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Who's afraid of more ambitious climate policy? How distributional implications shape policy support and compensatory preferences

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ABSTRACT

Nation states need to strengthen domestic climate policies to address global climate change. As more ambitious climate policy shapes the material interests of different societal groups, distributional conflict about who wins and loses will likely intensify over the coming years. I use the recent complete revision of the Swiss CO₂ law as an example of a change towards more ambitious climate policy and experimentally test whether distributional implications resulting from this policy change affect both people's policy support and redistributive preferences. I establish that learning about negative impacts on some societal groups significantly decreases support, while information about groups profiting also increases support. Moreover, being informed about the negative consequences of ambitious climate policy makes people more likely to support redistributive schemes, even if they are not personally affected. These results show the centrality of distributional implications for the political feasibility of progressive climate policy.

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KEYWORDS Climate change; distributional politics; compensation; survey experiment

Introduction

While the global climate crisis has become more manifest in recent years, national political responses are still far from putting the world on track to achieve the main goal of the 2015 Paris Agreement – limiting the average global temperature increase to 2°C. For decades, climate change inaction has been attributed to the collective-action problems that states encounter on a global-scale. However, more recent contributions have forcefully argued that an alternative explanation for the differing climate policy ambitions of states is the centrality of domestic distributional conflict (Falkner 2016, Aklin and Mildenberger 2020, Colgan *et al.* 2021).

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Theoretically, distributive consequences can significantly influence people's appetite for ambitious climate reforms. Individual- and group-contingent costs associated with climate policies dampen general support for climate policy packages (Bechtel and Scheve 2013, Beiser-McGrath and Bernauer 2019, 2023) and contribute to the politicization (Schaffer 2023) and ever-increasing polarization of climate-related issues (McCright and Dunlap 2011, Dunlap *et al.* 2016).¹ Such polarization can make ambitious climate policy hard to implement and politically costly for policy-makers.² Empirically, the distributive consequences of stricter climate policies have been identified with large-scale protests, including those led by the yellow-vest movement in France (Douenne and Fabre 2022). Nevertheless, there is scarce empirical evidence causally linking distributive implications to climate policy support.³ The present paper is intended to fill this lacuna by experimentally testing how the distributional implications of more ambitious climate policy affect individual support for policy reform.

Moreover, I inquire whether public support for redistributive schemes changes when people are made aware that certain groups will lose out due to more ambitious policies. Recent research stresses this link between climate and social policy (Bergquist *et al.* 2020, Schaffer 2021). Although just transition policies are becoming more popular (e.g. the European Green Deal and the German Klimageld), we know relatively little about individuals' preferences for compensatory redistributive schemes associated with distributional implications, including whether they prefer general compensation schemes or those targeted at losing groups.⁴

This paper contributes to the emerging literature on individual attitudes toward climate policy in three important ways. First, I evaluate how distributive implications affect popular support for more stringent climate change policies. I argue that learning about the material costs and benefits of ambitious climate policy for different societal groups greatly impacts policy support. Learning about losing groups is hypothesized to significantly lessen support. Second, I test whether learning about groups that are liable to benefit/lose from ambitious climate policy changes people's social policy preferences. I assume that people adjust their preferences for compensatory measures, especially if they learn about those liable to lose out. Third, I argue that especially distributional consequences along the tenant-homeowner divide deserve more attention moving forward with ambitious climate policy. Hence, to proxy distributional conflict, I use information about material benefits and costs of this more stringent policy for homeowners and tenants (the potential winners and losers).

Empirically, I use the recent complete revision of the Swiss CO₂ law (the main climate policy instrument in Switzerland) as an example of more ambitious climate policy. 3200 people in Switzerland were surveyed in September 2020, immediately before the parliamentary decision about the

CO₂ law. I formulated informational treatments on material benefits and costs of the CO₂ law for homeowners and tenants.⁵ I then asked respondents about their support for (opposition to) the proposed policy change and whether they agreed with redistributing revenue to benefit those specifically projected to lose out or generally to poor households.

I find that providing people with information about the distributional implications of climate policy for specific groups significantly affects their support for such policy changes. Hence, even with widespread public support for tackling the climate crisis, the cost to individuals or groups of more ambitious climate policy may be the most powerful argument against ambitious climate action.⁶ This indicates the potential for actors that oppose stricter climate policy (e.g. political parties, firms, associations) to politicize reforms and change public opinion.⁷ Moreover, I find that individuals do not necessarily react according to their self-interest but instead seem to evaluate the prospective CO₂ law in relation to its implications for society. These results corroborate findings about climate change taxes provided in Bergquist *et al.* (2022), namely, that societal (distributional) fairness conceptions are more important than personal ones. My results for Switzerland suggest furthermore that voters are more likely to agree with compensatory measures when informed about the potential costs to specific groups of people. One cannot completely reject self-interest as a driving force, but nor should one ignore the fact that people care about (group-related) fairness aspects in the context of ratcheting-up national climate policy. The present contribution adds to our knowledge about what the public will and will not support in terms of more ambitious climate policy.

Ratcheting up: how distributional implications affect policy support and preferences for compensation

In the following section, I develop a theoretical framework concerning how information about distributional consequences for specific groups may change people's baseline support for more ambitious climate policy. Moreover, confirming recent contributions to the comparative climate-change literature that have stressed the importance of building compensatory schemes into climate policy (Bergquist *et al.* 2020, Gaikwad *et al.* 2022), I argue that learning about distributional implications changes people's preferences for redistribution.

Impacts of distributional consequences on policy support

How might knowledge about distributional implications alter people's attitudes toward more ambitious climate policy? Climate change issues and the looming climate crisis can be considered salient issues for

voters in most European countries (Carter *et al.* 2018). The public is generally in favour of tackling the climate crisis (McCright *et al.* 2016) but less enthusiastic about concrete climate policies. Hence, despite the generally high baseline level of support for action, making people aware of the costs of specific policies has been found to decrease support for (international) climate policies in different studies (Bechtel and Scheve 2013, Bakaki and Bernauer 2017). While the incentive to free-ride off of the actions of other nation-states can be considered problematic for the international politics of climate change, the problem is replicated at the individual level. Individual voters rationally shirk away leaving others pay a higher share of the cost (Keohane 2015).

Research on carbon taxation overwhelmingly finds that increases in expected individual or household expenses dramatically reduce support for policies (Jagers *et al.* 2019, Maestre-Andrés *et al.* 2019). While the increased costs associated with carbon taxes are transparent, other potentially positive or negative impacts are not so easily discernible. As a result, policies that obfuscate individual costs (e.g. subsidy schemes, green investments, regulatory schemes) are usually more popular than more effective CO₂-reducing instruments such as carbon taxes (Drewe and Van den Bergh 2016, Umit and Schaffer 2020). The immediate costs and regressive character of carbon taxes are readily identifiable,⁸ while the implications of renewable energy feed-in tariffs or industry-wide emission caps on individual household costs are much harder to calculate (Beiser-McGrath and Bernauer 2019, Levi 2021). To further complicate matters, the costs and benefits of policies are not uniformly distributed among individuals. This means that more ambitious climate policies are very likely to create winners and losers and redistribute income (Hirth and Ueckerdt 2013). Moreover, such redistributive effects will likely intensify as the adverse effects of a changing climate become more pronounced (Colgan *et al.* 2021).

Therefore, I argue that providing distributional information about climate policy changes lessens uncertainty. It allows individuals to more accurately assess the personal cost of such policies and their impact on other societal groups. In addition, distributional information helps people formulate attitudes to proposed climate policies (Ansolabehere and Konisky 2014, Egan and Mullin 2017, Stokes and Warshaw 2017). Hence, additional information can decrease the significant baseline uncertainty regarding the concrete implications of ambitious climate-change policy and help people form opinions. Specifying the costs or benefits associated with a policy change is generally expected to alter people's support or opposition to that change. Learning about the differing impacts of stringent climate policy on different groups may challenge norms about fairness in society. If

distributional information leads to the violation of fairness norms, support for policy change may be significantly dampened (Montada and Kals 2000, Huber *et al.* 2020). Accordingly, I formulate the following baseline hypothesis:

H1: *Receiving information about the potential winners of a policy change leads to greater policy support, while learning about groups losing out from policy reform dampens support.*

In the following section, I argue that this direct effect of distributional information on individual support for progressive climate policy change is shaped further by *individual self-interest*.

Self-interest

Individuals usually evaluate policy changes with respect to the impact on their material interests. However, establishing an overarching theoretical framework about the losers and winners of climate change policy is difficult due to the implications of the choice of instruments (Levi *et al.* 2020) and the choice of target sector. Furthermore, the groups affected by distributional conflict differ depending on the nature of the policy instrument (e.g. regulatory, voluntary, or market-based instruments), the targeted sector (e.g. electricity, buildings, or transport sector), and how interests are represented and mediated within domestic political systems (Finnegan 2022, Schaffer *et al.* 2022).⁹

In the context of carbon taxes, Beiser-McGrath and Bernauer (2023) find evidence that the support of high-income individuals strongly decreases when they learn about the impact on their income. Thus, distributional information about who might potentially win or lose out as a result of a policy change does not uniformly affect people's support or opposition. Individuals who belong to groups that will be negatively affected are expected to exhibit greater opposition to policy changes than those who personally stand to profit.¹⁰ Therefore, eliciting private cost implications is expected to override the valence nature of the climate issue¹¹ (Bechtel and Scheve 2013) and should lead individuals to evaluate climate change policies according to their material self-interest.

H2: *Belonging to a group that is portrayed to be negatively (positively) affected by stricter climate policy leads individuals to be less (more) supportive of the policy*

Impacts of distributional consequences on preferences for redistribution

In light of the increasing urgency of making the world's economies carbon neutral and the distributional implications arising from more ambitious transition policies, much depends on sustaining the societal consensus about the need for climate change mitigation. Recent contributions have advised policymakers to combine social and economic policies to promote climate justice or a just transition (Bergquist *et al.* 2020, Carley and Konisky 2020). Moreover, compensation policies and increased social spending on the losers of both climate policy and climate change itself are important for avoiding electoral backlash due to the politicization and increasing polarization of the politics of climate change (Colantone *et al.* 2023; Lüth and Schaffer 2022, Schaffer 2023). Policy bundles, including the European Commission's European Green Deal, or the Inflation Reduction Act (IRA) in the U.S., illustrate that policymakers have realized the need to connect economic and social investment with serious climate policy. Accordingly, I also address whether knowledge of distributional implications associated with climate policy change affects people's preferences for redistribution: i.e. if people are made aware that certain groups will lose out due to more ambitious policies, will they be more willing to support redistributive schemes?

To address this question, we need to clarify what people perceive as fair and acceptable in the context of climate policies. In the literature on carbon taxes, research has found that the fairness and acceptability of (regressive) taxes are determined chiefly by how revenues are recycled or earmarked for specific purposes (Kallbekken and Sælen 2011, Klenert *et al.* 2018, Beiser-McGrath and Bernauer 2019, Maestre-Andrés *et al.* 2019, Fairbrother and Jia 2022) and whether they are informed about the redistributive impact for society (Beiser-McGrath and Bernauer 2023). There is considerable heterogeneity in how people want revenues to be spent,¹² but the most popular schemes are direct investments into renewables or other green technologies (Carattini *et al.* 2017), lump-sum transfers to the population (Sommer *et al.* 2022) or transfers to poor or adversely affected groups (Kallbekken and Sælen 2011, Klenert *et al.* 2018). Fairness concerns and acceptability issues are not only important in the context of carbon taxes (a generally unpopular instrument) but also with larger infrastructural transformations associated with decarbonization. For example, compensating coal workers who lose out due to decarbonization through the provision of retraining programmes or targeted spending for community infrastructure purposes is linked to greater policy acceptability (Mayer 2019, Gaikwad *et al.* 2022). In sum, compensatory measures

have been found to be a powerful means of mitigating fairness concerns in the context of carbon pricing (Jagers *et al.* 2019, Büchs *et al.* 2021) and concerning employment-related issues associated with the energy transition (Mayer 2019, Gaikwad *et al.* 2022).

Regarding people's social policy preferences when presented with distributional information, I assume that individuals generally want to avoid inequitable outcomes in society (Fehr and Schmidt 1999), but also that conceptions of fairness vary between countries and over time (Alesina *et al.* 2012). Due to people's general inequity aversion, learning about *negative* impacts on societal groups is predicted to increase their support for redistribution. Conversely, I propose that being presented with information about groups that are liable to profit from policy change should not change preferences for redistribution.

H3: *When presented with information about the negative distributional implications of a policy, individuals will be more likely to support redistributive schemes, whereas positive distributional information will have no effect.*

Besides the *general* support for redistributive schemes when pointed to *negative* distributional implications, another important question has to do with the fairness principle evoked to justify social cushioning. Redistributing revenue can be implemented to profit poor households (general redistribution), or those groups that are directly affected by the law (targeted redistribution).¹³ Empirically, studies have found that there is comparatively more support for *general redistribution to poor households* than towards those groups directly affected (targeted redistribution). However, respondents that would profit from such targeted redistribution are more likely to also support such redistribution (Sommer *et al.* 2022, p. 10, Gaikwad *et al.* 2022). Such self-interested behaviour is also in line with research in social psychology stating that between-group competition increases in-group cooperation, meaning that group belonging matters for redistribution preferences (Nettle & Saxe 2020). We would hence expect people that are personally affected by a policy change to be more in favour of targeted redistribution.

H4: *Belonging to a group portrayed as negatively affected by a policy will increase individuals' support for targeted redistribution that benefits their group.*

Data and design

My analysis is based on data from a nationally representative survey experiment conducted in September 2020 in Switzerland. For various reasons, Switzerland and the substantive revised CO₂ law provide an ideal case for this study.

First, the CO₂ law has been the centrepiece of Switzerland's climate policy since 1999. To align with Switzerland's internationally pledged climate goal of reducing GHG emissions by 50% by 2030 (compared to 1990), the law had to be revised to include stricter emission cuts for all sectors. Second, direct democratic decision-making is commonplace in Switzerland. Swiss people are regularly asked to vote on popular initiatives and government proposals. They are thus used to voicing their opinions about climate change and energy policy issues (Dermont and Stadelmann-Steffen 2020, Ingold and Fischer 2014). Between 2000 and 2020, there were around twelve federal referendums on climate or energy policy. Thus, on the one hand, the Swiss population is reasonably well informed about climate and energy topics and already has experience with the pre-existing CO₂ law and the associated costs of the CO₂ levy. The Swiss national parliament (*Nationalrat*) decided in favour of the total revision of the CO₂ law as the main pillar of Swiss climate policy for the next decade on 25 September 2020. My study was in the field between 15 and 25 September 2020. Thus, I assume respondents were aware of the discussion of this revision as newspapers reported on the issue beforehand (c.Schäfer 2019). On the other hand, however, the revised CO₂ law's distributional implications may not have been completely clear at the time of our survey, so providing additional information should indeed help address uncertainty.

With respect to their climate policy targets and ambition, Switzerland compares well with most other Western countries. And while the Swiss electricity supply has traditionally been very green, with 80% coming from renewable resources (Bundesrat 2023), significant efforts within the building and transport sector are necessary to attain the pledged goal of a 50% emissions cut by 2030. Challenges in implementing ambitious climate policy are thus similar to most industrialized countries. Overall, I argue that one can be confident that results regarding the impact of distributional consequences on public support to strengthen climate policy within the Swiss context are to extendable other Western countries.

The study consisted of around 3,200 respondents, all residents of Switzerland, recruited by the survey company *IPSOS-Mori*. The survey was fielded in three of the four official Swiss languages (German, French, and Italian). Detailed comparisons between this sample and the Swiss voting-age population are available in the Appendix A1 (Figures A1 and A2). These

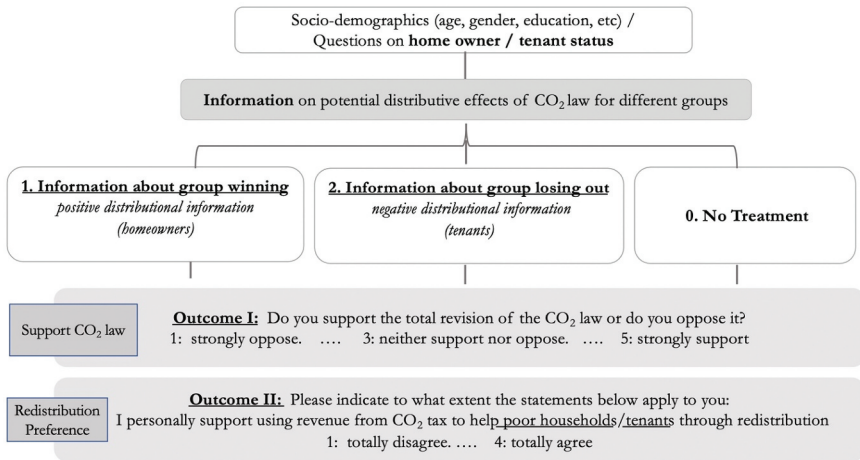


Figure 1. Survey process.

comparisons show that the sample differed only slightly from the voting-age population in terms of age, gender, and region.

Operationalization

After a series of questions intended to collect information about respondents' demographic characteristics (gender, birth year, education, home ownership/tenant status, income) and attitudes (worries about climate change, interest in politics, left-right placement), respondents were randomly assigned to three different experimental groups.¹⁴

To test the theoretical expectations, two vignettes informed about distributional implications of the planned CO₂ law, highlighting groups that might benefit and groups that might lose out (see Figure 1 for a depiction of the survey process), while respondents in the control condition were only provided with the factual information that parliament is debating the revision of the CO₂ law.

Information on potential distributive effects on specific groups

While individuals and society are generally expected to profit from the stipulations of the proposed law in the long term, some measures were liable to affect parts of society more directly. Revenue from the CO₂ levy would continue to be redistributed to the population on a per capita basis. However, one of the primary subjects of media debate was the so-called 'climate fund' that would be filled by using one-third of the CO₂ levy and one-half of the newly proposed flight ticket levy.¹⁵

This fund was designed to be used for three main purposes: first, a building program (*Gebäudeprogramm*) for investing in renovating or retrofitting buildings and supporting investment into new building technology; second, for investments in emission-reducing technology; and, third, for adaptation programs for climate-change-affected parts of the population (the tourism sector, farmers, etc.).

To specify the potential distributional implications, I concentrated on the homeowner-tenant divide (c.f. Jansma *et al.* 2020). Homeowners are envisaged to obtain access to very beneficial loans and incentives from the climate fund associated with the revised CO₂ law for making their homes more energy efficient and increasing their value. However, different commentators on the CO₂ law such as Häne (2021), Martel (2021), and Schäfer (2019) have raised concerns about the additional burden on *tenants* due to the higher CO₂ levy that would make heating even more expensive and the lack of tenant eligibility for funds to modernize flats (e.g. improving their energy efficiency to reduce energy costs). Moreover, it has been argued that if landlords decide to modernize flats, rents might increase.¹⁶ Accordingly, I formulated treatments hinting at the potential distributional effects of the revised CO₂ law for the two groups – tenants (potential losers) and homeowners (potential winners). I argue that this is an innovative approach because the literature has primarily focused on car owners, the rural population or poor households (Umit and Schaffer 2020, Douenne and Fabre 2022) as potential losers of climate policy. However, as Switzerland – like other nations – is lagging behind in making emissions cuts in the buildings (and transport) sector, the distributional divide between homeowners and tenants will become increasingly politically salient.

Respondents assigned to the control condition only received factual information that the CO₂ law is being debated in parliament at the moment. As depicted in Figure 1, the first treatment condition provided respondents with information about how homeowners would potentially benefit directly from the revised CO₂ law. The respondents learned from this vignette that homeowners stand to obtain access to beneficial loans for modernizing their dwellings or heating systems. In the second treatment condition, the remaining respondents were informed that tenants would potentially not profit from the CO₂ law due to higher heating costs and an inability to modernize their flats themselves. Moreover, rents could increase if landlords retrofitted homes with the help of public money.¹⁷ Thus, there were two treatment and one control group, as summarized below¹⁸:

Distributional information treatments (abbreviated)

Information about group winning

Some groups will profit directly from the revised CO₂ law. For example, extensive subsidies and loans can be used by homeowners to modernize buildings and lower energy costs in the long term.

Information about group losing

Not all groups will profit from the revised CO₂ law. Tenants might have higher heating costs. They cannot profit from loans for retrofitting buildings but might be subject to higher rents if landlords retrofit them.

To test Hypothesis 2, respondents were asked at the beginning of the survey whether they (or someone in their household) owned the flat or house they were living in or whether they (someone in their household) were renting it. Hypothesis 2 posited that there would be less support for the climate policy from those who rent than those who own (due to self-interest).¹⁹

Immediately after the respondents had been allocated vignettes, I measured the outcomes of interest with three questions. The main dependent variable inquired about individuals' *general support* for the CO₂ law: 'Do you support or oppose the total revision of the Swiss CO₂ law?' with

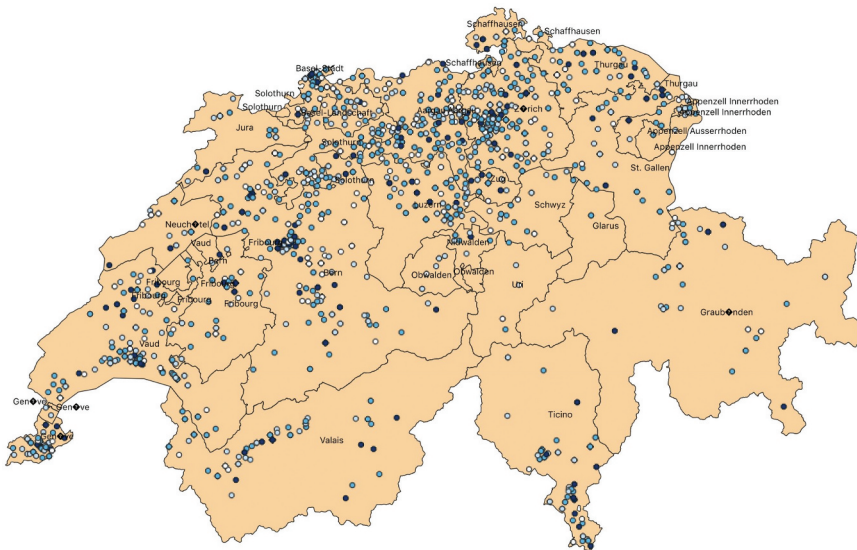


Figure 2. Map of Switzerland, dots represent respondents, darker dots indicate higher levels of support for the revision of the CO₂ law.

answer categories ranging from ‘Strongly oppose’ (1) to ‘Strongly support’ (5). This question gives us a general indication of popular support for the policy change. Figure 2 shows the geographical spread of respondents and their different levels of support for the CO₂ law.

To investigate further whether informing people about distributional effects also impacts preferences with respect to redistribution, we asked respondents to evaluate different statements about potential revenue-recycling schemes associated with a revised CO₂ levy. My second outcome measure thus asked respondents whether they agreed or disagreed with statements about different redistribution options: ‘Please indicate to what extent the statements below apply to you: a) Personally, I would support using revenue from the CO₂ levy to help *poor households* through redistribution, and b) Personally, I would support using revenue from the CO₂ levy to help *tenants* with redistribution’, with answer categories ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (4).²⁰

Results

Does support for more ambitious climate policy change according to its distributional implications? The experimental evidence provided in Figure 3 clearly indicates that it does, supporting H1. Figure 3 shows the average effect of each experimental level compared to the control group.²¹ Learning about

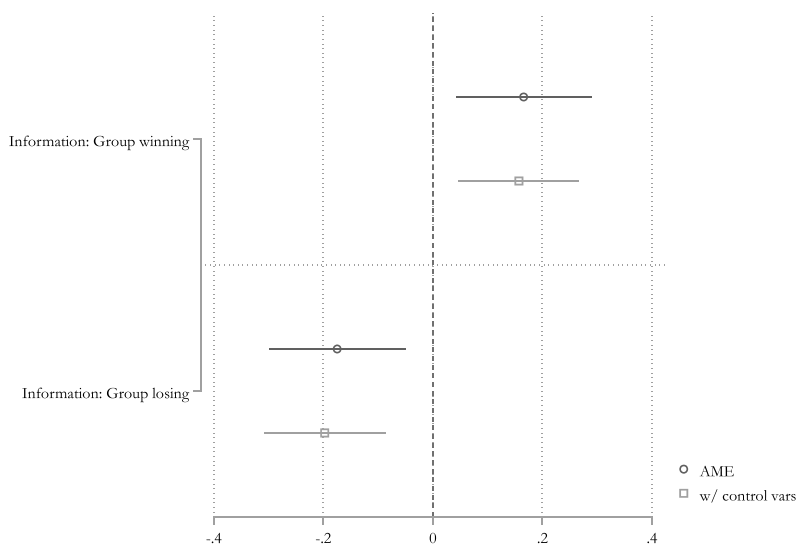


Figure 3. Average effect of distributional information about groups potentially positively (“information: Group winning”) or negatively (“information: Group losing”) affected on respondents’ support for revision of the CO₂ law (compared to the control group). Full results are in Appendix Table A1.

the losers of more ambitious climate policy decreases support for policy change (compared to the control), while reading about winners increases it. Adding relevant control variables (age, gender, climate concern, political interest, left-right placement and education) does not change the overall picture.²² In what follows, only main effects are reported and the reader is directed to the Appendix for the results including control variables. These initial results show that respondents react to information about the potential consequences of more ambitious climate policy. Transforming the variable into a binary variable (indicating respondent support with 1 and 0 otherwise) allows for a more substantive interpretation: While support for the CO₂ law for the group reading the information about groups liable to lose is below the cut-off at 0.45, learning about winning groups enhances support by 13% points, above the cut-off (0.58).²³

As argued in Hypothesis 2, I expected *individual self-interest* to affect the impact of distributional information on policy support. The imposition of individual or household costs due to climate policy has been shown to decrease the appetite for more ambitious climate policy (Maestre-Andrés *et al.* 2019, Schaffer 2021). Hence, I expected a heterogeneity of responses to the distributional treatments depending on how the respondent would be personally affected by the policy change, operationalized by considering ‘individual winners’ (home ownership) and ‘Individual losers’ (tenants).

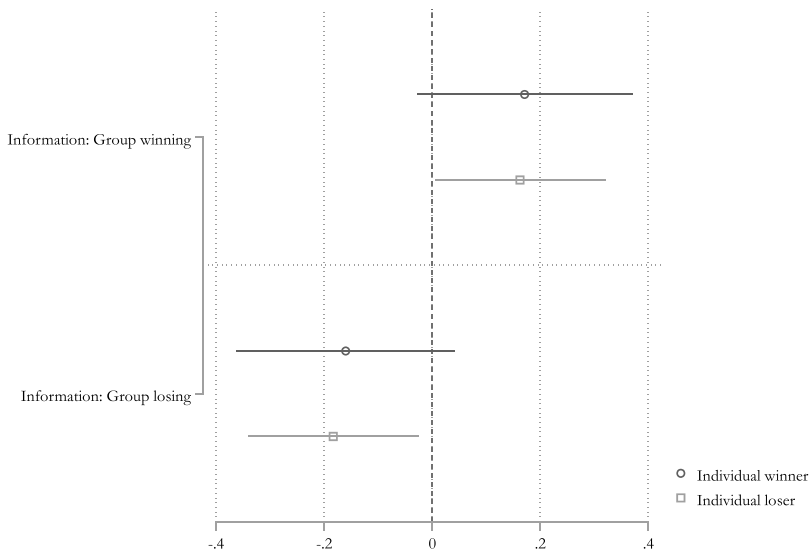


Figure 4. Average effect of distributional information on support for revision of the CO₂ law conditioned on respondents differentiated into winners (homeowner/“individual winner”) and losers (tenant/“individual loser”).

Figure 4 shows that the decrease in support for the CO₂ law due to learning that some groups might lose from the policy change is only statistically significant (and more pronounced) for those individuals classified as losers.²⁴ However, respondents personally set to gain from the policy change winners are not more supportive of the law.²⁵

Hypothesis 2 therefore cannot be conclusively confirmed on the basis of the experimental evidence. Respondents did not uniformly respond according to their self-interest but seem to have evaluated the projected CO₂ law with respect to its wider implications for society. Although projected losers react more strongly to the negative distributional treatments, their reaction to the treatments follows the same pattern.

The impact of distributional consequences on redistribution preferences

Survey respondents were then presented with two additional outcome questions that asked for their preference for redistributing income from the Swiss CO₂ levy (that was projected to increase within the revised CO₂ law) to favour potentially adversely affected groups. First, respondents were asked to evaluate whether they

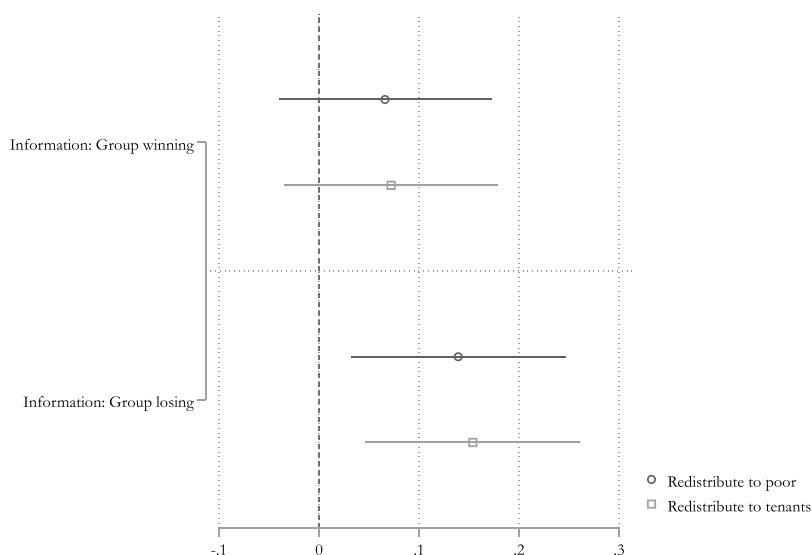


Figure 5. Average effect of distributional information about groups potentially positively ("group winning") or negatively ("group losing") affected on individual support/opposition with statements a) personally, I would support using revenue from the CO₂ levy to help poor households through redistribution ("Redistribute to poor"), and b) personally, I would support using revenue from the CO₂ tax to help tenants through redistribution ("Redistribute to tenants").

would support redistribution that would benefit tenants ('targeted' compensation, given they were presented to some respondents as direct 'losers' of more ambitious climate policy) or poor households ('general' help for the poor; the most vulnerable group in respect of increases in living expenses).

Hypothesis 3 posits that people will be more supportive of compensatory measures when they learn about the negative impacts of ambitious climate policy than those respondents who are not provided with such information. Figure 5 shows the treatment effects associated with information about winning and losing groups on respondents' support for redistributing revenue from the CO₂ levy to tenants and poor households. A positive effect suggests that respondents are more likely to agree to redistribution. Figure 5 shows that respondents who were informed that some members of society might be adversely affected were more likely to agree to redistribute revenue to *both* poor households and tenants (Full results with and without control variables are available in the online Appendix Table A3). The predicted means from the control group, 2.66, changed to 2.80 for those receiving information about losing groups in the case of the poor, corresponding to an increase of nearly 5% for the four-point scale from 1 ('would not support') to 4 ('would support'). For the tenants, there is a similar 5% increase: these changed from 2.52 (control group) to 2.68 (Information group losing).

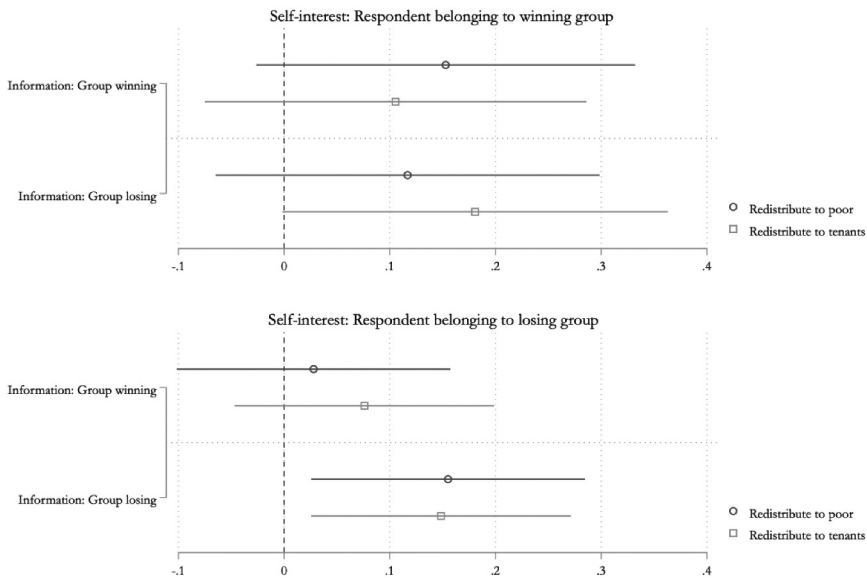


Figure 6. Average effect of distributional information about groups on agreement with statements on a) support to redistribute revenue to poor, and b) support to redistribute revenue to tenants, conditioned by respondents' status as homeowner ("winner") or tenant ("loser").

Although the substantive effects are not very large, they shift the predicted mean toward ‘would rather support’ (3). This finding supports Hypothesis 3 and can be tentatively interpreted as good news for governments pondering compensatory measures. When confronted with climate policy’s distributional implications, respondents are significantly more likely to support redistributive schemes.²⁶

Lastly, Figure 6 illustrates how distributional information had differing effects on redistribution preferences according to whether the respondent is a potential ‘winner’ or ‘loser’ of more stringent climate policy. The upper panel displays the treatment effects for homeowners (‘winners’) and the lower panel for tenants (‘losers’). Testing Hypothesis 4 focuses on individuals whose self-interest is likely to align with targeted redistribution measures (i.e. those that benefit tenants). The lower panel of Figure 6 shows that for this group, support for redistribution is elevated from the baseline redistribution support in the control group. This supports Hypothesis 4, but the findings reveal two additional points. First, this strong effect of the negative distributional treatment on redistribution preferences is not restricted to an increase in support for targeted compensation for those directly affected (tenants) but holds also for redistribution to generally vulnerable, poor households. Moreover, these preferences are clearly linked to negative distributional information: providing tenants with the information that some groups (homeowners) will benefit *does not* change their redistribution preferences compared to those of the control group.

Second, as pertains to the projected ‘winners’ of the CO₂ law in the upper panel of Figure 6, they are also more supportive of targeted compensation for tenants when they hear about the adverse effects of the law on tenants. However, this effect is only significant at the 10% level (and at the 5% level when including control variables, cf. Appendix Table A4). Overall, I cannot completely reject self-interest as a driving force determining preferences for redistribution, but the findings suggest that people also care about distributional effects on other social groups.²⁷

The second part of the analysis suggests that indeed distributional aspects in ambitious climate policy proposals also cause individuals to be more open for compensatory schemes that help both direct losers (targeted compensation), but also generally vulnerable households (general compensation).

Conclusion

The costs of more ambitious climate policy are unlikely to be equally distributed. Hence, policymakers must carefully design climate policies that do not leave the losers behind. Taking as an example a projected increase in climate policy stringency in Switzerland, I investigated how distributional considerations affect policy support and redistribution preferences. Due to

the steady increase in climate policy ambition associated with the Paris Agreement, it is relevant for policymakers and scholars to know how and which distributional implications change support for policy-strengthening measures (if any) and whether the knowledge of adverse effects on particular groups increases support for redistribution that benefits losing groups.

The present research provides mixed results concerning the feasibility of more ambitious climate policy. First, I conclude that the adverse distributional effects of the policy on some groups substantially lessen support (despite generally high levels of support for climate policy). Public opinion is malleable in relation to the distributional impacts of progressive climate policy. Providing people with information about the personal or group-contingent costs of policy change dampens their enthusiasm for ratcheting up national climate policy. This result, obtained from a representative survey experiment in the relatively weakly politicized context of a parliamentary debate and vote on the Swiss CO₂ law, foreshadowed subsequent events. After a heated campaign about the CO₂ law in April–June 2021, mainly fought by the opponents of more progressive climate-change policies (most prominently, the populist Swiss People's Party [SPP]), the Swiss public rejected the CO₂ law at the ballot on 13 June 2021. Although most of the Swiss population is fairly well informed about climate and energy policy (and has a say in politics), the potential for politicizing and stalling progressive climate policy reforms based on distributional implications became clear.

The empirical finding corroborates claims in theoretical work by Aklin and Mildemberger (2020), Büchs *et al.* (2011), and Colgan *et al.* (2021) about the centrality of distributional conflict in the climate policy of the future. Debate about who benefits and who loses as a result of climate policies is likely to intensify in the coming years and decades. Based on the results of this study, distributional conflict between homeowners and tenants needs to be carefully addressed by policymakers moving towards decarbonising the transport and building sector.

One suggestion for managing distributional conflict and avoiding potential (electoral) backlash from ambitious climate policy is more strongly combining social policy with a more progressive climate agenda (Bergquist *et al.* 2020). While linking distributional consequences and compensation seems intuitively plausible, a precondition of the effective use of compensatory schemes is understanding that people support redistribution to a greater extent if they are made aware of adverse effects on members of society. In the context of the Swiss CO₂ law, my research produced two noteworthy findings. First, learning about the adverse effects of ambitious climate policy significantly increases support for compensation schemes. Second, this effect is not entirely driven by self-interest. When 'losers' are made aware that they are liable to lose, they are significantly more supportive of redistribution schemes. However, prospective winners are *also* more supportive of

redistribution that benefits losers (assuming prior information about distributional impacts). This finding adds to the wider research about individuals' concerns about equity (Montada and Kals 2000, Tyler 2000), especially in the context of the energy transition (Syme *et al.* 2000, Büchs *et al.* 2011, Carley and Konisky 2020, Bergquist *et al.* 2022). This can be considered good news for policy-makers considering offering compensation to vulnerable groups to increase the feasibility of ambitious climate policy.

The present study is, of course, limited in its geographical coverage. A recent study by Beiser-McGrath and Bernauer (2023) points to differences in the impact of distributional implications for Germany and the U.S. Future research may compare findings from different countries to further account for the institutional differences between nations that are relevant to climate policy progress (Finnegan 2022, Schaffer *et al.* 2022). Moreover, the study did not investigate whether adding more detailed distribution-related information about compensatory programmes can increase policy support. More elaborate conjoint designs may be used to obtain detail about what level of compensation is considered adequate and which groups are considered deserving.

Notes

1. While polarization suggests a conflict between partisan positions on the issue, politicization is used to describe a process by which an issue becomes "political", meaning that it has entered the political arena of conflict and cooperation more generally (Chinn *et al.* 2020).
2. In Australia, a carbon tax introduced in 2012 by the labour government was soon after repealed by the conservative government that had campaigned on the issue (Crowley 2017).
3. For a notable exception, see Beiser-McGrath and Bernauer (2023).
4. For notable exceptions, see Jagers *et al.* (2019), Sommer *et al.* (2022).
5. The building sector is one of the most important sectors for decarbonization efforts within most countries, similarly to the transport sector (c.f. Huber *et al.* (2020) on policy support and fairness considerations within the transport sector).
6. A lesson also learned from the French 'yellow-vest' protests (Douenne and Fabre 2022).
7. In Switzerland, this was the fate of the progressive CO₂ law covered in this paper. In June 2021, after a long and fierce campaign fought mostly about the distributional impact on specific groups, the revision of the CO₂ law was rejected in a popular referendum initiated by the right-leaning SPP.
8. Although behavioural research still stresses that the workings and individual consequences of carbon taxes are poorly understood by citizens (Douenne and Fabre 2022, Mildemberger *et al.* 2022).
9. Recent contributions on the international political economy of climate change have argued for distinguishing between owners of climate-forcing assets and climate-vulnerable assets (Colgan *et al.* 2021) to determine actors' climate policy preferences. While this framework is very helpful for explaining the (changing)

overall structure of domestic politics associated with climate change, its application in regard to individual preference formation related to concrete policy proposals may be limited due to the complexity of individual economic calculations necessary to determine individual net asset ownership.

10. Group interest also reflects self-interest (the latter conceptually overlap to a great extent) (Weeden and Kurzban 2017)
11. A valence issue is one for which there is broad consensus among voters that its attainment is generally desirable (e.g. climate change mitigation or environmental protection).
12. For a comprehensive review, see Maestre-Andrés *et al.* (2019).
13. These concepts relate to the horizontal equity principle and the vertical equity principle (Sommer *et al.* 2022).
14. Online Appendix A4 provides questions used for selected control variables.
15. More detailed information on the law can be obtained here: <https://www.bafu.admin.ch/bafu/de/home/themen/klima/dossiers/klimaschutz-und-co2-gesetz.html>
16. Ultimately, this exact division between homeowners and tenants was a key issue in the campaign about the CO₂ law in April, May, and June 2021 (Schäfer 2019, Häne 2021, Martel 2021, Vonplon 2021). In the Appendix A5, two examples of campaign posters are displayed for reference (Figure A9).
17. In the Appendix A1.3, we provide the original (German) wording of the experimental components in the survey.
18. In the original study design, I also added different informational contexts (See Appendix section A3).

For the subsequent analysis, I present results collapsed into the main two experimental levels regarding positive (Information Group winning) and negative (Information Group losing) distributional information. Results from vignette-level analyses are additionally provided within the online Appendix in Table A8 and Figure A8 for reference. This is appropriate as there are no statistically significant differences between the responses of the groups administered additional different contextual frames (see Appendix Table A7). Moreover, Table A6 shows that the randomization worked well, and we have a balanced survey of our main control variables.

19. Roughly 37% of our sample can be classified as ‘winners’ (homeowners); this corresponds well to the 40% proportion of homeowners reported for Switzerland by Bundesamt für Wohnungswesen (BWO 2022).
20. Appendix Figures A3 and A4 contain descriptive statistics for the three outcome variables by treatment and control group.
21. All figures use the Stata graphic scheme ‘plottig’ developed by Bischof (2017).
22. To facilitate interpretation, I use OLS regression models to estimate average treatment effects and do not show the coefficients of control variables here (complete results are contained in Table A1 in the Appendix).
23. See corresponding Table A2 and Figure A5 in the Appendix.
24. For individual “losers” (tenants), the mean support for the CO₂ law reduces from 3.6 (tending towards 4 “rather support the law”) for those who get the information that some groups will win compared to 3.2 for those *individual losers* who learn that the group they belong to will lose, again leaning toward 3 (“neither support nor oppose”).
25. The larger confidence intervals on the part of the ‘winners’ stems from the fact that only about 39% of the respondents in our sample are homeowners, representative of the share of homeowners in the general population (BWO 2022).

26. While these treatment effects are estimated compared to the control group, they should not be confused with absolute levels of support. Appendix Figure A4 shows that respondents generally agreed in higher number to redistributing revenue to poorer households.
27. Notably, the baseline predicted support for redistribution is much lower for homeowners compared to tenants, as can be seen from the predictive margins on the logistic regression in Appendix Figure A7 and Table A5.

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Data availability statement

The data that support the findings of this study are openly available at the Harvard Dataverse (Schaffer 2023, “Replication Data for: “Who’s afraid of more ambitious climate policy? How distributional implications shape policy support and compensatory preferences””, <https://doi.org/10.7910/DVN/KXYVU3>, Harvard Dataverse, DRAFT VERSION)

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