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When climate assemblies call for stringent climate mitigation policies: Unlocking public acceptance or fighting a losing battle?

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ABSTRACT

In a context where traditional political institutions struggle to build consensus on urgent climate action, this study investigates the role of deliberative instruments in climate policymaking. Specifically, it examines how Climate Assemblies (CAs) influence public acceptance of implementing stringent climate policies. Using public reactions to the recommendations of Luxembourg's *Klima Biergerrot* (KBR) as a case study—which, like other European CAs, called for more ambitious climate mitigation measures—our findings indicate the importance of outcome favorability: agreement with the content of the KBR policy proposals (i.e., winning from the process) was the strongest predictor of acceptance for their effective implementation. However, we also found that, while policy losers were prominent, their acceptance of implementing proposals they disagree with increased the more they perceived CAs as legitimate and fair decision-making processes. This evidence suggests that CAs' can foster 'loser consent' and help bridge divides with climate policy opponents. In this way, CAs have the potential to help overcome climate policy gridlock by building broader public acceptance for necessary, though often unpopular, climate actions.

1. Introduction

As the environmental crisis intensifies, effective climate policymaking is essential. However, ambitious policies come with high costs and require significant collective and individual behavioral changes. Research suggests that politicians and parties often believe that most citizens are unwilling to accept ambitious green policies and may sanction those who adopt them (Fritz et al., 2024; Mildenberger and Tingley, 2019; Dabla-Norris et al., 2023; Pereira et al., 2024). To overcome these challenges, scholars argue that more inclusive and participatory decision-making processes could offer a solution to this gridlock. The argument draws on procedural fairness theory, which posits that *'democratic governments can generate citizen acceptance of difficult decisions if they follow fair procedures when making them*' (Esaiasson et al., 2019: 291). Specifically, participatory mechanisms that enhance citizen involvement in decision-making (OECD, 2020; Paulis et al., 2021) are known to increase policy acceptance, even among policy opponents, when they are perceived as fair—and fairer than electoral and representative mechanisms (Werner and Marien, 2022).

This is central to understanding the rise of Climate Assemblies (CAs) across European democracies. By directly involving citizens in climate policymaking and shifting part of the responsibility for building consensus on climate action to citizens, advocates argue that CAs can help overcome policy gridlock and public reluctance. They aim to address key shortcomings of representative politics—such as short-termism, interest group influence, limited scientific integration, and electoral constraints—which contribute to these problems (Ejsing et al., 2023; Knops, 2023; Perlaviciute, 2022; Willis et al., 2022). Building on these premises, research on the role and impact of CAs has expanded. It mainly examines their design, the quality of their deliberation, the effect on participating citizens, or still the policy outcomes (Elstub et al., 2021, Ainscough and Willis, 2024, Willis et al., 2022, Boswell et al., 2023, Torney, 2021).

This article offers a different and overlooked perspective by examining the impact of CAs on policy acceptance within the broader public. Paraphrasing Muradova and Suiter (2022), we ask whether fair and inclusive public deliberation, as promoted within CAs, might help foster public acceptance of difficult decisions inherent to climate policymaking, which are usually advocated by CAs (Lage et al., 2023). While a few studies suggest that fair procedures engaging the citizenry can

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reduce public skepticism toward more stringent climate actions (Fairbrother, 2022, Heyen and Wicki, 2024, Drews and Van Den Bergh, 2016), they do not directly examine CAs and how the process and outcome-related aspects of these specific participatory mechanisms affect climate policy acceptance.

We aim to address this gap by using panel survey data collected alongside Luxembourg's first CA, the Klima Biergerrot (KBR), organized by the national government in 2022. In our survey, respondents reported their perceptions of the procedural qualities of CAs at multiple points throughout the process. In the final survey wave, respondents were exposed to five policy recommendations from the KBR. They indicated their level of agreement with these proposals, reflecting whether the KBR provided them with favorable outcomes, as well as their acceptance of the policy proposals' implementation by political authorities. Based on this information, we analyze the effect of outcome favorability and perceived procedural quality on respondents' policy acceptance. We also examine the interaction of these two dimensions to capture how procedural evaluations influence policy acceptance among policy winners (i.e., those agreeing with more ambitious climate policies advocated by the CA) and losers (those opposing such policies).

Our case provides a critical test of CAs' potential to foster acceptance of stricter climate policies, particularly among those who disagree with them (policy losers). The KBR's recommendations were highly ambitious, exceeding Luxembourg's existing policies. This aligns with prior research showing that CAs propose more stringent climate measures than representative institutions (Lage et al., 2023). Moreover, CAs often expand policy debates beyond traditional measures like fossil fuel taxes to broader areas, including mobility, consumption, agriculture, and energy production. Public attitudes toward these domains vary (Sælen and Aasen, 2023), making widespread acceptance of such policies—especially among skeptics—an important measure of CAs' effectiveness in advancing climate action.

This article is structured as follows. We first examine the role of CAs in building support for ambitious climate policies, focusing on procedural fairness. We then present our case study and data, followed by empirical analyses. Finally, we discuss the implications for CAs and climate governance more broadly.

2. The role of citizens' assemblies in policy acceptance, and their relevance for climate policymaking

While existing research and evaluation reports provided valuable insights into how deliberation on climate-related topics may affect participants' attitudes (Ghimire et al., 2021, Buzogány et al., 2022; Elstub et al., 2021; Paulis and Pospieszna, 2024; Jacobs, 2024; Hobson, 2012; Hall and Newman, 2011; Theuwis et al., 2025), this study advances the literature by examining its implications for public opinion. It aligns with broader research about the impact of decision-making procedures on the legitimacy and public acceptance of policy decisions (Arnesen, 2017; Christensen, 2020; Esaiasson et al., 2019; Gibson et al., 2005; Grimes, 2006; Martin et al., 2022; Werner and Marien, 2022), and more specifically on how citizens' assembly and other participatory instruments may enhance policy acceptance due to their procedural quality and perceived fairness (Carman, 2010, Germann et al., 2024, Hirschl and Hudson, 2024, Jäske, 2019, Muradova and Suiter, 2022). The core idea within procedural fairness theory is that citizens consider the quality of the decision-making process when evaluating policy decisions as something they could accept or not. Fair procedures that are transparent and based on reasoned arguments can promote policy acceptance. However, a few studies have nuanced this claim, showing that although procedural fairness can matter and citizens can differentiate between decision-making arrangements based on their quality (Persson et al., 2013), the key driver of policy acceptance is often the content of the policy decision and its alignment with personal policy preferences (Esaiasson et al., 2019, Arnesen, 2017). Such studies conclude that outcome favorability is what truly matters for policy acceptance. Nevertheless, while acknowledging the role of outcome favorability, several authors have shown that procedural fairness still matters (Martin et al., 2022; Werner and Marien, 2022), especially for the 'losers' of policy decisions, those who face policies they do not like. In such a situation, procedural fairness can play a significant role in fostering policy acceptance and the loser's consent. This compliance would be particularly crucial for policy outcomes reached through participatory instruments because they can widen the loser-winner gap compared to general elections (Van Der Eijk and Rose, 2021).

Such debates are relevant beyond elections and for all kinds of decision-making arrangements. Nonetheless, they are becoming increasingly central in the rapidly growing research on deliberative democracy instruments and studies of citizens' assemblies. A key claim within this field is that citizens' assemblies can generate policy acceptance through two main procedural aspects. First, they promote procedural fairness by directly engaging the population. More specifically, by involving a representative sample of randomly selected citizens, these assemblies offer a more diverse representation of societal views than parliaments, and participants are independent of electoral pressures and organized interests. As a result, given the growing distrust in politicians and institutions (Van Der Meer, 2017), citizens may feel more confident in public decisions when they see people like themselves (rather than politicians) involved, ensuring that their opinions are considered (Parkinson and Mansbridge, 2012, Paulis et al., 2024b, Pow et al., 2020). Such decision-making processes are thus perceived as fairer due to the direct involvement of lay citizens and the representative and inclusive nature of the process (Christensen, 2020, Germann et al., 2024).

Second, citizens' assemblies rely on a "deliberative" procedure, which does not merely aggregate public opinion but enables a fair consideration of judgments (Fishkin and Mansbridge, 2017). Through deliberation professionally facilitated and neutrally moderated, participants enhance their understanding by learning from experts and one another (Muradova, 2021, Roberts et al., 2020, Warren and Gastil, 2015,). It thus shifts decision-making from a vote-centric to a talk-centric process, emphasizing dialog, judgment, respect, learning, and inclusion (Habermas et al., 2001, Dryzek, 2002). This amplifies the voices of ordinary citizens in a more evidence-based manner, reflecting all sides of policy debates and breaking with the homophilic logic of exchanging with like-minded.

The potential role of citizens' assemblies in generating policy consent applies to all policy fields but is particularly crucial for climate policies. Despite the urgency, elected politicians often struggle to find consensus on how to address the climate crisis and mitigate its impact. Climate policies are constrained by short-termism, electoral dynamics, and the defense of vested interests, which seem to prevent governments from adopting ambitious climate action plans (Knops, 2023). Engaging ordinary citizens through CAs is thus a potential solution to overcome electoral barriers and ideological conflict and develop more long-term, consensual strategies that reconcile all societal views. Moreover, climate mitigation policies remain relatively unpopular among the public (Beiser-McGrath and Bernauer, 2021, Fairbrother, 2022). The core reason does not seem to be public opposition to climate policies per se. On the contrary, much research has shown that public support for greener policies is underestimated (Sparkman et al., 2022, Mildenberger and Tingley, 2019). But what remains is low trust in political actors in general, and in their capacity to handle the environmental crisis in particular (Davidovic and Harring, 2020, Kitt et al., 2021). As recently discussed by Gomm et al., (2024), opting for alternative approaches to policy-making, and in particular, granting citizens a greater role in climate policymaking through CAs could help restore trust toward those making climate policies and, therefore, in policies themselves. Another reason for public reluctance toward climate mitigation policies is the perceived economic and social costs of their implementation. While many citizens are concerned about the climate crisis and recognize the need for action, they are reluctant to support stringent policies at any cost (Rettig et al., 2023), leading to low support for tougher climate

mitigation measures. Acknowledging that the procedural fairness of citizens' assemblies can increase public acceptance of difficult decisions, particularly among those who might otherwise oppose them, suggests that CAs could be instrumental in gaining broader support for stringent climate actions. Considering these prospects, some scholars argue that integrating more systematic citizen deliberation into our political systems, turning them into 'deliberative democratic systems', could significantly improve our ability to address the climate crisis (Smith, 2024, Willis et al., 2022).

All these elements underscore the importance of examining whether CAs can genuinely foster greater acceptance of stringent climate mitigation policies. While the theoretical foundations are well-established, we still lack empirical evidence to confirm this relationship, especially in the context of climate policies (Hügel and Davies, 2020). A few studies have shown that public participation can enhance the acceptability of climate mitigation measures and projects, largely due to the perceived fairness of the process (Bergquist et al., 2022, Hügel and Davies, 2020, Liu et al., 2020, Maestre-Andrés et al., 2019, Thaller et al., 2023). However, these studies often rely on broad, hypothetical scenarios tested through experimental approaches rather than real-world participatory processes and policy outcomes. This suggests that while their internal validity is strong, their external validity is limited. Consequently, we do not yet know how people would react to actual deliberative experiences or the resulting climate policy proposals. Although most national-level CAs organized in Europe over the past decade have converged on the need for more stringent climate mitigation policies (Lage et al., 2023), it remains unclear to what extent these conclusions, reached by direct participants, are shared and accepted by the broader public. Moreover, it is still unknown whether CAs can shift the prevailing reluctance toward the adoption of more stringent climate mitigation policies.

Building on those different elements, we propose to study the impact of CAs on policy acceptance of climate decisions based on a real-life case: the Luxembourg CA (*Klima Biergerrot* - KBR). Alongside this CA, we fielded a survey of a representative sample of the national population to assess respondents' willingness to support the CA's policy recommendations, accept their implementation, and endorse CAs as a fair decision-making procedure. More specifically, our survey aimed to empirically test three specific theoretical expectations elaborated on the theory outlined above regarding the roles of procedural fairness and outcome favorability in generating policy acceptance. First, we expect that acceptance of the implementation of stringent climate policies recommended by the CA will be primarily driven by outcome favorability, i.e., whether respondents agree with the content of the recommendations. Second, we expect that respondents' evaluations of the procedural quality of CAs in general will also play a role, albeit a more minor one. Those who perceive CAs as a fair and inclusive method for making climate policy decisions, and who value the opportunity for citizens to engage in high-quality deliberation on environmental issues, will be more likely to accept policy recommendations formulated by a CA. Our third and final expectation is that the perceived procedural quality of CAs will primarily influence respondents who disagree with the content of the policy recommendations from the CA.

3. Material and methods

3.1. The case: Luxembourg climate assembly – Klima Biergerrot (KBR)

Our study examines Luxembourg's Climate Assembly, the Klima Biergerrot (KBR), announced by Prime Minister Xavier Bettel in 2021 as a democratic innovation to foster social consensus on climate policy. Inspired by deliberative processes in other countries, the KBR was tasked with assessing Luxembourg's climate commitments, particularly the National Energy and Climate Plan (NECP).

Between January and September 2022, 100 randomly selected citizens living or working in Luxembourg participated in the assembly. Recruitment ensured representation across nationality, gender, age, and occupation, including cross-border workers. The participants met over five weekends, each dedicated to an NECP policy area—agriculture, renewable energy, construction, waste management, and transport. The process combined in-person discussions, online expert debates, and field studies, tailored to Luxembourg's multilingual population.

The KBR produced 56 policy recommendations, largely advocating more stringent climate mitigation policies in line with other European citizens' assemblies (CAs). Unlike in some cases, the Luxembourg government actively engaged with the results. The Prime Minister committed to integrating the KBR's work into policy discussions, and a government task force reviewed the recommendations. While many reinforced existing policies, five entirely new measures were added to the NECP—policy changes that would not have occurred without the KBR. This responsiveness contributed to strong media coverage and public awareness (Paulis et al., 2024a). Despite its experimental nature, the KBR was positively evaluated by participants and the academic review team, meeting deliberative standards. It provided a platform for a diverse group of citizens to meaningfully engage in climate policymaking. Additionally, the high level of governmental attention distinguished it from similar initiatives in Europe.

Luxembourg presents a unique case for studying the impact of a CA on public acceptance of climate policies. It has the highest CO2 emissions per capita in Europe (11.6 tons per person in 2022, Climate Watch 2023), making mitigation urgent but politically challenging due to public reliance on high consumption. If a CA can foster support for stricter climate measures in this context, it would highlight its potential to overcome resistance. Furthermore, Luxembourg's small size, economic prosperity, and relatively high political trust contrast with larger, more polarized democracies where democratic innovations often gain traction. If a CA influences public opinion here—where the motivation for change may be lower—it would underscore its effectiveness. Third, another challenge is Luxembourg's diverse population, with a significant proportion of non-citizen residents who cannot vote in national elections. Their limited stake in national policymaking might make consensus-building on climate action more difficult. However, the KBR's inclusive approach suggests CAs could enhance political engagement beyond traditional electorates, demonstrating their value for broader democratic participation.

3.2. Data sources

When the Luxembourg government launched the Klima Biergerrot (KBR), we initiated a panel study with a representative sample of the population. It consisted of three internet-based survey waves, using quota sampling to ensure demographic representation—excluding KBR members. This analysis focuses on the final wave (November 2022), after the KBR's final report had been submitted (September 2022) and debated in parliament (October 2022). The sample included 1777 respondents, with a 63 % retention rate. Despite attrition, the sample remained broadly representative (see Appendix 1).

In the final wave, we included a module assessing public support for policy proposals from the KBR. We selected five recommendations advocating stricter climate policies, simplifying their wording for clarity. These were chosen based on their relevance to different NECP subfields, alignment with other CAs in Europe, and their perceived ambition, as noted in media and political debates (see Appendix 2 Table C for more information on the media and political coverage of the five recommendations). Although agriculture contributes minimally to Luxembourg's economy and employment, it occupies over half the country's land. Strong agricultural interest groups and political ties to the Christian Democratic Party (CSV) fueled opposition to these proposals in parliament, while the populist right-wing ADR dismissed the vegetarian proposal. The government declined to implement livestock reduction and passed the vegetarian measure to the relevant ministry. Both received little media coverage.

Table 1
Policy recommendations from KBR and follow up questions.

The citizens participating in KBR have agreed on a range of recommendations that they want the Luxembourg Parliament to adopt in order to tackle climate change. Here is a short selection of the recommendations put forward by citizens from KBR. Now, we would like to know you level of agreement with the content of each policy proposal and to what extent you would accept to see them implemented by Luxembourg political authorities.

		Agreement (IV)	**Acceptance of implementation (DV)**
		On a scale where 0 means that you fully disagree and 10 that you fully agree, how much do you agree with each of the policy proposal?	*From 0–10 where 0 means that it is not acceptable at all and 10 that it is very acceptable, how acceptable is it that these recommendations are implemented by Luxembourg's political authorities?*
Sub-field	Proposal	Mean	Mean
Agriculture	A law that imposes a reduction in the number of livestock on Luxembourg farms.	3.7	3.5
Energy/ carbon pricing	A tax on (higher) consumption of fossil fuels by citizens, along with a tax reduction for investment in renewable energies	4.7	4.5
Energy/ carbon pricing	A tax on (higher) consumption of fossil fuels by companies and industries, along with a tax reduction for investment in renewable energies	4.6	4.3
Agriculture	The promotion of vegetarian meals to reduce the consumption of meat	4.3	4.0
Transport/ mobility	Speed limits should be reduced to 110 km/h on motorways and to 30 km/h in city centers	4.0	3.9
	All	4.2	4.0

Two other proposals involved increasing CO_2 taxes for individuals[1] and industries.[2]

Given Luxembourg's high emissions and car dependency (Maciejewska et al., 2023), these sparked significant debate in parliament and received media attention. Major parties, including CSV and social-democratic LSAP, opposed raising CO_2 taxes, citing concerns for car users and low-income households. While the government partially followed the KBR's advice, increasing individual CO_2 taxes from €20/t CO_2 in 2021 to €30/t CO_2 in 2023, this fell far short of the proposed €200/t CO_2. The industry tax proposal was deemed redundant under existing NECP policies and not pursued.

The final proposal introduced in the survey suggested speed limits on highways and urban areas, a previously debated and divisive issue.[3] Despite controversy, it was among five new KBR-inspired measures incorporated into the NECP. Public and media discussions about its implementation remain ongoing.

To avoid order effects, the five proposals were randomly displayed to respondents. A brief introduction ensured that participants were aware these recommendations stemmed from the KBR, with prior survey sections providing background information (see Table 1).

3.3. Variables and models

Our main dependent variable is 'policy acceptance'. Following Pytlik Zillig et al., (2018), we understand it as 'judgments and evaluations about the policy being in place.' We operationalize it as how citizens evaluate the perspective of the KBR policy proposals being effectively implemented by political authorities. It is measured through the average level of acceptance of the implementation of the five KBR's policy proposals, based on the question: '*On a scale from 0 to 10, where '0' means not acceptable at all and '10' means very acceptable, how acceptable is it for you that Luxembourg's political authorities implement these recommendations?*' Respondents rated each of the five proposals on the 0–10 scale. A factor analysis revealed that the five policy recommendations load onto one single dimension (see Appendix 2. Table A). Therefore, we use the mean score as a general measure of acceptance for more stringent climate policies promoted by the CA (Cronbach's alpha =.77, mean = 4.0). As shown in Fig. 1, the distribution indicates that negative opinions dominate, with a majority of citizens opposing the implementation of these stricter climate policy measures by Luxembourg's political authorities.

Our analysis considers two main independent variables. Following Arnesen (2017), 'outcome favorability' is understood as whether the process delivered favorable policy outcomes. We operationalize it through how much respondents agreed with the content of the KBR policy recommendations, meaning that the KBR outcomes aligned with respondents' policy preferences. For this, we calculated the average level of agreement with the five recommendations based on the question: '*On a scale from 0 to 10, where 0 means you fully disagree and 10 means you fully agree, how much do you agree with each policy proposal?*'. This question on policy support preceded the one on policy acceptance in the survey but was nonetheless comprised in the same survey block. To avoid contamination, they were not displayed on the same screen. Moreover, the order of the proposals was randomized and differed between the two screens. A factor analysis revealed that the proposals load on one single factor (see Appendix 2. Table A), so we averaged these ratings and created a continuous scale (Cronbach's alpha =.74, mean = 4.3), the distribution of which is presented in Fig. 2. To facilitate the interpretation, we dichotomized the sample into two groups: those who disagreed with the proposals (below the mean, 'losers') and those who agreed (at or above the mean, 'winners').

The second independent variable measures the perceived procedural quality of CAs. To assess this, we use 10 original questions that capture various aspects of citizens' assemblies in the field of climate policy. These questions were part of three different survey blocks, in which the presentation order was randomized. While the two previous variables were measured at the end of the survey, these questions were presented

[1] The original recommendation was to "*Reduce citizens' greenhouse gas emissions by introducing a CO2 tax on all fossil fuels and redistributing revenue to the population.*"

[2] The original recommendation was to: "*Reduce greenhouse gas emissions from companies by creating a framework program for companies (not EU-ETS), introducing obligations to reduce their emissions and subsidies for the necessary transformations via a bonus-malus system which financially penalizes big polluters and subsidizes projects which aim to reduce CO2 emissions.*"

[3] The original recommendation was "*Better and less driving: limit the maximum speed limits by lowering speed on the motorway to 100 km/h outside office hours and 90 km/h during office hours, while reducing speed in town and introduce 30 km/h zones in municipalities.*"

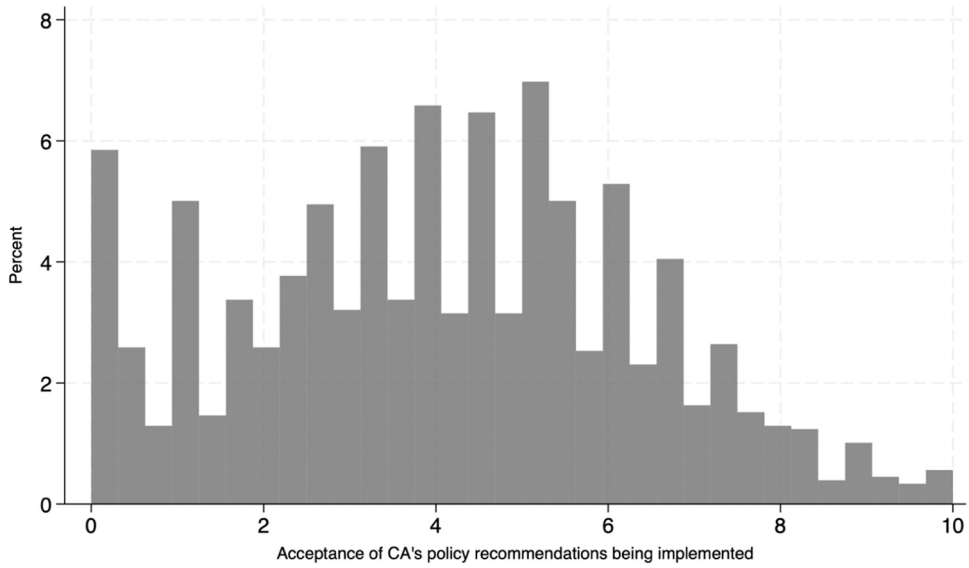

Fig. 1. Distribution of the main dependent variable: acceptance of the implementation of the CA's recommendations calling for more stringent climate policies.

at the beginning.[4] Acknowledging that CAs are novel policymaking instruments—particularly in Luxembourg—and that respondents might lack a full understanding of them despite relatively good media coverage and public awareness in this case (Paulis et al., 2024c), we introduced a brief informational message beforehand to ensure an equal level of knowledge.[5] This message explains that a citizens' assembly on climate was organized by the government and highlights key features such as the use of sortition, the representativeness and inclusiveness of the group, the deliberative nature of the process, and the assembly's assigned remit and outcomes.

The 10 questions, presented in Appendix 2 Table B, were designed by our research team to capture how citizens external to the CA evaluate these core aspects. The first three items focus on respondents' opinions about sortition, which aims to guarantee equal participation opportunities. We also examine how respondents perceive the need for CAs to be inclusive—an aspect often considered crucial for their legitimacy (Gąsiorowska, 2023; Pow, 2023) and generally praised by the public (Germann, 2025; Goldberg, 2023; Paulis et al., 2024b), especially in contrast to elected institutions (Werner and Marien, 2022). The fourth item measures general support for deliberative assemblies as a legitimate democratic process (Pilet et al., 2023) and whether respondents believe they should be replicated for other policy issues. The remaining six items assess procedural fairness and citizen capability, examining opinions on whether participants are free to express their views, capable of reaching consensus, attentive to others' viewpoints, and able to make fair and honest decisions. These items align with research on the deliberative quality of CAs and their potential to enhance fairness in decision-making when best practices are followed, ensuring an open and respectful deliberative environment (OECD, 2024; Zhang, 2012). Their formulation also accounts for the fact that public opinion on CAs is closely linked to perceptions of citizens' capacity to engage in political decision-making (Pilet and Rojon, 2021). Respondents rated all 10 items on a 5-point Likert scale. A factor analysis (see Appendix 2, Table B) revealed that, except for one item (which we excluded), all loaded onto a single dimension. We averaged the remaining scores to create a continuous scale (Cronbach's alpha =.75, mean = 3.1), where higher values indicate a more positive evaluation of the quality of deliberative processes involving citizens in climate policymaking. The distribution is presented in Fig. 3 and shows that respondents tended to adopt a relatively neutral position.

In terms of modeling strategy, we run OLS regression models, with single and interaction terms, allowing us to disentangle the effect of the CA's procedural evaluation for policy 'winners' and 'losers.' We run two main models. The first looks at the individual effects of our two main independent variables (outcome favorability and procedural quality) on policy acceptance for the five recommendations emanating from the Luxembourg CA and calling for harsher climate policies. The second model interacts outcome favorability with procedural quality to see whether the effect of procedural quality is especially strong for respondents who tend to disagree with the content of the policy recommendations. All our analyses control for a wide range of confounding factors that may influence the reception of climate policy recommendations from a CA, including demographic and socioeconomic characteristics (age, gender, education, and income security), opinions on climate change, baseline political attitudes (political interest, satisfaction with democracy, left-right self-placement, and internal efficacy) and the evaluation of the capacity of politicians to tackle climate change. All operationalizations and descriptive statistics are provided in Appendix 3. Appendix 4 provides the full model specification.

As robustness checks, we also replicated the same models independently for each policy proposal (Appendix 5). Moreover, to address concerns about potential contamination effects, we conducted two additional checks. First (Appendix 6), we also re-estimated the main model using procedural evaluations measured in Wave 2 instead of Wave 3. Second (Appendix 7), we re-estimated the main model (Wave 3 only) but included three control variables for prior attitudes toward CAs, measured in the second wave of our panel study: two general (a) support for deliberative processes in general and (b) acceptance of the policy outcomes of these processes in general; and one more specific (c) perceived favorability of the KBR's outcomes (yet still undetermined).

[4] This should prevent contamination in the measurement of this variable due to exposure to the actual outcomes. However, since we cannot entirely rule out that respondents may have learned about the final outcomes and recommendations through other means, we conducted additional robustness checks using procedural evaluations measured in the second survey wave, when the outcomes were still undetermined, and the process had limited media coverage.

[5] "The government of Luxembourg decided to organize a citizen assembly on climate called the Klima Biergerrot (KBR hereafter in the rest of the survey). It brought a randomly selected group of 100 citizens representative of the population living or working in Luxembourg. Meeting over five working weekends, they were tasked with discussing Luxembourg's current commitments as regards combating climate change, and with developing possible additional measures or proposals. At the end of this process, the Klima Biergerrot's recommendations were presented to the Luxembourg Parliament."

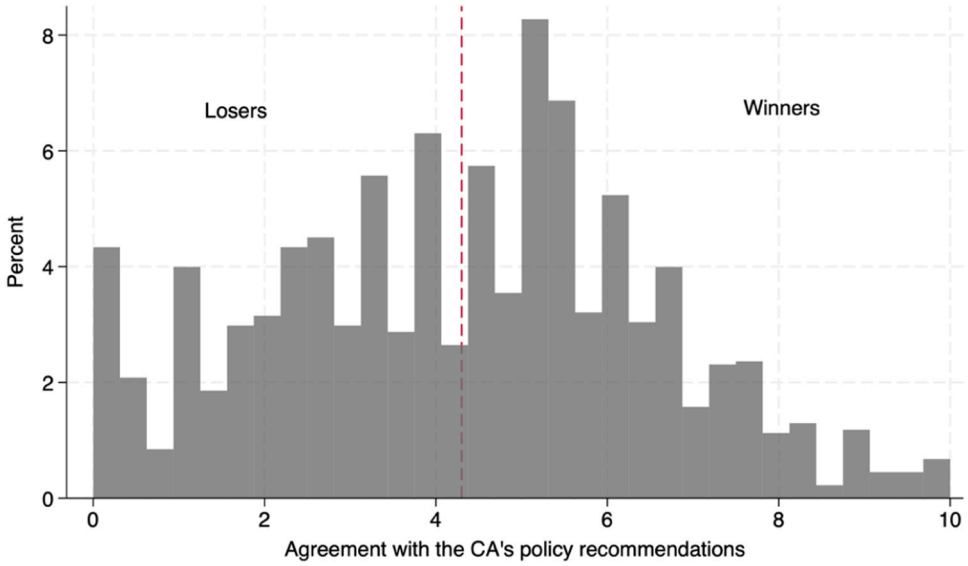

Fig. 2. Distribution of the first independent variable: agreement with the CA's recommendations calling for more stringent climate policies (outcome favorability).

4. Results

When presenting the descriptive statistics of our main dependent variable, we observed that the level of acceptance of stronger climate mitigation policies called by the KBR was relatively low (below the mid-point), indicating limited public acceptance for their implementation by political authorities.

As suggested by our theoretical framework, the primary explanation for this low acceptance could be that the recommendations do not align with respondents' policy preferences. Our regression results confirm this, highlighting the importance of outcome favorability (Appendix 4, Table A). Specifically, a one-unit increase in agreement with the KBR recommendations is significantly associated with a 0.88 increase in acceptance of their implementation ($p < .001$). In short, the more respondents agree with the CA's policy proposals, the more likely they are to accept their effective implementation. This provides full support for our first hypothesis.

However, the literature also highlights that policy acceptance may be driven by how respondents evaluate the procedural quality of decision-making arrangements, in this case, a CA. In our first model, which tests the effect of perceived procedural quality of CAs on acceptance of CA's policy proposals being implemented, we found that our expectation is not corroborated. Despite a slightly positive coefficient, there was no significant relationship between the evaluation of CAs' procedural aspects and acceptance of the implementation of their policy proposals, which call for more stringent mitigation actions. This means that the second hypothesis is not verified.

These results, along with the previous findings, emphasize the importance of decision outcomes over decision-making processes. Citizens' willingness to accept policy recommendations made by CAs is driven by whether they agree with the content of the policy recommendations and not directly by how they evaluate the procedural quality of CAs. Supporting this, our model—which explains a considerable portion of the variance ($R^2 = 78$ %)—shows that agreement with the recommendations alone accounts for 70 % of the explained variance. This underscores a strong relationship between citizens' support for policy proposals' content and their willingness to accept them being implemented.

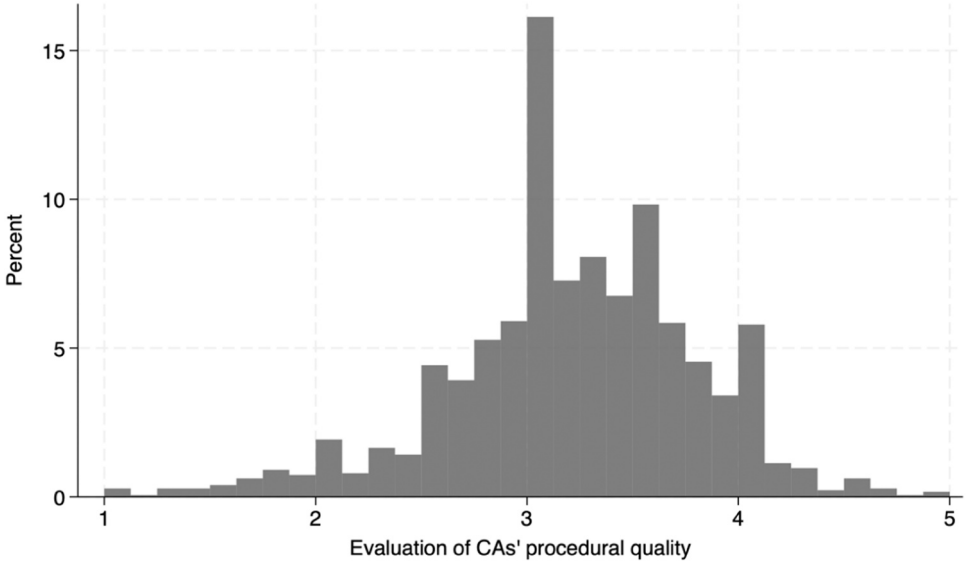

Fig. 3. Distribution of the second independent variable: evaluation of CAs' procedural quality.

Our second model included an interaction between respondents' agreement with the content of policy recommendations emanating from the CA (outcome favorability) and their evaluation of the procedural quality of CAs. As shown in the regression table (Appendix 4, Table A), the interaction term is significant and positive for those who disagreed with the KBR recommendations—the climate policy 'losers.' This finding fully supports the last hypothesis, which is that procedural quality matters for the consent of policy losers. To better illustrate this, Fig. 4 presents the marginal effect of the evaluation of the procedural quality of CAs on policy acceptance separately for two groups of respondents: climate policy 'winners' (those who agree with the KBR's call for stricter climate mitigation policies) and 'losers' (those who disagree). For policy winners, their evaluation of the CA's procedural quality has little effect on policy acceptance. Policy winners usually do not care about how decisions are made since they align with their preferences. However, for policy losers, the results clearly show that the evaluation of procedural quality matters. The more positive respondents are about the quality of deliberative processes, the more likely they are to accept the implementation of the KBR's policy recommendations that call for more stringent climate mitigation actions. Our results remain robust even in additional tests that account for prior attitudes and mitigate potential contamination effects.

5. Conclusion and discussion

The urgency of climate action is undeniable, yet governments often struggle to implement ambitious policies due to concerns over public resistance. In response, Climate Assemblies (CAs) have emerged as deliberative tools aimed at increasing legitimacy and public acceptance of climate policies. While participants in CAs typically callf for stronger climate action (Lage et al., 2023), gaining broader public support remains a major challenge, given the economic and social costs involved. Our study examines the real-world impact of Luxembourg's Klima Biergerrot (KBR), analyzing how public perceptions shaped acceptance of its policy recommendations, which called for more rigorous climate mitigation policies.

5.1. The role of agreement with the content of the policy recommendations

In line with previous research on decision-making processes and participatory policy instruments (Christensen, 2020; Esaiasson et al., 2019; Werner and Marien, 2022), our findings emphasize the critical importance of outcome favorability. The most important determinant of Luxembourg citizens' acceptance of KBR's policy recommendations was strongly linked to how much they agreed with the content of those proposals. Specifically, respondents who agreed with stricter climate mitigation policies were significantly more likely to support their implementation. This outcome highlights a fundamental aspect of human behavior: when decisional outcomes (do not) align with individuals' own preferences and expectations, they are (less) more likely to accept the. As such, our study reinforces existing literature suggesting that public support for climate action is heavily conditioned by individuals' policy preferences (Beiser-McGrath and Bernauer, 2021, Rettig et al., 2023).

However, this emphasis on outcome favorability also points to a potential limitation in CAs' capacity to foster widespread acceptance of stringent climate policies. If public support is largely dependent on agreement with the policy recommendations themselves, then CAs may struggle to win over those who disagree with the recommended measures. Given the significant reluctance toward harsher climate policies in many societies, this raises important questions about the broader efficacy of CAs in driving meaningful climate action. While CAs may serve as useful tools for generating policy recommendations, their success in gaining broad public support depends largely on the alignment of those recommendations with citizens' preferences.

5.2. The role of procedural quality

Despite the central role of outcome favorability, our study also explored the potential for CAs to influence public acceptance directly through their deliberative and inclusive nature. We expected that positive evaluations of the procedural fairness of the KBR would enhance acceptance of the policy recommendations' implementation, whatever the level of agreement with their content. However, our results do not provide empirical support for this direct relationship. This suggests that, at least in the case of the KBR, the deliberative process itself did not significantly sway public opinion on climate policy outcomes. In this regard, our findings echo previous studies that have highlighted the primacy of decision outcomes over decision-making processes in directly shaping public attitudes (Christensen, 2020; Esaiasson et al., 2019).

Nevertheless, our analysis revealed a more nuanced role for procedural fairness among citizens who disagreed with the content of the CA's policy recommendations. While procedural evaluations of CAs did not significantly impact the overall population, they became relevant when considered alongside respondents' evaluations of the policy proposals. Specifically, we found that perceptions of procedural fairness mattered for those who opposed the CA's recommendations—i.e., the climate policy 'losers' who disagreed with the more stringent climate mitigation

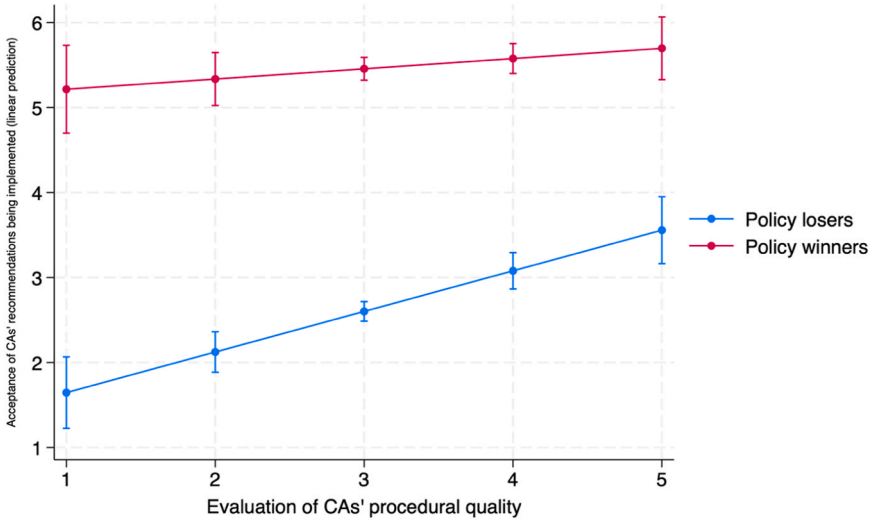

Fig. 4. Predictive margins of procedural quality according to outcome favorability (lowers vs winners).

measures proposed by the KBR members. For these individuals, positive evaluations of the deliberative process were linked to greater acceptance of the policy proposals' implementation, even when those proposals did not align with their preferences. This is a crucial finding, as it underscores the potential of CAs to secure the consent of climate policy 'losers,' a group typically resistant to unpopular climate measures. This aligns with existing research on the importance of procedural fairness in shaping the acceptance of unfavorable and tough decisions (Muradova and Suiter, 2022).

More broadly, this finding is particularly relevant in the context of climate policymaking, where the public is often divided over the necessity and scale of mitigation actions. It suggests that by fostering perceptions of fairness and legitimacy, CAs may help reduce public opposition to the implementation of stringent climate measures. Future research could further investigate whether specific procedural aspects of CAs (e.g., expert involvement, representativeness, transparency) contribute to this effect, whether it holds in the long term, applies to different types of climate policy proposals, or persists in larger and more polarized societies than Luxembourg, thereby addressing some of the limitations of the present study.

5.3. Implication for climate governance

The implications of these findings are significant for climate governance. First, they highlight the importance of designing climate policies that resonate with public preferences. While CCAs can offer valuable recommendations, their success in securing broad public support depends on how well those recommendations align with citizens' views. Policymakers must therefore strike a balance between ambitious climate goals and public concerns about economic and social costs. Simultaneously, the role of procedural fairness should not be underestimated. Our results suggest that CAs can help secure the consent of those opposed to stringent climate policies by overcoming some of the typical resistance. In particular, if 'policy losers' value the procedural qualities of citizens' assemblies, knowing that a policy recommendation they initially oppose comes from a CA could facilitate policy acceptance. These findings echo recent studies that emphasize the importance of the specific design and procedures of CAs in shaping their perceived legitimacy among the public. Factors such as the number of participants, the presence of experts, decision-making rules, and even the identity and preferences of CA members play a role (Goldberg et al., 2024; Paulis et al., 2024b).

Second, our study contributes to ongoing debates about the role of deliberative instruments in climate governance. While CAs are praised for bridging the gap between citizens and policymakers, their influence on public opinion depends on both the content of the proposed policies and the perceived fairness of the process. Therefore, CAs alone cannot solve the challenge of public reluctance toward climate action. Instead, they should be viewed as part of a broader toolkit for engaging citizens, combining deliberative processes with efforts to ensure that policy outcomes reflect public preferences.

Ethics and consent

This study received ethical approval from the Data Protection Officer (N° R2019/001) on September 23, 2019, and from the Ethics Committee of the Faculty of Philosophy and Social Sciences at the Université libre de Bruxelles (ULB) on December 8, 2022. The identity of the research subjects was always fully anonymized. Respondents gave informed consent to participate in the study when recruited by the Luxembourg survey company Ilres.

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Declaration of generative AI in scientific writing

The AI-assisted technology 'Grammarly' has been used in the writing process to improve the grammar and language of the manuscript, under careful authors' oversight.

Author Statement

Study conception and design: all authors; Data curation, analysis and visualization: Emilien Paulis; Project administration, management, and funding: Jean-Benoit Pilet; Writing – original draft: Emilien Paulis, Jean-Benoit Pilet; Writing – review and editing: Davide Vittori and Sebastien Rojon. All authors reviewed the results and approved the final version of the manuscript.

CRediT authorship contribution statement

Jean-Benoit Pilet: Writing – original draft, Project administration, Writing – review & editing, Funding acquisition, Supervision, Conceptualization. **Emilien Paulis:** Writing – review & editing, Software, Data curation, Writing – original draft, Methodology, Visualization, Formal analysis, Conceptualization. **Sebastien Rojon:** Conceptualization, Writing – review & editing, Validation. **Davide Vittori:** Validation, Writing – review & editing, Conceptualization.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Jean-Benoit Pilet reports financial support was provided by European Research Council. Emilien Paulis reports financial support was provided by Luxembourg Ministry of State. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix 1. . Representativeness of the sample

Appendix 1. Table A1
Comparison between population statistics and sample distribution

	W1		W2		W3		Census	Delta	Drop out observation
Total N	*3025*		*2250*		*1797*				
Age	N	%	N	%	N	%	%		W3 slightly younger, lose 55 +
16–24 years old	307	10	216	10	223	12	12	=	
25–34 years old	508	17	370	16	336	19	19	=	
35–44 years old	543	18	421	19	332	18	19	−1.0	
45–54 years old	523	17	392	17	318	18	18	=	
55–64 years old	555	18	403	18	271	15	15	=	
65–74 years old	420	14	316	14	223	12	18	+ 1.0	
75 years old or more	169	6	132	6	93	5			
Gender									Stable, no major change
Men	1529	51	1162	52	900	50	50	=	
Women	1496	49	1088	48	897	50	50	=	
Nationality									Stable, no major change
National	1993	66	1506	67	1196	67	53	+ 14.0	
Foreigners	1032	34	744	33	601	33	47	−14.0	
Region of residence									Stable, no major change
Luxembourg-Ville	518	17	395	18	352	20	20	=	
Center	491	16	363	16	291	16	16	=	
South	1101	36	820	36	668	37	37	=	
North	478	16	339	15	275	15	15	=	
East	437	14	333	15	210	12	12	=	
Professional status									Stable, no major change
Paid worker	1609	53	1196	53	988	55	57	−2.0	
Student	295	10	207	9	201	11	43	+ 2.0	
Unemployed	53	2	38	2	31	2			
Sick or long-term disabled	38	1	33	1	28	2			
Retired	790	26	593	26	406	23			
Homemaker	128	4	98	4	80	4			
Other	112	4	85	4	63	4			
Education									
None	2	0	2	0	1	0			Stable, no major change
Primary school	50	2	37	2	25	1			
Lower secondary school	233	8	177	8	140	8			
Upper secondary school	951	31	702	31	522	29			
Post-secondary non-tertiary education	307	10	230	10	170	9			
Short-cycle higher education (ex. DEUG, BTS, DUT)	307	10	230	10	181	10			
University bachelor's degree or equivalent	456	15	338	15	295	16			
University master's degree or equivalent	584	19	437	19	379	21			
PhD or equivalent	89	3	64	3	60	3			
No response	46	2	33	1	24	1			

Note: The figures presented in the table are rounded numbers. They are based on the full raw sample and were provided by the survey company (ILRES) along with the report of their fieldwork.

Appendix 2. . Factor analyses

Appendix 2. Table A
Factor analyses (loadings): agreement and acceptance of implementation

Sub-field	Proposal	Agreement with the recommendations	Acceptance of their effective implementation
Agriculture	A law that imposes a reduction in the number of livestock on Luxembourg farms	.61	.60
Energy/carbon pricing	A tax on (higher) consumption of fossil fuels by citizens, along with a tax reduction for investment in renewable energies	.62	.68
Energy/carbon pricing	A tax on (higher) consumption of fossil fuels by companies and industries, along with a tax reduction for investment in renewable energies	.66	.66
Agriculture	The promotion of vegetarian meals to reduce the consumption of meat	.55	.56
Transport/ mobility	Speed limits should be reduced to 110 km/h on motorways and to 30 km/h in city centers	.55	.59
Eigenvalue		1.7	2.6
N		1777	1777

Appendix 2. Table B
Descriptive statistics and factor loadings: evaluation of CCAs

Item	IV II (Evaluation of CCAs)	Min	Max	Mean	Loading
1	Selecting participants by lottery ensures that all perspectives are heard (reversed: fully disagree > fully agree)	1	5	3.3	.33
2	Policymaking on important issues like the climate should be open to all citizens, and not just those invited to the KBR (fully agree > fully disagree)	1	5	2.2	.09
3	Citizens' Assemblies like the KBR should involve only Luxembourg Nationals, and not residents who are not Luxembourg Nationals (fully agree > fully disagree)	1	5	3.4	.34
4	The participants of citizen assemblies like the KBR are informed and skilled enough to contribute to policymaking on climate protection (reversed: fully disagree > fully agree)	1	5	3.0	.56
5	Citizens' Assemblies like the KBR should be organized on other issues (reversed: fully disagree > fully agree)	1	5	3.8	.32
6	The participants of citizen assemblies like the KBR are incapable of reaching a consensus on how to address climate change (fully agree > fully disagree)	1	5	2.9	.60
7	The participants of citizen assemblies like the KBR can take fair and honest decisions on climate protection (reversed: fully disagree > fully agree)	1	5	3.2	.61
8	Only the loudest and the most confident participants' opinions on climate protection can be heard in citizen assemblies like the KBR (fully agree > fully disagree)	1	5	2.8	.50
9	The participants of citizen assemblies like the KBR can freely express divergent or alternative views on climate change (reversed: fully disagree > fully agree)	1	5	3.6	.46
10	The participants of citizen assemblies like the KBR are not willing to accept opposing viewpoints, even if good arguments are put forward by the other participants or by the experts (fully agree > fully disagree)	1	5	2.9	.60
11	The participants of citizen assemblies like the KBR put their personal interests before climate protection goals (fully agree > fully disagree)	1	5	3.0	.66
	Scale (item 2 removed)	1	5	3.1	

Appendix Table C
Media and political coverage of the five KBR recommendations

Sub-field	Proposal (survey)	Proposal (original)	Media coverage	Political salience in parliamentary debate	Follow up
Agriculture/ food	A law that imposes a reduction in the number of livestock on Luxembourg farms.	Proposal 5 (p. 22): *Limit the number of cattle and pigs in the medium term according to the farm's available pasture and arable land (the number of cattle would be reduced from 200,000 at present to 60,000, a reduction of 66 %); provide for a per capita tax if the limit is exceeded.*	This proposal received limited coverage in media pieces reporting on the KBR after September 2022 and the delivery of the final report. – Le Quotidien, 16/09/2022 – Paperjam, 16/09/2022 – Radio 100,7, 13/10/2022	The Christian democrats (CSV) voiced against this recommendation, which supposes an intensive farming "*that does not exist in Luxembourg*". The CSV MPs also expressed their desire to have seen more representation from the farming community in the KBR, which is "*an important part of the solution to fight against global warming*". This can be explained by the fact that the CSV has historically strong ties with the farming community.	The Government did not follow on the recommendation.
Energy/ carbon pricing	A tax on (higher) consumption of fossil fuels by citizens, along with a tax reduction for investment in renewable energies	Proposal 11: (pp. 30–34): *Reduce citizens' greenhouse gas emissions by introducing a CO2 tax on all fossil fuels and redistributing revenue to the population.*	This proposal received substantial media coverage when the report was delivered but also later. It was one of the flagship measures, which was covered by mainstream media of all kinds: – Luxemburger Wort: 16/09/2022; – 22/10/2022 – Tageblatt: 16/09/2022; – 26/10/2022 – L'Essentiel: 16/09/2022 – Le Quotidien, 26/10/2022 – RTL, – 15/09/2022; – 25/10/2022; – 11/12/2023 – Radio 100,7: 5/10/2022; 13/10/2022 – Woxx, 06/09/2022; 22/09/2022; – 28/04/2023 – Reporter.lu, 14/09/2022, 15/09/2022, 26/10/2022 – Land.lu: 7/10/2022	Both the Christian democrats (CSV) and the social democrats (LSAP) voiced against this proposal and the high amount suggested by the KBR (€200/t CO_2) during the debate, citing concerns about car users and low-income earners, especially in a context of energy crisis. This opposition was also often mentioned in the media pieces covering the parliamentary debate.	The Government follows the recommendation, which called for the reinforcement of an existing measure. The CO_2 tax was, indeed, introduced in 2021, with €20/t CO_2, gradually increasing of 5€ each year. The government agreed to continue to increase the tax, but not in the proportion suggested by the KBR, which asked for €200/t CO_2.
Energy/ carbon pricing	A tax on (higher) consumption of fossil fuels by companies and	Proposal 12 (pp. 35–36): *Reduce greenhouse gas emissions from companies by*	There was no coverage of this proposal. Media were above all focused on the measures	This measure was not specifically discussed.	This proposal was not followed because evaluated as redundant by the Government,

(*continued on next page*)

Appendix Table C (*continued*)

Sub-field	Proposal (survey)	Proposal (original)	Media coverage	Political salience in parliamentary debate	Follow up
	industries, along with a tax reduction for investment in renewable energies	*creating a framework program for companies (not EU-ETS), introducing obligations to reduce their emissions and subsidies for the necessary transformations via a bonus-malus system which financially penalizes big polluters and subsidizes projects which aim to reduce CO2 emissions.*"	affecting individual citizens directly.		corresponding to measures already existing in the NECP.
Agriculture/ food	The promotion of vegetarian meals to reduce the consumption of meat	Proposal 8 (p. 25): *Promote alternative menus and local products by introducing at least 2 Veggiedays per week in the 'relay houses' and school canteens; require increasing the percentage from 50 % to 80 % of local products for all high schools.*	This recommendation was not much relayed by the media. – Virgule.lu: 16/09/2022 – RTL.lu: 25/10/2022	The proposal was briefly mentioned and opposed by the populist right (ADR) during the debate: "*the idea or rather the compulsion to eat vegan with minimum 2 veggie-daysin the canteen… This sounds like the electoral manifesto of the Green party. You can't oblige children to do that!*" One of the two media pieces relayed also this point of view.	This proposal was transferred to the competent Ministry.
Transport/ mobility	Speed limits should be reduced to 110 km/h on motorways and to 30 km/h in city centers	Proposal 42 (p. 66): *Better and less driving: limit the maximum speed limits by lowering speed on the motorway to 100 km/h outside office hours and 90 km/h during office hours, while reducing speed in town and introduce 30 km/h zones in municipalities.*"	Along with the CO_2 tax, this measure was probably the best covered by the media. – Tageblatt: 16/09/2022 – Luxemburger Wort: – 22/10/2022 – Le Quotidien: 20/09/2022 – RTL.lu: 25/10/2022 – Reporter: 15/09/2022 – Zeitung vum Lëtzbuerger Vollek: 17/09/2022 – Radio 100,7: 13/10/2022 The effective implementation of this proposal still generates some media coverage and crystallizes polarization among the public. – Luxemburger Wort: 01/08/ 2024 – Virgule.lu: 01/08/2024 – L'Essentiel: 22/08/2024 – RTL: 06/08/2024	The proposal was briefly mentioned and opposed by the populist right (ADR) during the debate: "*These are speed limits, we have already heard, we do not agree with them by the way.*"	This proposal was retained and constitutes one of the five novel policy measures included in the new NECP as a result of the KBR.
Source		KBR final report		Parliamentary debate on the KBR report	Official follow up document from the Government

Appendix 3. . Operationalization and descriptive statistics of the control variables

	Question	Response	Min	Max	Mean (s. d.)
Climate skepticism	*To what extent do you agree or disagree with the following statements on climate change?*	5-point Likert scale ranging from (1) strongly agree to (5) strongly disagree			
	I do not believe climate change is a real problem		1	5	4.054 (1.117)
	Claims that human activities are changing the climate are exaggerated		1	5	3.567 (1.222)
	Nothing I do makes any difference to climate change one way or another		1	5	3.618 (1.139)
	There is no point in me doing anything about climate change because no-one else is		1	5	3.503 (1.186)
	Developing countries should take most of the blame for climate change		1	5	3.343 (1.117)
	Jobs today are more important than protecting the enviroment for the future		1	5	2.674 (1.155)
	People should be made to reduce their energy consumption if it reduces climate change		1	5	1.783 (0.823)
	Industry and business should be doing more to tackle climate change		1	5	2.474 (1.029)
	The government is not doing enough to tackle climate change		1	5	2.480 (1.077)

(*continued on next page*)

(*continued*)

	Question	Response	Min	Max	Mean (s. d.)
	Mean scale		1	5	2.311 (0.681)
Political interest	*How interested would you say you personally are in politics?*	4-point scale ranging from (1) not interested all to (4) very interested	1	4	2.889 (0.837)
Satisfaction with democracy	*On the whole, how satisfied are you with the way democracy works in Luxembourg?*	11-point scale range from (0) not satisfied at all to (10) very satisfied	0	10	6.712 (2.543)
Left-right self-placement	*In politics people sometimes talk of "left" and "right". How would you place your views on the scale below?*	11-point scale range from (0) left (10) right	0	10	4.438 (2.227)
Internal efficacy	*To what extent do you agree or disagree with the following statements?* Politics is too complicated for people like me	5-point Likert scale ranging from (1) strongly agree to (5) strongly disagree	1	5	3.710 (0.995)
Income security	*Which of the descriptions below comes closest to how you feel about your household's income nowadays?*	5-point scale ranging from (1) very difficult on present income to (5) living very comfortably on present income	1	5	3.602 (0.920)
Education	*What is the highest level of education you have obtained until now?*	9 OECD categories ranging from (1) early childhood education / no education to (8) doctoral or equivalent	1	8	5.595 (1.864)
Age	*What is your age?*	7 age groups ranging from (1) 16–24 years old to (7) 75 years old or more	1	7	3.927 (1.730)
Gender	*Are you male or female?*	(1) Male; (2) Female	1	2	1.500 (0.499)
CAs' support (W2)	*Citizens' Assemblies like the KBR should be organized on other issues*	5-point scale of agreement, reversed to range from (1) strongly disagree to (5) strongly agree	1	5	3.871 (0.886)
CAs' acceptance (W2)	*I am willing to accept policy proposals made by citizens' assemblies like the KBR*	5-point scale of agreement, reversed to range from (1) strongly disagree to (5) strongly agree	1	5	3.303 (0.892)
CAs' outcome favorability (W2)	*The policy outcomes of the KBR will be favorable to me.*	5-point scale of agreement, reversed to range from (1) strongly disagree to (5) strongly agree	1	5	3.047 (0.739)

Appendix 4. . Full model specification (main model)

	(1)	(2)
	single	interaction
Agreement with CA's recommendations		
Continuous measure	0.884***	
	(0.0146)	
Binary measure (ref=winners)		
Climate policy losers		−4.150***
		(0.446)
CAs' perceived procedural quality	0.0417	0.507***
	(0.0561)	(0.103)
Climate policy losers#CAs' perceived procedural quality		0.418**
		(0.137)
Climate skepticism	−0.0643	−0.539***
	(0.0506)	(0.0692)
Political interest	0.0691	0.164**
	(0.0397)	(0.0557)
Satisfaction with democracy	0.0209	0.0634***
	(0.0128)	(0.0179)
Left-right self-placement	−0.0230	−0.0355*
	(0.0125)	(0.0176)
Internal efficacy	−0.0422	−0.115*
	(0.0320)	(0.0453)
Income security	−0.0201	−0.00820
	(0.0320)	(0.0451)
Education	−0.0262	0.00908
	(0.0157)	(0.0221)
Age	0.0318	0.0404
	(0.0171)	(0.0242)
Gender	0.127*	0.207*
	(0.0587)	(0.0825)
Constant	0.239	1.891***
	(0.331)	(0.520)
Observations	1553	1553
R-squared	0.783	0.571

Standard errors in parentheses
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Appendix 5. Robustness checks 1 (estimation by policy proposal)

Appendix 5. Table A
Results for each policy proposal (single-term main model)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Proposal 5
Agreement with proposal 1	0.733***				
	(0.0166)				
Agreement with proposal 2		0.663***			
		(0.0200)			
Agreement with proposal 3			0.812***		
			(0.0159)		
Agreement with proposal 4				0.799***	
				(0.0151)	
Agreement with proposal 5					0.837***
					(0.0140)
CAs' perceived procedural quality	0.140	0.285**	0.0711	0.0694	0.0893
	(0.0935)	(0.0990)	(0.0908)	(0.0945)	(0.0874)
Climate skepticism	−0.172*	−0.545***	−0.173*	−0.00167	−0.105
	(0.0835)	(0.0908)	(0.0834)	(0.0843)	(0.0774)
Political interest	0.0516	0.158*	0.176**	0.0802	0.00336
	(0.0679)	(0.0712)	(0.0657)	(0.0685)	(0.0631)
Satisfaction with democracy	0.0271	0.0892***	0.0180	0.00313	0.00471
	(0.0202)	(0.0214)	(0.0196)	(0.0204)	(0.0187)
Left-right self-placement	−0.0158	−0.0366	−0.0427*	−0.0125	−0.00604
	(0.0217)	(0.0227)	(0.0210)	(0.0219)	(0.0200)
Internal efficacy	−0.0302	−0.00502	−0.0841	−0.126*	−0.0853
	(0.0549)	(0.0574)	(0.0531)	(0.0554)	(0.0507)
Income security	−0.0465	−0.0310	0.00602	−0.0536	0.0212
	(0.0555)	(0.0581)	(0.0536)	(0.0561)	(0.0512)
Education	−0.0359	0.0287	−0.0286	−0.0292	−0.00253
	(0.0269)	(0.0283)	(0.0262)	(0.0272)	(0.0249)
Age	−0.0535	0.0536	0.00204	0.0285	0.0404
	(0.0295)	(0.0311)	(0.0289)	(0.0297)	(0.0274)
Gender	−0.180	−0.150	−0.284**	0.0806	−0.102
	(0.100)	(0.105)	(0.0973)	(0.101)	(0.0935)
Constant	1.282*	0.795	0.962	0.882	0.677
	(0.533)	(0.555)	(0.518)	(0.540)	(0.487)
Observations	1557	1557	1557	1557	1557
R-squared	0.604	0.599	0.706	0.671	0.748

Standard errors in parentheses
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Appendix 5. Table B
Results for each policy proposal (interaction term main model)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Proposal 5
Climate policy losers – proposal1 (ref= winners)	−5.348***				
	(0.645)				
Climate policy losers – proposal2 (ref= winners)		−2.035**			
		(0.642)			
Climate policy losers – proposal3 (ref= winners)			−5.587***		
			(0.667)		
Climate policy losers – proposal4 (ref= winners)				−5.673***	
				(0.669)	
Climate policy losers – proposal5 (ref= winners)					−4.806***
					(0.667)
CAs' perceived procedural quality	0.425**	0.300	0.470**	0.492***	0.398**
	(0.138)	(0.154)	(0.148)	(0.146)	(0.137)
Climate policy losers – proposal1	0.549**				
# CAs' perceived procedural quality	(0.196)				
Climate policy losers – proposal2		−0.310			
# CAs' perceived procedural quality		(0.198)			
Climate policy losers – proposal3			0.455*		
# CAs' perceived procedural quality			(0.203)		
Climate policy losers – proposal4				0.403*	
# CAs' perceived procedural quality				(0.203)	
Climate policy losers – proposal5					0.0266
# CAs' perceived procedural quality					(0.202)
Climate skepticism	−0.450***	−0.956***	−0.663***	−0.202	−0.472***
	(0.0985)	(0.0989)	(0.103)	(0.104)	(0.0981)
Political interest	0.116	0.254**	0.254**	0.168*	0.145

(*continued on next page*)

Appendix 5. Table B (*continued*)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Proposal 5
	(0.0808)	(0.0791)	(0.0828)	(0.0844)	(0.0807)
Satisfaction with democracy	0.00959	0.134***	0.00597	0.0250	0.00794
	(0.0242)	(0.0238)	(0.0247)	(0.0252)	(0.0240)
Left-right self-placement	−0.0272	−0.0424	−0.0336	−0.0169	−0.0244
	(0.0258)	(0.0253)	(0.0265)	(0.0270)	(0.0257)
Internal efficacy	−0.0185	−0.0367	−0.115	−0.173*	−0.106
	(0.0654)	(0.0643)	(0.0669)	(0.0682)	(0.0652)
Income security	−0.0547	0.0163	0.0465	−0.143*	0.0720
	(0.0660)	(0.0646)	(0.0674)	(0.0690)	(0.0656)
Education	−0.0173	0.0722*	0.0384	−0.00793	4.57e−05
	(0.0320)	(0.0315)	(0.0329)	(0.0335)	(0.0319)
Age	−0.0298	0.0189	−0.0492	0.0483	0.119***
	(0.0352)	(0.0346)	(0.0362)	(0.0366)	(0.0350)
Gender	−0.0961	−0.0359	−0.372**	0.119	−0.273*
	(0.119)	(0.117)	(0.122)	(0.125)	(0.120)
Constant	1.696*	2.309**	2.018**	1.226	1.106
	(0.688)	(0.723)	(0.722)	(0.742)	(0.682)
Observations	1557	1557	1557	1557	1557
R-squared	0.442	0.504	0.536	0.502	0.588

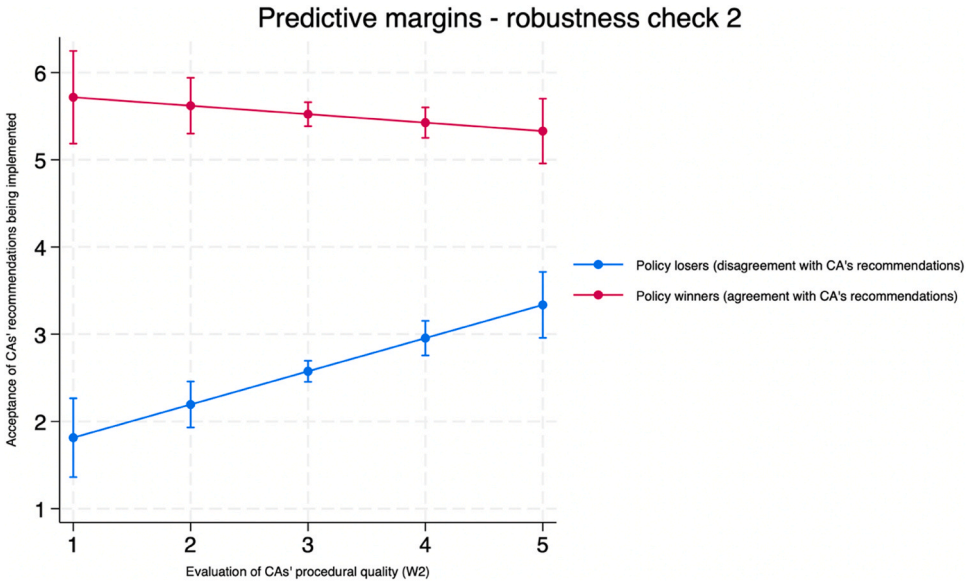
Standard errors in parentheses
*** p < 0.001, ** p < 0.01, * p < 0.05

Appendix 6. Robustness checks 2 (CAs' evaluation measured in W2)

Appendix 6. Table A
Results for the main model estimated with CAs' procedural evaluation in W2

	(1)	(2)
	single	interaction
Agreement with CA's recommendations		
Continuous measure	0.879***	
	(0.0145)	
Binary measure (ref=winners)		
Climate policy losers		−4.380***
		(0.488)
CAs' perceived procedural quality (W2)	0.0004	−0.0969
	(0.0554)	(0.112)
Climate policy losers#CAs' perceived procedural quality (W2)		0.477**
		(0.146)
Climate skepticism	−0.0852	−0.612***
	(0.0497)	(0.0671)
Political interest	0.0717	0.157**
	(0.0396)	(0.0555)
Satisfaction with democracy	0.0191	0.0535**
	(0.0117)	(0.0165)
Left-right self-placement	−0.0224	−0.0382*
	(0.0126)	(0.0177)
Internal efficacy	−0.0526	−0.133**
	(0.0319)	(0.0449)
Income security	−0.0196	−0.00179
	(0.0321)	(0.0452)
Education	−0.0255	0.00201
	(0.0157)	(0.0220)
Age	0.0309	0.0353
	(0.0171)	(0.0241)
Gender	−0.121*	−0.182*
	(0.0586)	(0.0823)
Constant	0.652*	7.078***
	(0.314)	(0.493)
Observations	1555	1555
R-squared	0.781	0.568

Standard errors in parentheses
*** p < 0.001, ** p < 0.01, * p < 0.05



Appendix 6. Figure A. Interaction plot based on the main models using CAs' procedural evaluation measured in W2

Appendix 7. . Robustness checks 3 (prior attitudes toward CAs)

Appendix 7. Table A
Results for the main model estimated with control variables measuring attitudes toward CAs in W2

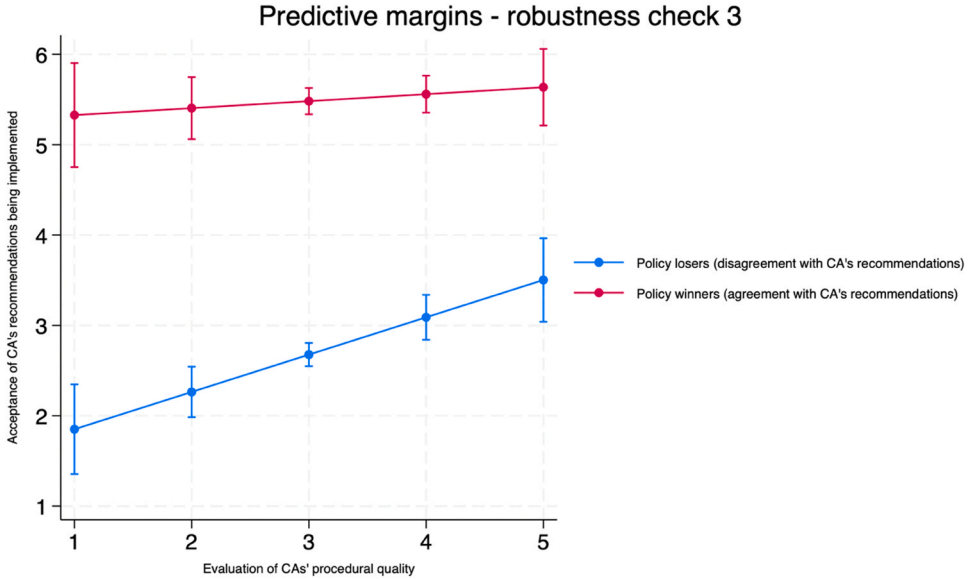
	(1)	(2)
	single	interaction
Agreement with CA's recommendations		
Continuous measure	0.883***	
	(0.0158)	
Binary measure (ref=winners)		
Climate policy losers		−3.812***
		(0.514)
CAs' perceived procedural quality (W2)	0.0018	0.0772
	(0.0635)	(0.123)
Climate policy losers#CAs' perceived procedural quality (W2)		0.336*
		(0.157)
Climate skepticism	−0.0782	−0.514***
	(0.0547)	(0.0774)
Political interest	0.0636	0.157*
	(0.0429)	(0.0621)
Satisfaction with democracy	0.0238	0.0571**
	(0.0128)	(0.0185)
Left-right self-placement	−0.0161	−0.0394*
	(0.0135)	(0.0197)
Internal efficacy	−0.0475	−0.110*
	(0.0346)	(0.0504)
Income security	−0.0304	−0.0432
	(0.0342)	(0.0497)
Education	−0.0151	0.0255
	(0.0168)	(0.0243)
Age	0.0371*	0.0273
	(0.0182)	(0.0264)
Gender	−0.0709	−0.0843
	(0.0629)	(0.0914)
Support for CAs (W2)	0.0435	0.0889
	(0.0367)	(0.0532)
Acceptance for CAs' outcomes (W2)	0.0458	0.0761

(*continued on next page*)

Appendix 7. Table A (*continued*)

	(1)	(2)
	single	interaction
	(0.0425)	(0.0618)
Perceived CA's outcome favourability (W2)	0.0186	0.102
	(0.0458)	(0.0663)
Constant	0.149	5.286***
	(0.366)	(0.593)
Observations	1252	1252
R-squared	0.801	0.583

Standard errors in parentheses
*** p < 0.001, ** p < 0.01, * p < 0.05



Appendix 7. Figure A. Interaction plot based on the main models using CAs' procedural evaluation measured in W2

Data availability

The data and materials for replication can be accessed at https://doi.org/10.7910/DVN/V1KFVD. The full original dataset and codebook are available at https://doi.org/10.34934/DVN/VQMEWU.

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