymakers are wary of policy backlash, a planned policy has low priority, and/or existing policy drafts are still vague. While fortifying impact addresses political and administrative dimensions, enriching impact is about substance, meaning that a proposal added aspects to a policy that policymakers might have overlooked or given less priority. An example would be to augment a tax through a redistributive mechanism for certain target groups to make it fairer. Political impact describes situations where a PP proposal breaks a political deadlock on an issue, for example by providing a compromise solution, increasing pressure to act, or tipping the power balance to one side. Shifting impact occurs when a PP proposal challenges and changes the majority position of relevant policymakers, e.g. the government. When a PP proposal makes relevant policymakers abandon a previously planned policy decision, we speak of inhibiting impact. Lastly, innovating impact indicates that a PP led to decisions that had not been seriously debated among policymakers.

5.4 Qualitative triangulation

The analytical framework we propose yields quantitative results that inform expectations about the frequencies of impact, impact degrees, and impact mechanisms. This data is valuable in that it provides a basis for case comparisons and quantitative analyses of factors explaining impact (e.g. through regressions as in Font et al., 2018, or QCA as in Pogrebinschi & Ryan, 2018). However, as with any such exercise, relevant information is lost during coding. Omission of important information lost in coding can lead to invalid theoretical inferences. We therefore strongly advise to triangulate the quantitative findings with relevant qualitative and more explorative insights won during data collection and coding (see results).

6 Dealing with uncertainty

We have presented ideal types of evidence that are sufficient and necessary to infer causality. In practice, however, evidence does not always fall neatly into the ideal type categories. Only few experts – usually policymakers and public officials – possess relevant knowledge about policy impact, with some facing institutional constraints to openness and having incentives to report biased results. Hence, researchers will face uncertainty, such as missing data and data of questionable credibility and validity[8]. In this section, we propose coding rules and provide examples to assess and transparently report uncertainties.

6.1 Coding uncertainty

For each proposal under study, we distinguish between low, moderate and high uncertainty regarding the impact assessment (Table 4) (also see the codebook of Font et al., 2016). For high uncertainty, we refrain from distinguishing between ‘impact’ and ‘no impact’.

[8] See Supplements for operational notes on assessing validity and credibility.

Table 4. Uncertainty

	Low uncertainty	Moderate uncertainty	High uncertainty
Impact	• Valid confirmation of necessity by credible expert	• Expert confirmation of necessity of slightly limited validity/credibility • Multiple consistent pieces of evidence of limited validity/credibility (e.g., near perfect textual congruence + novelty + low uptake cost + public statements of impact)	• Contradictory evidence (e.g., opposing expert statements) • Expert confirmation of highly limited credibility/validity • Suggestive evidence of impact but no expert confirmation
No impact	• Absence of novelty or change • Valid confirmation of non-necessity by credible expert	• Presence of novelty and change but limited suggestiveness of impact and no further evidence • Single piece of evidence of limited validity/credibility (e.g., public government statement of uptake)	
Contributory impact	• Low uncertainty expert confirmation of collective impact, but high uncertainty regarding the necessity of an isolated proposal effect		

A valid confirmation of '(no) impact' by a credible expert is indicative of low uncertainty. Moreover, absence of novelty or change in the document analysis is low uncertainty evidence of missing impact.

Impact is coded as moderately uncertain when interviewed experts confirm it, but researchers slightly doubt the validity or credibility of the statement. If the document analysis indicates novelty and change, but there is no expert confirmation of causality, or only a single piece of evidence with low credibility or validity – e.g., government publicly stating uptake of a proposal – we consider the proposal to have had no impact with moderate uncertainty. That means, we generally set high boundaries for coding impact, if there is no explicit expert confirmation available because we assume that, given there was impact, experts usually have an incentive to report such impact, when asked, due to social desirability.[9] However, in exceptional cases, multiple pieces of consistent evidence can be sufficient for inferring causal impact with moderate uncertainty even without expert confirmation (see Fairfield & Charman, 2017, section 3 on multiple pieces of evidence). For example, we find PP proposals that are taken up in policy documents using almost identical wording while being novel, causing very little political and monetary costs, and being portrayed as impactful by the government in an official response document. We argue that the likelihood of finding this combination of evidence given 'no impact' is unlikely enough, i.e. $P(E_1;\ E_2 \ldots\ E_n|{\sim}HI) = "Low\ enough"$. It seems likely that such proposals did have a

[9] In formal terms, we assume $P(E_E|HI) = "Medium\ to\ High"$, with E_E denoting the finding of expert evidence confirming impact. This implies $P({\sim}E_E|HI) = 1 - "Medium\ to\ High" = "Medium\ to\ Low"$.

causal impact because they had not been on the agenda before and did not hurt policymakers while offering them an opportunity to demonstrate responsivity. In such cases, we suspect that we failed to reach an expert with knowledge of the proposal's impact (see section 7.3.2).

Finally, we code high uncertainty when there is contradictory evidence such as opposing expert statements, or suggestive evidence of impact where credibility and/or validity is a serious concern, e.g., strong textual congruence without further evidence. The results section provides more coding examples.

6.2 Contributory impact

In section 5.1, we proposed measuring impact on a binary scale. One may augment this binary scale of impact with a third category of contributory impact. For our purposes, contributory impact has occurred when a proposal was one of several factors that *collectively* caused a policy decision, and isolating the individual effect of the proposal from the collective effect of the set of factors is impossible (cf. Goertz & Levy, 2007, p. 10). Contributory impact, as we operationalize it, is thus characterized by a simultaneous occurrence of low and high uncertainty regarding causality: low uncertainty regarding collective impact, i.e., the necessity of the set of factors; and high uncertainty regarding isolated impact, i.e., the necessity of the proposal within the set. This is typically evidenced by an expert clearly stating both conditions. High uncertainty regarding isolated impact can manifest itself when experts state that they are genuinely unable to disentangle the effect. Assessing the genuineness of such statements is a practical weakness of this concept. There is a risk of providing experts with an "easy way out" of effortful reflection and/or honest responding amid social desirability. Hence, we suggest that researchers avoid prompting this category. However, once an expert statement is suggestive of contributory impact, researchers should seek to clarify what the uncertainty pertains to.

7 Applying the method: The Berlin Climate Assembly

We now briefly demonstrate the application of our method to the Berlin Climate Assembly (BCA).

7.1 Case description

The BCA was an advisory citizens' assembly (Setälä, 2021). Citizens' assemblies belong to the family of deliberative mini-publics. Mini-publics convene randomly selected citizens to deliberate on policy issues after hearing (scientific and sometimes non-scientific) experts (Smith & Ryan, 2014). Held in the city-state of Berlin, the BCA is a sub-national process. The contextual conditions and political system dynamics are similar to national-level German politics with a diverse and critical media landscape, vibrant civil society, diverse citizenry, and party politics. Following a citizens' initiative, the BCA was commissioned by the climate and mobility ministry of the Berlin coalition government consisting of Social Democrats, Greens, and the Left Party. The BCA assembled 100 participants who deliberated on the issues of mobility, habitation and buildings, and energy, spreading across a total of 8 online

and in-person sessions between April and June 2022. Prior to the process, the Berlin government promised to take the BCA proposals seriously, deliberate upon them internally, and publicly respond to each BCA proposal while providing comprehensive justifications (Senatskanzlei, 2022b). The non-binding results containing 47 proposals were submitted to the government in the summer of 2022. BCA proposals, along with inputs from many other groups, were meant to inform a scheduled amendment of the Berlin Energy and Climate Protection Program (BEC) – Berlin's main climate policy tool. BCA proposals arrived relatively late in the amendment process with the amendment resolution being published in December 2022. BCA proposals were generally brief – often two sentences – but dense with some containing multiple elements relevant for policy decisions. The BCA proposals were discussed in Berlin's Climate Cabinet consisting of the head of government and six ministers (Senatskanzlei, 2022a). In December 2022, the Berlin government published a response commenting on each proposal, along with a resolution of the revised BEC. According to the government, 43 of the 47 proposals were fully (31) or partially (12) taken up in subsequent policy amendments. The time frame of our short-term analysis of impact ends with snap-elections in February 2023 which led to a complete change of government.

7.2 Methods

We keep this section brief as most of this paper has already elaborated on the conceptual and methodological foundation of our analysis (for a more detailed account, see AUTHOR).

The data sources for the document analysis included the BCA's final report, the government response to the BCA, official policy documents, and mission statements and strategy papers that were published by the parliament or the ministries of the Federal State of Berlin (see Supplements). The selection of sources was guided by the sphere of influence (i.e., political arenas) under study which was determined by the BCA's context and stated purpose. Expert interviews supported the search for relevant documents decreasing the likelihood of omission.

One co-author (AUTHOR) conducted semi-structured expert interviews of about 45 minutes each between July and September 2023. The interviewer explained the counterfactual approach at the beginning of each interview, and, when in doubt about specific expert statements, sought clarification by restating a counterfactual question. Experts were identified through personal contacts, government websites of departments addressed by BCA proposals, and through snowballing, as many contacts of lower-level public officials are not publicly disclosed.

To address limited availability, confidentiality concerns, and varying response preferences, experts were also given the opportunity to take part in an anonymous online survey (see Supplements). The survey identified respondents' area of expertise before exposing them to questions about each proposal in the respective area. Closed questions about impact and impact mechanisms were followed by open questions allowing respondents to comment and explain. At the end of the survey, respondents were asked to indicate why and to what extent they were capable of making credible judgements.

We sent out email requests to 44 experts, of which 16 did not respond and 18 declined the invitation, mostly because they did not believe to possess sufficient knowledge on the subject. In the end, we conducted three semi-structured interviews (two in-person, one online), held two informal telephone interviews, and received two completed surveys as well as two emails on the impact of specific recommendations. This makes for nine expert responses in total. With these, we were able to triangulate the document analysis for 27 of 47 proposals (57%). Note that most of the remaining non-triangulated proposals could still be coded with moderate or low uncertainty due to missing novelty or change as to the document analysis. The full impact matrix is available in the Supplementary material.

7.3 Results

7.3.1 Quantitative results

Of all 47 proposals, 39 (83%) had no impact, 2 (4%) had impact, and 2 (4%) had contributory impact. For the remaining 4 (9%) proposals, impact was not assessed due to high uncertainty (Figure 4, Panel a.). Of the 39 proposals without impact, 14 (36 %) were not taken up, while 25 (64%) were policy decisions that already existed or would have also been made without the BCA (Figure 4, Panel c.). Of the 4 proposals with (contributory) impact, 3 had full impact, while 1 had partial impact (Figure 4, Panel b.). We find the mechanism of fortifying and enriching impact occurring twice, while political impact ensued once. We find no evidence of innovating, shifting or inhibiting impact (Figure 4, Panel d.).[10]

[10] Enriching and political impact mechanisms occurred simultaneously for one proposal of contributory impact. This explains why there are five impact mechanisms for four impactful proposals.

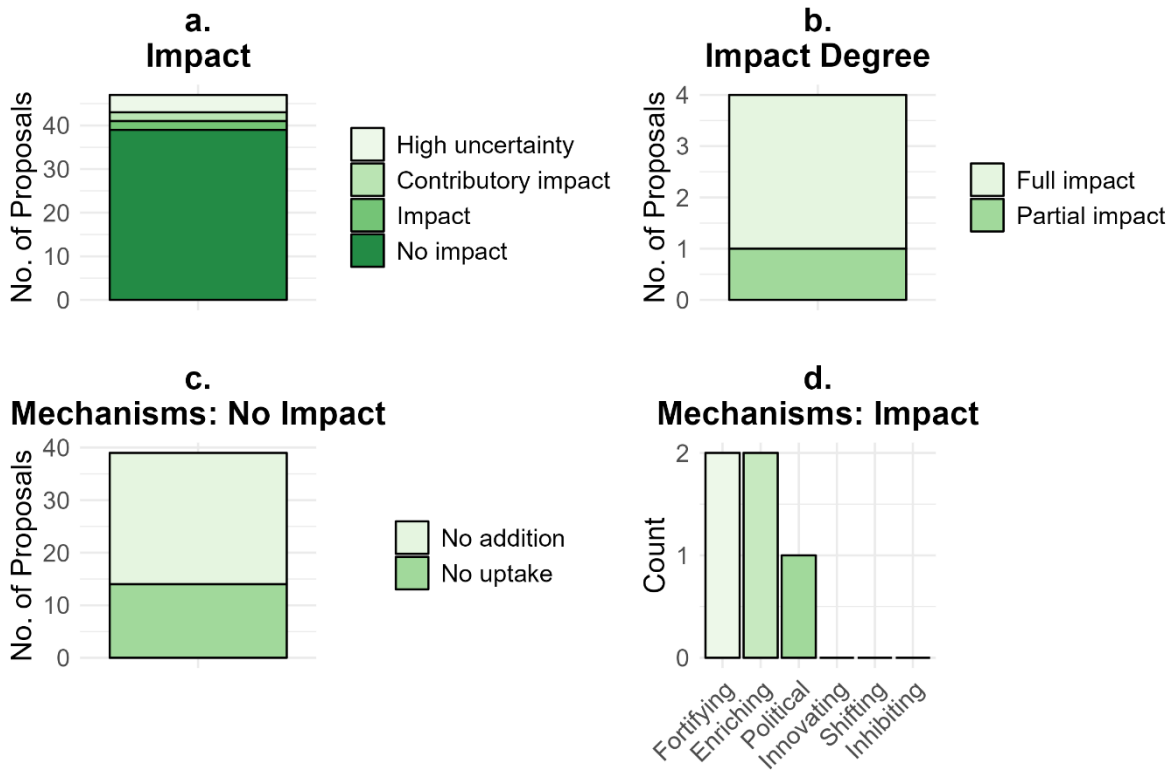

Figure 4. Quantitative results of BCA proposals' impact on policy decisions

7.3.2 Coding examples

We provide illustrative coding examples for all cells in Table 4, except for the 'no impact and low uncertainty' cell, as it is self-explanatory.

Proposal *P(13)* had the most notable impact. The BCA recommended making the inner city of Berlin a carbon-emission-free mobility zone by 2030, entailing a ban of combustion engine mobility. While the Berlin government had previously agreed on this goal, plans had remained vague and next steps unclear, and the plans were still extremely controversial among the Berlin public. The BCA proposal gave momentum to this issue, leading to more concrete steps and specific time plans. It thus had fortifying impact. This was supported by evidence from two experts with one clearly stating the impact, and another stating more cautiously that they had noticed the concretization and could imagine that this was due to the BCA. We coded this as low uncertainty impact. The proposal had partial impact because the government stated not to adopt the 2030 target arguing that it cannot warrant all technical and legal pre-conditions to be in effect by then. Moreover, other elements of the recommendation were ignored, such as electric car subsidies for low-income groups and certain occupational groups.

Proposal *P(39)* illustrates an exceptional case where we coded impact with moderate uncertainty, even though no expert evidence was available (see section 6.1). The proposal called on the city-state of Berlin to lobby, at the federal level, for an expansion of funding schemes for apartment housing, aimed at supporting climate-neutral heating and increasing solar energy use. This proposal was taken up in almost identical wording in

Berlin's Energy and Climate Protection Program, the official government response highlighted this uptake, and integrating this intention to lobby in the Program encompassed low to no costs. While existing policies to support apartment housing were already addressed in Berlin's heating strategy, the idea to lobby for federal funding was new. Hence, the impact was classified as enriching. Moreover, it was classified as full impact because the nearly identical wording retained all essential elements of the proposal.[11]

Proposal *P(33)* provides an example of contributory impact. The BCA recommended enabling the use of balcony photovoltaic (PV) in an unbureaucratic way for all citizens. The government previously had plans to facilitate balcony PV, but this had a low priority and there were concerns regarding its limited effects on CO2 emission reductions. One expert stated that a subsequent funding program for balcony PV followed from the BCA, explaining that this would not have happened "had the BCA not provided the opportunity" (own translation). However, the same expert noted that the decision was caused not only by the BCA but also by a broader public demand. In a survey, another expert chose the "I don't know" option for fortifying impact explaining in the open response that "the balcony PV scheme emerged from it, which, however, was politically intended. I dare doubt whether the citizens' assembly indeed had a significant impact". It appears evident that the BCA had some impact on the policy decision. However, statements regarding the necessity of the BCA are ambiguous. The first expert states both necessity for the BCA proposal but also for public demand.[12] The second expert suggests collective impact highlighting the simultaneous relevance of political will and, seemingly, indicates uncertainty regarding the individual necessity of the BCA. We decided to code this as contributory and fortifying impact.

Proposal *P(10)* is an example of high uncertainty. The BCA recommended car-free days supplemented by free public transport on such days to promote a mobility transition. As to the document analysis, the car-free element of the proposal was taken up partially and weakened. The government stated it will examine temporary road closures on some days. We found no evidence of such a proposal seriously being considered by relevant political actors before. That the idea was weakened to reduce bindingness and reframed to avoid the politically risky term "car-free" is consistent with theoretical expectations (Boswell, 2016). This could be interpreted as suggestive of innovating impact. Instead of weakening and reframing the proposal, the government could have rejected or ignored it. However, we were not able to validate this suggestive evidence through an expert. Thought counterfactually, the decision to examine temporary road closures might have occurred without the proposal, for instance, as a result of experiences with closures and pop-up bike lanes during the

[11] One could argue that, given the somewhat trivial nature of the impact, it is perhaps less surprising that we did not find an expert confirmation of impact – formally: $P(\sim E_E|HI) = "Medium"$ rather than *"Low"* (see footnote 9) – because experts might have been unaware of it or even found it pathetic to sell it as impact.

[12] This need not be contradictory as both conditions can each be necessary while, on their own, insufficient for impact, and sufficient as a set of conditions. It is unclear whether this is a valid interpretation.

COVID-19 pandemic. Hence, though on the edge, we coded this proposal as highly uncertain.

Finally, proposal *P(16)* is an example of no impact with moderate uncertainty because there is evidence of change but limited suggestiveness of impact and no expert confirmation. The proposal demanded implementing energy-focused refurbishment of buildings as soon as possible while prioritizing buildings most in need. The government previously stated to consider needs for refurbishment but also economic viability and costs. After the BCA and in line with the proposal, the government only stated to prioritize buildings with the worst energy efficiency. However, the Worst-First-Approach is an established concept that shortly after was adopted in federal funding schemes and was already planned at the EU level. Hence, it appears likely that this was a general trend in the policy sub-system, that other actors lobbied for the Worst-First-Approach, and that it would have also been adopted by the Berlin government had the BCA not been. The impact mechanism is therefore 'no addition'.

7.3.3 Qualitative triangulation

The coding examples illustrate how qualitative triangulation can help evaluate the meaning of quantitative results for scientific and practitioner discourses and avoid invalid inferences.

Expert interviews also yielded relevant explorative findings regarding potential explanatory factors of (lacking) impact, and the BCA's effects on the agenda dimension of policy impact. For example, it is noteworthy that the BCA proposals were subject of intense and time-consuming deliberations within and across multiple ministries (cf. Curato & Böker, 2016; Mansbridge et al., 2012). As to explanatory factors, one ministerial official, for instance, criticized that their department had not been consulted in the organization of the process, which reduced the usefulness of proposals under their responsibility, and consequently limited the proposals' impact (more comprehensive in AUTHOR).

Triangulation also reveals the limits of our measures and provides context to assess the relevance of findings. Our variable of impact degree captures partial impacts, accounting for the observation that PP proposals are often weakened, re-interpreted or only selectively taken up, which has been criticized (e.g. Boswell, 2016; Font et al., 2018; Galván Labrador & Zografos, 2023). While from this perspective full impact appears more desirable than partial impact, this measure must not be misinterpreted as some measure of the substantial importance of the policy impact. For example, we find evidence of full impact for proposal *P(39)*. However, this is likely explained by the proposal itself being extremely easy to adopt fully – through a statement of intent to lobby for funding at the federal level. The expected climate effectiveness of this stated lobby intent is probably low. In contrast, proposal *P(13)* calling for a carbon-emission-free inner Berlin "only" had partial impact but even its partial implementation would save large amounts of greenhouse gas emissions – and is not unlikely. These examples show that impact degree is an inadequate measure of climate effectiveness, disruptiveness, implementation likelihood or similar qualities of an impact.

The same logic holds for impact mechanisms. While shifting, political, inhibiting, and innovating impacts may be considered stronger impacts than fortifying and enriching from a politics perspective, they need not be from a policy perspective. The reason is that, as for impact degree, the substance of the proposal is not accounted for. Thus, fortifying impact on highly ambitious policies may be much more transformative than shifting impact on minor issues.

7.3.4 Summary and brief discussion

The method's application has demonstrated the kind of insights it can yield. The counterfactual approach likely offers a more robust and realistic estimate of the extent of a PP's causal impact on collective policy decisions than congruence approaches and government reports. While the Berlin government stated that over 90% of proposals were taken up in policymaking, we find that only about 8% had causal impact on collective decisions.

Nonetheless, we found evidence supporting the claim that mini-publics can have causal impact on policy decisions, and that this can occur via different mechanisms (cf. Jacquet et al., 2023). We found that mini-publics can provide momentum and confidence for policy action on controversial issues, substantially enrich existing policy plans, and break political deadlocks. In our single case, we find no evidence of innovating, shifting, or inhibiting impact.

Scholars and practitioners have criticized policymakers for cherry-picking, meaning that only proposals in line with policymakers' agendas are taken up (Font et al., 2018). Our results suggest that blaming policymakers only paints half the picture. Of the PP proposals without impact on policy decisions, more than half had none because such policy already existed or would have come anyways. This raises questions about inefficient designs of PPs (Pfeffer, 2024). Still, there can be merit in having PPs deal with previously planned policy, for example, to limit risks of public resistance through "market-testing", or to give citizens the opportunity to resist or enrich plans. Moreover, proposals that do not change collective decisions might still have an impact on implementation if, for instance, they change the attitudes of key actors (particularly in stakeholder participation).

Exploratory analysis yielded qualitative insights on the nature and determinants of impacts (more comprehensive in AUTHOR). For example, we find impact for proposals of both high and low controversy and transformative potential, with impact mechanisms and degree being poor indicators of such dimensions. The policy impact of some proposals was impeded because the exclusion of responsible policymakers during PP planning, organization or deliberation led to proposals that they perceived as not useful. While serving policymakers demands might increase policy impact it can also tame PPs (Pfeffer, 2024).

8 Weaknesses of the approach

Policy impact, of course, is not the only value of PPs. The literature has highlighted and studied numerous other benefits we believe to be important (e.g. Beauvais & Warren, 2019;

Curato & Böker, 2016; Glucker et al., 2013; Rowe & Frewer, 2004). What is more, impact on policy decisions per se does not guarantee impact on the ground, e.g. in terms of improved social or environmental conditions (e.g. Koontz & Thomas, 2006). Nonetheless, given the paramount function of PPs in democratic decision-making, a scientifically rigorous assessment of their impact on decisions seems vital.

The most prominent downside of our approach is its labor intensity. Most work is required for document analysis. Labor intensity can vary between cases depending, for instance, on how many documents are relevant, or the degree to which PP outputs and political responses can pre-structure the search for documents and analysis.

Quantitative results from our approach are valuable but narrow and risk misinterpretation. As demonstrated in the preceding sections, triangulation through explorative qualitative analysis or systematic measurement of other variables is necessary for insights about closely related and highly relevant areas of theory (e.g., policy implementation, decision qualities).

Our approach is prone to missing data and results of high uncertainty because, usually, only few experts possess knowledge about policy impact. Still, we believe that publishing results with missing data and remaining uncertainty based on a theoretically robust analysis will produce less bias and more scientific progress than publishing seemingly neat but potentially invalid data or not publishing at all. We therefore encourage researchers to follow a theoretically robust approach, even when worried about missing data and high uncertainty. Peer reviewers should recognize this and reward transparency rather than disguise.[13]

9 Conclusion

Many researchers and practitioners hope and argue that PPs can improve public policymaking, rendering it more just, less susceptible to lobby influence, or more independent from institutional constraints set by elections or party discipline (e.g. Farrell & Suiter, 2019; Glucker et al., 2013; Newig et al., 2018; Willis et al., 2022). Such arguments presuppose that PPs have actual impact on policy decisions. However, the causal impact of PPs on policy decisions has varied greatly and past research has been criticized for frequently lacking rigor and comparability (e.g. Hendriks, 2023, pp. 49–50; Ryan, 2023; Vrydagh, 2022). Limitations in methodological rigor and transparency impede knowledge cumulation and scientific progress (Newig & Rose, 2020; Ryan, 2023).

We provide methodological guidance on how to rigorously assess the causal impact of PP proposals on collective decisions in public policy or administration. Our counterfactual approach is informed by established theory and practice of causality and (Bayesian) process tracing (Collier, 2011; Fairfield & Charman, 2017; Goertz & Levy, 2007; Mahoney & Barrenechea, 2019). In asking whether a collective decision would have occurred had the

[13] Furthermore, our method fails to detect the impact mechanism of preventing backlash, see Supplements.

PP never been, our approach is more conservative but, we argue, also more robust than merely relying on textual comparisons with policy documents, as many studies have done (Jacquet & van der Does, 2021). We provide practical guidance on how to delineate, define, and operationalize key concepts, evaluate pieces of evidence regarding their strength to infer causality, deal with uncertainties, and offer coding examples. We also point to the weaknesses of the approach.

An exemplary application of the method to a citizens' assembly on climate change demonstrates the added value of insights to be yielded: a more realistic and defensible picture of the magnitude of impact; robust testing of hypotheses in a well-defined area of theory; explorative insights through original data collection and qualitative analysis; and data sets providing the basis for future quantitative and qualitative research to explain policy impact.

We find that only a small share of the proposals from the Berlin Climate Assembly had a policy impact. Still, those few impactful proposals provide supportive evidence for theories claiming that deliberative mini-publics can alter policy decisions by encouraging policymakers, substantially enriching policy, and breaking deadlocks. We further find that about half of the proposals had no impact because concurrent policy was already existing or planned. This raises questions about inefficient mini-public design. Involving responsible policymakers in PPs might enhance policy impact by increasing proposals' perceived usefulness for policymakers but this might also tame PPs.

We hope this paper will contribute to more standardization, at least transparency, in the study of PPs' policy impact across research fields. This would allow for significant scientific progress through bolstering robustness, comparability, and knowledge cumulation. Our approach may also be used for (re)coding existing studies, such as in meta-analyses. Lastly, the fundamental principles of our counterfactual approach informed by (Bayesian) process tracing can inspire research on PPs' impacts beyond policy decisions.

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