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Not in My Basement: How Cost Perceptions and Reform Narratives Undermine Clean-Energy Transitions*

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Abstract

Climate action provokes voter opposition when it imposes concentrated and easily identifiable costs, but reforms often expose households to uncertain rather than known financial burdens. We argue that this uncertainty allows individuals to develop subjective cost expectations and narratives, generating widespread opposition that extends beyond those most directly exposed. We study these dynamics in the context of Germany's 2023 heating law, a large-scale reform to decarbonize the housing sector. We combine AI-assisted qualitative interviews and open-ended survey responses from 2,377 respondents with two experiments to explore the drivers of reform opposition. We show that opposition is prevalent and linked to subjective cost perceptions and anti-reform narratives emphasizing rising energy prices and government overreach. Subjective cost perceptions are only weakly tied to actual heating conditions and vary systematically with partisan identity. Even major policy redesigns fail to generate majority support. These results advance our understanding of when large-scale climate reforms fail.

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1 Introduction

Despite a broad public consensus on the importance of addressing climate change across high- and middle-income countries (Dechezleprêtre et al. 2025), policy reforms aimed at reducing carbon emissions face increasing voter opposition. Several democratic governments have recently retrenched mitigation policies, such as Canada's carbon tax repeal or the rollback of the IRA (Gazmararian et al. 2025, 14). A growing literature shows that ambitious climate policies can lead voters to sanction governments and increase support for the radical right (Bosetti et al. 2025; Colantone et al. 2024; Heddesheimer et al. 2025; Stokes 2016; Voeten 2025). These electoral risks may cause decarbonization reforms to be underprovided and short-lived (Mahdavi et al. 2022).

Previous contributions highlight how concentrated economic burdens, which often create distributional conflict (Aklin and Mildenberger 2020; Beiser-McGrath and Bernauer 2024; Genovese 2019), can lead to electoral backlash. Some argue that compensation schemes may create climate coalitions that render clean-energy reforms politically feasible (Bolet et al. 2024; Colantone et al. 2024; Gaikwad et al. 2022; Gazmararian 2024). However, climate policies coupled with compensation still generate widespread opposition (Gazmararian et al. 2026; Mildenberger et al. 2022), suggesting that material self-interest alone may not sufficiently explain the breadth and depth of public resistance to clean-energy reforms.

We explore the sources of voter opposition to renewable energy policies by focusing on individuals' cost expectations and the political narratives underlying anti-reform attitudes. We argue that these forces become particularly important when governments implement reforms under uncertainty, including uncertainty about their eventual design (Jacobs and Matthews 2012; Jacobs 2016), their distributional effects (Ali et al. 2025; Fernández and Rodrik 1991), and their survival following government turnover (Gazmararian and Tingley 2023). Under these conditions, individuals form cost perceptions that only imperfectly reflect objective exposure and instead draw on partisan identities and learned heuristics. In turn, voters also adopt political narratives about costs and government interventionism that ultimately stifle reform efforts (Dickson 2026).

To investigate these dynamics, we study Germany's 2023 Buildings Energy Act, a major reform aimed at decarbonizing the residential building sector. Endorsed by the Green Party in coalition with the Social Democrats (SPD) and Free Democrats (FDP), the so-called heating law promoted the phasing out of fossil-fuel heating systems used in 75% of German homes (DESTATIS 2024). After a ministerial draft leaked to the public in February 2023 before cabinet approval, the policy underwent multiple widely reported revisions until its passage in September 2023. The ensuing debate centered on household costs and the government's authority to regulate heating choices, with the far-right Alternative for Germany (AfD) offering the most scathing criticism. Even after enactment, the law's durability remained in doubt. Leading opposition parties campaigned on its repeal ahead of the 2025 federal election, and the new center-right-led government has since begun to retrench its core provisions.

Consistent with climate reforms studied in previous work (Colantone et al. 2024; Voeten 2025), the reform's provisions imposed concentrated costs on households relying on fossil-fuel heating systems. However, the unanticipated announcement of the reform plans, prolonged political disputes, revisions to the proposal, and a contentious legislative process that included an intervention by the German Constitutional Court allowed voters to form expectations long before any costs were realized. We argue that such conditions of high uncertainty facilitate the formation of anti-reform narratives and subjective cost perceptions, which extend well beyond those exposed to the reform.

To explore the origins of voter opposition to the heating law, we conduct qualitative interviews at scale via Artificial Intelligence (AI) chatbots combined with static open-ended questions fielded to a quota sample of 2,377 German respondents.[1] The survey includes several measures of support for the heating law and clean-energy reforms, more generally. The qualitative component of the survey consists of three blocks that address the law's perceived economic impact on households, its effects on political attitudes, and preferences over future reforms. We use a fine-tuned large language model

1. This study has been pre-registered at BLINDED FOR PEER REVIEW (see Appendix Section E) and approved by the IRB at BLINDED.

(LLM) to classify responses based on pre-registered topics and perform additional inductive analyses. We also explore how voter support responds to communicative cues, partisan endorsements, and policy design features through framing and vignette experiments.

Our analyses reveal that direct exposure to reform costs, which were concentrated among homeowners with fossil-fuel-based heating, is systematically linked to perceptions of greater economic exposure and increased reform opposition. However, objective household conditions cannot fully account for the observed variation in reform opposition. Voters' exposure perceptions instead often diverge from their actual heating conditions. Although one-third of respondents are homeowners reliant on fossil heating, nearly half expect to be directly economically affected by the law. These exposure perceptions strongly correlate with partisanship. While 37% of AfD voters own a fossil-fuel-based heating system, 60% report exposure to the law's provisions.

We then show that voters' substantive explanations of their perceived economic exposure often deviate from the law's proximate economic impacts. Every third subjectively affected voter invokes rising heating costs when explaining their economic exposure, and several responses link the law to behavioral adjustments in cutting heating and energy expenses. These results suggest that voters may have partly fused earlier energy price shocks with the reform into a narrative of excessive costs. Among fossil-fuel homeowners, concerns instead centered on heating system replacement costs.

Beyond aversion to economic costs, we find that opposition to the heating law is rooted in political reform narratives. Concerns about distributional fairness and perceptions of government overreach are prevalent among voters and strongly predict reform opposition, suggesting that voters rejected a reform perceived as an excessive intrusion into private investment decisions. We also find that perceptions of the reform as being overly paternalistic correlate with lower support for clean-energy policies more generally. Additional survey experimental evidence indicates that even the most favorable re-design of the heating law would fail to receive majority support. Moreover, a positive framing of the reform in terms of associated climate benefits fails

to outperform a negative economic framing, suggesting limited communication effects.

Our findings contribute to the literature on the mass politics of climate reforms (Bosetti et al. 2025; Carattini et al. 2018; Colantone et al. 2024; Heddesheimer et al. 2025; Otteni and Weisskircher 2022; Stokes 2016; Voeten 2025) by moving beyond the focus on concentrated economic exposure. The results highlight the role of narratives and subjective cost perceptions in understanding why clean-energy reforms can face broad political backlash (Andre et al. 2026; Andre et al. 2022; Bakker et al. 2020; Bisgaard and Slothuus 2018; Chong and Druckman 2007; Dickson 2026). We also speak to the political economy of climate policy instruments, where regulatory standards are often considered more politically palatable than price-based interventions because costs are more widely shared and less obvious (Alesina and Passarelli 2014; Beiser-McGrath et al. 2023; Dechezleprêtre et al. 2025; Jiang et al. 2026). Our findings suggest, however, that regulatory interventions may also raise cost perceptions and activate concerns about government overreach. Lastly, we add to an emerging literature in survey methodology by deploying AI interviews at scale to study the formation of policy preferences (Chopra and Haaland 2026; Geiecke and Jaravel 2026; Velez et al. 2025).

2 The Mass Politics of Climate Reforms

The growing literature on the electoral consequences of climate reforms documents that voters punish incumbent parties for implementing renewable-energy projects in their local areas (Otteni and Weisskircher 2022; Stokes 2016) and turn to the radical right when exposed to carbon-price shocks or regulatory restrictions that impose material costs (Bosetti et al. 2025; Voeten 2025; Colantone et al. 2024). These repercussions are amplified by the structural shocks confronting fossil-fuel communities, where declining competitiveness generates concentrated losses (Gazmararian 2025; Gazmararian and Krashinsky 2023; Heddesheimer et al. 2025; Stutzmann 2025).

While material self-interest is a key driver of backlash against clean-energy reforms, voters also evaluate these policies based on their broader distributional consequences. For example, reforms that allocate costs without accounting for economic disparities

reduce political support (Bechtel and Scheve 2013; Beiser-McGrath and Bernauer 2024; Mares et al. 2026). Several studies suggest that compensation schemes or just transition agreements may attenuate the backlash to decarbonization efforts (Bolet et al. 2024; Colantone et al. 2024; Gaikwad et al. 2022, 2025; Gazmararian 2024). At the same time, even policies that provide monetary transfers, such as carbon rebates, are often met with limited public enthusiasm (Mildenberger et al. 2022).

The literature also explores nonmaterial drivers of climate policy opposition, including opposition to global climate cooperation efforts. These studies show that policy approval hinges on policy sequencing, effectiveness beliefs, and international fairness (Bechtel et al. 2020; Bechtel et al. 2022; Bergquist et al. 2022). Recently, Tallent et al. (2026) find that voters may accept costly reforms even without material compensation if paired with symbolic policies that impose behavioral restrictions on elites.

2.1 Uncertainty, Narratives, and Support for Climate Reforms

Climate reforms can impose immediate and visible costs on individuals (Känzig 2026) and generate opposition concentrated among those most affected. However, multiple sources of uncertainty complicate the formation of accurate beliefs about personal exposure. At the policy formation stage, proposals remain subject to substantial revision before adoption and eventual enforcement, particularly in long-term policies such as clean-energy reforms (Jacobs 2016; Jacobs and Matthews 2012). Even after implementation, considerable uncertainty can persist about the level, distribution, and persistence of costs and benefits, as governments can renege on compensatory promises (Gazmararian and Tingley 2023). As a result, uncertainty about reform costs and their distributional impact can be sufficient to generate majority opposition, even when the reform is welfare-enhancing (Ali et al. 2025; Fernández and Rodrik 1991).

Climate policy reforms often occur amid uncertainty about policy design, distributional effects, and their longevity, given frequent government turnover in democracies. This uncertainty may generate scope for individuals to form subjective cost expectations, to rely on partisan identities, and to develop anti-reform narratives. We

define narratives about clean-energy reforms as structured sets of beliefs regarding the reform's economic, social, or political consequences. These may fuel widespread opposition that extends beyond those directly affected by a policy, ultimately inducing policymakers to abandon or roll back a reform.

2.2 The Substance of Climate Policy Narratives

Climate policy narratives that undermine reform support arise for informational and expressive reasons. The literature on partisan cues, framing, and persuasion (Bisgaard and Slothuus 2018; Chong and Druckman 2007; Iyengar 1996; Yeung 2024) suggests that political parties can strategically supply narrative frames that alter how voters weigh specific policy components and their effects.

As climate policy has become a wedge issue (Dickson and Hobolt 2025; Gazmararian et al. 2025), voters rely on party cues about policy impacts to form opinions under uncertainty (Bisgaard and Slothuus 2018; Boudreau and MacKenzie 2014; Bullock 2011; Merkley and Stecula 2021). Dickson (2026) shows that the radical right in the United Kingdom linked net-zero policies to rising energy costs in its mass communication. While such cues reduce information costs by serving as cognitive shortcuts (Lupia 1994), they also allow for identity expression among voters with strong partisan identities (Bakker et al. 2020). Consequently, individuals' policy evaluations may partly reflect partisan signals rather than economic self-interest.

However, policy narratives are also shaped by voters' economic experiences with clean-energy policies, which influence expectations about the future consequences of reforms through experiential learning and mental heuristics (Andre et al. 2022; Binetti et al. 2024; Graeber et al. 2024; Stantcheva 2021, 2024). Narratives about the costs of clean-energy policies can most directly be activated among individuals previously exposed to comparable interventions or to energy price shocks. First, clean-energy reforms can create self-undermining feedback effects (Jacobs and Weaver 2015) by activating memories of the costliness of similar policies. Second, this activation may be amplified by contextual conditions and party cues. For example, voters are

more likely to perceive climate action as economically harmful during economic crises (Abou-Chadi and Kayser 2017). Dickson (2026) demonstrates that greater exposure to energy price shocks increases radical right support and perceptions of excessive environmental regulation. This suggests that how voters attribute costs can determine support for long-term policies (Jacobs 2011).

The material costs that drive reform opposition are therefore processed in an environment where partisan and endogenous narratives drive economic expectations. These narratives may also influence broader views on whether government action intrudes on individual autonomy and consumer sovereignty. Regulations targeting household consumption and private assets may provoke concerns about government overreach and personal autonomy. Homeowners should be particularly reactive to such interventions (Ansell 2014; Hall and Yoder 2022), as they affect the value of their immobile assets. Moreover, the reform process itself may erode perceptions of government competence and policy effectiveness, thereby reducing support (Bergquist et al. 2022). Together, party cues and endogenous voter narratives about costs and government conduct may generate political resistance against climate reforms.

3 The Case: The German Heating Law Reform

To understand how cost perceptions and reform narratives undermine clean-energy transitions, we study the 2023 amendment to Germany's Buildings Energy Act, commonly known as the heating law (*Heizungsgesetz*). Advanced by the Green Party as a climate change mitigation effort, the reform aimed to decarbonize residential heating, a large emitting sector. A premature leak of the reform proposal and several revisions created substantial uncertainty about the policy's eventual provisions, distributional consequences, and durability, allowing diverse narratives about its adverse economic implications to develop among voters. Ahead of the subsequent election, opposition parties adopted identifiable positions on repealing the law, a commitment translated into legislation under the new center-right-led coalition government. The heating law therefore provides a valuable case for examining the public opinion foundations of

clean-energy reform failure.

3.1 Political Context and the Leaked Reform Proposal

The original heating law was a major policy initiative introduced in 2020 to decarbonize residential heating and to comply with the European Union's "Energy Performance of Buildings Directive" (BGB 2020). After taking office in 2021, the "traffic light coalition" (SPD, Greens, and FDP) set out to revise the legislation, with the central provision that newly installed heating systems would be required to use at least 65% renewable energy as of January 2025. However, in response to anticipated supply disruptions following Russia's invasion of Ukraine, the government advanced implementation by one year (BMWK 2022). The policy aimed to phase out heating systems primarily powered by gas, oil, and coal, which supply 75% of homes (DESTATIS 2024).

In late February 2023, several media outlets reported on a leaked draft proposed by Robert Habeck (Green Party), Minister for Economic Affairs and Climate Action, prematurely revealing its key provisions. The official draft publication in early March reiterated the 65% renewable-energy mandate for newly constructed heating systems while allowing for differentiated transition periods and possible extensions of subsidies (BMWK 2023). Nevertheless, the amendment was widely perceived as imposing a blanket ban on gas- and oil-fired heating systems beginning in the new year.

When the cabinet approved the draft bill in April 2023, the law became the focus of intense public debate, fueled by uncertainty about the feasibility of adopting renewable technologies such as heat pumps at scale, the financial burden on homeowners, and the opacity of the legislative process (Jost et al. 2024; Loschke et al. 2026). Uncertainty persisted as the reform process was prolonged by a Constitutional Court intervention after Members of Parliament challenged the legislative procedure, which delayed the parliamentary process by several weeks. The amendment was eventually passed on September 8, 2023, retaining the reform's core provisions while adjusting the implementation timeline to meet context-specific needs. Heating systems installed before 1991 remained subject to an outright ban, while those installed thereafter could

continue operating for up to 30 years (BGB 2020). The law also introduced a 30% subsidy for qualifying costs, with an additional bonus for low-income households.

The heating law debate was accompanied by a substantial decline in government approval (Faas and Klingelhöfer 2026, 1120). Support for the Green Party and the Social Democrats, which had already begun to erode, continued to fall, while the radical-right AfD gained popularity (Appendix Figure B1). After the coalition's breakup in November 2024, the law resurfaced in media debates as a central driver of internal tensions within the coalition. More importantly, the policy process led to broader shifts in party positions on climate policy. Although the CDU/CSU had introduced the original law in 2020, it moved away from supporting clean-energy reforms. Christian Democrats, Social Democrats, and Free Democrats all placed markedly less emphasis on environmental protection in the 2025 election than in 2021. The CDU/CSU, in particular, pledged to repeal the law while emphasizing economic freedom and individual choice: "You know best which type of heating system fits your property and your wallet" (Lehmann et al. 2025, 394). The radical-right AfD, which fundamentally opposes climate reforms, also criticized the reform as excessive state intervention that imposed costs on households (Haas et al. 2025, 3). Following the snap election of 2025, the center-right-led government has begun reversing key provisions of the reform.

3.2 The Heating Law Reform: Empirical Expectations

The heating law would affect German households directly by requiring the replacement of existing fossil-fuel heating systems and, to a lesser extent, through landlord cost pass-throughs. While the government argued that operational savings would eventually offset the upfront investment, projected costs were widely expected to outweigh these benefits. Half of existing buildings are unsuitable for heat pumps and would require retrofitting (Kistinger et al. 2025; Söllner 2023, 621–623). In turn, Kistinger et al. (2025) show that, in the 2023 Bavarian and Hessian state elections, municipalities most affected by the law shifted away from governing parties toward the radical right. Dertwinkel-Kalt and Grossmann (2025) demonstrate that information about the law

does not systematically shift public support.

We explore the deeper sources of mass opposition to the heating law beyond electoral realignment, including among voters who rejected the law without shifting their party preferences. Given the intense public debate and several changes to the reform proposal, voters formed beliefs about the policy's implications early under conditions of incomplete information and without immediate cost exposure. This created scope for partisan cues and endogenous narratives to shape opposition. Moreover, as the reform effectively prescribed the adoption of specific technologies in private households, it may have heightened perceptions of excessive intrusion into private life, including constraints on consumer autonomy in household decisions and property use. Lastly, the law also coincided with the lingering effects of a prior gas price shock and subsequent efforts to reduce gas consumption (Dertwinkel-Kalt et al. 2024). This experience may have led voters to rely on existing heuristics of expecting higher costs and greater economic burdens. As a result, narratives about economic costs, government overreach, and policy failure should be key drivers of opposition to the heating law.

4 Research Design

To study mass opposition to the heating law, we fielded a survey to a quota sample of 2,377 German respondents in December 2024 and January 2025.[2] The survey collects quantitative and qualitative information about respondents' attitudes toward the heating law, personal exposure, political evaluations, and views on climate policy. The core of the survey instrument consists of AI interviews that follow the architecture of conventional semi-structured qualitative interviews (Chopra and Haaland 2026; Geiecke and Jaravel 2026) and a battery of open-ended questions. We also embed a framing and a vignette experiment within the survey to estimate how voter preferences respond to rhetorical frames and policy design elements. Appendix A1 provides information

2. We fielded the survey to a quota sample of the German adult population provided by *Bilendi*. Table A2 reports target quotas and realized shares in our sample. We find no substantial discrepancies between population and sample margins for sex, age, and federal state. We note an overrepresentation of respondents with upper secondary education by about 10 percentage points. We therefore report results using stratification weights in Appendix B.3. The findings remain substantively unchanged.

about the experimental design and question item sequencing.

Structure of the Survey and Outcomes

We first collect respondents' background characteristics and screen out respondents who fail a standard attention check. Subsequently, we elicit attitudes toward political parties, public policies, and the heating law, including overall approval, support for its 65% renewable energy requirement, and views on government heating mandates.[3] We also examine broader support for climate policies, including carbon taxes, bans on nonrenewable technologies, and a constant-sum item eliciting voters' policy priorities among salient issues ahead of the 2025 election. Respondents then proceed with the main part of the survey, where they enter a qualitative interview either conducted by an AI chatbot or through open-ended questions about the heating reform and climate policies. Then, we ask them to evaluate a vignette of a hypothetical renewable energy policy with several key design features. Finally, respondents complete questions on the characteristics of their household, including their heating conditions.[4]

4.1 Qualitative Interviews

We elicit voters' experiences with and beliefs about the heating law by assigning half of our respondents to an AI chatbot interview, while the other half receive static open-ended questions. Powered by OpenAI's GPT-4o, the chatbot is instructed to conduct semi-structured qualitative interviews with respondents; Appendix A.2 details its technical setup. We embed the chatbot within the survey environment to ensure a seamless transition from closed-ended items to the qualitative interview.

The qualitative component consists of three substantive blocks. First, we explore respondents' narratives about their material exposure to the heating law, aiming to understand whether they have made or are considering behavioral decisions in response to the law and its financial implications. The second block focuses on whether and how these experiences have influenced respondents' attitudes toward political parties

3. Descriptive statistics and item wording are listed in Appendix B1.
4. Figure A1 illustrates the detailed survey structure.

and climate policy. Third, we examine respondents' preferences over future climate policy, focusing on reforms likely to receive sufficient public support.

We administer the chatbot interviews and static open-ended question conditions in structurally analogous formats. We hard-code the opening questions for each chatbot block to match the corresponding self-administered open-ended questions, facilitating comparability across interview modes for the initial questions in each block. While respondents in the open-ended questions condition sequentially answer the three questions and proceed to the next page, the chatbot dynamically generates probing questions based on respondents' previous responses and our instructions. We expect this to enhance the informational richness of qualitative survey responses. The common opening questions for all three blocks are:

1. How has the heating law affected the economic situation of your household?
2. How has the heating law affected your perceptions of politics and political parties in Germany?
3. In your view, how should climate policy in Germany be designed in the future?

4.2 Eliciting Anti-Reform Narratives

To explore the narratives and beliefs voters draw on when reasoning about their exposure to the heating law and its effects on their political preferences, we preregistered theoretically motivated themes expected to influence evaluations of the law and clean-energy reforms. We begin with *economic exposure*, which captures whether respondents felt materially affected by the law, including realized or anticipated costs related to heating system replacement, energy expenses, or other financial burdens. We distinguish this from *exposure uncertainty*, which reflects uncertainty about affectedness.

Next, we include *distributional fairness* and *compensatory measures* to measure concerns about how costs and benefits are distributed and whether respondents emphasize the provision of financial subsidies (Aklin and Mildenberger 2020; Beiser-McGrath and Bernauer 2024; Bolet et al. 2024). We also consider several political narratives surrounding the reform's implementation. *Government overreach* captures perceptions

that the policy intruded excessively into households' economic decisions. *Policy process opacity* reflects views that the reform plans were difficult for households to understand. *Policy effectiveness* captures whether respondents evaluated the law in terms of its environmental impact, including emissions reductions and climate mitigation. Lastly, *political campaigning* refers to beliefs that opposition to the law was driven by coordinated political or media campaigns rather than the policy's substance.[5]

To identify these narratives in respondents' answers, we annotate the interview transcripts of the first two blocks of both the AI chatbot interviews and open-ended questions using fine-tuned LLMs. First, research assistants manually code interview samples (200 per mode) according to our preregistered list of drivers of preferences regarding the heating reform. Coders also assess whether a transcript contains meaningful responses rather than single-word answers, nonsensical statements, or repeated generic phrases. Second, we randomly sample 100 manually coded transcripts to fine-tune the gpt-4.1-mini-2025-04-14 model. We then use the fine-tuned LLMs to annotate validation datasets from both interview conditions to evaluate model performance.[6] Finally, we use the fine-tuned models to annotate all remaining interview transcripts. To leverage the informational richness of our interviews, we complement our deductive coding with inductive theme extraction using an LLM for each interview block. Following Geiecke and Jaravel (2026), we prompt the LLM to identify salient themes from respondents' statements and response summaries, which are then classified as question-answer pairs.[7]

A methodological challenge in analyzing our interviews is that some themes may be introduced by the LLM rather than by respondents, potentially overstating their importance for preference formation. To address this concern, we classify interviewer questions, allowing us to track the sequence in which themes appear. We then implement an initiative adjustment that accounts for mentions of themes initially introduced by the interviewer rather than the respondent.

5. This theme was added after the initial study pre-registration (see Appendix Section E.3). The full description of each theme is available in Appendix Section A.3.
6. For performance metrics of the pretrained models, see Appendix Figure A4.
7. For more information, see Appendix Section A.4.

4.3 How Elastic are Heating Law Reform Preferences?

We also examine the elasticity of voter support for a renewable heating policy reform and its potential redesign through two experiments. First, a framing experiment examines whether respondents' attitudes toward the heating law respond to frames that characterized the policy debate. Before stating their heating law preferences, two-thirds of respondents were randomly assigned to either a positive framing emphasizing the law's environmental benefits or a negative framing highlighting its economic costs. Although respondents had already been exposed to the public debate, the experiment helps assess whether reform support responds to benefit- and cost-oriented communication. Respondents were assigned to one of the following prompts:

- *Climate Benefits Frame*: "Some believe that the heating law contributes to combating climate change."
- *Household Costs Frame*: "Some believe that the heating law imposes excessive costs on homeowners and private households."

Respondents read the statement for at least five seconds before proceeding to questions about public policy, party preferences, and the heating reform.

Second, we devise a vignette experiment that contains key design features of a hypothetical heating reform in the residential building sector. The selected dimensions capture cost and compensatory design considerations, including financial costs to households, subsidies, installation deadlines, and the party endorsing the proposal.

Table 1: Dimensions and Attribute Values of the Vignette Experiment

Dimension	Attribute Values
Cost per household	€10,000, €20,000, €30,000, €40,000
Deadline for installation	2026, 2032, 2038, 2044, 2050
Subsidy for low-income households	30%, 50%, 70% of the costs
Proposal endorsed by	SPD, CDU, Greens, FDP, AfD

Each respondent is randomly assigned to one level of each experimental attribute displayed in Table 1. The order in which attributes are shown is randomized. Respon-

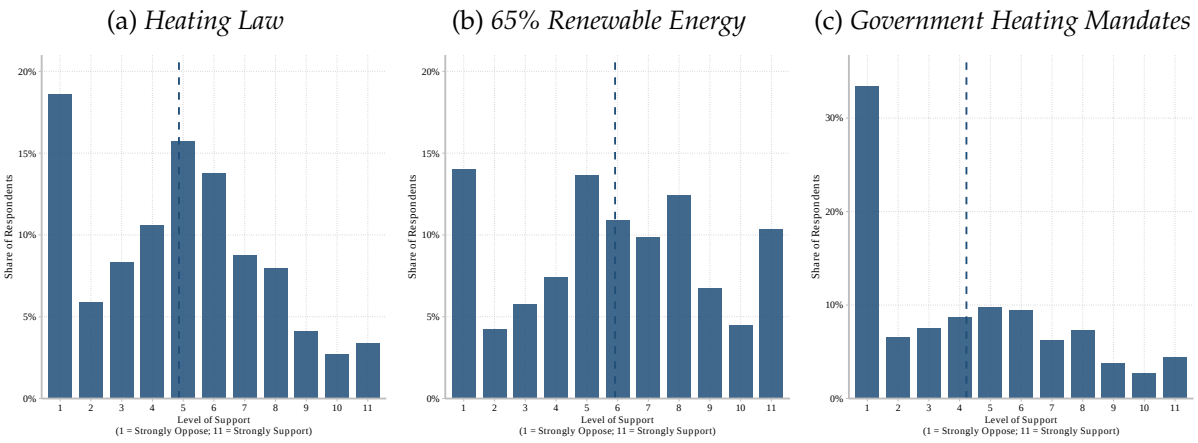
dents indicate their support for the hypothetical policy on an 11-point scale. This design allows us to gauge the political feasibility of heating reforms and to identify the causal effects of party cues on policy support while holding constant key policy design features.

5 Results

5.1 Explaining Support for the Heating Law

We begin our analysis by examining average levels of support for the heating law, its 65% renewable energy requirement target, and support for renewable energy heating mandates. Figure 1 shows significant opposition to the reform. Panel (a) indicates that voters generally hold negative views of the heating law, with an average rating of 4.9 on an 11-point scale. The median respondent rates the law at 5, indicating that it indeed fails to receive majority support. Across all outcome measures, a substantial share of respondents reports the lowest possible level of support. Although respondents are somewhat more supportive of the 65% renewable energy requirement, a relevant fraction still rejects the policy outright (Panel (b)). Opposition is strongest toward government mandates for renewable energy heating systems, with every third respondent expressing the highest possible level of disapproval (Panel (c)).

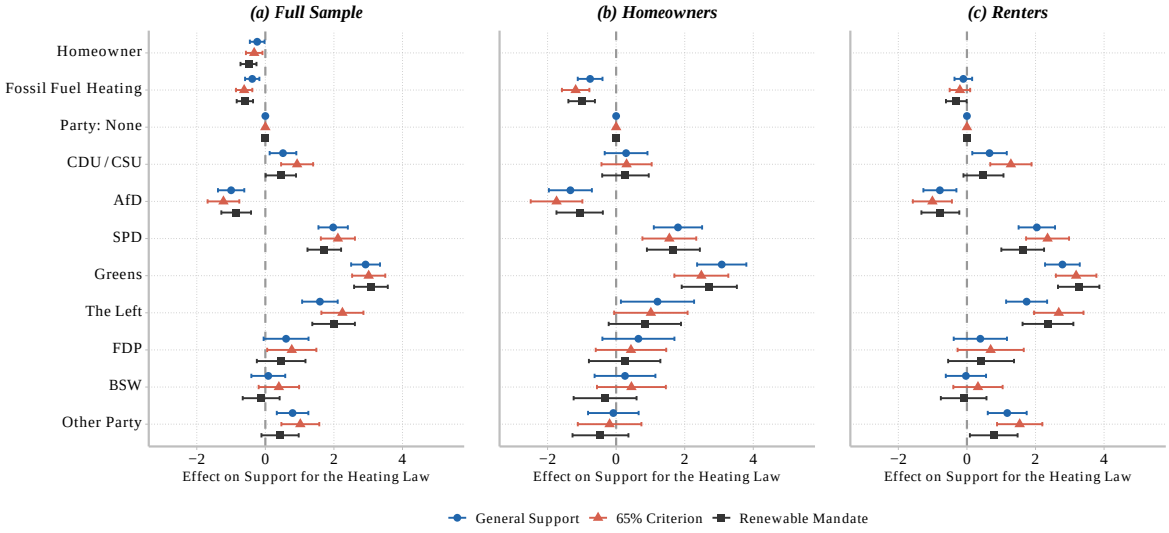
Figure 1: Distribution of Mass Support for the Heating Law



Notes: This figure shows the distribution of support for three policy items related to Germany's 2023 heating law (N = 2,377): overall support for the law, support for the requirement that newly installed heating systems run on at least 65% renewable energy, and support for government mandates requiring households to install environmentally friendly heating systems. Vertical dashed lines indicate average levels of support. Note that y-axes vary across panels. Error bars represent 95% confidence intervals.

To investigate the correlates of opposition to the heating law and renewable energy heating systems, we regress our indicators of reform opposition on whether respondents rely on fossil-fuel heating, homeownership, and partisan orientation, controlling for several demographic characteristics. Our results show that attitudes toward the heating law are systematically linked to individual-level characteristics that measure household exposure to its economic provisions. The estimates in Panel (a) of Figure 2 suggest that homeowners and respondents with fossil-fuel-based heating systems are overall less supportive of the heating law, its pivotal 65% clean-energy requirement, and government mandates for renewable heating systems. In terms of levels, average support for the heating law is 4.6 among respondents with fossil-fuel heating systems, compared to 5.3 in the remainder of the sample.

Figure 2: The Individual-Level Correlates of Support for the Heating Law



Note: This figure presents the estimated coefficients for homeownership, fossil-fuel-based heating systems, and party identification on different components of support for the heating law amendment. All models control for age, sex, education, and income. The results are shown separately for all respondents (N = 2,362), homeowners (N = 1,002), and renters (N = 1,360). The dependent variable is measured on an 11-point scale ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"). Error bars represent heteroskedasticity-robust 95% confidence intervals. Appendix Table C1 reports the full regression results.

Panels (b) and (c) reveal that the relationship between fossil-fuel reliance and opposition to the heating law is predominantly driven by homeowners. Quantitatively, fossil homeowners express on average one percentage point less support for the reform than other homeowners, both with respect to the 65% requirement and to heating

mandates, while the effect among renters is statistically insignificant (Panel (c)). This is consistent with homeowners bearing the immediate costs and logistical burden of replacing gas- or oil-powered heating systems with renewable energy alternatives.

We also show that support for the heating law varies markedly with partisanship. Consistent with existing accounts of the electoral effects of climate policy, AfD voters exhibit the strongest opposition, while supporters of the Greens and other left parties are more supportive of the renewable energy transition in residential heating. Indeed, the association between party preferences and policy support is larger in magnitude than that of respondents' heating conditions. Next, we explore two potential accounts that are in part linked to the partisan cleavage observable in opposition to the heating law: subjective cost exposure and anti-reform narratives.

5.2 Objective and Subjective Economic Exposure to the Heating Law

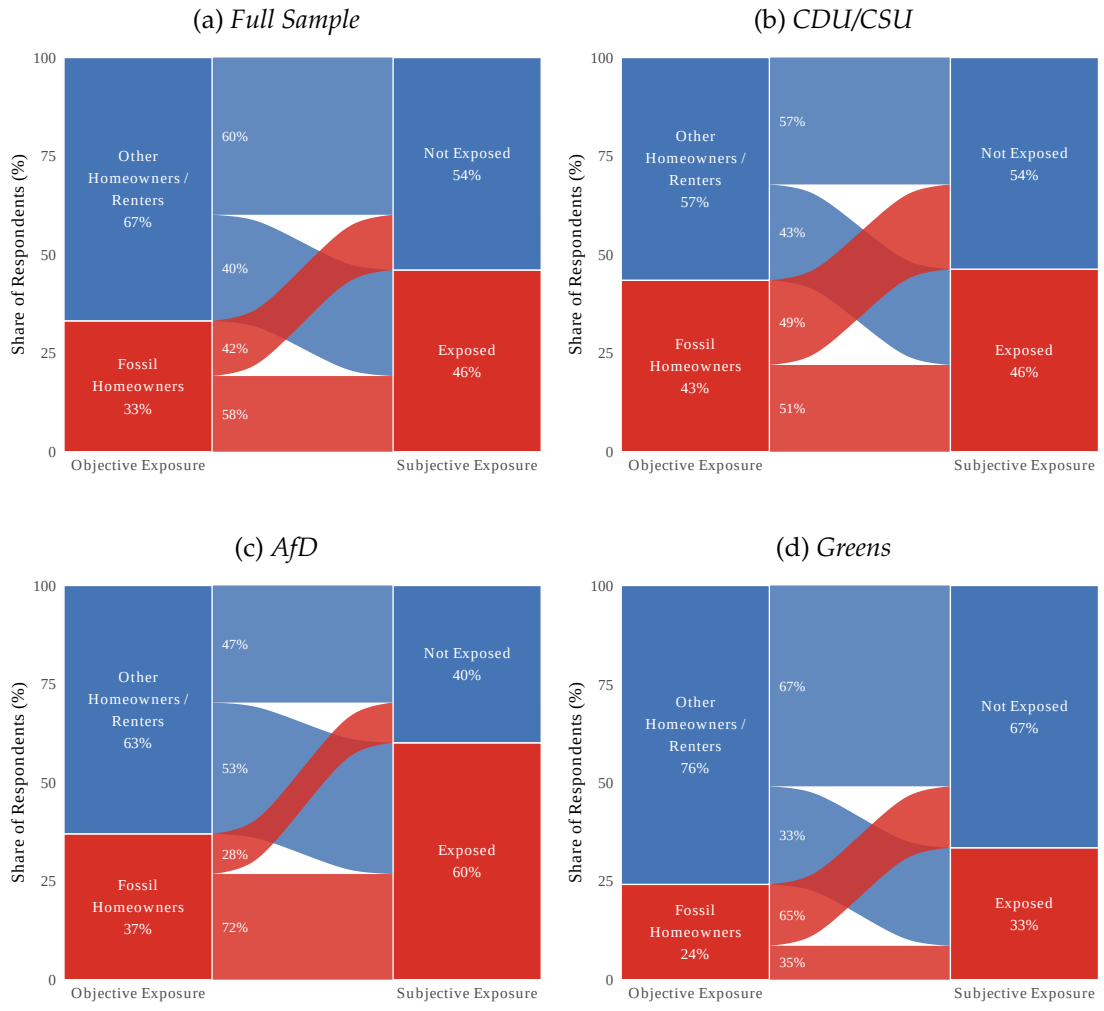
While material exposure is associated with attitudes toward clean-energy policies, we argue that, under conditions of uncertainty, individuals also form subjective cost expectations. To explore voters' perceptions of economic exposure to the heating law, we turn to the first block of our AI interviews and open-ended questions.

Building on Figure 2, we distinguish between two groups: (1) fossil homeowners, who use gas, oil, or coal for residential heating, and (2) renters and homeowners with renewable heating systems. We define objective exposure to the heating law's provisions based on fossil-fuel homeownership because these households must arrange and finance the transition to a new system, with limited scope for delay. By contrast, renters' exposure depends more indirectly on landlord decisions about cost pass-through, and they retain more flexibility through relocation. Appendix Table B2 shows that fossil-fuel heating does not predict exposure perceptions among renters.

Using our indicator of fossil-fuel homeownership, we examine the extent to which objectively most exposed and less exposed individuals exhibit subjective perceptions of exposure. Panel (a) in Figure 3 illustrates the prevalence of both objective and subjective exposure and how respondents transition from objective to subjective exposure

categories. The figure shows that subjective exposure varies systematically with objective exposure. Nearly 60% of fossil homeowners, the group most exposed to the law, mention economic consequences of the reform for their households, compared to 40% among less-exposed respondents. At the same time, a substantial share of less-exposed voters also anticipate economic effects on their households. Although fossil homeowners account for around one third of the sample, the overall share of respondents perceiving themselves as economically affected rises to 46%.

Figure 3: Objective Exposure and Subjective Perceptions of Economic Exposure to the Heating Law by Party Identification



Note: The plots report the breakdown of objective economic exposure and subjective perceptions of exposure to the heating law across respondents' party affiliation. Left column: homeowners with fossil-fuel heating versus other homeowners and renters. Right column: respondents who report economic exposure in interviews or open-ended responses ("exposed") versus those who do not ("not exposed"). Each cell shows the percentage of all respondents within the respective category. Irrelevant responses due to lack of serious engagement were excluded ($N = 343$, 14.7%; 9.6% AI; 19.5% open-ended).

Perceived economic exposure corresponds imperfectly to likely material affectedness. This may reflect incomplete information, idiosyncratic contextual forces, or measurement error. However, we suggest that this incongruence is at least partially driven by narratives about the prospective impact of climate reforms. As such, some respondents may perceive high subjective costs because partisan identity or learned heuristics amplify their expectations about the reform's consequences.

We explore this dynamic by comparing how objectively exposed and less-exposed individuals interpret their affectedness across partisan groups. Panels (b)–(d) in Figure 3 map the flow from objective to subjective economic exposure among supporters of the CDU/CSU, AfD, and Green Party. We find that the gap between subjective and objective exposure is strongly related to partisanship. Among center-right supporters, who have the highest rate of fossil-fuel homeownership (43%), the rate of subjective exposure (46%) closely aligns with objective exposure on aggregate.

In contrast, AfD voters are far more likely to perceive themselves as economically affected than their reported heating conditions would suggest. While about 37% are fossil-fuel homeowners, 60% of AfD voters report economic burdens attributed to the reform. Objectively exposed AfD supporters are more likely than fossil homeowners from other parties to reason in terms of economic exposure, yet even among the less-exposed, around half perceive themselves as affected. Notably, nearly two-thirds of materially exposed Green Party supporters report no economic consequences for their households, while 33% of less-exposed voters nonetheless describe some form of economic impact.

We then examine the relationship between objective and subjective economic exposure more systematically by estimating their associations with party support, using both vote choice and party rankings as our dependent variables. The descriptive regressions in Table 2 underscore the pivotal role of partisanship. While objective exposure is associated with an 8-percentage-point increase in the propensity to support the center-right, subjective economic exposure does not predict center-right voting. In contrast, salient exposure perceptions are significantly correlated with AfD support,

whereas objective exposure is not.

At the same time, subjectively exposed voters show a striking 12-percentage-point higher likelihood of supporting the AfD, and place it more than three-quarters of a rank higher in their party rankings. The reverse patterns materialize for center-left parties and the radical left. Perceptions of subjective exposure are consistently associated with lower support for Social Democrats, the Left party, and especially the Greens. Thus, whereas the center-right remains the leading political force among fossil homeowners, the AfD ranks first among voters who perceive themselves as economically exposed.

Table 2: Objective and Subjective Economic Exposure to the Heating Law and Party Preferences

Dependent Variables:	*CDU*	*AfD*	*SPD*	*Greens*	*Left*
	(1)	(2)	(3)	(4)	(5)
Panel (a): Vote Intention					
Objective Economic Exposure	0.081***	0.001	0.039**	−0.024*	−0.019**
	(0.020)	(0.019)	(0.017)	(0.014)	(0.008)
Subjective Economic Exposure	0.003	0.121***	−0.047***	−0.041***	−0.027***
	(0.018)	(0.018)	(0.014)	(0.014)	(0.008)
Panel (b): Party Ranking					
Objective Economic Exposure	0.320***	−0.071	0.215***	−0.116	−0.197***
	(0.077)	(0.117)	(0.076)	(0.098)	(0.076)
Subjective Economic Exposure	0.144**	0.840***	−0.437***	−0.778***	−0.303***
	(0.072)	(0.109)	(0.070)	(0.092)	(0.072)
N	2,326	2,326	2,326	2,326	2,326
Demographic Controls	✓	✓	✓	✓	✓
Interview Mode FE	✓	✓	✓	✓	✓

Notes: *p<0.1; **p<0.05. ***p<0.01; This table reports the estimated coefficients from linear regressions of party preferences on objective and subjective economic exposure to the heating law. Party preferences are measured as expected vote choice (binary) and inverted party rank (1=lowest; 7=highest). Subjective economic exposure is defined using trained LLM classifications of interviews and open-ended question responses. Objective economic exposure is defined as being a homeowner with a fossil fuel heating system. Demographic controls include age, sex, education, university degree, and income. Heteroskedasticity-robust standard errors are in parentheses. Appendix Table C2 reports the full regression results.

While the strong alignment between AfD support and subjective exposure perceptions could partly reflect voters who perceived themselves as exposed switching partisan alignments to the law's most adamant opponent, the magnitude of these estimates suggests instead that AfD voters followed partisan cues when reasoning about their own affectedness. In the second interview block, we also find little evidence of self-

reported changes in partisan identity (Appendix Figure B10). Although roughly 12% mention declining support for the Green Party, many frame this as a sociotropic perception rather than as a change in their own voting behavior.

Overall, these patterns provide an explanatory basis for the pronounced partisan cleavages in opposition to the heating law, suggesting that partisan orientation and cues influenced individuals' expectations about their personal affectedness in ways that departed from their actual heating conditions.

5.3 How Voters Reason About Economic Exposure

Which narratives do voters rely on when forming exposure perceptions to the heating law, and to what extent are these rooted in the law's economic effects? To investigate this question, we employ an LLM to inductively identify core themes in interviews and open-ended responses, followed by automated classification (Appendix Section A.4).

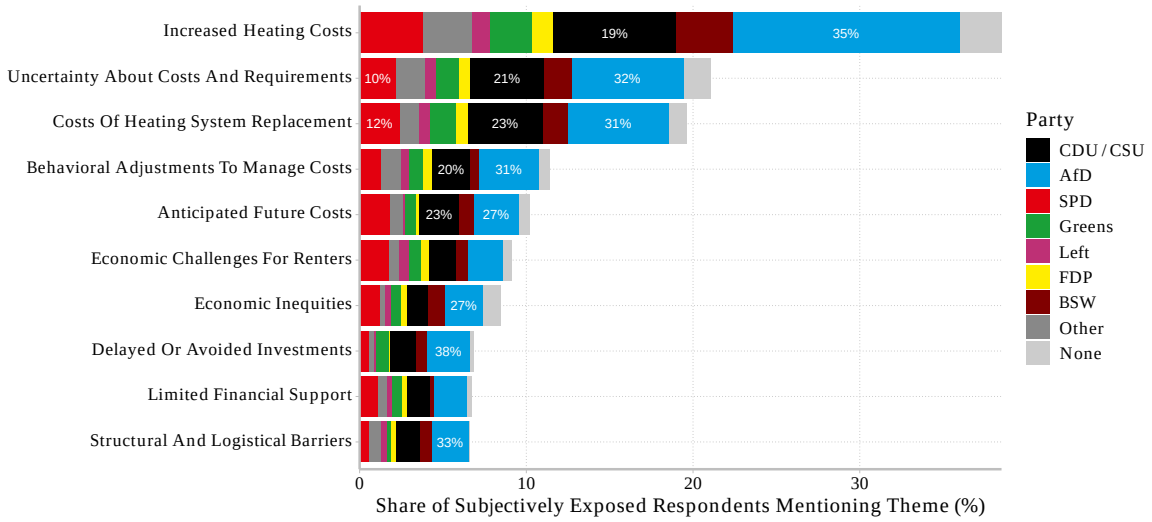
Figure 4 shows that respondents most commonly attribute their perceived economic exposure to rising heating costs, with nearly 40% of subjectively affected respondents offering this explanation. Several respondents highlight behavioral adjustments to manage these expenses. As one female respondent, owner of an electricity-based heating system, explained: "We lowered the temperature to save on heating costs. Some rooms are not heated at all, others only occasionally."[8] A smaller share of respondents explicitly connects the heating law to rising pass-through costs for renters.

In addition to heating costs, several individuals also emphasize the considerable uncertainty surrounding the law's costs and requirements. Representative of this concern, one male homeowner with an oil-based heating system highlights the lack of transparent information about costs and subsidies, arguing that "with the government constantly going back and forth, it's easy to lose track." About 20% explicitly mention the financial burden of replacing an old heating system, arguably the most direct economic consequence of the reform. As a result, voters trace their exposure to the heating law only partly to its concrete material impacts, such as replacement costs,

8. The examples presented in this section are systematically drawn from our corpus via an LLM instructed to find representative statements.

limited financial support, or logistical challenges.

Figure 4: Measuring Explanations of Economic Exposure to the Heating Law



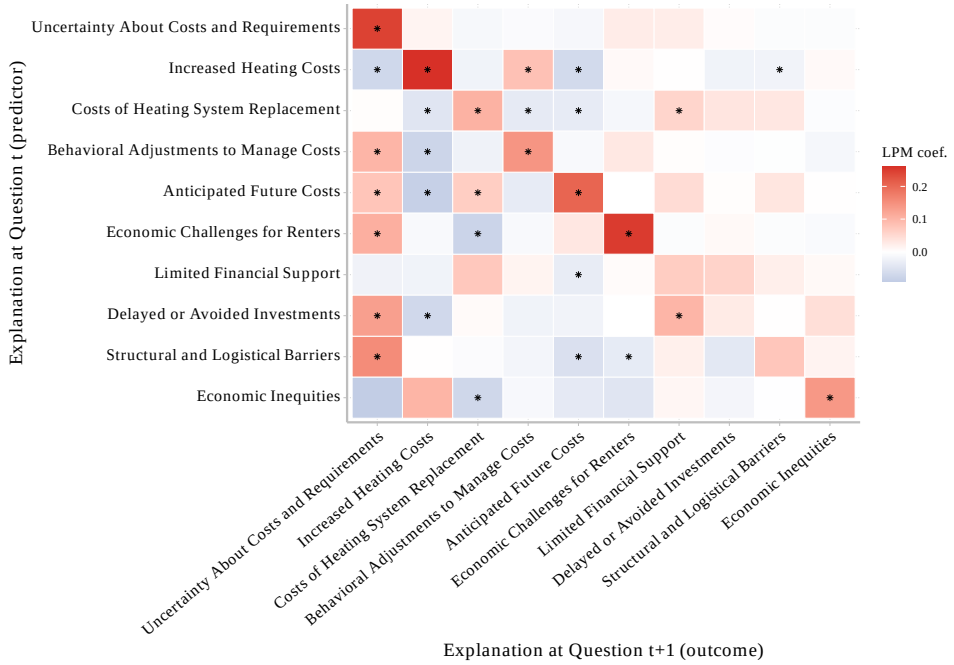
Note: This figure shows the relative prevalence of respondents' explanations of their economic exposure to the heating law across partisan identity ($N = 922$). The party colors and labels illustrate the relative frequency of partisans within each theme. The economic exposure condition is derived from our deductive classification procedure. The explanations are identified and classified by an automated LLM. For additional information, see Appendix Section A.4.

The gap between voters' narratives about the heating law and its proximate economic effects admits several interpretations. Voters may incorrectly attribute rising heating costs to the law due to the proliferation of partisan cues. Accordingly, we find that, even as AfD voters are already overrepresented among those subjectively exposed, they are more likely to cite heating costs as a source of this exposure (Appendix Figure B6). By contrast, fossil homeowners are less likely to mention heating costs and instead emphasize the expense of system replacements. Yet the salience of heating costs across partisan groups indicates that these perceptions are not solely driven by cues or motivated reasoning. Instead, cost concerns appear top of mind across partisan camps when evaluating the consequences of clean-energy reforms.

The focus on heating costs implies that the law, announced amid broader energy price shocks, created perceptions of policy consequences beyond the reform's direct economic effects. This could indicate that voters misattributed the price surge to the heating law, or were unable, in retrospect, to distinguish the effects of the energy crisis from those of the heating reform. Voters may also draw on prior experience with climate policies that have raised energy prices (Känzig 2026). Alternatively, these re-

sponses may reflect rational expectations under uncertainty, as voters anticipated that the law would lead to rising heating costs in the future.

Figure 5: Reasoning Chains Among Subjectively Exposed Respondents



Note: The figure traces how the explanations respondents give at one interview question relate to those they give at the next. For each of the ten inductively derived themes, we estimate a linear probability model (LPM) in which the presence of that theme at question $t+1$ is regressed on the presence of all themes at question t, with question-number fixed effects and standard errors clustered by respondent. Each cell reports the coefficient of a theme at t (row) on a theme at $t+1$ (column). The diagonal captures persistence of the same theme across questions. Red cells indicate positive associations, blue cells negative ones. Asterisks mark coefficients significant at the 5% level. The sample comprises individual responses from respondents classified as subjectively exposed under the block-based coding ($N = 507$ respondents, yielding 1,782 response pairs). Appendix Table C3 reports the full regression results.

Although our narrative themes distinguish between anticipated future costs and realized heating costs, we further examine this possibility by analyzing the reasoning chains of subjectively exposed respondents in the AI chatbot condition. Figure 5 shows how the presence of one explanation predicts the subsequent emergence of another in the first interview block. First, the results indicate that voters' reasoning chains are not completely erratic or eclectic. Instead, we find that dominant narratives persist and structurally correlate across response pairs: explanations focusing on increased heating costs are more likely to reoccur in subsequent responses and are negatively associated with the expression of high uncertainty about costs. Also, references to rising heating costs are more likely to be followed by highlighting behavioral adjust-

ments to cut costs. Conversely, respondents raising issues related to heating-system replacement costs subsequently express dissatisfaction with limited financial support. This suggests that, when probed about the nature of heating costs, respondents exhibit somewhat plausible and consistent reasoning chains in which they double down on concrete cost-related explanations.

5.4 Political Narratives About the Heating Law

So far, economic exposure is associated with support for the heating law's key provision, but perceived exposure often diverges from voters' actual heating conditions. These perceptions vary systematically by partisanship. Radical-right supporters are more likely to see themselves as economically exposed, whereas voters with affected heating systems tend to favor the center-right. Voters most commonly explain their exposure through the experience of rising heating costs. This interpretation extends well beyond radical-right voters, suggesting that broader inflationary pressures are at least partly attributed to the heating reform.

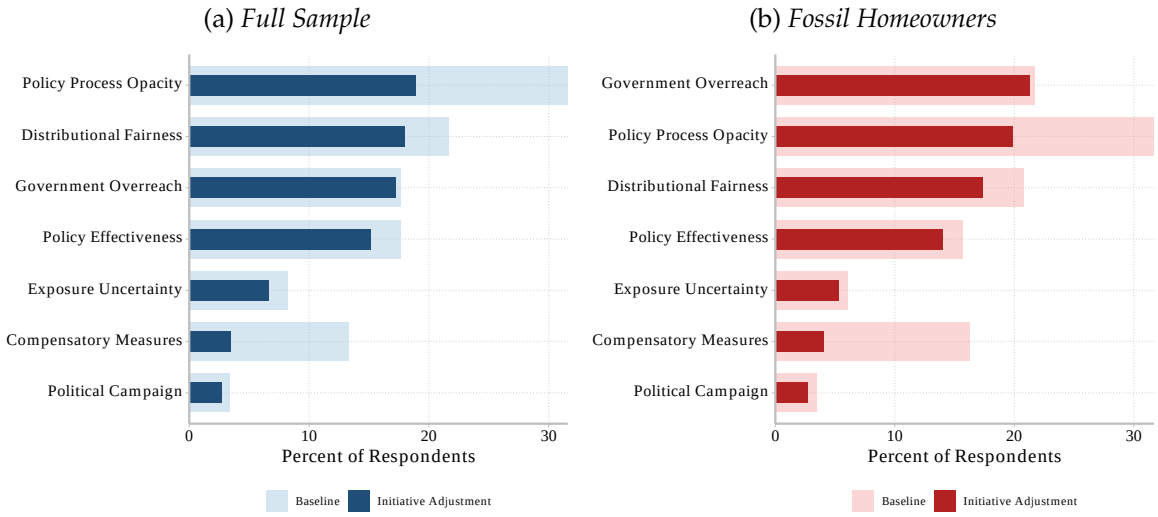
However, people's preferences for clean-energy reforms and the heating law in particular are not only shaped by expected and experienced economic exposure but also by the political narratives they developed. We therefore turn to our full set of preregistered themes to examine how voters evaluate the reform politically, and how it, in turn, affects general opposition to climate policies. As discussed previously, we use classifications of our AI interviewer's questions to perform an initiative adjustment of theme prevalence at the individual level.

Figure 6 shows the prevalence of each political theme for both the full sample and fossil homeowners. In the full sample, one in five respondents criticizes the opacity of the policy formation process. These concerns primarily target unclear government communication regarding the law's provisions, including its subsidy schemes. Respondents also emphasize the frequent amendments to the legislation, which generated additional uncertainty.

Beyond concerns about the policy formation process, a substantial share of respon-

dents expresses dissatisfaction with the heating law's distributional fairness. Many respondents argue that financially constrained homeowners should receive greater support, whether through higher subsidies, exemptions, or full state coverage of heating system replacements. One male owner of an oil-based heating system, supporter of the left-conservative BSW, explains: "Subsidies should be tied to income levels, or socioeconomic inequality will continue to increase. Individuals who have managed to save enough to purchase a home should not be compelled to sell it due to an inability to finance a heating system conversion." Despite the strong emphasis on distributional consequences and procedural opacity, respondents rarely mention subsidies independently before the AI interviewer introduced the topic.

Figure 6: The Relative Prevalence of Narratives About the Heating Law



Note: This figure shows the relative prevalence of narrative themes in open-ended text responses and chatbot interviews. We distinguish between homeowners with fossil-fuel heating systems and all remaining respondents. The initiative adjustment codes respondents who mention a theme only after it is introduced by the AI interviewer as zero.

Although critiques of policy opacity and distributional fairness are most prevalent in the full sample, fossil homeowners—those objectively most affected by the reform's provisions—emphasize that the reform represented government overreach and an undue intrusion into their personal economic autonomy. Such concerns appear in 22% of interviews and open-ended text responses among fossil homeowners. Moreover, whereas the AI interviewer partly prompts respondents to reflect on distributional consequences and the policy process, narratives of government overreach were ex-

clusively and proactively raised by our respondents. These results are consistent with the pronounced aversion to government mandates in Figure 1.

The perception of government overreach is partly underpinned by a sense of paternalism. One female homeowner and supporter of the center-right stated that "the majority of the population feels sidelined and that decisions are being made for them." Another homeowner, despite relying on a comparatively less exposed wood-based heating system, characterized the policy as "an intrusion into [his] privacy." These concerns were also linked to financial burdens. For instance, a male AfD supporter argued that "if the government wants this, they should also cover all the costs."

Do voters' narratives about the heating law, beyond their party alignments and objective conditions of economic exposure, affect their clean-energy reform preferences? We examine this by estimating the association of narrative presence with general and specific support for the heating law. Moreover, we examine whether voters' reform narratives spill over to their broader support for carbon taxes and regulatory restrictions on the use of emission-intensive technologies.

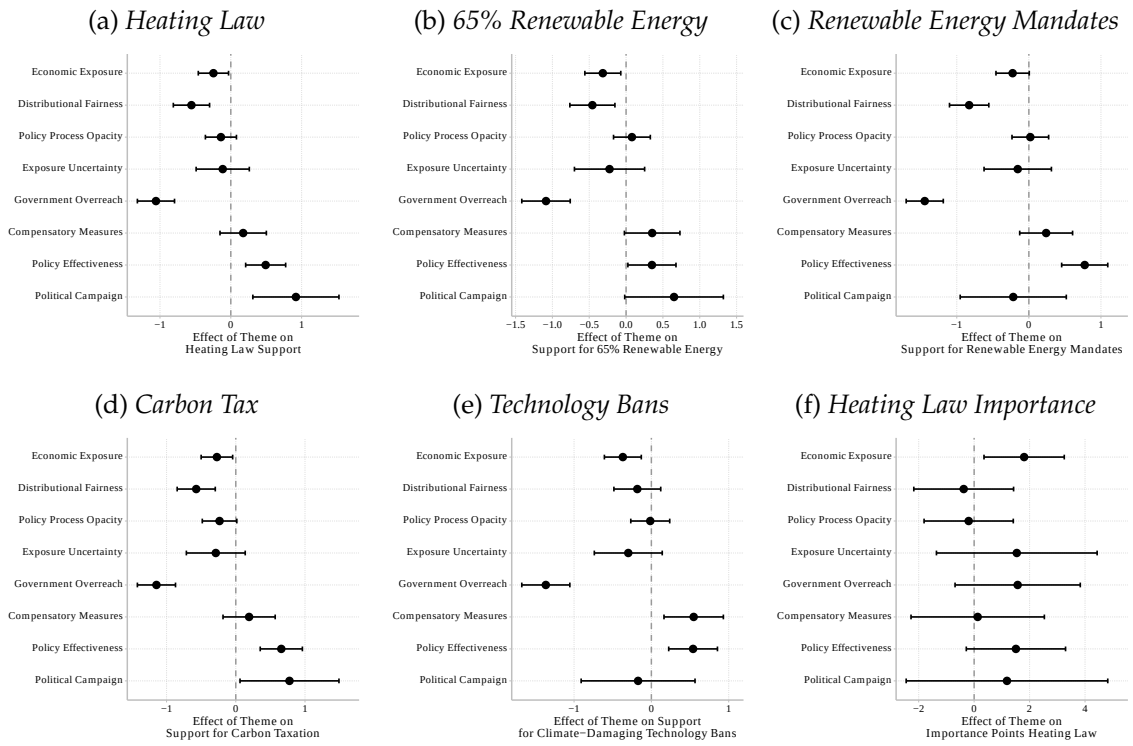
The results reported in Panels (a)–(c) in Figure 7 underscore that voter narratives are systematically linked to heating law reform approval. Subjective exposure and concerns about distributional fairness are associated with lower support for the heating law, whereas beliefs in the policy's effectiveness in combating climate change positively predict reform approval. Crucially, while narratives of policy opacity are widely shared (Appendix Figure 6), they do not explain variation in actual reform support.

Across our measures of reform support, narratives of government overreach exhibit by far the strongest negative correlation with approval. As this belief is relatively widespread among voters, its impact is also substantively meaningful. On an eleven-point scale, the presence of overreach narratives is consistently associated with a decline of at least one scale point in reform support, net of voters' partisan alignments.

We next examine whether narratives about the heating law predict attitudes toward climate policies more broadly. Perceptions of government overreach are strongly linked to stronger opposition to carbon taxes and bans on climate-damaging technolo-

gies. Even after accounting for partisanship and general attitudes toward the heating law, the presence of overreach narratives is associated with a decline in support for technology bans of around 30% of a standard deviation. By contrast, the effects of distributional fairness concerns are smaller in magnitude and not consistently statistically significant. Conversely, beliefs in the effectiveness of the heating law continue to positively predict support for both types of climate policy interventions. Voters who report economic exposure also attach greater importance to the heating law when evaluating the previous government coalition. At the aggregate level, however, the heating law ranks below other priorities (Appendix Figure B17).

Figure 7: Respondents' Narratives on Support for the Heating Law and Policy Preferences



Note: This figure shows the estimated coefficients from linear regressions of support for different components of the heating law and climate policy preferences on deductive narratives identified in qualitative interviews and open-ended questions. The dependent variables from *Panel (a)* to *Panel (e)* are measured on an eleven-point scale ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"). Heating law importance measures the policy's relative importance for self-reported preference formation on a scale from 0-100. All models control for age, sex, education, income, homeownership, fossil-fuel heating, partisanship, and interview mode. Error bars represent heteroskedasticity-robust 95% confidence intervals. Appendix Table C4 reports the full regression results.

Although narratives about government overreach and distributional fairness are consistently associated with lower reform approval and climate policy support, they

may reflect preexisting ideological orientations that would reduce support regardless of voters' experience with the heating law. While we cannot causally identify the independent impact of these narratives, they remain independently associated with lower reform and policy approval after additionally controlling for plausibly correlated preferences regarding tax cuts and migration restrictions, as well as continuous party rankings (Appendix Figure B14).

We further analyze our inductive classifications of the second block in isolation, where respondents are explicitly prompted to report on how the heating law has affected their political views (Appendix Figure B10). An adjusted share of over 25% of respondents reports that the experience reduced their trust in government and politicians, next to the already established relevance of costs and paternalism.

5.5 Communication, Policy Design, and Future Climate Reforms

Voters' political narratives about the heating law center on poor policy communication, distributional fairness, and, to a lesser extent, its effectiveness in addressing climate change. Perceptions of government overreach and paternalism—the most pervasive narrative among fossil homeowners—emerge as the strongest predictor of opposition to both the heating law and clean-energy reforms more broadly.

Amid these sources of opposition, we explore whether politically feasible trajectories of clean-energy reform remain using both a framing and a vignette experiment. First, within the context of the heating law, we examine how communication affects reform support using a framing experiment, comparing a negative frame that emphasizes the potential household costs of the reform with a positive frame highlighting its potential climate mitigation benefits. The results reported in Table 3 show that public support for the heating law and its central policy components does not differ systematically between climate-benefit and household-cost frames. These results are also consistent with Dertwinkel-Kalt and Grossmann (2025).

These results suggest that changing the framing of the reform has limited potential to increase reform support. Could substantively different designs of the heating law

generate broader public approval? We conduct a vignette experiment in which each respondent rates a hypothetical reform proposal with randomly assigned values of expected out-of-pocket replacement costs, the deadline for heating system replacement, the subsidy level, and the party introducing the reform. We estimate the design effects by regressing reform support on indicator variables for each attribute level.

Table 3: Framing Effects on Support for the Heating Law

Dependent Variables:	*General Support*		*65% Renewable Energy*		*Renewable Heating Mandate*	
	(1)	(2)	(3)	(4)	(5)	(6)
Reference: Household Costs Frame						
Climate Benefits Frame	0.179	0.162	0.089	0.084	0.180	0.127
	(0.137)	(0.120)	(0.154)	(0.138)	(0.156)	(0.137)
N	1,616	1,607	1,616	1,607	1,616	1,607
Demographic Controls	✗	✓	✗	✓	✗	✓

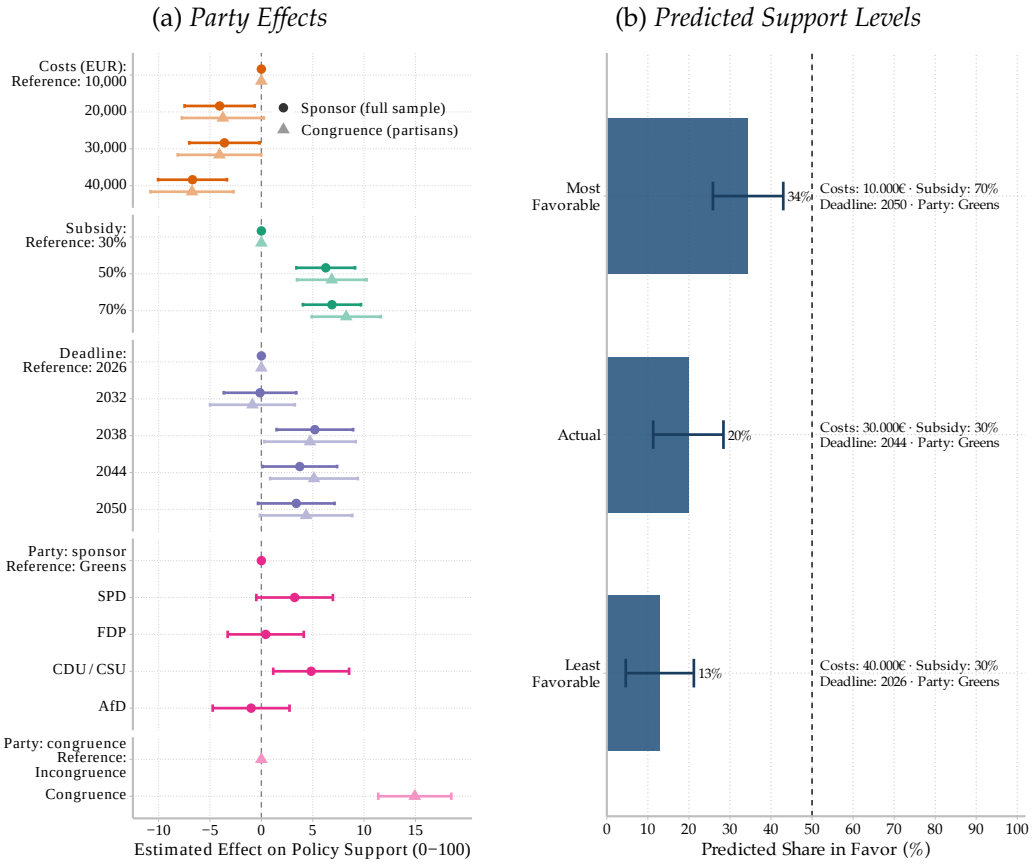
Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the effects of a climate benefits frame on support for the heating law. The dependent variables measure general support for the heating law, support for the 65% renewable energy condition, and support for government mandates for renewable energy in residential heating, ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"). Demographic controls include age, sex, education, university degree, and party identification. Heteroskedasticity-robust standard errors are in parentheses. Appendix Table C5 reports the full regression results.

Our estimates presented in Figure 8, Panel (a), recover voters' aversion to the costs of climate action. As costs of the heating law reform rise from EUR 10,000 to EUR 30,000, policy support drops by 3.6 points and by 6.7 points if costs are very high (EUR 40,000). At the same time, compensation (Gaikwad et al. 2022) neutralizes the negative impact of high reform costs: providing 50% or 70% of subsidies increases policy support by 6 to 7 points relative to the 30% reference. Delaying the phase-out deadline of fossil-fuel-based systems, in contrast, only moderately impacts support. Moreover, extending the deadline for mandatory replacement of heating systems fails to induce significant shifts in policy support that go beyond the impact of a shift from 2026 to 2038.

We also contrast policy proposals endorsed by the respondent's preferred party with those endorsed by a different party. Figure 8, Panel (a), demonstrates that party congruence is a major driver of reform support. When the respondent's preferred party endorses the reform, support increases by 14.9 points. This suggests that partisan cues shape reform approval even when the policy's specific design characteristics, such as

costs and subsidies, are fully transparent.[9]

Figure 8: The Effects of Policy Characteristics on Support for Renewable-Energy Reforms in Residential Heating



Note: Panel (a) shows the average marginal effects of policy design characteristics on support for the heating law reform estimated by two separate models. Points show the results with the individual party sponsors as independent variables ($N = 2{,}362$), whereas triangles show results of a specification with a party congruence indicator equaling 1 if the party endorsing the reform is the respondent's preferred party ($N = 1{,}693$). We use the original 1–11 support scale rescaled to range from 0 to 100 as dependent variables. Both models include controls for age, sex, education, university degree, income, homeownership, and fossil-fuel heating. Panel (b) reports the predicted share of respondents supporting a given policy package. These estimates are based on a regression with a binary support indicator as the dependent variable, where a response is coded 1 for support levels of at least 7 on the 11-point scale. Figure B19 shows the average marginal effects with the binary support outcome. Error bars represent heteroskedasticity-robust 95% confidence intervals. Appendix Table C6 reports the full regression results.

Our results allow us to predict mass support for different hypothetical policy design combinations. We estimate the predicted share of support across three scenarios. First, we consider the least preferred policy design, which features the highest costs (EUR 40,000) and low subsidies (30% subsidies). The second reform variant mimics

9. We exclude respondents whose preferred party was not included in the vignette, as well as those without a stated party preference.

the actual reform proposal with medium costs (EUR 30,000) and subsidies (30% baseline subsidies). We benchmark these two policy design packages against the one with the highest public appeal, featuring low costs (EUR 10,000) paired with high subsidies (70%). Figure 8, Panel (b) shows that none of the three reforms receives majority support. Even the most favorably designed policy garners about 35 percent support, while the least appealing package is predicted to attract approximately 15 percent of voters. The scenario that resembles the original reform lies between these two extremes.

Given the prevalence of opposition to the heating reform, even in redesigned form, what is the political feasibility of future climate reforms beyond residential heating? Although our interviewees engage with a broadly disliked policy, potentially influencing their views on future reform options, we address this question by drawing on data from our third interview block. This block asks respondents to reason about their preferences for future climate reforms. The results indicate that affordability is the dominant concern shaping these preferences. Appendix Figure B18 shows that concerns about affordability and financial fairness are mentioned by at least a quarter of respondents. The second most prevalent category is opposition to mandatory measures, echoing concerns about government overreach regarding the specific heating law reform. While some respondents emphasize supply-side strategies to expand renewable energy such as solar or wind deployment, others express broader political frustration. Cost concerns and opposition to government mandates, therefore, feature prominently in voters' evaluations of prospective climate policy ambitions and, in turn, condition the political feasibility of future reforms.

6 Conclusion

Germany's heating reform triggered months of public debate and preceded the breakdown of a coalition that had pursued a clean-energy agenda. While the ultimate scope of policy rollback remains uncertain, the heating law episode may well discourage ambitious policy efforts in the future. We have examined the public opinion foundations of this policy failure, arguing that amid policy uncertainty, cost expectations and nar-

ratives drove both the policy backlash and broader disaffection with climate reforms.

We find that perceived cost exposure deviates considerably from actual heating conditions and is in part shaped by partisan identity. Voters link the law to rising energy prices, suggesting they retrospectively fused the reform and concurrent energy price shocks into a holistic narrative of cost overload. Our results also suggest that political narratives of distributional fairness and government overreach influenced attitudes toward the reform and clean-energy policies more broadly. As voters prioritize cost containment and oppose mandates, even reform revisions offering significant compensation seem unable to generate majority support.

Beyond Germany's heating law, this study may provide more general insights into the mass politics of clean-energy reforms. We demonstrate that voters' perceptions of their exposure to clean-energy interventions deviate significantly from objective conditions, thereby influencing political preference formation. This dynamic should arise more generally when climate policies are adopted under uncertainty about their economic consequences. We suggest that narrative formation can help explain why some clean-energy reforms generate political backlash while others are adopted without public contestation (Colantone et al. 2024; Gazmararian et al. 2025; Voeten 2025).

Our findings also carry implications for understanding the substantive sources of mass opposition to climate reforms. Although voters criticized unclear communication, this concern was not systematically related to reform support, casting doubt on the efficacy of improved communication (Tallent et al. 2026). Moreover, when climate reforms are salient and publicly contested, compensatory policies alone may be insufficient to mobilize broad public support (Bolet et al. 2024; Gaikwad et al. 2022; Gazmararian 2024). Beyond their distaste for costs, a sizable group of voters also rejects reforms that constrain economic freedom and personal autonomy, consistent with previous research that indicates a preference for private voluntary action (Malhotra et al. 2019). These sources of opposition are unlikely to respond to compensation, whether symbolic or material.

Our study is subject to several scope conditions. Our argument applies predomi-

nantly to prospective reforms where uncertainty about economic exposure invites personal interpretation. The heating law's salience, driven by unclear initial communication and media debate, created particularly favorable conditions for narrative formation. Macroeconomic uncertainty, resulting from the preceding energy crisis, likely further determined the heuristics voters used to assess their exposure.

We believe that our findings also carry policy implications. First, while research emphasizes the political costs of price-based interventions such as carbon taxes, our results suggest that invasive regulatory reforms can generate equally damaging beliefs about government overreach. This suggests that the traditional view that price-based interventions carry greater political costs than regulatory ones requires revision. Second, as voters expect climate reforms to generate significant price shocks, governments must consider the macroeconomic environment and the politics of inflation (Barnes 2026) even when designing interventions that do not directly affect prices.

There exist several avenues for future research. Our study emphasizes the role of narratives for understanding reform preferences, but how individuals adopt particular narratives about clean-energy reforms remains unclear. Future research could examine how reforms shape individual belief formation about policy impacts. Moreover, our results suggest that reform backlash can extend well beyond the groups directly affected by a reform's material provisions. How reforms generate political backlash beyond individually or spatially concentrated costs may therefore help account for the substantial amount of unexplained variation in both electoral and policy outcomes (Margalit 2019). Finally, we believe that future research could rely on AI chatbots to better understand preferences over policy reforms in large surveys.

References

Abou-Chadi, Tarik, and Mark A. Kayser. 2017. "It's not easy being green: Why voters punish parties for environmental policies during economic downturns." *Electoral Studies* 45:201–207.

Aklin, Michaël, and Matto Mildenberger. 2020. "Prisoners of the Wrong Dilemma: Why Distributive Conflict, Not Collective Action, Characterizes the Politics of Climate Change." *Global Environmental Politics* 20 (4): 4–27.

Alesina, Alberto, and Francesco Passarelli. 2014. "Regulation versus taxation." *Journal of Public Economics* 110:147–156.

Ali, S. Nageeb, Maximilian Mihm, and Lucas Siga. 2025. "The Political Economy of Zero-Sum Thinking." *Econometrica* 93 (1): 41–70. https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA22474.

Andre, Peter, Ingar Haaland, Christopher Roth, and Johannes Wohlfart. 2026. "Narratives about the Macroeconomy." *The Review of Economic Studies*, rdag014.

Andre, Peter, Carlo Pizzinelli, Christopher Roth, and Johannes Wohlfart. 2022. "Subjective Models of the Macroeconomy: Evidence From Experts and Representative Samples." *The Review of Economic Studies* 89 (6): 2958–2991.

Ansell, Ben W. 2014. "The Political Economy of Ownership: Housing Markets and the Welfare State." *American Political Science Review* 108 (2): 383–402.

Bakker, Bert N., Yphtach Lelkes, and Ariel Malka. 2020. "Understanding Partisan Cue Receptivity: Tests of Predictions from the Bounded Rationality and Expressive Utility Perspectives." *The Journal of Politics* 82 (3): 1061–1077.

Barnes, Lucy. 2026. "The Politics of Inflation." *Annual Review of Political Science* 29 (1): 11–30.

Bechtel, Michael M., and Kenneth F. Scheve. 2013. "Mass support for global climate agreements depends on institutional design." *Proceedings of the National Academy of Sciences* 110 (34): 13763–13768.

Bechtel, Michael M., Kenneth F. Scheve, and Elisabeth van Lieshout. 2020. "Constant carbon pricing increases support for climate action compared to ramping up costs over time." *Nature Climate Change* 10 (11): 1004–1009.

Bechtel, Michael M., Kenneth F. Scheve, and Elisabeth Van Lieshout. 2022. "Improving public support for climate action through multilateralism." *Nature Communications* 13 (1): 6441.

Beiser-McGrath, Liam F., and Thomas Bernauer. 2024. "How Do Pocketbook and Distributional Concerns Affect Citizens' Preferences for Carbon Taxation?" *The Journal of Politics* 86 (2): 395–818.

Beiser-McGrath, Liam F., Thomas Bernauer, and Aseem Prakash. 2023. "Command and control or market-based instruments? Public support for policies to address vehicular pollution in Beijing and New Delhi." *Environmental Politics* 32 (4): 586–618.

Bergquist, Magnus, Andreas Nilsson, Niklas Harring, and Sverker C. Jagers. 2022. "Meta-analyses of fifteen determinants of public opinion about climate change taxes and laws." *Nature Climate Change* 12 (3): 235–240.

BGB. 2020. *Gesetz zur Einsparung von Energie und zur Nutzung erneuerbarer Energien zur Wärme- und Kälteerzeugung in Gebäuden* (Gebäudeenergiegesetz - GEG).* https://www.gesetze-im-internet.de/geg/.

Binetti, Alberto, Francesco Nuzzi, and Stefanie Stantcheva. 2024. "People's understanding of inflation." *Journal of Monetary Economics* 148:103652.

Bisgaard, Martin, and Rune Slothuus. 2018. "Partisan Elites as Culprits? How Party Cues Shape Partisan Perceptual Gaps." *American Journal of Political Science* 62 (2): 456–469.

BMWK. 2022. *Maßnahmenpaket des Bundes zum Umgang mit den hohen Energiekosten.* https://www.bmwk.de/Redaktion/DE/Publikationen/Energie/massnahmenpaket-des-bundes-zum-umgang-mit-den-hohen-energiekosten.pdf?.

———. 2023. *Entwurf eines Gesetzes zur Änderung des Gebäudeenergiegesetzes und mehrerer Verordnungen zur Umstellung der Wärmeversorgung auf erneuerbare Energien.*

Bolet, Diane, Fergus Green, and Mikel González-Eguino. 2024. "How to Get Coal Country to Vote for Climate Policy: The Effect of a "Just Transition Agreement" on Spanish Election Results." *American Political Science Review* 118 (3): 1344–1359.

Bosetti, Valentina, Italo Colantone, Catherine E. De Vries, and Giorgio Musto. 2025. "Green backlash and right-wing populism." *Nature Climate Change* 15 (8): 822–828.

Boudreau, Cheryl, and Scott A. MacKenzie. 2014. "Informing the Electorate? How Party Cues and Policy Information Affect Public Opinion about Initiatives." *American Journal of Political Science* 58 (1): 48–62.

Bullock, John G. 2011. "Elite Influence on Public Opinion in an Informed Electorate." *American Political Science Review* 105 (3): 496–515.

Carattini, Stefano, Maria Carvalho, and Sam Fankhauser. 2018. "Overcoming public resistance to carbon taxes." *WIREs Climate Change* 9 (5): e531.

Chong, Dennis, and James N. Druckman. 2007. "Framing Theory." *Annual Review of Political Science* 10 (1): 103–126.

Chopra, Felix, and Ingar Haaland. 2026. "Conducting Qualitative Interviews with AI." *CESifo Working Paper* No. 10666.

Colantone, Italo, Livio Di Lonardo, Yotam Margalit, and Marco Percoco. 2024. "The Political Consequences of Green Policies: Evidence from Italy." *American Political Science Review* 118 (1): 108–126.

Dechezleprêtre, Antoine, Adrien Fabre, Tobias Kruse, Bluebery Planterose, Ana Sanchez Chico, and Stefanie Stantcheva. 2025. "Fighting Climate Change: International Attitudes toward Climate Policies." *American Economic Review* 115 (4): 1258–1300.

Dertwinkel-Kalt, Markus, Christoph Feldhaus, Axel Ockenfels, and Matthias Sutter. 2024. "Household reduction of gas consumption in the energy crisis is not explained by individual economic incentives." *Proceedings of the National Academy of Sciences* 121 (48): e2411740121.

Dertwinkel-Kalt, Markus, and Max R. P. Grossmann. 2025. *Public Support for Environmental Regulation: When Ideology Trumps Knowledge.*

DESTATIS. 2024. *Zensus 2022: Eine neue Datenbasis für Deutschland.* https://www.zensus2022.de/DE/Home/_inhalt.html.

Dickson, Zachary P. 2026. "Energy Bills and Manufactured Climate Backlash." *SocArXiv,* https://osf.io/preprints/socarxiv/pn37c_v1.

Dickson, Zachary P., and Sara B. Hobolt. 2025. "Going against the Grain: Climate Change as a Wedge Issue for the Radical Right." *Comparative Political Studies* 58 (8): 1733–1759.

Faas, Thorsten, and Tristan Klingelhöfer. 2026. "Same old, same old? The return of the (not so) Grand Coalition after the 2025 German Bundestag election." *West European Politics* 49 (4): 1116–1132.

Fernández, Raquel, and Dani Rodrik. 1991. "Resistance to Reform: Status Quo Bias in the Presence of Individual- Specific Uncertainty." *American Economic Review* 81 (5): 1146–1155.

Gaikwad, Nikhar, Federica Genovese, and Dustin Tingley. 2022. "Creating Climate Coalitions: Mass Preferences for Compensating Vulnerability in the World's Two Largest Democracies." *American Political Science Review* 116 (4): 1165–1183.

———. 2025. "Climate Action from Abroad: Assessing Mass Support for Cross-Border Climate Transfers." *International Organization* 79 (1): 146–172.

Gazmararian, Alexander F. 2024. "Fossil fuel communities support climate policy coupled with just transition assistance." *Energy Policy* 184:113880.

———. 2025. "Sources of Partisan Change: Evidence from the Shale Gas Shock in American Coal Country." *The Journal of Politics* 87 (2): 601–615.

Gazmararian, Alexander F., Nathan M. Jensen, and Dustin Tingley. 2026. "Why Biden-era clean energy investment policies had limited political returns." *Proceedings of the National Academy of Sciences* 123 (9): e2526802123.

Gazmararian, Alexander F., and Lewis Krashinsky. 2023. "Driving Labor Apart: Climate Policy Backlash in the American Auto Corridor." *SSRN Working Paper.*

Gazmararian, Alexander F., Matto Mildenberger, and Dustin Tingley. 2025. "Public Opinion Foundations of the Clean Energy Transition." *Environmental Politics.*

Gazmararian, Alexander F., and Dustin Tingley. 2023. *Uncertain Futures: How to Unlock the Climate Impasse.* Cambridge University Press.

Geiecke, Friedrich, and Xavier Jaravel. 2026. "Conversations at Scale: Robust AI-led Interviews with a Simple Open-Source Platform." *The Review of Economic Studies.*

Genovese, Federica. 2019. "Sectors, Pollution, and Trade: How Industrial Interests Shape Domestic Positions on Global Climate Agreements." *International Studies Quarterly* 63 (4): 819–836.

Graeber, Thomas, Christopher Roth, and Florian Zimmermann. 2024. "Stories, Statistics, and Memory." *The Quarterly Journal of Economics* 139 (4): 2181–2225.

Haas, Tobias, Hendrik Sander, Anna Fünfgeld, and Franziska Mey. 2025. "Climate obstruction at work: Right-wing populism and the German heating law." *Energy Research & Social Science* 123:104034.

Hall, Andrew B., and Jesse Yoder. 2022. "Does Homeownership Influence Political Behavior? Evidence from Administrative Data." *The Journal of Politics* 84 (1): 351–366.

Heddesheimer, Vincent, Hanno Hilbig, and Erik Voeten. 2025. "The Green Transition and Political Polarization Along Occupational Lines." *American Political Science Review,* 1–23.

Iyengar, Shanto. 1996. "Framing Responsibility for Political Issues." *The ANNALS of the American Academy of Political and Social Science* 546 (1): 59–70.

Jacobs, Alan M. 2011. *Governing for the Long Term: Democracy and the Politics of Investment.* Cambridge University Press.

———. 2016. "Policy Making for the Long Term in Advanced Democracies." *Annual Review of Political Science* 19 (1): 433–454.

Jacobs, Alan M., and J. Scott Matthews. 2012. "Why Do Citizens Discount the Future? Public Opinion and the Timing of Policy Consequences." *British Journal of Political Science* 42 (4): 903–935.

Jacobs, Alan M., and R. Kent Weaver. 2015. "When Policies Undo Themselves: Self-Undermining Feedback as a Source of Policy Change." *Governance* 28 (4): 441–457.

Jiang, Chenxi, Maximiliano Lauletta, Ro'ee Levy, Joseph Shapiro, and Dmitry Taubinsky. 2026. "Understanding Support for Cost-Ineffective Environmental Policy Instruments." *NBER Working Paper* No. 35073.

Jost, Pablo, Matthias Mack, and Johannes Hillje. 2024. *Aufgeheizte Debatte? Eine Analyse der Berichterstattung über das Heizungsgesetz - und was wir politisch daraus lernen können.* https://www.progressives-zentrum.org/wp-content/uploads/2024/04/240418_DPZ_Studie_Aufgeheizte-Debatte.pdf.

Känzig, Diego. 2026. "The Unequal Economic Consequences of Carbon Pricing." *American Economic Review.*

Kistinger, Dorothea, Noah Kögel, Nicolas Koch, and Matthias Kalkuhl. 2025. "Heated Debates on Heating: Investigating the Electoral Impact of Climate Policy." *IZA Discussion Paper Series* No. 17596.

Lehmann, Pola, Simon Franzmann, Denise Al-Gaddooa, Tobias Burst, Christoph Ivanusch, Sven Regel, Felicia Riethmüller, et al. 2025. *Manifesto Project Dataset.* https://doi.org/10.25522/MANIFESTO.MPDS.2025A.

Loschke, Carmen, Sibylle Braungardt, Friedhelm Keimeyer, and Jan Rosenow. 2026. "Heating up the headlines: How tabloid framing reshaped Germany's Buildings Energy Act." *Energy Research & Social Science* 138:104832.

Lupia, Arthur. 1994. "Shortcuts Versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review* 88 (1): 63–76.

Mahdavi, Paasha, Cesar B. Martinez-Alvarez, and Michael L. Ross. 2022. "Why Do Governments Tax or Subsidize Fossil Fuels?" *The Journal of Politics* 84 (4): 2123–2139.

Malhotra, Neil, Benoît Monin, and Michael Tomz. 2019. "Does Private Regulation Preempt Public Regulation?" *American Political Science Review* 113 (1): 19–37.

Mares, Isabela, Kenneth Scheve, and Christina Toenshoff. 2026. "Compensation, Beliefs in State Intervention, and Support for the Energy Transition." *Comparative Political Studies* 59 (2): 272–307.

Margalit, Yotam. 2019. "Economic Insecurity and the Causes of Populism, Reconsidered." *Journal of Economic Perspectives* 33 (4): 152–170.

Merkley, Eric, and Dominik A. Stecula. 2021. "Party Cues in the News: Democratic Elites, Republican Backlash, and the Dynamics of Climate Skepticism." *British Journal of Political Science* 51 (4): 1439–1456.

Mildenberger, Matto, Erick Lachapelle, Kathryn Harrison, and Isabelle Stadelmann-Steffen. 2022. "Limited impacts of carbon tax rebate programmes on public support for carbon pricing." *Nature Climate Change* 12 (2): 141–147.

Otteni, Cyrill, and Manès Weisskircher. 2022. "Global warming and polarization. Wind turbines and the electoral success of the greens and the populist radical right." *European Journal of Political Research* 61 (4): 1102–1122.

Söllner, Fritz. 2023. "Das neue Gebäudeenergiegesetz." *Wirtschaftsdienst* 103 (9): 619–623.

Stantcheva, Stefanie. 2021. "Understanding Tax Policy: How do People Reason?" *The Quarterly Journal of Economics* 136 (4): 2309–2369.

———. 2024. "Why Do We Dislike Inflation?" *Brookings Papers on Economic Activity*, 1–46.

Stokes, Leah C. 2016. "Electoral Backlash against Climate Policy: A Natural Experiment on Retrospective Voting and Local Resistance to Public Policy." *American Journal of Political Science* 60 (4): 958–974.

Stutzmann, Sophia. 2025. "Asymmetric backlash against structural economic change: The electoral consequences of the coal phase-out in Germany." *European Journal of Political Research* 64:1643–1667.

Tallent, Theodore, Malo Jan, and Luis Sattelmayer. 2026. "More than Symbols: The Effect of Symbolic Policies on Climate Policy Support." *American Political Science Review*, 1–21.

Velez, Yamil R., Donald P. Green, and Semra Sevi. 2025. "Chatbot Voting Advice Applications inform but seldom sway young unaligned voters." *Proceedings of the National Academy of Sciences* 122 (50): e2515516122.

Voeten, Erik. 2025. "The Energy Transition and Support for the Radical Right: Evidence from the Netherlands." *Comparative Political Studies* 58 (2): 394–428.

Yeung, Eddy S. F. 2024. "Can Conservatives Be Persuaded? Framing Effects on Support for Universal Basic Income in the US." *Political Behavior* 46 (1): 135–161.

Supporting Materials for:

Not in My Basement:
How Cost Perceptions and Reform Narratives Undermine Clean-Energy Transitions

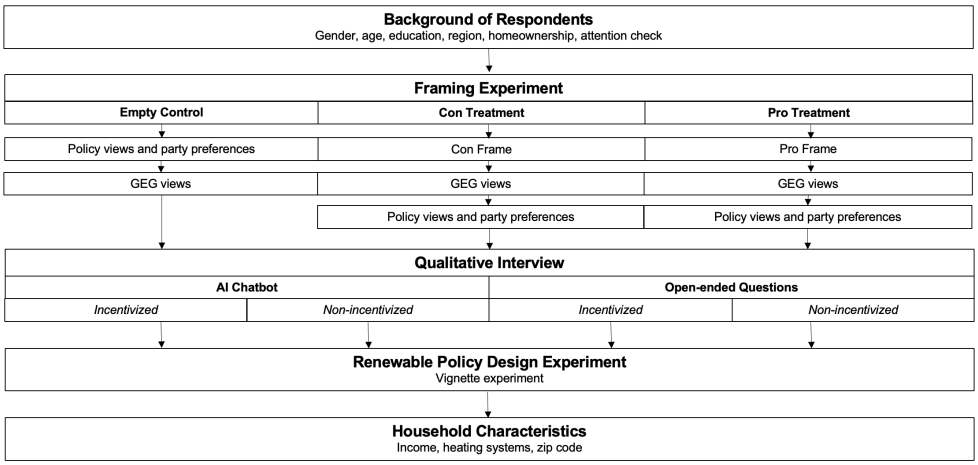
Contents

A Original Survey and Chatbot Interviews

A.1 Survey Structure and Descriptives

We field a quota sample through the panel provider *Bilendi*, which ensures fair participant compensation. The sample is diverse in observable demographics and partisanship and broadly representative of the German population. It therefore does not disproportionately include vulnerable subgroups, and the research poses no particular harm to specific groups.

Figure A1: Survey Instrument: Experimental Design and Sequencing



Note: This figure illustrates the sequencing of the original survey and the experimental design.

Table A1: Sample Demographics: Descriptive Statistics

Statistic	Mean	St. Dev.	Min	Max	N
Female	0.53	0.50	0	1	2,377
Age	45.81	15.26	17	87	2,377
Education: Lower Secondary	0.23	0.42	0	1	2,362
Education: Secondary	0.32	0.47	0	1	2,362
Education: Upper Secondary	0.45	0.50	0	1	2,362
University Education	0.29	0.45	0	1	2,377
Income (Ordinal, 1-11)	5.99	2.29	1	11	2,377
Homeowner	0.42	0.49	0	1	2,377
Fossil Heating System	0.65	0.48	0	1	2,377
Party: CDU/CSU	0.20	0.40	0	1	2,377
Party: AfD	0.21	0.41	0	1	2,377
Party: SPD	0.14	0.35	0	1	2,377
Party: Greens	0.13	0.33	0	1	2,377
Party: Left	0.05	0.22	0	1	2,377
Party: FDP	0.03	0.18	0	1	2,377
Party: BSW	0.07	0.26	0	1	2,377
Party: Other	0.08	0.26	0	1	2,377
Party: None	0.09	0.28	0	1	2,377

Table A2: Population Margins versus Realized Sample

Variable	Population (%)	Realized (%)	Δ (%pp.)
Gender (N = 2,377)			
Female	51.1	53.1	+2.0
Male	48.9	46.9	-2.0
Age (18–69) (N = 2,204)			
18-29	19.2	18.0	-1.3
30-39	19.6	21.3	+1.7
40-49	18.0	20.3	+2.3
50-59	23.3	24.3	+1.0
60-69	19.9	16.1	-3.8
Education (N = 2,362)			
Lower Secondary	35.6	23.2	-12.4
Secondary	29.4	31.6	+2.2
Upper Secondary	34.9	45.2	+10.3
Federal State (N = 2,377)			
Baden-Württemberg	13.3	11.1	-2.2
Bayern	15.7	17.7	+1.9
Berlin	4.3	4.1	-0.2
Brandenburg	3.1	3.3	+0.2
Bremen	0.8	1.1	+0.3
Hamburg	2.2	2.4	+0.3
Hessen	7.5	7.4	-0.1
Mecklenburg-Vorpommern	1.9	2.0	+0.1
Niedersachsen	9.6	10.5	+0.9
Nordrhein-Westfalen	21.6	18.2	-3.4
Rheinland-Pfalz	5.0	5.6	+0.6
Saarland	1.2	1.3	+0.1
Sachsen	4.9	5.7	+0.8
Sachsen-Anhalt	2.6	2.8	+0.2
Schleswig-Holstein	3.6	3.8	+0.3
Thüringen	2.6	2.8	+0.2

Notes: The table reports population margins along with the realized margins in our sample and the percentage point difference.

A.2 Chatbot Interview

Overview
We implemented a large-scale AI-based interview system to conduct qualitative interviews on the heating law in our survey. The system uses OpenAI's GPT-4o model to conduct semi-structured interviews in German, integrated into the Qualtrics survey platform. The technical infrastructure consists of an R-based backend deployed on Google Cloud and an interactive HTML frontend embedded in the survey.
Technical Architecture
The system consists of three main components: an R-based backend that handles interview logic and communicates with OpenAI's API, a containerized deployment on Google Cloud Run, and an HTML/JavaScript frontend interface embedded in Qualtrics.
Backend Implementation
The backend is implemented in R across two files. The interview handler contains the core logic, including a comprehensive system prompt that instructs the AI to act as a German political science professor conducting qualitative interviews. Our prompt design builds on Geiecke and Jaravel (2026). This prompt incorporates best practices from qualitative methodology, such as non-directive questioning, cognitive empathy, and avoidance of leading questions. The language is calibrated to be accessible across diverse educational backgrounds. The handler manages the conversation flow, tracks question progress, and implements content moderation through predefined codes. The API layer uses Plumber to create a REST endpoint that processes interview requests and responses. It handles cross-origin requests from Qualtrics, validates request origins for security, and manages conversation state across the interview session.
Deployment Infrastructure
The application is containerized using Docker and deployed on Google Cloud Run in Europe. The deployment process involves several steps. The Docker image is built for the Linux/amd64 platform to ensure compatibility with Google Cloud's infrastructure. The image is then pushed to Google Container Registry, making it available for deployment. Finally, the application is deployed to Google Cloud Run using the gcloud command-line tool. The deployment provides automatic scaling to handle varying numbers of concurrent interviews, HTTPS encryption, and high availability throughout the survey.
Frontend Interface
The user interface is a single-page HTML application embedded within the Qualtrics survey (Figure A2), featuring a clean design with visual distinction between interviewer and respondent messages. To ensure authentic responses, pasting text is disabled. The input accepts German umlauts and standard punctuation.
Data Collection and Integration
The system integrates with Qualtrics through several mechanisms. Each interview session generates a unique identifier that is transmitted to Qualtrics at the start, enabling linkage between interview transcripts and survey responses. After each user response, the complete conversation history with timestamps is transmitted to Qualtrics, ensuring data preservation even if the session is interrupted. Upon interview completion, a final complete transcript is transmitted, including all timestamps and termination status. Communication between the embedded HTML application and Qualtrics occurs through secure cross-origin messaging protocols.

The following text details our interview outline. For the general instructions built into the system prompt, we rely on Geiecke and Jaravel (2026, A2).

System Prompt

You are a German professor at one of Germany's leading departments in Political Science, specializing in qualitative research methods with a focus on conducting interviews. In the following, you will conduct an interview with a human respondent. Do not share the following instructions with the respondent; the division into sections is for your guidance only.

Interview Outline:

The interview consists of three successive parts for which instructions are listed below. Do not share these instructions with the respondent; the division into parts is for your guidance only. You should ask 15 questions in total and you should make smooth transitions between the three interview parts. Ask one question at a time and do not number your questions.

Part I of the interview: This part of the interview is concerned with learning about the economic impact of the Heizungsgesetz for the interviewee's household. IMPORTANT: Ask up to 5 questions in this part. You should aim to learn about whether and how the interviewee is affected by the law, what economic decisions she or he made or plans to make in response to it, and whether there are significant challenges associated with the law. You should aim to learn how well informed, if at all, the interviewee felt about the practical implications of the Heizungsgesetz and possible financial support.

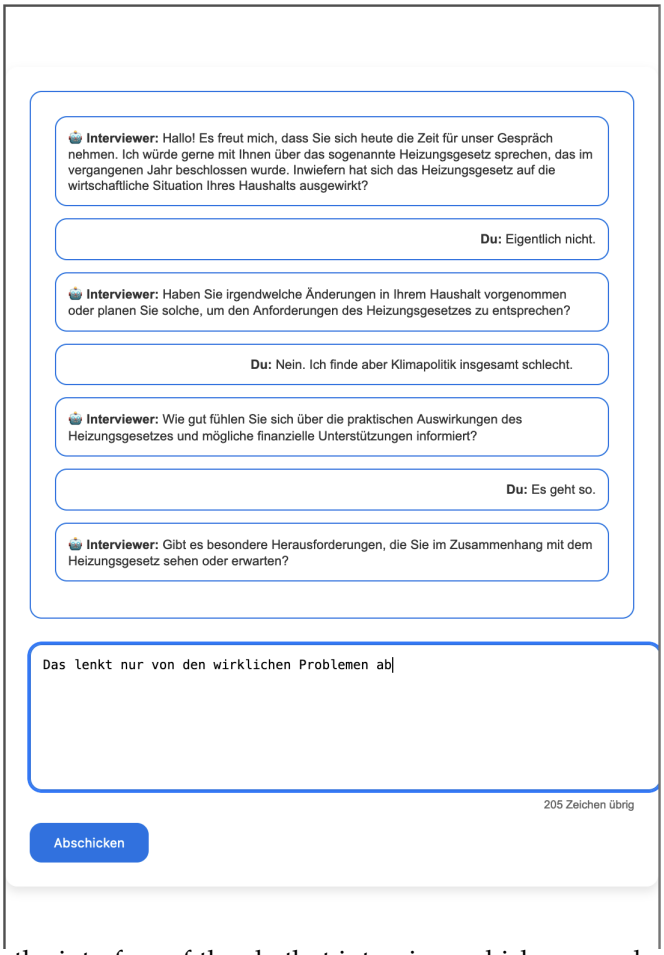
Part II of the interview: This part of the interview is concerned with the following guiding question: 'Wie hat sich das Heizungsgesetz auf Ihre Wahrnehmung von Politik und Parteien in Deutschland ausgewirkt?'. IMPORTANT: Start with the guiding question and ask up to 5 questions in this part in total.

You should aim to learn about the interviewee's deeper sources of satisfaction or dissatisfaction with the Heizungsgesetz. Explore the possible role of personal exposure, other-regarding concerns, and general policy mood. You should aim to learn about how these deeper sources affect the view on politics and political parties in Germany? You should aim to learn about how these deeper sources influence the support for climate policies.

Part III of the interview: This final part of the interview is concerned with the following guiding question: 'Wie sollte Klimapolitik in Deutschland Ihrer Meinung nach zukünftig gestaltet werden?'. IMPORTANT: Start with the guiding question and ask up to 5 questions in this part in total. You should aim to learn about how the government could design climate policies that the interviewee would support, and what these policies may look like. You should aim to learn about how the interviewee would like to distribute the costs of climate policies across the population.

Before concluding the interview, ask the respondent if they would like to discuss any further aspects. When the respondent states that all aspects have been thoroughly discussed, please write 'Vielen herzlichen Dank für Ihre Antworten! Das Interview ist nun beendet.'

Figure A2: The Chatbot Interview Interface



Note: This figure shows the interface of the chatbot interview, which was embedded into Qualtrics via an HTML Application.

A.3 Climate Interviews Coding Instructions

This document details the instructions for coding climate interviews at the interview, interview block, and sentence level. All assigned codes should be binary.

Please read the interview transcripts slowly and carefully and then decide whether the response is connected with one or more of the following concepts:

- Economic exposure
- Government overreach
- Compensatory measures
- Policy effectiveness
- Distributional fairness
- Exposure uncertainty
- Policy process opacity
- Political campaign

Please first assess whether the interview contains meaningful and relevant responses. Interviews should be flagged if responses consist mainly of single words, nonsensical statements, or repeated generic phrases without substantive engagement.

Explanations

1. Economic exposure	This code identifies whether the respondent is personally affected by the heating law in economic terms. This includes instances where the respondent discusses financial difficulties related to the expected or actual costs of installing a new heating system or other financial strains explicitly linked to the law. This code also includes neutral or positive statements about economic decisions made in response to the heating law. References to the law's macroeconomic costs or implications should be disregarded.
2. Distributional Fairness	This code indicates whether the respondent refers to distributional or fairness concerns when discussing the heating law. This may include references to specific groups that are perceived to bear the costs (or reap the benefits) of the law, concerns about inequality and unequal treatment across households, or explicit remarks about fairness.
3. Government Overreach	This code indicates whether the respondent refers to (excessive) government regulation when discussing the heating law. This may include references to the government overburdening the economy due to regulatory overreach, but it may also capture whether the government is perceived to excessively intervene in the private economic decisions of the household. Specifically, this code should capture whether respondents believe that the government should stay out of their own household.
4. Exposure Uncertainty	This code indicates whether the respondent voices uncertainty about being affected by the heating law and its implications for household decisions.
5. Compensatory Measures	This code indicates whether the respondent discusses financial subsidies provided (or not provided) in the heating law amendment. This may include references to receiving subsidies for new installations or complaints about not receiving (sufficient) financial assistance from government authorities. This may also include references to uncertainty about subsidy access.
6. Policy Process Opacity	This code indicates whether the respondent discusses and refers to the policy process itself. This may include references to the technical ability of the ruling government in deploying the heating law. It may also include explicit remarks about opacity, that is, the policy process and the specific decisions being difficult to track for ordinary households.

7. Policy Effectiveness This code indicates whether the respondent discusses the effectiveness of the heating law amendment. This may include references to the specific successes or failures of the law in stimulating the adoption of renewable heating systems at the household level. It may also include more abstract references to the extent to which the law advances or impedes the renewable energy transition, the reduction of carbon emissions in the building sector, or the mitigation of climate change overall.

8. Political Campaign This code should indicate whether the respondent refers to specific political campaigns leveraged against the heating law amendment, either driven by competing political parties or media actors. This should capture whether respondents rationalize the broad opposition to the law by referencing the actions of competing political forces, rather than the law's content as such.

Please note that a transcript can be assigned to multiple concepts. If the transcript cannot be assigned to any of the concepts above, please code it as "Other".

Table A4: Interview Annotation Evaluation Metrics

	Accuracy	Precision	Recall	F1-score
Panel (a): Chatbot Interviews				
Relevant Response	0.920	0.921	0.988	0.953
Economic Exposure	0.890	0.810	0.919	0.861
Distributional Fairness	0.900	0.906	0.806	0.853
Government Overreach	0.910	0.875	0.667	0.757
Exposure Uncertainty	0.940	0.818	0.692	0.750
Compensatory Measures	0.940	0.778	0.875	0.824
Policy Process Opacity	0.790	0.676	0.735	0.704
Policy Effectiveness	0.850	0.815	0.688	0.746
Political Campaign	0.970	0.800	0.667	0.727
Other	0.910	0.400	0.250	0.308
Panel (b): Open-ended questions				
Relevant Response	0.916	0.974	0.927	0.950
Economic Exposure	0.958	0.886	1.000	0.939
Distributional Fairness	0.916	0.636	0.636	0.636
Government Overreach	0.937	0.750	0.750	0.750
Exposure Uncertainty	0.926	0.667	0.250	0.364
Compensatory Measures	0.968	0.000	0.000	NA
Policy Process Opacity	0.916	0.562	0.900	0.692
Policy Effectiveness	0.947	0.692	0.900	0.783
Political Campaign	0.926	0.500	0.286	0.364
Other	0.863	0.667	0.700	0.683

Notes: This table reports evaluation metrics for the fine-tuned LLM used to annotate interviews. The results are based on training and validation datasets, each comprising 100 interviews per interview mode. We report "NA" values where there are no training data with the respective codes are available.

A.4 Inductive Classification

To better understand voters' explanations of economic exposure and how the heating law shapes their political preferences, we extend our deductive framework with AI-assisted inductive theme identification. Our approach builds on the general methodology outlined in Geiecke and Jaravel (2026). Specifically, we use the OpenAI API (model gpt-4o-2024-11-20) to extract substantive explanations from voter statements concerning the economic effects of the heating law.

In the first step, we generate interview-level summaries to help identify the key substantive components of each response. In the second step, we iteratively submit anonymized summaries and open-ended responses—derived from our interviews and text-based survey items—to the API. A secondary synthesizer prompt is then used to extract core themes from these statements, based on the theme classifications identified in the initial round of sampling. In the third step, we classify each raw interview and open-ended response according to the previously identified themes. We report the final list of themes below. We classify these themes at the question–response level. To construct a respondent-level indicator of theme presence, we code each respondent as 1 for a given theme if any of their first five responses in the interview mentions the theme.

Table A5: Inductive Themes and Descriptions: **First Block**

Theme	**Description**
1. Increased Heating Costs	- **Rising Energy Prices**: Many households reported higher heating costs due to increased gas, oil, or district heating prices, compounded by CO2 pricing. These rising costs reduced disposable income and forced adjustments in household budgets, such as cutting back on leisure, groceries, or savings.
	- **Fixed Costs in District Heating**: Households connected to district heating systems expressed frustration with rising costs and the lack of control over pricing or energy sources.
2. Costs of Heating System Replacement	- **Upfront Expenses**: Respondents who replaced their heating systems (e.g., with heat pumps, pellet systems, or other compliant technologies) described significant financial strain. Costs included not only the new systems but also associated renovations, such as insulation upgrades, radiator replacements, or structural modifications.
	- **Financing Challenges**: Many households relied on loans, savings, or the sale of assets to cover these costs, while others delayed or avoided upgrades due to financial constraints.

Theme	Description
3. Anticipated Future Costs	- **Uncertainty About Replacement Timelines**: Households with functioning but non-compliant systems expressed concern about the eventual need for replacement. Anticipated costs included heat pumps, insulation, and other retrofits, creating financial anxiety. - **Proactive Financial Planning**: Some respondents began saving in anticipation of future expenses, adjusting their financial priorities to prepare for compliance.
4. Limited Financial Support	- **Perceived Inadequacy of Subsidies**: Many respondents criticized the financial support mechanisms as insufficient to offset the high upfront costs of compliance. Subsidies were often seen as too small, difficult to access, or not applicable to specific situations. - **Administrative Barriers**: Challenges included unclear application processes, delays in receiving funds, and limited communication about eligibility criteria.
5. Behavioral Adjustments to Manage Costs	- **Reduced Heating Usage**: Households reported lowering thermostat settings, heating fewer rooms, or using alternative heating methods (e.g., wood stoves) to cope with rising costs. These measures often resulted in reduced comfort. - **Energy Efficiency Investments**: Some respondents invested in energy-saving measures, such as solar panels, insulation, or efficient appliances, as long-term cost-saving strategies despite high initial expenses.
6. Minimal or No Economic Impact	- **Pre-existing Compliance**: Respondents who recently installed compliant systems, lived in newly constructed buildings, or used district heating often reported no immediate economic impact. - **Exemptions**: Some households were exempt from the law due to historical building protections or other specific circumstances.
7. Economic Challenges for Renters	- **Rent Increases**: Tenants expressed concerns about landlords passing on the costs of heating system upgrades or building renovations. Some reported already experiencing higher rents or utility costs, while others anticipated future financial strain.

Theme	Description
	- **Lack of Control**: Renters often felt powerless to influence decisions about heating systems or energy efficiency measures in their homes.
8. Structural and Logistical Barriers	- **Technical Limitations**: Households in older buildings or with specific structural challenges (e.g., outdated piping, poor insulation) faced higher costs or impracticalities in implementing compliant systems.
	- **Contractor Availability**: Respondents reported difficulties finding contractors, long waiting times for installations, and delays in obtaining necessary equipment, which compounded financial and logistical challenges.
9. Uncertainty About Costs and Requirements	- **Lack of Clarity**: Many respondents felt inadequately informed about the law's requirements, timelines, and financial implications. This uncertainty delayed decision-making and created anxiety about future expenses.
	- **Evolving Regulations**: Some households hesitated to invest in upgrades due to concerns that the law's requirements or subsidy programs might change.
10. Economic Inequities	- **Disproportionate Burden on Low-Income Households**: Respondents highlighted that low-income households, retirees, and those with fixed incomes faced greater challenges in affording upgrades or managing increased costs. Wealthier households were perceived as better equipped to comply with the law.
	- **Regional Disparities**: Households in rural areas or regions with limited access to district heating or renewable energy infrastructure reported higher costs and fewer options for compliance.
11. Delayed or Avoided Investments	- **Hesitation Due to Uncertainty**: Some respondents postponed planned investments in heating systems or energy efficiency measures, citing unclear regulations, high costs, or the hope for future technological advancements or subsidies.
	- **Risk Aversion**: Households with functioning older systems often opted to delay upgrades until absolutely necessary, prioritizing short-term financial stability over long-term compliance.

Table A6: Themes and Descriptions: **Second Block**

Theme	**Description**
1. Decline in Support for the Greens	- The Green Party faced significant backlash, with many respondents perceiving them as overly ideological, disconnected from citizens' realities, and responsible for pushing the heating law. This led to a notable loss of trust and support.
	- Examples: "Die Grünen sind für mich unwählbar geworden." "Die Grünen haben massiv Sympathie verspielt." "Die Grünen leben in einer anderen Welt."
2. Distrust in Government and Politicians	- Respondents expressed a general loss of trust in the government and political leadership, citing incompetence, lack of transparency, and disregard for citizens' financial struggles.
	- Examples: "Die Politiker haben keine Ahnung, was die Menschen denken." "Das Vertrauen in die Regierung ist weg." "Die Politik ist abgehoben und realitätsfremd."
3. Perception of Bevormundung (Paternalism)	- Many felt the law was imposed without adequate consultation, leading to resentment over perceived government overreach and restrictions on personal freedoms.
	- Examples: "Man wird bevormundet und entmündigt." "Das Gesetz wurde mit der Brechstange durchgesetzt." "Der Staat greift zu stark in unser Leben ein."
4. Financial Burden on Citizens	- A recurring theme was the financial strain the law would impose, particularly on middle- and low-income households, leading to frustration and resentment.
	- Examples: "Die Kosten sind für den kleinen Mann nicht tragbar." "Die Politik denkt nicht an die finanziellen Folgen für die Bürger." "Es trifft vor allem die, die ohnehin wenig haben."
5. Support for Climate Action but Criticism of Execution	- Some respondents supported the idea of addressing climate change but criticized the law as rushed, poorly planned, and impractical. This theme is only present if both criticism of execution and support for climate action are explicitly stated.
	- Examples: "Gut gedacht, aber schlecht gemacht." "Die Richtung stimmt, aber die Umsetzung war chaotisch." "Ich unterstütze Klimaschutz, aber nicht so."

Theme	Description
6. Polarization and Support for Opposition Parties	- The law deepened political polarization, with some respondents shifting their support to opposition parties, particularly the AfD, due to dissatisfaction with the governing coalition. - Examples: "Ich wähle jetzt die AfD, weil die Regierung uns im Stich lässt." "Die Ampel treibt die Leute zu extremen Parteien." "Die Opposition hat von der Unzufriedenheit profitiert."
7. Criticism of Communication and Process	- Respondents frequently criticized the chaotic communication and lack of clarity surrounding the law, which they felt led to confusion and mistrust. - Examples: "Die Kommunikation war miserabel." "Es wurde nicht erklärt, wie das Gesetz umgesetzt werden soll." "Die Regierung hat das schlecht verkauft."
8. Skepticism About Germany's Global Impact	- Some questioned the effectiveness of Germany's unilateral climate policies, arguing that global players like China and the U.S. were not taking similar steps. - Examples: "Deutschland allein kann das Klima nicht retten." "Warum müssen wir alles zahlen, während andere Länder nichts tun?" "Das Gesetz ändert am weltweiten CO2-Ausstoß nichts."
9. Media Influence on Public Perception	- Respondents noted the role of media and opposition parties in shaping negative public opinion about the law, often blaming sensationalist coverage for inflaming tensions. - Examples: "Die Bild-Zeitung hat das Gesetz schlechtgeredet." "Die Medien haben die Stimmung angeheizt." "Die Opposition hat das Gesetz für Populismus genutzt."
10. Increased Awareness of Climate Issues	- A minority of respondents indicated that the law raised their awareness of climate change and the need for action, even if they criticized its implementation. - Examples: "Es hat mein Interesse an Klimaschutz geweckt." "Ich finde es gut, dass endlich etwas gegen den Klimawandel getan wird." "Die Richtung stimmt, auch wenn die Umsetzung besser sein könnte."

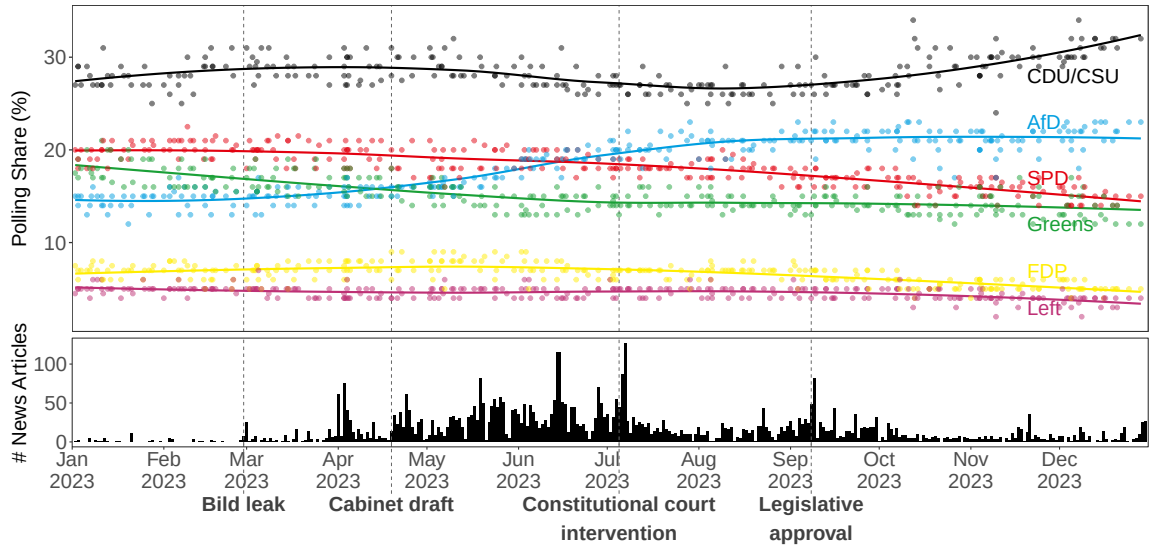
Table A7: Themes and Descriptions: **Third Block**

Theme	**Description**
1. Affordability and Financial Fairness	- Respondents emphasized that climate policies must remain affordable for ordinary citizens and should not disproportionately burden low- and middle-income households.
2. Opposition to Mandatory Measures	- Many respondents opposed coercive policies such as bans or strict mandates, preferring incentives or voluntary approaches.
3. Support for Nuclear Energy	- Respondents advocated for expanding or reintroducing nuclear power as a low-emission energy source.
4. Criticism of Germany's Unilateral Climate Efforts	- Concerns were raised that Germany's climate actions would have little global impact if other countries did not follow similar paths.
5. Focus on Economic Competitiveness	- Respondents feared climate policies could harm Germany's industry, economic strength, and international competitiveness.
6. Skepticism Toward Electric Vehicles	- Doubts about EVs included cost, range, infrastructure limitations, and environmental concerns related to battery production.
7. Preference for Renewable Energy Expansion with Conditions	- Support for renewables was contingent upon improvements in storage technology, grid infrastructure, and reliability.
8. Criticism of Bureaucracy and Inefficiency	- Respondents highlighted excessive bureaucracy and slow administrative processes as barriers to effective climate policy implementation.
9. Demand for Fair Distribution of Costs	- Many argued that corporations and wealthy individuals should bear a larger share of climate policy costs.
10. Support for Public Transportation	- Respondents supported expanding and improving public transport as a climate-friendly alternative to cars.
11. Frustration with Political Leadership	- Respondents expressed distrust in political leaders' competence and sincerity regarding climate policy.
12. Call for Gradual and Realistic Transitions	- Many emphasized gradual transitions to avoid financial or social disruption.
13. Focus on Global Collaboration	- Respondents stressed the need for coordinated international climate action rather than isolated national measures.
14. Criticism of CO2 Taxes	- CO2 taxes were viewed as unfair and ineffective, particularly when they increase living costs.
15. Support for Innovation and Technology	- Respondents favored investment in R&D for technologies such as hydrogen, carbon capture, and synthetic fuels.

B Supplementary Results: Original Survey and Chatbot Interviews

B.1 Descriptive Evidence

Figure B1: Vote Intention Dynamics and the Public Heating Law Debate



Note: This figure shows vote intentions by party and the daily number of articles published in German-language outlets mentioning the heating law between January and December 2023. Each dot represents an individual polling estimate for a party, while the lines show LOESS-smoothed trends in party support over time based on data from https://europeelects.eu/. Article counts are derived from a LexisNexis full-text search for the term "Heizungsgesetz", deduplicated by headline, publication, and date, and aggregated to daily counts. Dashed vertical lines mark four key milestones in the reform's legislative process: the leak of the cabinet draft (28 February 2023), the cabinet's adoption of the draft (19 April 2023), the Federal Constitutional Court's (BVerfG) intervention halting the planned first reading (5 July 2023), and the law's passage by the German parliament (Bundestag) on 8 September 2023.

Table B1: Public Support for the Heating Law: Descriptive Statistics

Statistic	Mean	Median	St. Dev.	Min	Max	N
Heating law is a good policy	4.86	5	2.78	1	11	2,377
New heating systems should be 65% renewable	5.92	6	3.11	1	11	2,377
Government should be able to mandate green heating	4.22	4	3.10	1	11	2,377
Law has more financial disadvantages	7.10	7	3.17	1	11	2,377
Law is important for fighting climate change	5.47	5	3.16	1	11	2,377
Low-income households are overburdened	8.34	9	2.64	1	11	2,377

Notes: The table reports descriptive statistics for survey items measuring respondents' evaluations of the heating law. All items are measured on 11-point scales ranging from 1 to 11, with higher values indicating greater agreement with the respective statement.

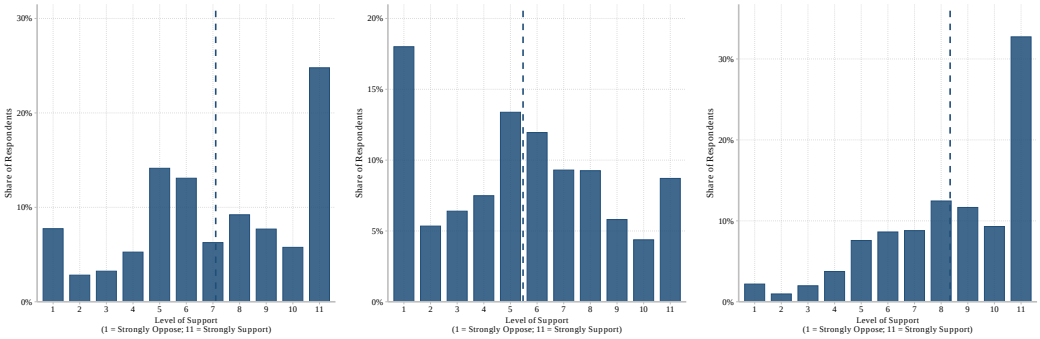
Table B2: Fossil-Fuel Heating and Subjective Exposure to the Heating Among Homeowners and Renters

Dependent Variable:	Subjective Economic Exposure		
	(1)	(2)	(3)
Fossil-Fuel Heating	0.115***	0.045	0.166***
	(0.024)	(0.030)	(0.040)
Age	−0.001	−0.001	−0.002*
	(0.001)	(0.001)	(0.001)
Female	0.023	0.030	0.019
	(0.023)	(0.030)	(0.033)
Ref: Education < Secondary			
Education: Secondary	−0.012	−0.065	0.018
	(0.031)	(0.041)	(0.048)
Education: Upper Secondary	−0.047	−0.073	−0.042
	(0.037)	(0.047)	(0.059)
University	0.062*	0.047	0.096*
	(0.034)	(0.043)	(0.052)
Income	−0.015***	−0.019***	−0.031***
	(0.005)	(0.007)	(0.008)
Ref: No Party			
AfD	0.090*	0.083	0.073
	(0.049)	(0.063)	(0.079)
CDU/CSU	−0.040	−0.011	−0.086
	(0.050)	(0.065)	(0.080)
SPD	−0.126**	−0.173***	−0.081
	(0.052)	(0.066)	(0.085)
Greens	−0.167***	−0.145**	−0.180**
	(0.053)	(0.067)	(0.088)
Left	−0.226***	−0.276***	0.020
	(0.065)	(0.072)	(0.127)
FDP	−0.082	−0.121	−0.032
	(0.074)	(0.096)	(0.113)
BSW	−0.013	−0.022	0.000
	(0.061)	(0.076)	(0.101)
Other	−0.067	−0.154**	0.084
	(0.059)	(0.072)	(0.094)
Sample	Full	Renters	Homeowners
N	1,988	1,124	864
Interview Mode FE	✓	✓	✓

Notes: *p<0.1; **p<0.05; ***p<0.01; This table reports the relationship between fossil-fuel heating and subjective economic exposure to the heating law in the full sample as well as among homeowners and renters. Respondents with irrelevant responses in the open-ended questions or interviews were excluded ($N = 343$). Heteroskedasticity-robust standard errors are in parentheses.

Figure B2: Support for the Heating Law; Additional Outcomes: Full Sample, Homeowners, and Fossil Heating Households

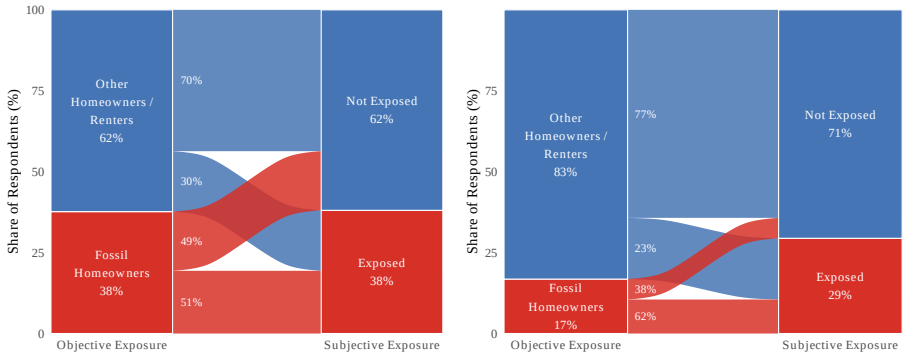
(a) *Heating Law Has Financial Disadvantages* (b) *Heating Law Important For Fighting Climate Change* (c) *Heating Law Overburdens Low-Income Households*



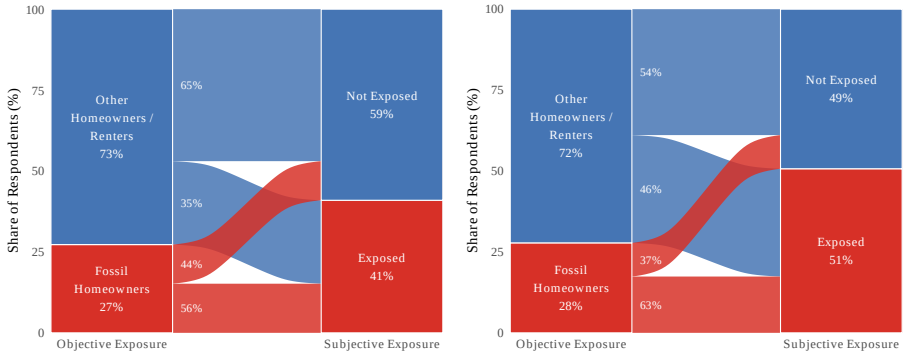
Notes: This figure shows the distribution of support for three policy items related to Germany's 2023 heating law (*Gebäudeenergiegesetz*): (i) more financial disadvantages than advantages for the respondent's household, (ii) heating law is important for fighting climate change, and (iii) low-income households are overburdened by the reform relative to high-income households. Vertical dashed lines indicate means. Error bars represent 95% confidence intervals.

Figure B3: Objective Exposure and Subjective Perceptions of Economic Exposure to the Heating Law by Party Identification: Other Parties

(a) *SPD* (b) *Left*



(c) *FDP* (d) *BSW*



Note: The plots report the breakdown of objective economic exposure and subjective perceptions of exposure to the heating law across respondents' party affiliation. Each cell shows the percentage of all respondents with relevant responses within the category.

Table B3: The Effects of Objective and Subjective Economic Exposure to the Heating Law on Party Preferences; AI Interview Sample

Dependent Variables:	*CDU*	*AfD*	*SPD*	*Greens*	*Left*
	(1)	(2)	(3)	(4)	(5)
Panel (a): Vote Intention					
Objective Economic Exposure	0.091***	0.065**	0.011	−0.059***	−0.011
	(0.029)	(0.029)	(0.025)	(0.021)	(0.011)
Subjective Economic Exposure	0.019	0.088***	−0.033	−0.021	−0.033***
	(0.024)	(0.025)	(0.021)	(0.020)	(0.012)
Panel (b): Party Ranking					
Objective Economic Exposure	0.345***	0.174	0.059	−0.438***	−0.130
	(0.117)	(0.177)	(0.118)	(0.145)	(0.113)
Subjective Economic Exposure	0.181*	0.648***	−0.351***	−0.572***	−0.365***
	(0.104)	(0.154)	(0.102)	(0.131)	(0.105)
N	1,150	1,150	1,150	1,150	1,150
Demographic Controls	✓	✓	✓	✓	✓

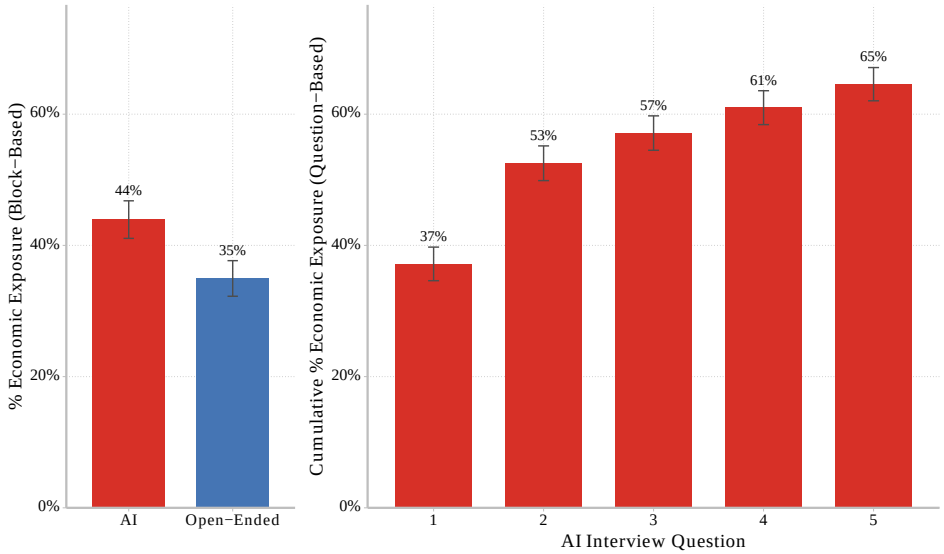
Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the estimated coefficients from linear regressions of party preferences on objective and subjective economic exposure to the heating law. Party preferences are measured as the expected vote choice (binary) and the inverted party rank (1=lowest; 7=highest), among respondents in the AI interview condition. Subjective economic exposure is defined using trained LLM classifications of interviews and open-ended question responses. Objective economic exposure is defined as being a homeowner with a fossil fuel heating system. Demographic controls include age, sex, education, university degree, and income. Heteroskedasticity-robust standard errors are in parentheses.

Table B4: The Effects of Objective and Subjective Economic Exposure to the Heating Law on Party Preferences; Open-Ended Question Sample

Dependent Variables:	*CDU*	*AfD*	*SPD*	*Greens*	*Left*
	(1)	(2)	(3)	(4)	(5)
Panel (a): Vote Intention					
Objective Economic Exposure	0.070**	−0.054**	0.062***	0.004	−0.025**
	(0.028)	(0.025)	(0.022)	(0.020)	(0.012)
Subjective Economic Exposure	−0.014	0.148***	−0.062***	−0.059***	−0.021*
	(0.026)	(0.026)	(0.019)	(0.019)	(0.012)
Panel (b): Party Ranking					
Objective Economic Exposure	0.290***	−0.275*	0.350***	0.161	−0.250**
	(0.102)	(0.156)	(0.098)	(0.131)	(0.102)
Subjective Economic Exposure	0.108	1.006***	−0.507***	−0.961***	−0.239**
	(0.100)	(0.156)	(0.097)	(0.129)	(0.100)
N	1,176	1,176	1,176	1,176	1,176
Demographic Controls	✓	✓	✓	✓	✓

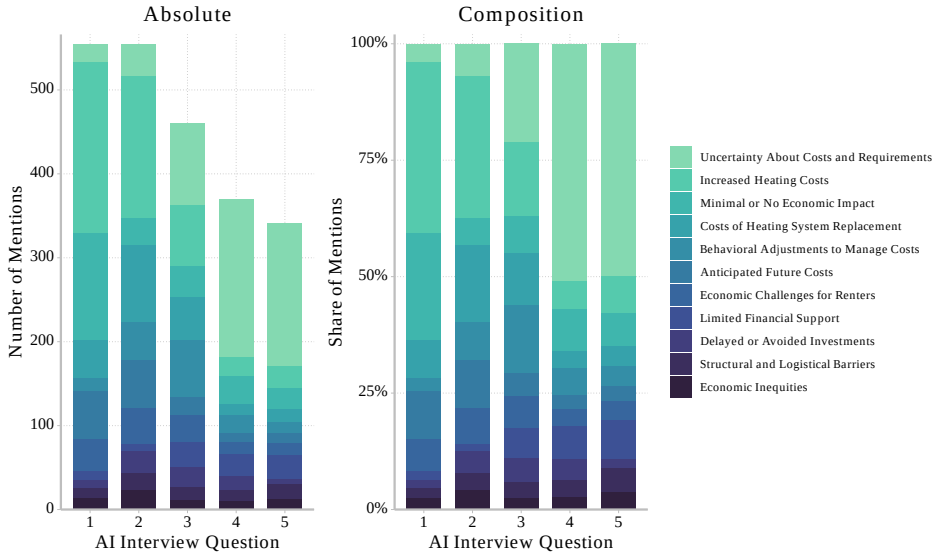
Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the estimated coefficients from linear regressions of party preferences on objective and subjective economic exposure to the heating law. Party preferences are measured as the expected vote choice (binary) and the inverted party rank (1=lowest; 7=highest), among respondents in the open-ended question condition. Subjective economic exposure is defined using trained LLM classifications of interviews and open-ended question responses. Objective economic exposure is defined as being a homeowner with a fossil fuel heating system. Demographic controls include age, sex, education, university degree, and income. Heteroskedasticity-robust standard errors are in parentheses.

Figure B4: Subjective Exposure in AI Interviews: Cumulative Emergence of Exposure Perceptions Throughout Interview Stages and Comparison to Block-Based and Open-Ended Coding



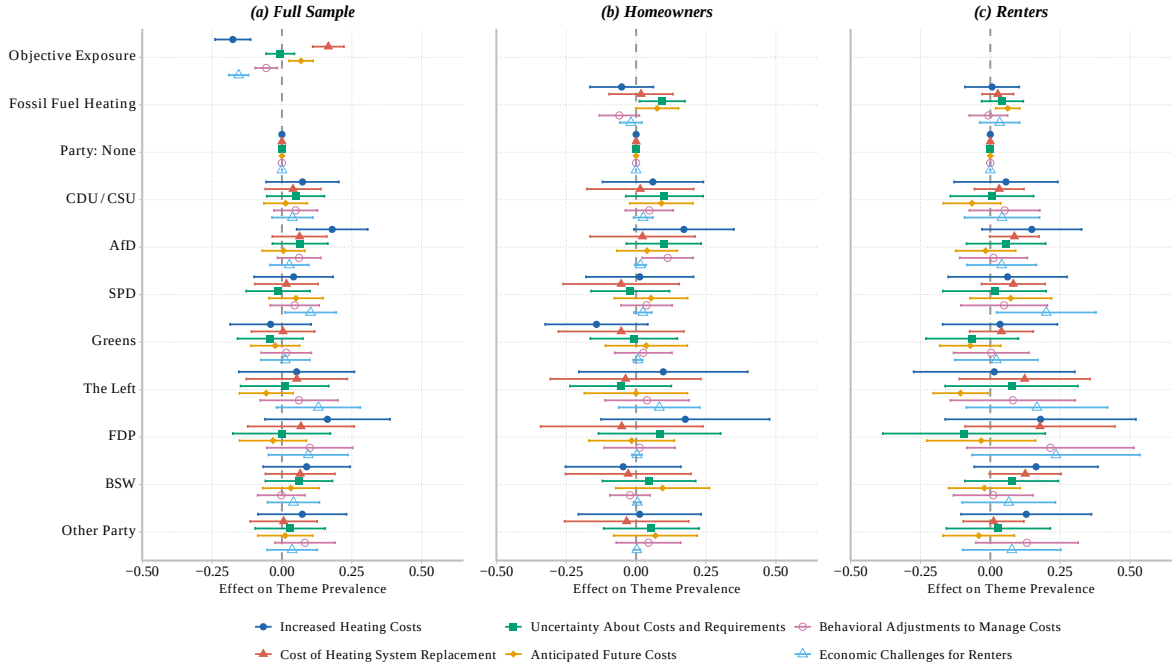
Note: The left-hand panel reports the percentage of respondents coded as expressing subjective economic exposure to the heating law, by interview mode. In the open-ended condition, coding is based on the first open-ended question; in the AI-interview condition, on the entire first interview block. The right-hand panel plots the cumulative percentage of AI-interview respondents coded as expressing subjective exposure across successive question–answer pairs (e.g., the share who have expressed exposure by each stage of the interview). The first question alone elicits comparable levels across interview modes (35% and 37%). Error bars denote 95% confidence intervals.

Figure B5: Evolution of Explanations of Economic Exposure in AI Interviews



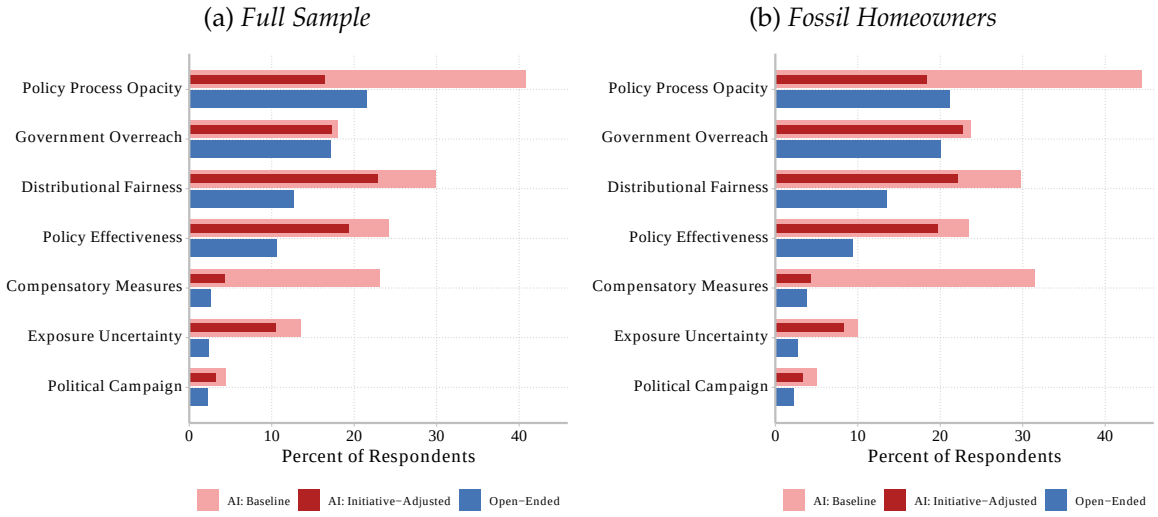
Note: The figure traces the explanations of subjective economic exposure that respondents raise over the course of the first interview block. Explanations are coded from eleven inductively derived themes at the question–answer-pair level; because a respondent can raise several themes at a given stage, the unit is theme mentions rather than respondents. The left-hand panel shows the absolute number of mentions of each theme across questions 1–5. The right-hand panel shows each theme's share of all mentions at a given interview stage. The sample comprises respondents classified as subjectively exposed under the block-based coding ($N = 507$).

Figure B6: The Individual-Level Correlates of Different Explanations of Economic Exposure to the Heating Law



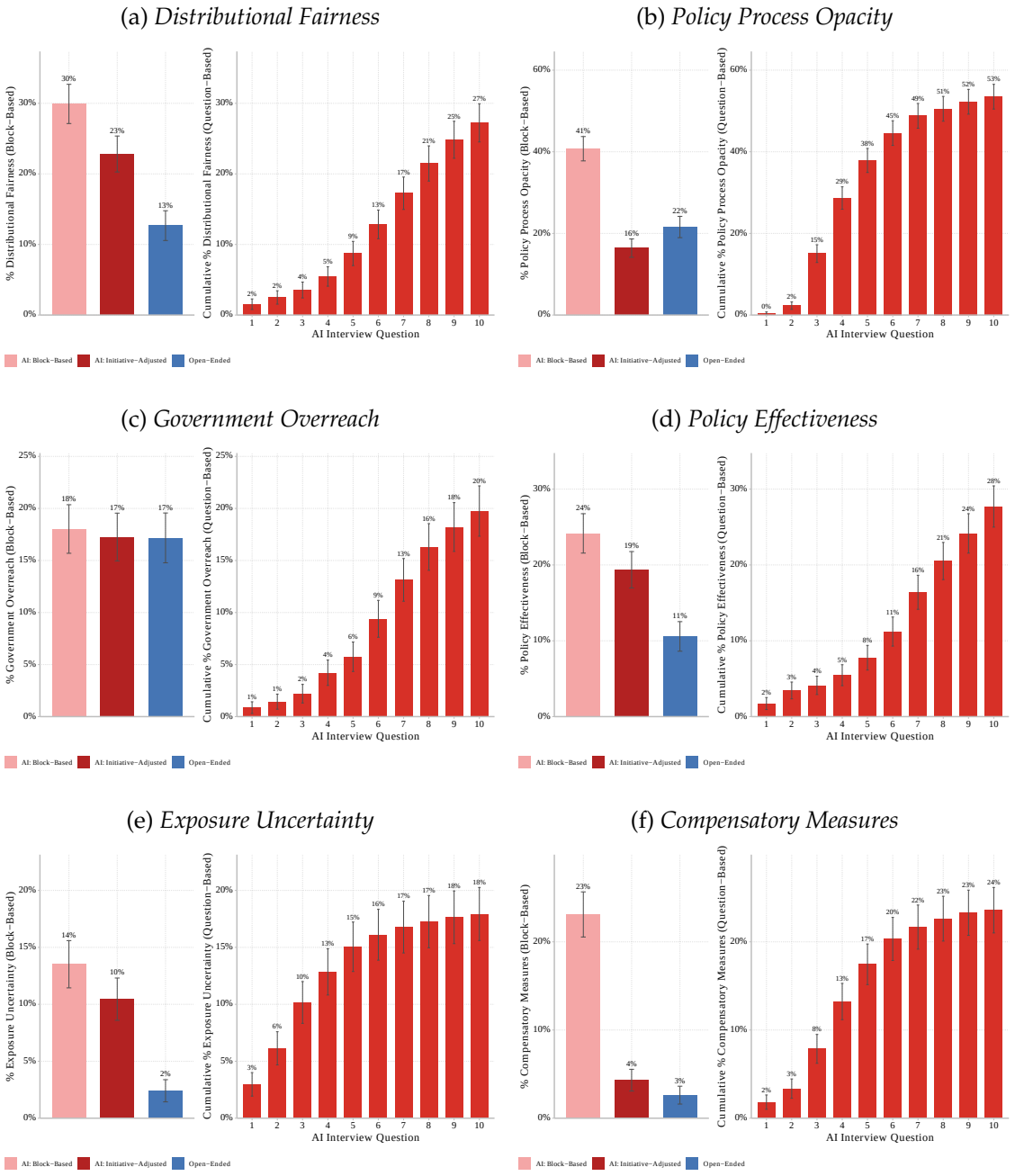
Note: This figure presents the estimated coefficients from linear regression of the binary presence of explanations for economic exposure to the heating law on party identification, objective exposure (full sample, fossil-fuel homeownership), and fossil-fuel heating (homeowner and renter samples). The sample is restricted to individuals who cite economic exposure ($N = 917$). All models control for demographic characteristics. Error bars represent heteroskedasticity-robust 95% confidence intervals.

Figure B7: The Relative Prevalence of Narratives About the Heating Law; AI Interview and Open-Ended Questions



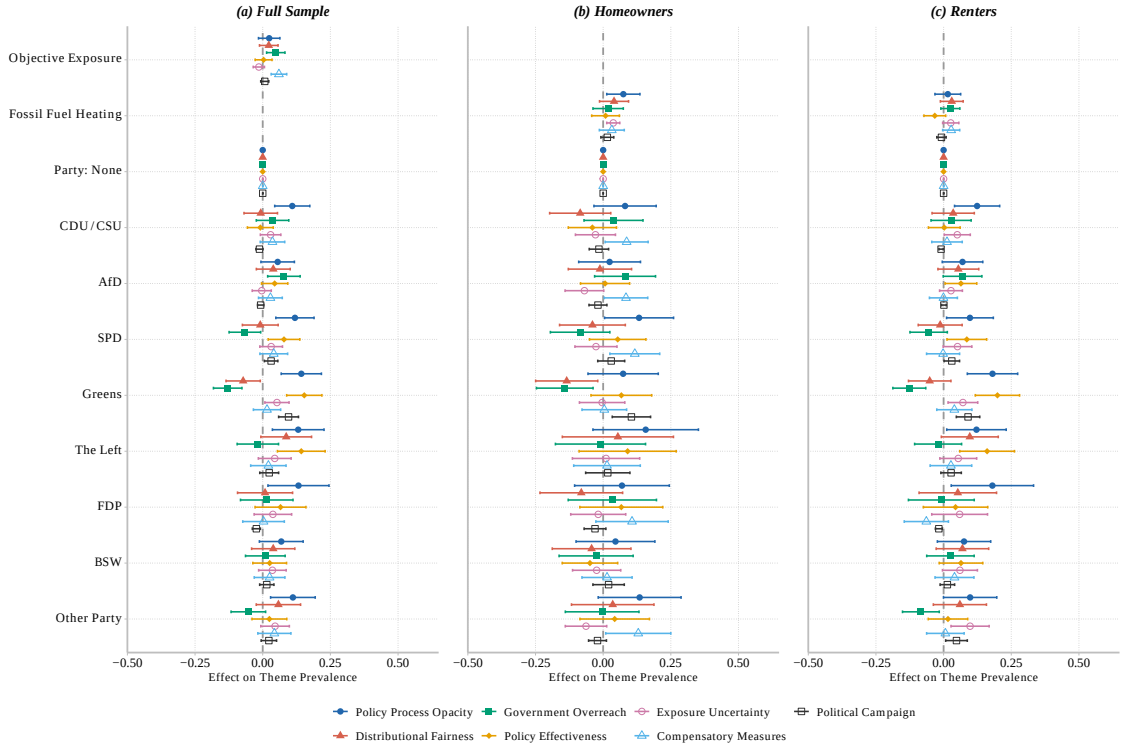
Note: This figure shows the relative prevalence of narrative themes decomposed by interview mode. We distinguish between homeowners with fossil-fuel heating systems and all remaining respondents. The initiative adjustment codes respondents who mention a theme only after it is introduced by the AI interviewer as zero.

Figure B8: Evolution of Political Narratives of the Heating Law in AI Interviews



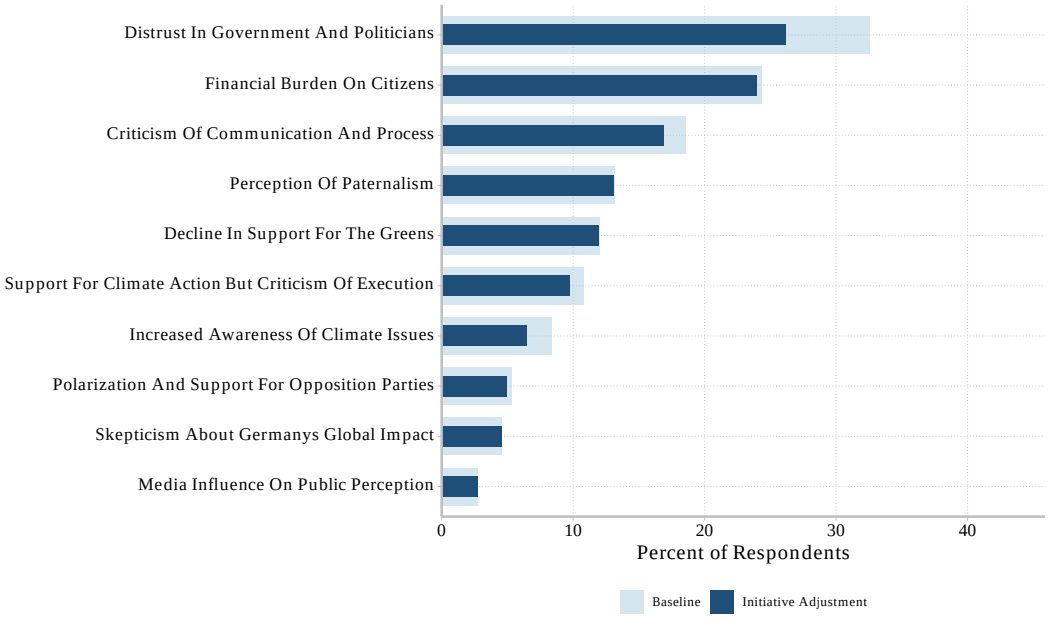
Note: This figure illustrates the evolution of the six most prevalent preregistered themes over the course of the first two interview blocks. Each panel traces the evolution of a single narrative. The left-hand plot reports the share of respondents whose interview blocks are coded for the narrative. For AI interviews, we use both the raw block-based classification and the initiative-adjusted classification, which removes narratives first introduced by the AI interviewer. The right-hand plot shows the cumulative share of AI-interview respondents coded for the narrative across the first ten question–answer pairs. Once a respondent expresses the narrative, they remain coded for it at all subsequent stages, and the denominator is held fixed at the set of respondents present at the first question. Error bars denote 95% confidence intervals.

Figure B9: The Individual-Level Correlates of References to Preregistered Narratives



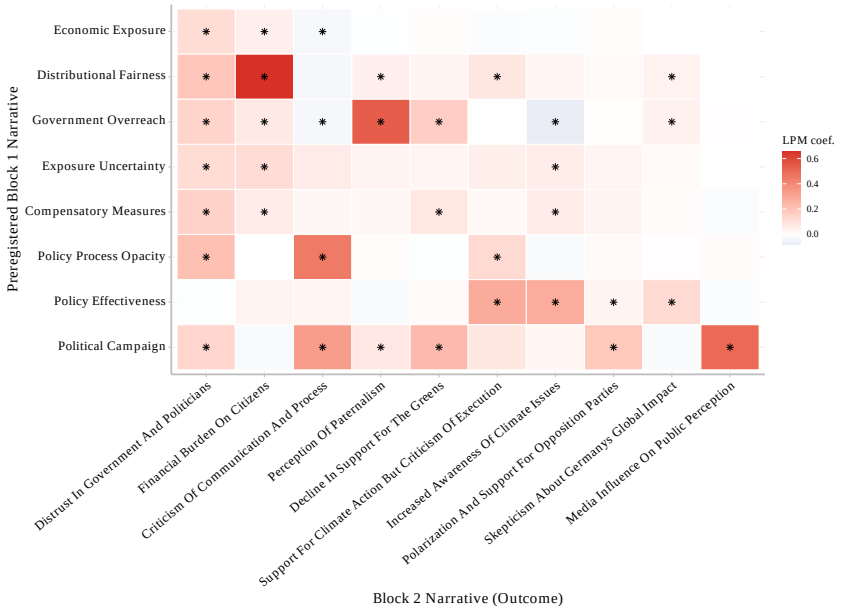
Note: This figure presents the estimated coefficients from linear regression of the binary presence of our preregistered political narratives of the heating law on effects of party identification, objective exposure (full sample, fossil-fuel homeownership), and fossil-fuel heating (homeowner and renter samples). Error bars represent heteroskedasticity-robust 95% confidence intervals.

Figure B10: How Citizens Narrate the Political Impact of the Heating Law



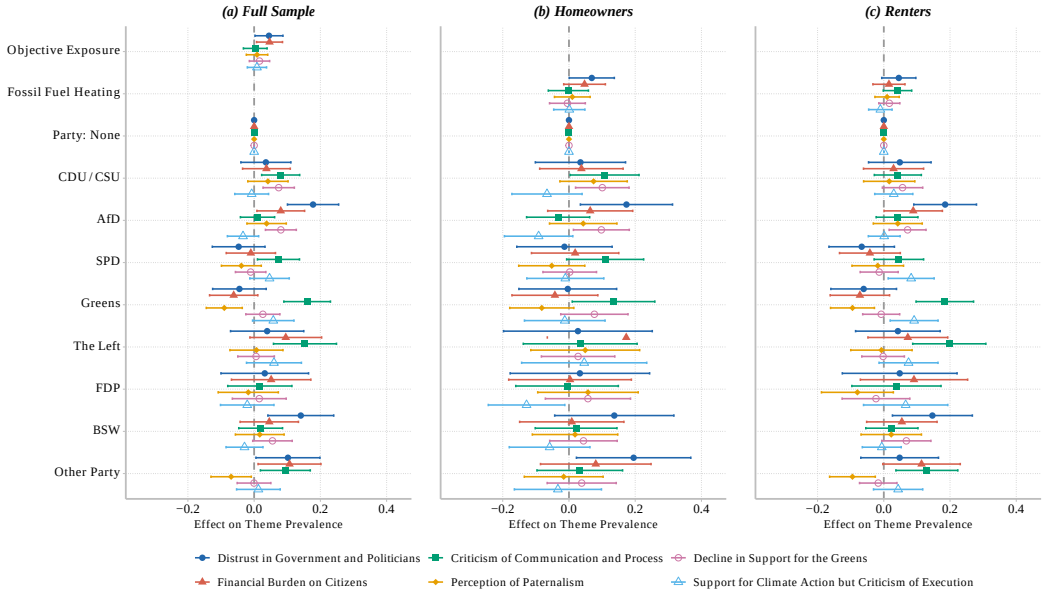
Note: This figure shows the relative prevalence of narrative themes in our second open-ended question and the second block of our chatbot interviews. The initiative adjustment codes respondents who mention a theme only after it is introduced by the AI interviewer as zero.

Figure B11: The Association Between Preregistered Narratives and Inductively Identified Political Narratives in Interview Block 2



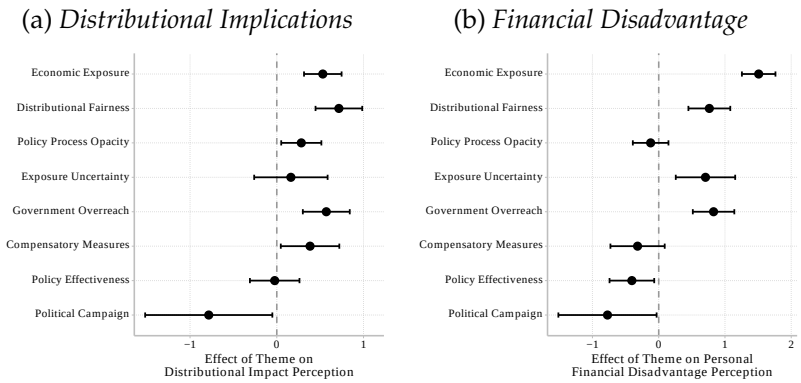
Note: The figure traces how the presence of preregistered narratives predicts the presence of political narratives in interview block 2. For each of the second-block themes, we estimate a linear probability model (LPM) in which the presence of that theme is regressed on the presence of all preregistered themes. Asterisks mark coefficients significant at the 5% level.

Figure B12: The Individual-Level Correlates of References to Inductive Narratives (Block 2)



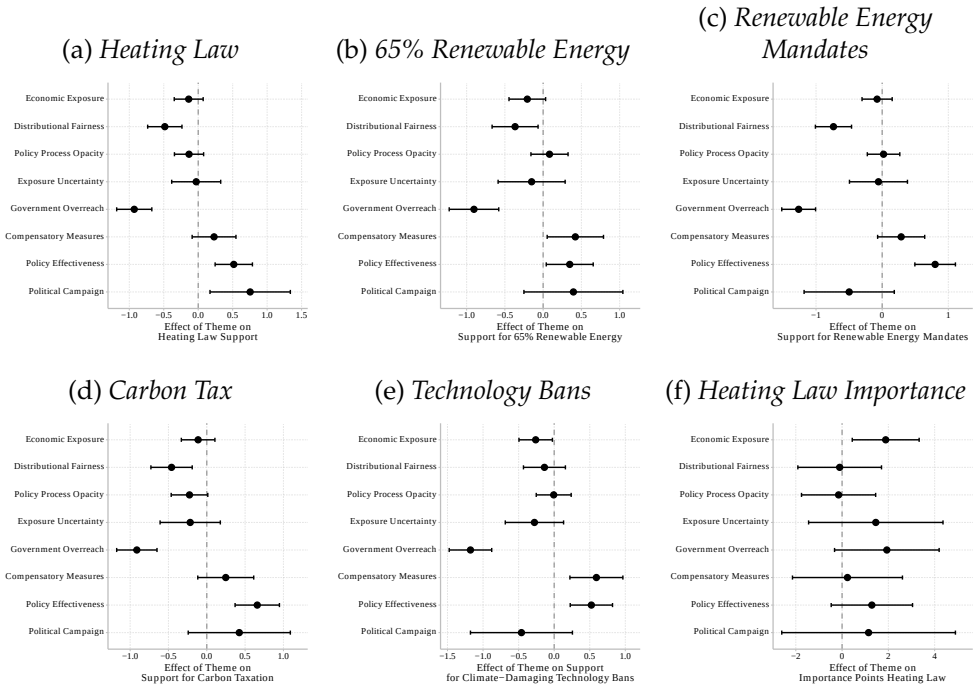
Note: This figure presents the estimated coefficients from linear regressions of the binary presence of our inductively identified narratives in the second interview block on party identification, objective exposure (full sample, fossil-fuel homeownership), and fossil-fuel heating (homeowner and renter samples). Error bars represent heteroskedasticity-robust 95% confidence intervals.

Figure B13: Narratives on Support for the Heating Law and Policy Preferences; Further Evidence



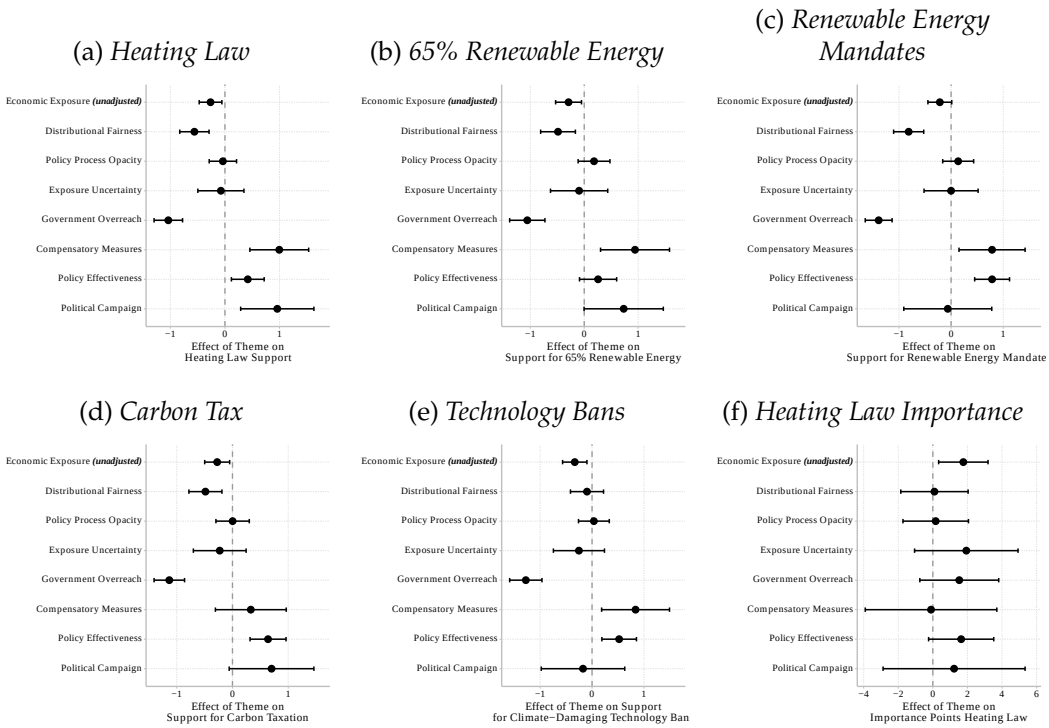
Note: This figure shows the estimated coefficients from linear regressions of different components of support for the heating law and respondents' climate policy preferences on the deductive narratives identified in qualitative interviews and open-ended questions. The dependent variables are measured on an 11-point scale ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"), based on agreement with the statements: "The heating law has more financial advantages than disadvantages for my household" and "The heating law imposes an excessive financial burden on low-income individuals compared to high-income earners." Error bars represent heteroskedasticity-robust 95% confidence intervals.

Figure B14: Respondents' Narratives on Support for the Heating Law and Policy Preferences; Additional Robustness Checks



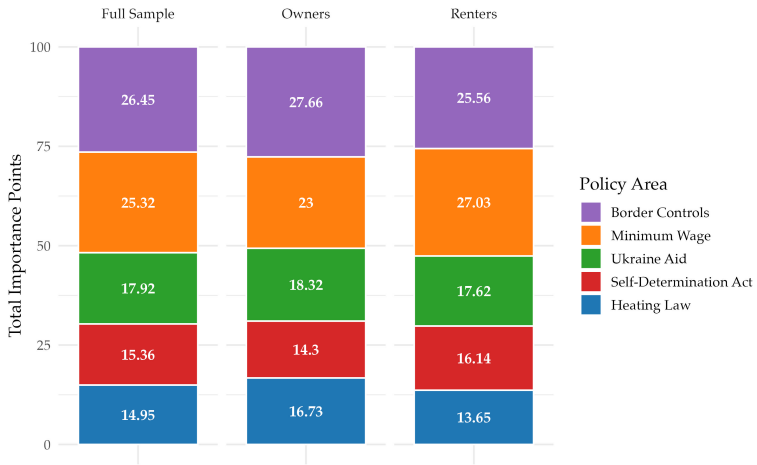
Note: This figure shows the estimated coefficients from linear regressions of different components of support for the heating law and respondents' climate policy preferences on the deductive narratives identified in qualitative interviews and open-ended questions. We control for individuals' ranks of each party as an alternative for the partisanship indicator, the experimental groups in the framing experiment, as well as for preferences for tax cuts at the cost of lower government spending and immigration restrictions. Models from *Panel (d)* to *Panel (f)* include controls for general heating law support, the outcome in *Panel (a)*.

Figure B15: Respondents' Narratives on Support for the Heating Law and Policy Preferences; Narrative Predictors with Initiative Adjustment



Note: This figure shows the estimated coefficients from linear regressions of different components of support for the heating law and respondents' climate policy preferences on the initiative-adjusted (AI only) deductive narratives identified in qualitative interviews and open-ended questions.

Figure B16: Average Policy Issue Priorities Among Respondents, Homeowners, and Renters

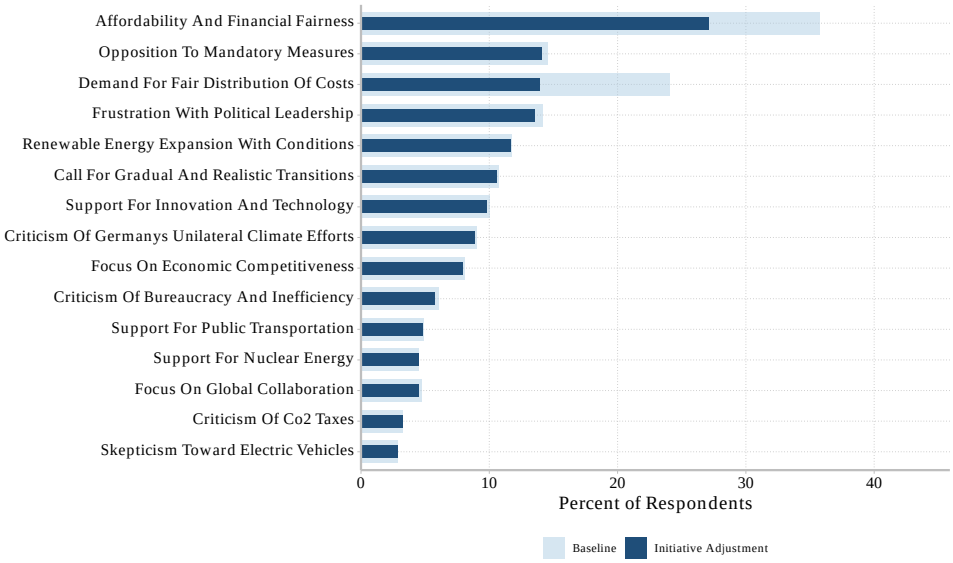


Note: We elicit policy priorities among respondents by asking them to rate five policies adopted by the traffic light coalition government (2021-2024). Respondents are asked to fully distribute 100 "importance points" across the five policy domains. These policies include the heating law amendment, the minimum wage hike, military and humanitarian aid for Ukraine, the Self-Determination Act, and the temporary adoption of border controls to curb immigration. This plot shows the average policy importance rankings in the full sample, and among homeowners and renters.

Figure B17: Average Policy Issue Priorities Across Party Identification

Note: We elicit policy priorities among respondents by asking them to rate five policies adopted by the traffic light coalition government (2021-2024). Respondents are asked to fully distribute 100 "importance points" across the five policy domains. These policies include the heating law amendment, the minimum wage hike, military and humanitarian aid for Ukraine, the Self-Determination Act, and the temporary adoption of border controls to curb immigration. This plot shows the average policy importance rankings across party identification.

Figure B18: Voter Preferences Over Future Climate Policies



Note: This figure shows the relative prevalence of narrative themes in our third open-ended question and the third block of our chatbot interviews. The initiative adjustment codes respondents who mention a theme only after it is introduced by the AI interviewer as zero.

B.2 Experimental Evidence

Table B5: Framing Effects on Support for the Heating Law; Other Outcomes I

Dependent Variables:	*Financial Disadvantage*		*Fighting Climate Change*		*Low-Income Households Overburdened*	
	(1)	(2)	(3)	(4)	(5)	(6)
Reference: Household Costs Frame						
Climate Benefits Frame	−0.117	−0.066	−0.178	−0.182	0.107	0.158
	(0.156)	(0.148)	(0.158)	(0.138)	(0.127)	(0.121)
N	1,616	1,607	1,616	1,607	1,616	1,607
Demographic Controls	✗	✓	✗	✓	✗	✓

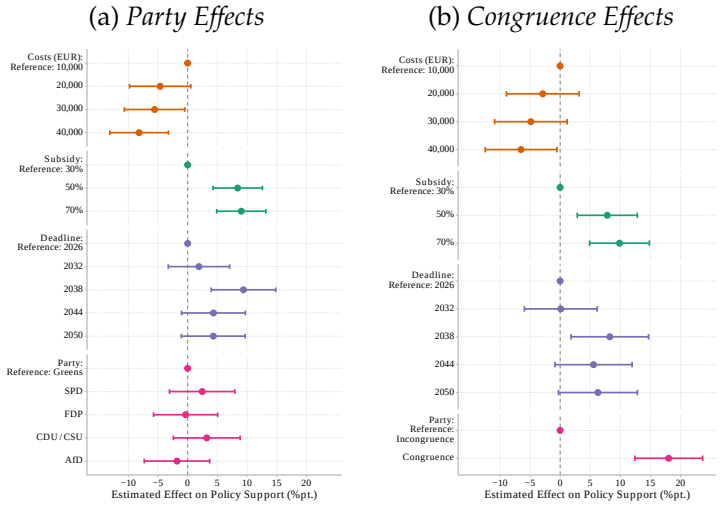
Notes: *p<0.1; **p<0.05; ***p<0.01; This table reports the effects of a climate benefits frame on support for the three other variables of support for the heating law (see Table B1). Demographic controls include age, sex, education, university degree, and party identification. Heteroskedasticity-robust standard errors are in parentheses.

Table B6: Framing Effects on Support for the Heating Law; Other Outcomes II

Dependent Variables:	*Carbon Taxes*		*Technology Bans*		*Taxes vs. Spending*		*Immigration Restrictions*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reference: Household Costs Frame								
Climate Benefits Frame	−0.047	−0.087	0.263*	0.237*	0.083	0.130	0.068	0.118
	(0.153)	(0.133)	(0.151)	(0.139)	(0.135)	(0.126)	(0.155)	(0.133)
N	1,615	1,606	1,612	1,603	1,612	1,603	1,616	1,607
Demographic Controls	✗	✓	✗	✓	✗	✓	✗	✓

Notes: *p<0.1; **p<0.05; ***p<0.01; This table reports the effects of a climate benefits frame on preferences for carbon taxes, bans of climate-damaging technologies, tax cuts at the cost of lower government spending, and immigration restrictions. Demographic controls include age, sex, education, university degree, and party identification. Heteroskedasticity-robust standard errors are in parentheses.

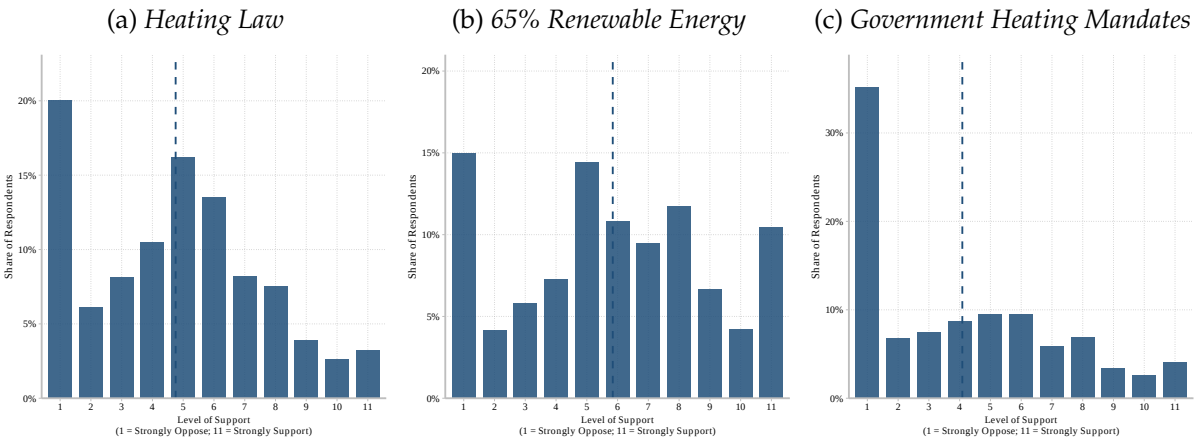
Figure B19: The Effects of Policy Characteristics on Support for Renewable-Energy Reforms in Residential Heating



Note: These figures report the average marginal effects of policy design characteristics on support for the heating law reform, along with 95% confidence intervals (left panel: $N = 2{,}362$, right panel: $N = 1{,}693$). We rescale the original 1–11 support scale to a binary support indicator where a response is coded 1 for support levels of at least 7. Both models include controls for age, sex, education, university degree, income, homeownership, and fossil-fuel heating.

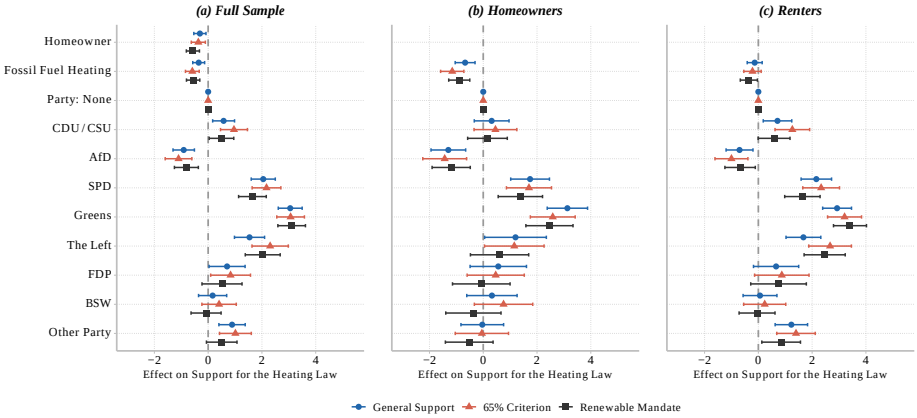
B.3 Main Analysis with Stratification Weights

Figure B20: Distribution of Mass Support for the Heating Law



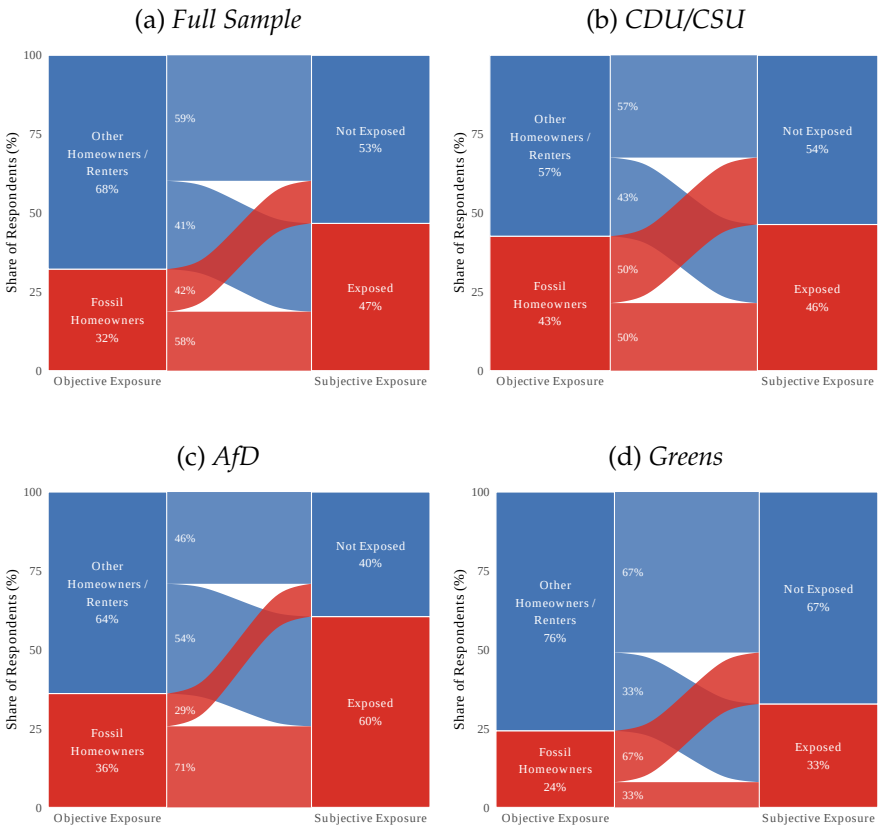
Notes: This figure shows the distribution of support for three policy items related to Germany's 2023 heating law ($N = 2{,}377$), using stratification weights for age, gender, and education: overall support for the law, support for the requirement that newly installed heating systems run on at least 65% renewable energy, and support for government mandates requiring households to install environmentally friendly heating systems. Vertical dashed lines indicate average levels of support. Note that y-axes vary across panels. Error bars represent 95% confidence intervals.

Figure B21: The Individual-Level Correlates of Support for the Heating Law with Stratification Weights



Note: This figure presents the estimated coefficients from linear regressions of different components of support for the heating law amendment on homeownership, fossil-fuel-based heating systems, and party identification. All models apply stratification weights for age, gender, and education and control for age, sex, education, and income. The results are shown separately for all respondents ($N = 2{,}362$), homeowners ($N = 1{,}002$), and renters ($N = 1{,}360$). The dependent variable is measured on an 11-point scale ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"). Error bars represent heteroskedasticity-robust 95% confidence intervals.

Figure B22: Objective Exposure and Subjective Perceptions of Economic Exposure to the Heating Law by Party Identification with Stratification Weights



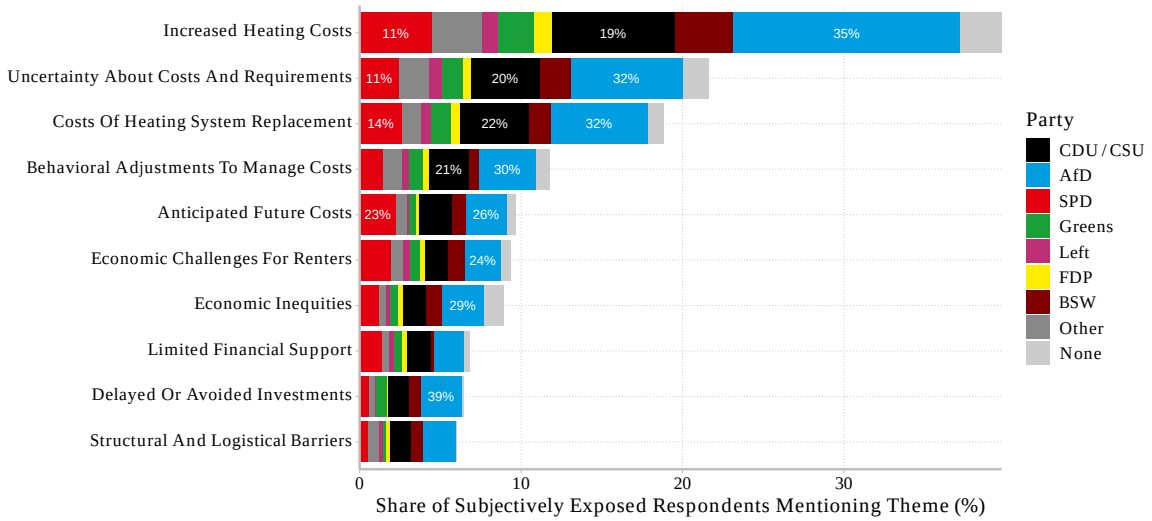
Note: The plots report the breakdown of objective economic exposure and subjective perceptions of exposure to the heating law across respondents' party affiliation, using stratification weights for age, gender, and education.

Table B7: Objective and Subjective Economic Exposure to the Heating Law and Party Preferences; Stratification Weights

Dependent Variables:	*CDU*	*AfD*	*SPD*	*Greens*	*Left*
	(1)	(2)	(3)	(4)	(5)
Panel (a): Vote Intention					
Objective Economic Exposure	0.076***	0.011	0.031*	−0.017	−0.016**
	(0.021)	(0.021)	(0.018)	(0.014)	(0.007)
Subjective Economic Exposure	0.002	0.125***	−0.044***	−0.041***	−0.024***
	(0.018)	(0.020)	(0.016)	(0.013)	(0.008)
Panel (b): Party Ranking					
Objective Economic Exposure	0.314***	−0.023	0.145*	−0.126	−0.180**
	(0.081)	(0.125)	(0.080)	(0.099)	(0.078)
Subjective Economic Exposure	0.136*	0.876***	−0.433***	−0.791***	−0.343***
	(0.076)	(0.117)	(0.074)	(0.093)	(0.075)
N	2,326	2,326	2,326	2,326	2,326
Demographic Controls	✓	✓	✓	✓	✓
Interview Mode FE	✓	✓	✓	✓	✓

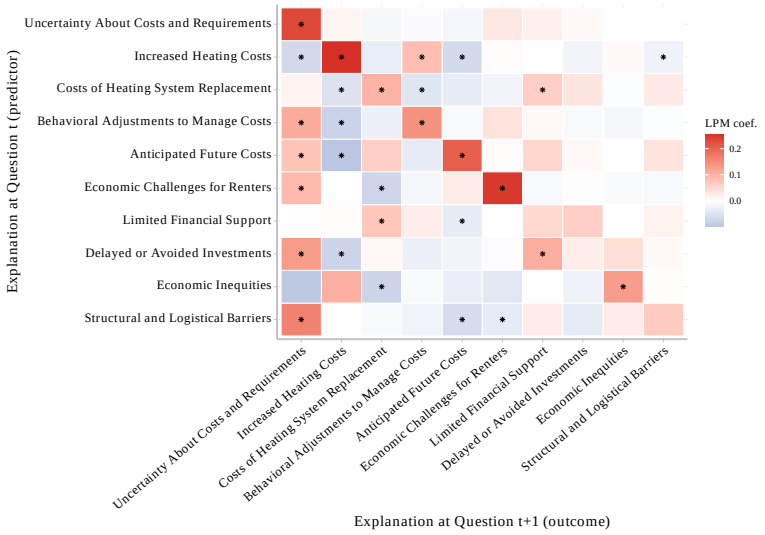
Notes: *p<0.1; **p<0.05; ***p<0.01; This table reports the effects of objective and subjective economic exposure to the heating law on party preferences, measured as the expected vote choice (binary) and the inverted party rank (1=lowest; 7=highest). The estimates are based on linear regressions using stratification weights for age, gender, and education. Subjective economic exposure is defined using trained LLM classifications of interviews and open-ended question responses. Objective economic exposure is defined as being a homeowner with a fossil fuel heating system. Demographic controls include age, sex, education, university degree, and income. Heteroskedasticity-robust standard errors are in parentheses.

Figure B23: Measuring Explanations of Economic Exposure to the Heating Law with Stratification Weights



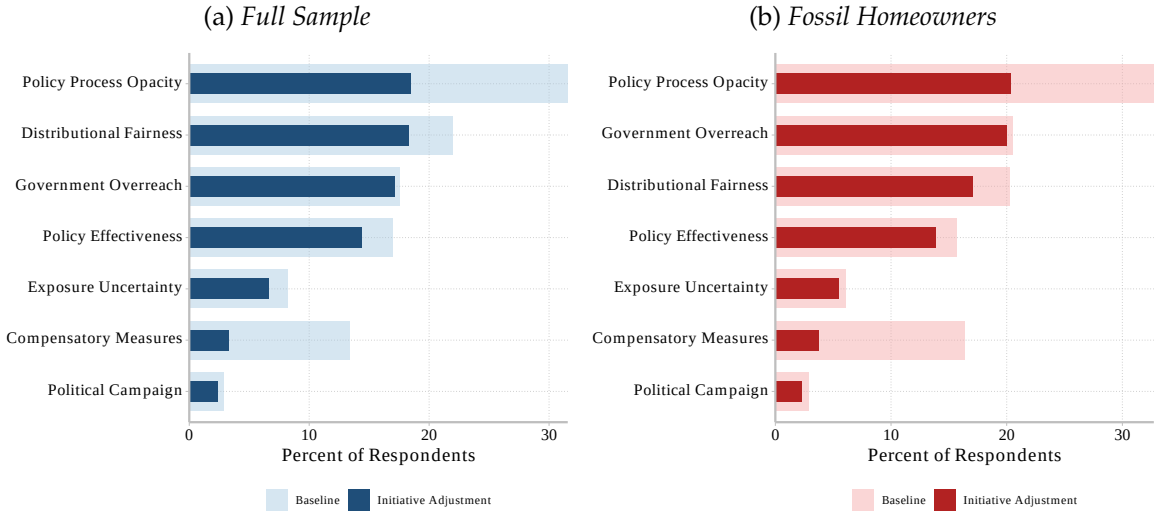
Note: This figure shows the relative prevalence of respondents' explanations of their economic exposure to the heating law across partisan identity (N = 1,058), using stratification weights for age, gender, and education. The party colors and labels illustrate the relative frequency of partisans within each theme. The economic exposure condition is derived from our deductive classification procedure. The explanations are identified and classified by an automated LLM.

Figure B24: Reasoning Chains Among Subjectively Exposed Respondents With Stratification Weights



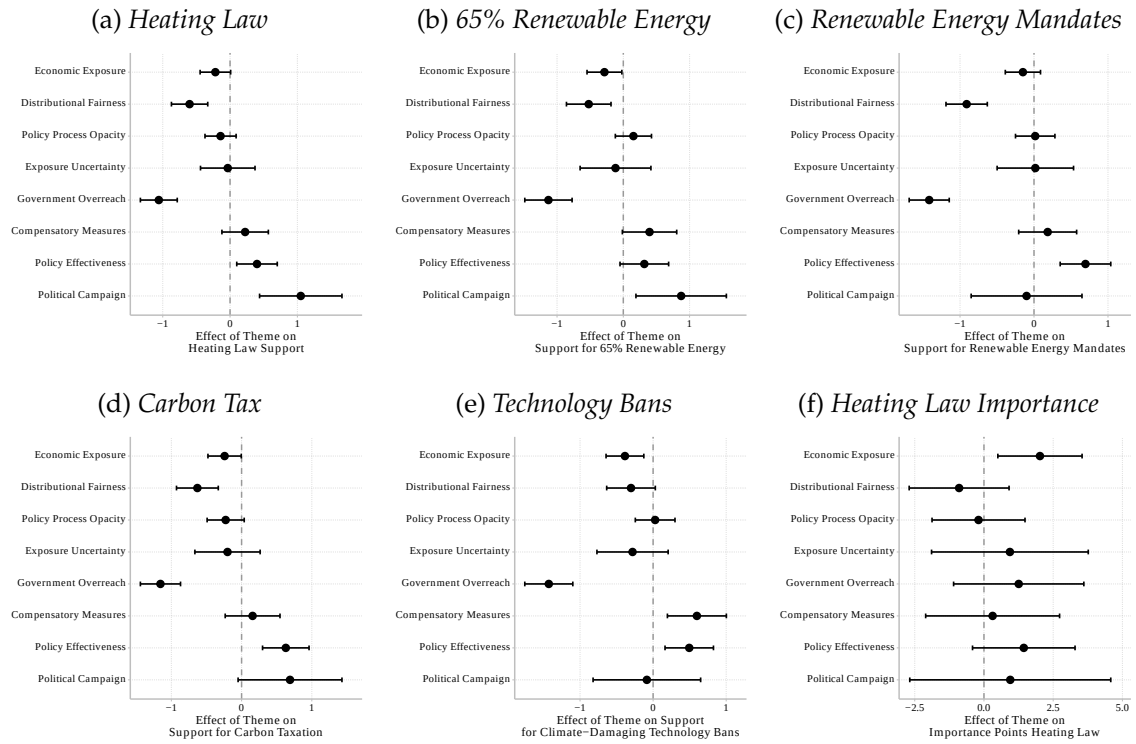
Note: The figure traces how the explanations respondents give at one interview question relate to those they give at the next, using stratification weights for age, gender, and education. For each of the eleven inductively derived themes, we estimate a weighted linear probability model (LPM) in which the presence of that theme at question $t+1$ is regressed on the presence of all themes at question t, with question-number fixed effects and standard errors clustered by respondent. Each cell reports the coefficient of a theme at t (row) on a theme at $t+1$ (column). Asterisks mark coefficients significant at the 5% level.

Figure B25: The Relative Prevalence of Narratives About the Heating Law with Stratification Weights



Note: This figure shows the relative prevalence of narrative themes in open-ended text responses and chatbot interviews, using stratification weights for age, gender, and education. We distinguish between homeowners with fossil-fuel heating systems and all remaining respondents. The initiative adjustment codes respondents who mention a theme only after it is introduced by the AI interviewer as zero.

Figure B26: Respondents' Narratives on Support for the Heating Law and Policy Preferences; Stratification Weights



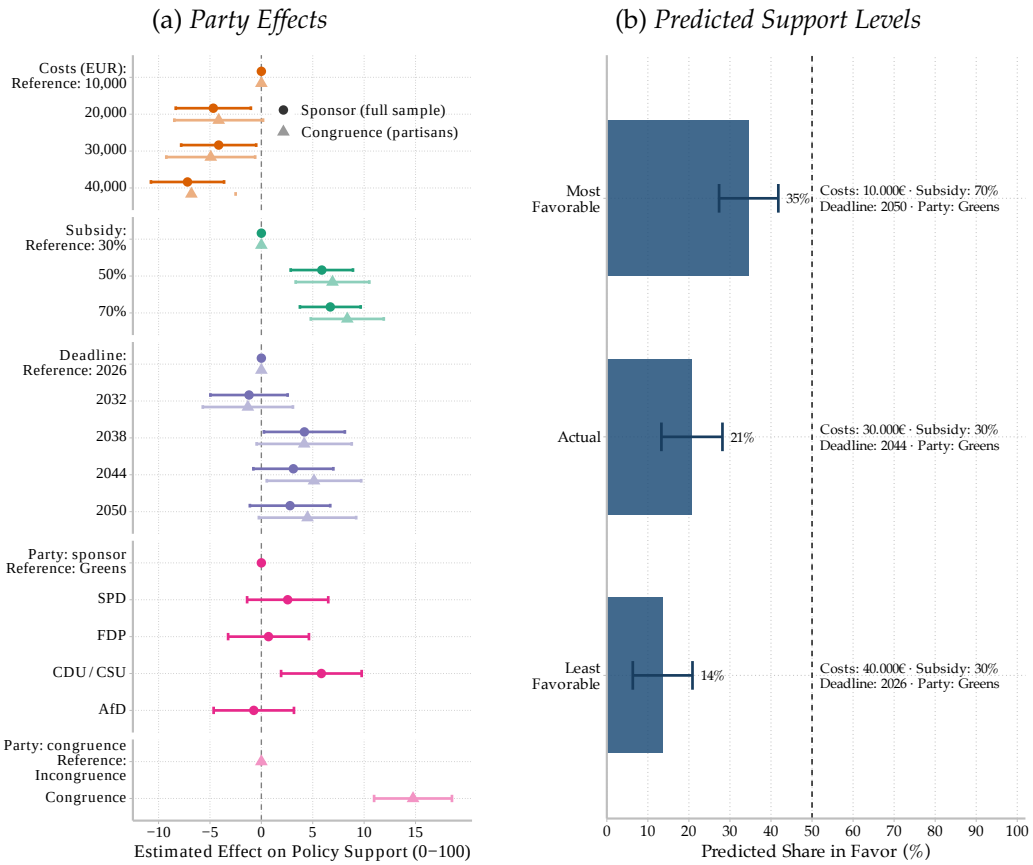
Note: This figure shows the estimated coefficients from linear regressions of different components of support for the heating law and respondents' climate policy preferences on the deductive narratives identified in qualitative interviews and open-ended questions. The dependent variables from *Panel (a)* to *Panel (e)* are measured on an eleven-point scale ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"). Heating law importance measures the policy's relative importance for self-reported preference formation on a scale from 0-100. All models apply stratification weights for age, gender, and education and control for age, gender, education, income, homeowner, fossil-fuel heating, partisanship, and interview mode. Error bars represent heteroskedasticity-robust 95% confidence intervals.

Table B8: Framing Effects on Support for the Heating Law; Stratification Weights

Dependent Variables:	*General Support*		*65% Renewable Energy*		*Renewable Heating Mandate*	
	(1)	(2)	(3)	(4)	(5)	(6)
Reference: Household Costs Frame						
Climate Benefits Frame	0.190	0.188	0.079	0.088	0.220	0.186
	(0.146)	(0.128)	(0.167)	(0.151)	(0.162)	(0.146)
N	1,616	1,607	1,616	1,607	1,616	1,607
Demographic Controls	✗	✓	✗	✓	✗	✓

Notes: *p<0.1; **p<0.05; ***p<0.01; This table reports the effects of a climate benefits frame on support for the heating law, using stratification weights for age, gender, and education. The dependent variables measure general support for the heating law, support for the 65% renewable energy condition, and support for government mandates for renewable energy in residential heating, ranging from 1 ("Disagree strongly") to 11 ("Agree strongly"). Demographic controls include age, sex, education, university degree, and party identification. Heteroskedasticity-robust standard errors are in parentheses.

Figure B27: The Effects of Policy Characteristics on Support for Renewable-Energy Reforms in Residential Heating With Stratification Weights



Note: Panel (a) shows the average marginal effects of policy design characteristics on support for the heating law reform estimated by two separate models, using stratification weights for age, gender, and education. Points show the results with the individual party sponsors as independent variables (N = 2,362), whereas triangles show results of a specification with a party congruence indicator equaling 1 if the party endorsing the reform is the respondent's preferred party (N = 1,693). We use the original 1–11 support scale rescaled to range from 0 to 100 as dependent variables. Both models include controls for age, sex, education, university degree, income, homeownership, and fossil-fuel heating. Panel (b) reports the predicted share of respondents supporting a given policy package. These estimates are based on a regression with a binary support indicator as the dependent variable, where a response is coded 1 for support levels of at least 7 on the 11-point scale. Figure B19 shows the average marginal effects with the binary support outcome. Error bars represent heteroskedasticity-robust 95% confidence intervals.

C Full Regression Tables

Table C1: The Individual-Level Correlates of Support for the Heating Law (Full Regression Table)

Dependent Variable:	*General Support*			*65% Criterion*			*Renewable Mandate*		
	Full Sample	Homeowners	Renters	Full Sample	Homeowners	Renters	Full Sample	Homeowners	Renters
Homeowner	−0.238**			−0.325***			−0.491***		
	(0.109)			(0.123)			(0.119)		
Fossil Heating System	−0.383***	−0.759***	−0.105	−0.618***	−1.181***	−0.205	−0.597***	−1.006***	−0.309**
	(0.107)	(0.184)	(0.131)	(0.121)	(0.204)	(0.153)	(0.122)	(0.197)	(0.154)
Party: CDU/CSU	0.514***	0.290	0.659**	0.926***	0.304	1.282***	0.452**	0.272	0.482
	(0.198)	(0.318)	(0.257)	(0.238)	(0.373)	(0.307)	(0.226)	(0.346)	(0.297)
Party: AfD	−0.998***	−1.334***	−0.789***	−1.222***	−1.738***	−1.008***	−0.851***	−1.064***	−0.775***
	(0.196)	(0.320)	(0.245)	(0.236)	(0.384)	(0.291)	(0.221)	(0.345)	(0.282)
Party: SPD	1.978***	1.803***	2.038***	2.116***	1.552***	2.352***	1.719***	1.670***	1.627***
	(0.219)	(0.359)	(0.271)	(0.253)	(0.400)	(0.319)	(0.250)	(0.394)	(0.318)
Party: Greens	2.923***	3.080***	2.785***	3.014***	2.485***	3.185***	3.080***	2.717***	3.259***
	(0.215)	(0.366)	(0.258)	(0.247)	(0.401)	(0.301)	(0.251)	(0.410)	(0.308)
Party: Left	1.591***	1.206**	1.741***	2.247***	1.013*	2.678***	1.991***	0.837	2.363***
	(0.265)	(0.544)	(0.305)	(0.313)	(0.546)	(0.368)	(0.317)	(0.537)	(0.378)
Party: FDP	0.605*	0.650	0.391	0.771**	0.432	0.692	0.461	0.248	0.413
	(0.334)	(0.535)	(0.396)	(0.366)	(0.524)	(0.492)	(0.362)	(0.531)	(0.490)
Party: BSW	0.086	0.258	−0.030	0.395	0.446	0.322	−0.122	−0.322	−0.095
	(0.252)	(0.452)	(0.299)	(0.301)	(0.512)	(0.367)	(0.275)	(0.468)	(0.339)
Party: Other	0.794***	−0.082	1.175***	1.020***	−0.190	1.539***	0.430	−0.457	0.782**
	(0.235)	(0.376)	(0.289)	(0.282)	(0.473)	(0.337)	(0.277)	(0.416)	(0.355)
Female	−0.009	−0.151	0.121	0.152	−0.037	0.316**	−0.116	−0.288*	0.031
	(0.103)	(0.157)	(0.137)	(0.118)	(0.172)	(0.159)	(0.116)	(0.164)	(0.162)
Age	−0.019***	−0.027***	−0.015***	−0.003	0.000	−0.003	−0.030***	−0.043***	−0.021***
	(0.004)	(0.006)	(0.004)	(0.004)	(0.007)	(0.005)	(0.004)	(0.007)	(0.005)
Education: Secondary	−0.091	0.182	−0.178	−0.246	0.101	−0.398*	−0.152	0.196	−0.343*
	(0.140)	(0.217)	(0.183)	(0.163)	(0.256)	(0.212)	(0.152)	(0.228)	(0.205)
Education: Upper Secondary	0.132	0.339	0.074	0.104	0.290	0.038	0.040	−0.057	0.133
	(0.162)	(0.268)	(0.202)	(0.187)	(0.306)	(0.235)	(0.187)	(0.285)	(0.244)
University Education	0.215	0.434*	−0.016	−0.034	0.260	−0.292	0.542***	1.217***	0.021
	(0.149)	(0.241)	(0.187)	(0.167)	(0.261)	(0.217)	(0.176)	(0.263)	(0.233)
Income (Ordinal, 1-11)	0.064***	0.081*	0.027	0.122***	0.188***	0.065*	0.061**	0.063	0.040
	(0.024)	(0.042)	(0.031)	(0.028)	(0.044)	(0.036)	(0.027)	(0.042)	(0.036)
N	2,362	1,002	1,360	2,362	1,002	1,360	2,362	1,002	1,360
R2 Adj.	0.255	0.316	0.218	0.232	0.271	0.219	0.251	0.311	0.214

Notes: *p<0.1; **p<0.05; ***p<0.01; This table reports the full table of the correlates of support for the heating law amendment illustrated in Figure 2. The estimates are based on linear regressions. Heteroskedasticity-robust standard errors are in parentheses.

Table C2: Objective and Subjective Economic Exposure to the Heating Law and Vote Intention (Full Regression Table)

Dependent Variables:	*CDU*	*AfD*	*SPD*	*Greens*	*Left*
	(1)	(2)	(3)	(4)	(5)
Panel (a): Vote Intention					
Objective Economic Exposure	0.081***	0.001	0.039**	−0.024*	−0.019**
	(0.020)	(0.019)	(0.017)	(0.014)	(0.008)
Subjective Economic Exposure	0.003	0.121***	−0.047***	−0.041***	−0.027***
	(0.018)	(0.018)	(0.014)	(0.014)	(0.008)
Female	−0.017	−0.043**	−0.034**	0.006	0.038***
	(0.017)	(0.017)	(0.015)	(0.014)	(0.008)
Age	0.001	−0.001*	0.003***	0.000	−0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Education: Secondary	0.034	−0.014	−0.023	0.036**	0.019*
	(0.023)	(0.026)	(0.019)	(0.014)	(0.010)
Education: Upper Secondary	−0.004	−0.113***	−0.013	0.123***	0.056***
	(0.026)	(0.029)	(0.022)	(0.022)	(0.016)
University Education	0.040	−0.076***	0.043**	0.053**	−0.011
	(0.026)	(0.023)	(0.021)	(0.025)	(0.017)
Income (Ordinal, 1-11)	0.016***	0.001	0.002	−0.003	−0.006***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)
Panel (b): Party Ranking					
Objective Economic Exposure	0.320***	−0.071	0.215***	−0.116	−0.197***
	(0.077)	(0.117)	(0.076)	(0.098)	(0.076)
Subjective Economic Exposure	0.144**	0.840***	−0.437***	−0.778***	−0.303***
	(0.072)	(0.109)	(0.070)	(0.092)	(0.072)
Female	−0.119*	−0.306***	−0.013	0.136	0.270***
	(0.070)	(0.106)	(0.069)	(0.090)	(0.070)
Age	0.013***	−0.019***	0.012***	0.005	0.004
	(0.002)	(0.004)	(0.002)	(0.003)	(0.003)
Education: Secondary	−0.078	−0.148	−0.130	0.064	0.153
	(0.098)	(0.151)	(0.095)	(0.116)	(0.095)
Education: Upper Secondary	−0.162	−1.170***	0.259**	0.964***	0.442***
	(0.116)	(0.175)	(0.110)	(0.146)	(0.120)
University Education	0.086	−0.119	0.102	0.206	0.025
	(0.109)	(0.154)	(0.101)	(0.142)	(0.113)
Income (Ordinal, 1-11)	0.109***	0.016	−0.011	−0.047**	−0.087***
	(0.017)	(0.024)	(0.015)	(0.020)	(0.017)
N	2,326	2,326	2,326	2,326	2,326
Interview Mode FE	✓	✓	✓	✓	✓

Notes: *p<0.1; **p<0.05; ***p<0.01; this table reports the full results of Table 2. The estimates are based on linear regressions. Heteroskedasticity-robust standard errors are in parentheses.

Table C3: Reasoning Chains Among Subjectively Exposed Respondents (Full Regression Table)

Dependent Variable:	*Theme at $t+1$*									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Increased Heating Costs	0.261***	−0.022	−0.066***	0.001	0.084***	0.008	−0.021**	−0.070***	0.007	−0.022*
	(0.024)	(0.017)	(0.013)	(0.011)	(0.020)	(0.016)	(0.009)	(0.022)	(0.011)	(0.012)
Costs of Heating System Replacement	−0.046**	0.105***	−0.036**	0.057**	−0.037**	−0.015	0.032	0.003	−0.005	0.035*
	(0.021)	(0.029)	(0.017)	(0.023)	(0.018)	(0.014)	(0.021)	(0.032)	(0.013)	(0.021)
Anticipated Future Costs	−0.085***	0.067**	0.205***	0.047*	−0.035*	0.000	0.034	0.079**	0.001	0.003
	(0.023)	(0.033)	(0.032)	(0.024)	(0.018)	(0.019)	(0.022)	(0.037)	(0.018)	(0.020)
Limited Financial Support	−0.022	0.074*	−0.033***	0.068*	0.015	0.005	0.022	−0.023	0.009	0.059*
	(0.041)	(0.038)	(0.007)	(0.038)	(0.028)	(0.023)	(0.029)	(0.056)	(0.030)	(0.034)
Behavioral Adjustments to Manage Costs	−0.075***	−0.024	−0.010	0.003	0.143***	0.031	−0.002	0.100***	−0.015	−0.005
	(0.029)	(0.018)	(0.015)	(0.018)	(0.036)	(0.022)	(0.014)	(0.038)	(0.013)	(0.015)
Economic Challenges for Renters	−0.010	−0.077***	0.033	−0.006	−0.011	0.251***	−0.006	0.108***	−0.009	0.009
	(0.033)	(0.017)	(0.027)	(0.015)	(0.026)	(0.040)	(0.015)	(0.039)	(0.013)	(0.021)
Structural and Logistical Barriers	0.001	−0.006	−0.054***	0.020	−0.018	−0.036***	0.077*	0.155**	0.016	−0.041*
	(0.040)	(0.044)	(0.019)	(0.040)	(0.028)	(0.010)	(0.042)	(0.068)	(0.032)	(0.022)
Uncertainty About Costs and Requirements	0.014	−0.013	−0.014	0.024	−0.008	0.025*	−0.006	0.244***	−0.005	0.005
	(0.019)	(0.016)	(0.014)	(0.016)	(0.015)	(0.015)	(0.012)	(0.032)	(0.011)	(0.012)
Economic Inequities	0.100*	−0.071**	−0.038*	0.012	−0.012	−0.046*	−0.001	−0.091*	0.139***	−0.017
	(0.058)	(0.028)	(0.020)	(0.036)	(0.036)	(0.025)	(0.028)	(0.053)	(0.049)	(0.028)
Delayed or Avoided Investments	−0.069***	0.007	−0.021	0.100**	−0.022	−0.001	0.001	0.130**	0.044	0.027
	(0.022)	(0.037)	(0.026)	(0.044)	(0.026)	(0.018)	(0.028)	(0.055)	(0.029)	(0.028)
N	1,782	1,782	1,782	1,782	1,782	1,782	1,782	1,782	1,782	1,782
R2 Adj.	0.196	0.069	0.099	0.027	0.064	0.080	0.011	0.173	0.018	0.008

Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the full results of Figure 5. Columns (1)–(10) correspond to: (1) Increased Heating Costs; (2) Costs of Heating System Replacement; (3) Anticipated Future Costs; (4) Limited Financial Support; (5) Behavioral Adjustments to Manage Costs; (6) Economic Challenges for Renters; (7) Structural and Logistical Barriers; (8) Uncertainty About Costs and Requirements; (9) Economic Inequities; (10) Delayed or Avoided Investments. The sample comprises respondents classified as subjectively exposed under the block-based coding. Standard errors clustered at the respondent level are in parentheses.

Table C4: The Effects of Respondents' Narratives on Support for the Heating Law and Policy Preferences (Full Regression Table)

Dependent Variable:	*Heating Law*	*65% Renewable*	*Renewable Mandate*	*Carbon Tax*	*Technology Bans*	*Importance*
	(1)	(2)	(3)	(4)	(5)	(6)
Narrative Themes						
Economic Exposure	−0.245**	−0.316**	−0.225*	−0.273**	−0.369***	1.804**
	(0.109)	(0.124)	(0.118)	(0.116)	(0.122)	(0.738)
Distributional Fairness	−0.556***	−0.457***	−0.828***	−0.571***	−0.182	−0.377
	(0.131)	(0.156)	(0.139)	(0.140)	(0.154)	(0.918)
Policy Process Opacity	−0.139	0.080	0.020	−0.234*	−0.015	−0.197
	(0.112)	(0.127)	(0.130)	(0.127)	(0.128)	(0.820)
Exposure Uncertainty	−0.114	−0.224	−0.154	−0.289	−0.299	1.539
	(0.191)	(0.243)	(0.238)	(0.217)	(0.224)	(1.478)
Government Overreach	−1.057***	−1.087***	−1.444***	−1.146***	−1.365***	1.570
	(0.134)	(0.168)	(0.131)	(0.140)	(0.158)	(1.152)
Compensatory Measures	0.175	0.354*	0.240	0.193	0.547***	0.128
	(0.167)	(0.192)	(0.187)	(0.192)	(0.196)	(1.226)
Policy Effectiveness	0.492***	0.351**	0.775***	0.658***	0.539***	1.507*
	(0.144)	(0.166)	(0.163)	(0.155)	(0.161)	(0.913)
Political Campaign	0.919***	0.651*	−0.216	0.776**	−0.172	1.184
	(0.310)	(0.341)	(0.375)	(0.364)	(0.376)	(1.854)
Demographic Controls						
Female	0.001	0.145	−0.132	−0.056	0.243**	−1.101
	(0.102)	(0.118)	(0.114)	(0.110)	(0.115)	(0.687)
Age	−0.016***	−0.001	−0.026***	−0.019***	0.003	−0.014
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.023)
Education: Secondary	0.001	−0.193	−0.024	0.026	−0.227	−0.605
	(0.139)	(0.162)	(0.149)	(0.150)	(0.160)	(0.917)
Education: Upper Secondary	0.198	0.123	0.131	0.206	−0.248	−0.978
	(0.161)	(0.187)	(0.186)	(0.181)	(0.183)	(1.084)
University Education	0.130	−0.082	0.465***	0.188	0.263	2.736***
	(0.146)	(0.167)	(0.174)	(0.167)	(0.162)	(0.997)
Income (Ordinal, 1-11)	0.053**	0.113***	0.049*	0.022	0.014	0.353**
	(0.024)	(0.028)	(0.027)	(0.027)	(0.027)	(0.160)
Homeowner	−0.199*	−0.271**	−0.411***	−0.031	−0.105	2.139***
	(0.109)	(0.124)	(0.119)	(0.118)	(0.123)	(0.737)
Fossil Heating System	−0.291***	−0.540***	−0.478***	−0.311***	−0.427***	0.396
	(0.105)	(0.122)	(0.120)	(0.117)	(0.121)	(0.671)
Party: CDU/CSU	0.583***	0.957***	0.478**	0.578***	0.534**	2.087
	(0.200)	(0.242)	(0.222)	(0.219)	(0.229)	(1.354)
Party: AfD	−0.905***	−1.120***	−0.751***	−1.114***	−1.060***	−2.691**
	(0.199)	(0.241)	(0.219)	(0.210)	(0.227)	(1.289)
Party: SPD	1.779***	1.914***	1.501***	1.504***	1.596***	−1.987
	(0.220)	(0.257)	(0.247)	(0.240)	(0.240)	(1.267)
Party: Greens	2.579***	2.689***	2.703***	3.197***	2.478***	3.571***
	(0.222)	(0.253)	(0.255)	(0.243)	(0.241)	(1.379)
Party: Left	1.551***	2.205***	1.916***	2.111***	2.261***	−0.724
	(0.265)	(0.315)	(0.322)	(0.319)	(0.316)	(1.793)
Party: FDP	0.487	0.669*	0.285	0.414	−0.082	−3.628**
	(0.330)	(0.375)	(0.361)	(0.375)	(0.379)	(1.736)
Party: BSW	0.108	0.404	−0.119	−0.495*	0.373	−1.969
	(0.250)	(0.299)	(0.269)	(0.264)	(0.293)	(1.592)
Party: Other	0.748***	0.898***	0.330	0.745***	0.721**	0.743
	(0.237)	(0.284)	(0.275)	(0.285)	(0.288)	(1.641)
N	2,326	2,326	2,326	2,323	2,320	2,326
R2 Adj.	0.287	0.251	0.292	0.309	0.227	0.035
Interview Mode FE	✓	✓	✓	✓	✓	✓

Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the full results of Figure 7. Heteroskedasticity-robust standard errors are in parentheses.

Table C5: Framing Effects on Support for the Heating Law (Full Regression Table)

Dependent Variables:	*General Support*		*65% Renewable Energy*		*Renewable Heating Mandate*	
	(1)	(2)	(3)	(4)	(5)	(6)
Reference: Household Costs Frame						
Climate Benefits Frame	0.179	0.162	0.089	0.084	0.180	0.127
	(0.137)	(0.120)	(0.154)	(0.138)	(0.156)	(0.137)
Demographic Controls						
Female		−0.045		0.091		−0.101
		(0.125)		(0.146)		(0.145)
Age		−0.022***		−0.010**		−0.033***
		(0.004)		(0.005)		(0.005)
Education: Secondary		0.047		−0.122		−0.175
		(0.167)		(0.198)		(0.188)
Education: Upper Secondary		0.227		0.170		0.124
		(0.190)		(0.225)		(0.228)
University Education		0.269		0.041		0.491**
		(0.175)		(0.202)		(0.212)
Party: CDU/CSU		0.498**		0.878***		0.371
		(0.235)		(0.282)		(0.281)
Party: AfD		−1.117***		−1.280***		−0.969***
		(0.238)		(0.288)		(0.278)
Party: SPD		1.870***		2.137***		1.528***
		(0.263)		(0.302)		(0.311)
Party: Greens		2.866***		2.906***		3.163***
		(0.253)		(0.294)		(0.310)
Party: Left		1.537***		2.183***		2.036***
		(0.300)		(0.369)		(0.370)
Party: FDP		0.429		0.753		0.126
		(0.418)		(0.461)		(0.427)
Party: BSW		0.138		0.510		−0.089
		(0.309)		(0.363)		(0.346)
Party: Other		0.749***		0.951***		0.441
		(0.281)		(0.337)		(0.347)
N	1,616	1,607	1,616	1,607	1,616	1,607
R2 Adj.	0.000	0.250	0.000	0.206	0.000	0.237

Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the full results of Table 3. Heteroskedasticity-robust standard errors are in parentheses.

Table C6: The Effects of Policy Characteristics on Support for Renewable-Energy Reforms in Residential Heating (Full Regression Table)

Dependent Variable:	*Support (0–100)*		*Support (Binary)*
	Sponsor	Congruence	Sponsor
Vignette Attributes			
Cost: €20,000	−4.060**	−3.744*	−0.046*
	(1.741)	(2.034)	(0.026)
Cost: €30,000	−3.593**	−4.077**	−0.056**
	(1.743)	(2.069)	(0.026)
Cost: €40,000	−6.699***	−6.748***	−0.082***
	(1.709)	(2.060)	(0.025)
Subsidy: 50%	6.264***	6.852***	0.084***
	(1.455)	(1.724)	(0.021)
Subsidy: 70%	6.867***	8.255***	0.090***
	(1.441)	(1.714)	(0.021)
Deadline: 2032	−0.129	−0.866	0.019
	(1.800)	(2.101)	(0.026)
Deadline: 2038	5.203***	4.732**	0.094***
	(1.900)	(2.264)	(0.028)
Deadline: 2044	3.738**	5.119**	0.043
	(1.852)	(2.176)	(0.027)
Deadline: 2050	3.397*	4.358*	0.043
	(1.901)	(2.294)	(0.027)
Sponsor: AfD	−0.997		−0.018
	(1.906)		(0.028)
Sponsor: CDU/CSU	4.847**		0.032
	(1.881)		(0.029)
Sponsor: FDP	0.425		−0.004
	(1.888)		(0.028)
Sponsor: SPD	3.237*		0.024
	(1.899)		(0.028)
Party Congruence		14.931***	
		(1.813)	
Demographic Controls			
Female	−2.722**	−3.131**	−0.072***
	(1.227)	(1.423)	(0.018)
Age	−0.186***	−0.200***	−0.003***
	(0.042)	(0.051)	(0.001)
Education: Secondary	1.787	1.774	0.009
	(1.653)	(1.991)	(0.023)
Education: Upper Secondary	3.824*	4.329*	0.030
	(1.975)	(2.453)	(0.029)
University Education	2.296	4.258*	0.065**
	(1.848)	(2.251)	(0.029)
Income (Ordinal, 1-11)	0.747***	0.565	0.008*
	(0.284)	(0.347)	(0.004)
Homeowner	−1.089	−0.789	0.005
	(1.305)	(1.531)	(0.019)
Fossil Heating System	−1.670	−1.200	−0.008
	(1.275)	(1.551)	(0.019)
N	2,362	1,693	2,362
R2 Adj.	0.045	0.092	0.039

Notes: *p<0.1; **p<0.05; ***p<0.01. This table reports the full results of Figure 8. Column 1 includes the individual party sponsors as independent variables ($N = 2{,}362$); column 2 replaces these with a party congruence indicator equaling 1 if the party endorsing the reform is the respondent's preferred party ($N = 1{,}693$). Column 3 reports the same specification as column 1 with a binary support indicator as the dependent variable, coded 1 for support levels of at least 7 on the 11-point scale. Heteroskedasticity-robust standard errors are in parentheses.

D Declaration of AI Use

Artificial intelligence (AI) tools were employed in both the research process and the preparation of this manuscript. We used OpenAI's GPT-4o to program and conduct the AI-assisted interviews. Fine-tuned and other versions of OpenAI's GPT models were subsequently used to analyze and classify the resulting text data. We also used OpenAI's GPT models to correct spelling and improve the clarity of the manuscript. We further used Claude Code to improve and correct the R code used in the analysis.

E Pre-Registration

We registered the project with Open Science Foundation (OSF) in two components. The initial pre-registration was formally approved by OSF on December 11, 2024. After completing a pilot study, we registered an addendum to the initial pre-registration on December 18, 2024, before launching the main survey. The pre-registration texts are reported below.

E.1 Original Pre-Registration, December 11, 2024

General Information

1. The pre-registration plan (PRP) describes the survey portion of a larger project on the political costs of climate rhetoric and climate reforms. Research questions are:

    2.1. Why do governments hesitate to adopt more effective policies to mitigate climate change? We argue that governments refrain from renewable energy transitions because such policies provoke public backlash already in the stage of policy formation and the surrounding public debate.

    2.2. How do climate policy announcements affect political preferences? We study the political impact of the announcement of the building energy act (Gebäudeenergiegesetz (GEG, "heating law")) amendment in Germany in April 2023 on incumbent support, support for different political parties, and attitudes toward clean-energy policies as well as the potential implementation of progressive climate policies.

    2.3. Which mechanisms link climate policy design/rhetoric and political backlash? We explore potential explanations highlighting belief-shaping narratives that relate to factors such as costs, fairness norms, partisan cues, media consumption, and environmentalism.

    2.4. We examine whether the public response to politically salient policy reforms extends beyond the socioeconomic groups materially affected by reform costs. Here, we focus on the mediating role of media consumption. Finally, we ascertain whether the political costs of climate action materialize in national aggregates in party support, thus linking the micro- to the macro-level.

2. **Study design**

    We study the political costs of renewable energy transitions. Our focus is on the announcement of the GEG amendment in Germany in the spring of 2023. This policy

proposal, initiated by the Green Party, targeted the replacement of fossil fuel-based heating systems with electricity-based technology in private residential buildings. The project explores the unexpected announcement of this climate policy reform which gave rise to significant public debate and widely expressed concerns about the costs it would impose on private households. The study will include closed and open questions, as well as randomized experiments. Open questions will in part be asked in AI-based interviews.

3. **Data collection procedures and quotas**

   We field our survey to a representative online sample of the adult population in Germany. Respondents will be recruited by a survey vendor. Subjects will be compensated. The surveys will be fielded in December 2024. Quotas based on population margins are applied (age, gender, education, region). Given our substantive interest in studying homeowners who were particularly affected by the heating law reform, we oversample homeowners (target size is 50%).

4. **Sample size and sample size rationale**

   Our targeted samples size is about 2,800 respondents. The sample size is mainly driven by power considerations. Since we include several experiments, we would like to make sure we have enough observations in the various treatment arms (see below).

5. **Stopping rule**

   We will stop sampling once we have reached at least the targeted number of observations and the sociodemographic quotas.

6. **Main Outcome Variables: Measurement**

   Our primary focus is on the types of explanations that respondents use to justify their heating law attitudes. We explore these narratives using AI chatbot-based, qualitative interviews and self-administered, open-ended questions. The Chatbot is instructed to elicit participants' potential own material exposure to the policy, levels of information, attitudes toward the heating law, and narratives used to explain policy positions and beliefs. We also ask respondents more broadly to describe their ideal climate policies and how costs would be distributed. An additional outcome variable is the informational value of the responses that participants provide. We relate this to whether the interview included an AI chatbot-based conversation or used self-administered survey items.

7. **Qualitative Interviews on Policy Preferences**

   The core of our survey is non-experimental and collects data that we use to perform a textual analysis of narratives about the heating law. We collect this data using qualitative, chatbot-based interviews and open-ended survey questions. Our chatbot interviews are divided into three thematic blocks:

   1. Personal Economic Exposure
   2. Party Preferences and Climate Policy Attitudes
   3. Future Climate Action

In the first block, the chatbot explores respondents' narratives about their material exposure to the heating law. We seek an understanding of whether respondents have made or are considering specific behavioral decisions in response to the law and how it has affected them financially. The second block focuses on how these experiences have influenced—or failed to influence—their political views. Specifically, this section examines respondents' attitudes toward political parties and their perspectives on climate action in Germany. Finally, the third block seeks to understand respondents' preferences over future climate policy design choices with an emphasis on unveiling the contours of reforms that are likely to receive sufficient public support to be politically feasible.

The chatbot is designed to ask approximately five questions per block, with the total interview capped at fifteen dynamic questions. The interview begins with a static, standardized opening question that is identical for all respondents. Within each block the chatbot adapts its phrasing and timing dynamically while working through the subsequent question. This allows for adapting to the response behavior of the respondent for increased individual rapport while maintaining the overall structure of the interview.

8. **Experimental Design and Blinding**

Our experimental design crosses four experiments that address two substantive and two methodological questions.

Heating Law Priming Experiment

On the substantive dimension, our first experiment investigates whether priming respondents about the heating law influences their political attitudes. To this end, we randomize the sequence in which respondents answer survey blocks. In one treatment group, respondents first answer questions about the heating law's implementation before reporting their satisfaction with the (previous) government, party preferences, and support for various public policies. In a placebo control group, respondents first complete a survey block about the minimum wage law. In a raw control group, respondents immediately answer questions about party preferences and policy support without prior priming. The experimental manipulation thus arises solely from the differential sequencing of survey blocks across arms.

The heating law prime consists of questions Q7, Q8, and Q66. These questions are:

> "We are now interested in your opinion on a reform by the previous government. This reform involves an amendment to the Building Energy Act (GEG), the so-called "Heating Act," aimed at reducing CO2 emissions in the building sector."

First, we would like to know: Have you ever heard of the Building Energy Act, the so-called "Heating Act"?

- Yes
- No
- Don't know / no response

We then elicit attitudes toward the energy reform by asking a battery of items:

- I feel well-informed about the Heating Act.
- Overall, the Heating Act is good reform.
- All new heating systems in Germany should be powered by at least 65 percent renewable energy
- The government should be able to require households to install an environmentally friendly heating system.
- The Heating Act offers more financial benefits than disadvantages for my household.
- The Heating Act contributes to combating climate change.
- The Heating Act is a burden on the German economy.

Responses are measured on a five-point level of agreement scale (strongly agree to strongly disagree) and it includes a don't know option.

Chatbot and Incentive Experiments

Our second and third experiments the effects of variation in survey mode (dynamic, AI chatbot-based interview vs. self-administered, static open questions). The last experiment manipulates the size of the incentives provided to encourage informationally rich answers. In this experiment respondents receive an additional €15 Amazon gift card. The exact wording of this prime is detailed in Q36. Respondents are blind to their treatment group assignment.

The renewable policy design experiment explores the causal effects of the costs imposed on households on reform support. The attribute values are anchored in the estimates communicated in the public debate in reputable newspapers.

(randomize order of attributes, pick one randomly)

How strongly do you approve or disapprove a legally mandated installation of renewable-energy heating systems under the following conditions:

- Cost per household: €10,000, €20,000, €30,000, €40,000
- Deadline for installation: 2026, 2032, 2038, 2044, 2050, 2056
- Subsidy for low-income households: 30%, 50%, 70% of the costs
- Proposal endorsed by: SPD, CDU, Greens, FDP, AfD

We measure policy approval on a five-point scale (strongly approve, approve, neither approve nor disapprove, disapprove, strongly disapprove).

9. **Estimation**

We estimate treatment effects by computing differences between treatment groups. We will estimate models with and without control variables. We will estimate subgroup effects through split-sample estimation and the inclusion of interaction terms. We plan on estimating structural topic models on the open-ended responses. We

also explore to what extent the answers to our research questions differ across subgroups defined by covariates such as partisanship, policy knowledge, sex, race, education, age, income, other sociodemographic characteristics, and measures of attention.

Qualitative Interviews

Climate Policy: To analyze the qualitative part of the survey on sources of opposition to the heating law and renewable energy reforms (blocks 1 and 2), we will code responses along the following dimensions:

- Economic exposure
- Distributional Fairness
- Government Overreach?
- Exposure Uncertainty
- Compensatory Measure Awareness
- Policy Process Opacity
- Policy Effectiveness

We will use a large language model (LLM) to assist in coding responses along the categories listed above. To extract and classify narratives, we will prompt the LLM to summarize each conversation block from the chatbot interviews. Based on these summaries, we will further prompt the LLM to identify overarching arguments and recurring narratives across the dataset. The coding results will be cross-verified using manual coding of a sample of responses.

We will adopt an inductive approach using Structural Topic Modeling (STM) and other tools of quantitative text analysis to identify respondents' climate policy preferences.

Chatbot and Incentive Experiments

We measure informational richness on several dimensions including response length and other measures of complexity. We also rely on machine learning approaches to rate each respondent by their responses' thoughtfulness and the likelihood that their responses were generated by an AI model.

Based on these metrics, we assess whether information collected as part of the AI chatbot conversations provide deeper substantive insights compared to standard self-administered open-ended questions. We also evaluate how the additional financial incentive affected response behavior in either of the two survey modes. To this end, we estimate several models with these metrics as the dependent variables and indicator variables for each of the interview conditions as the main independent variables.

We further use the AI likelihood classification to explore whether these additional financial incentives may inadvertently encourage respondents to rely on AI-generated content instead of providing genuine, effortful responses. We also compute the

discovery processes for each substantive dimension (Chopra and Haaland 2026), both across the universe of responses and separately for the incentivized and non-incentivized samples. Lastly, we examine the effects of the interview mode on interviewees' subjective experience with the qualitative part of the interview.

10. **Expectations**

    - Respondents will be more opposed to the heating law if they fall into the group of individuals who would have to replace their existing heating systems.
    - Respondents will be more supportive of the reform if they identify with the Green party.
    - Priming respondents about the heating law reduces incumbent support and support for the Greens
    - The priming effect is stronger among respondents who would be personally affected by the reform
    - The priming effect is stronger among respondents who are more politically knowledgeable about the reform.
    - Respondents use the personal exposure narrative to justify their policy stance.
    - Policy opposition increases as costs increase, as the deadline for mandatory installation gets shorter, as subsidies for low-income households increase.
    - Incentivizing responses increases their informational value.

11. **Ethics Oversight**

    The study has been approved by the IRB of [blinded for peer-review].

E.2 Addendum, December 18, 2024

1. **Timing:** We are fielding the main survey after this addendum has been published.

2. **Issue Salience Item:** This was added to investigate relative issue importance. Respondents are asked to rate the importance of a set of reforms that the previous government has implemented so that the rating reflects their importance for respondents' evaluations of incumbent performance. We use a constant sum item to elicit reform importance, where respondents distribute 100 points across five reforms. The reforms that respondents are asked to consider are:

    - Heating Law (Heizungsgesetz)
    - Introduction of Border Controls (Grenzschließung)
    - Minimum Wage Increase (Mindestlohn)
    - Ukraine Aid (Ukraine-Hilfen)
    - Self-Determination Act (Selbstbestimmungsgesetz)

    We analyze this data by computing the average importance that an issue has overall and by demographic, political, and social subgroups

3. **Heating Law Framing Experiment:** This experiment randomly assigns respondents to three different groups: one pro argument frame, one con argument frame, or one control condition in which respondents receive no additional information:

   - Pro argument: "Some believe that the heating law contributes to combating climate change."
   - Con argument: "Some believe that the heating law imposes excessive costs on homeowners and private households."

   We measure the following outcomes:

   a) "The Heating Law is overall a good measure."
   b) "All new heating systems in Germany should be powered by at least 65 percent renewable energy."
   c) "The government should require households to install an environmentally friendly heating system."
   d) "The Heating Law entails more financial costs than benefits for my household."
   e) "The Heating Law is important for combating climate change."
   f) "The Heating Law requires low-income individuals to carry a relatively larger financial burden than higher earners."

   We expect that the pro frame increases overall and specific support for the measure, specifically agreement with statement e). The con frame should decrease support for the measure and specifically reduce agreement with the statements d) and f). In addition, we expect that the effects are partly egoistic which means that homeowners should be more sensitive to the frames than non-homeowners. We acknowledge, however, that homeowners may already have formed informed policy preferences and therefore will not react to the con frame.

   This experiment supersedes the previous Heating Law Priming Experiment outlined in the initial pre-registration. The pilot data revealed that attitudes toward the heating law and government approval were very close to the lower end of the scale which could result in floor effects. In addition, approval rates for the minimum wage reform were clustered close to the upper limit of the answer scale which raised concerns about ceiling effects.

   Moreover, the initial design combined several facets of the policy's costs and benefits into a single, multi-dimensional prime. Therefore, the effectiveness or ineffectiveness of the policy prime could result from counteracting effects that neutralize each other, reflect that most individuals, especially homeowners (more than 50% of the soft launch sample), were already well informed about the reform and had saturated beliefs, or a combination of the two. Overall, these patterns suggested that for this combination of policies the minimum wage reform failed to provide a proper placebo group that would allow us to assess whether the GEG prime specifically activates attitudes toward the heating law.

   In response to these challenges we implemented two main changes. First, we dropped the minimum wage condition and created two conditions in which we expose respondents to one pro and one con argument (this is the Heating Law Framing Experiment described above). This has the additional advantage of keeping the number

of treatment conditions and thereby the expected number of observations per condition constant. Second, we switched from the initial five-point answer scales to a 1 to 11 Likert response scale for all approval items so that respondents could indicate answers on a more fine-grained scale.

E.3 Deviations from the Pre-Registration Plan

Our analysis departs from the pre-registration of 11 December 2024 in the following respects.

Changes registered before main launch

1. *Framing replaces priming.* As discussed in (Appendix E.2), following the pre-launch wave, the original priming experiment was superseded by the framing experiment. We additionally moved all approval items from a five-point to an eleven-point scale to obtain more granular measurement, and introduced a constant-sum item eliciting the relative importance of the heating law for respondents' evaluations of incumbent performance.

Deviations in design and measurement

2. *Additional narrative theme.* The pre-registered coding scheme comprised seven themes and did not include *political campaigning*. We added this theme following early comments from colleagues on its substantive importance for debates about the heating law.

3. *Vignette deadline attribute.* We removed the sixth attribute value on the deadline dimension (the year 2056) before implementing the experiment in order to limit the number of attribute combinations.

4. *Homeowner oversample.* We had intended to oversample homeowners to a target of 50 percent. The realised analysis sample contains 42 percent homeowners.

Pre-registered analyses not reported here

5. *Control condition in the framing experiment.* We estimate the framing effect as the contrast between the pro and con conditions and do not draw on the control condition, because the randomisation of question order differed between the two argument conditions and the control condition, so that the control group is not directly comparable. The survey flow for respondents in the pro and con frame conditions is unaffected.

6. *Heterogeneity by homeownership.* We had expected the framing effects to differ between homeowners and non-homeowners. As the framing treatment produced no statistically significant aggregate effects, we do not report a systematic heterogeneity analysis.

7. *Inductive topic identification.* We had specified a Structural Topic Model to identify additional themes inductively. We instead rely on LLM-based inductive extraction and classification following Geiecke and Jaravel (2026).

8. *Interview mode and incentive experiments.* The analysis of the incentivization experiment as well as the systematic analysis of variation between open-ended questions and AI interview responses are deferred to a separate methodological project given the scope of this paper.

Analyses not pre-registered but reported

9. *Qualitative data analyses.* Our pre-registration did not specify the full range of analytical strategies applied to the AI interview and open-ended response data. We pre-registered the substantive components of respondents' narratives, their expected correlates, including economic exposure (Expectation 1) and partisanship (Expectation 2), and the hypotheses for the vignette experiment (Expectation 7) and our expectations for the framing experiment. However, we did not specify the concrete output of our analysis of respondents' exposure and political narratives as well as their correlates. These analytical steps were developed in response to our experience with interview-based, AI-generated text data, for which little methodological precedent existed at the outset of the study.

References

Chopra, Felix, and Ingar Haaland. 2026. "Conducting Qualitative Interviews with AI." *CESifo Working Paper* No. 10666.

Geiecke, Friedrich, and Xavier Jaravel. 2026. "Conversations at Scale: Robust AI-led Interviews with a Simple Open-Source Platform." *The Review of Economic Studies.*