Title: Supporting carbon pricing when interest rates are higher

Authors: F. Funke[1,2], L. Mattauch[1,2]*, T. Douenne[3], A. Fabre[4,5]

Affiliations:

[1] Technical University Berlin; Berlin, Germany.

[2] Potsdam-Institute for Climate Impact Research; Berlin, Germany.

[3] University of Amsterdam; Amsterdam, Netherlands.

[4] Centre National de la Recherche Scientifique (CNRS), France

[5] Centre International de Recherche sur l'Environnement et le Développement (CIRED); Paris, France.

*Corresponding author. Email: linus.mattauch@tu-berlin.de

Abstract:
We provide a new perspective on the public's preference for policies reducing carbon emissions. Citizens desire viable alternatives to fossil-fuel based options when confronted with carbon pricing, especially as inflation and higher interest rates exacerbate access barriers for capital-intensive green substitutes. We argue that the political success of carbon pricing will be measured by how well policy design enables consumers to switch towards green substitutes. Evidence from a survey of 2250 Western Europeans on a carbon pricing scheme mimicking the second emission trading system to be introduced as part of the Green Deal legislation of the European Union supports our argument. Our findings have implications for politically feasible emission reductions. Using carbon pricing revenues to enable switching to viable alternatives, while insulating the worst-off from adverse impacts, seems a winning formula to ensure public support amid tighter fiscal constraints.

One-Sentence Summary: The political success of carbon pricing will be measured by how well it enables those on lower incomes to switch towards green substitutes.

Main text:

The global resolve to meet the goals of the Paris Agreement on Climate Change has never been stronger: more and more governments commit to net-zero targets and the public agrees that climate change should be met with decisive action[1]. However, this strengthened resolve is not adequately translated into stringent policy, as many policymakers are afraid of public opposition to concrete measures. This is particularly so for carbon pricing, which is if not sufficient, seen as at least a necessary component of cost-effective decarbonization[2]. Much of this opposition seems to center around the question of how the burden of climate policies ought to be shared. How can it be ensured that climate policies – and carbon pricing specifically – leave no one behind?

Due to post-pandemic disruptions of supply chains and the Russian invasion of Ukraine, costs of living are increasing in many industrialized economies. That coincides with a shift in monetary policy towards higher costs for public and private lending to keep inflation in check. The tighter fiscal constraints, together with public pressure to alleviate the burden of inflation on vulnerable households, are drawing attention to the opportunity costs of carbon pricing and its revenue use.

The simple logic of carbon pricing is making polluters pay for the damage caused by their carbon emissions. Polluters then factor the damage they impose on society into their decisions, which reduces emissions and increases social welfare. Importantly, this logic is independent of the use of tax revenues: the revenue can finance new public spending, tax cuts, or direct transfers to households. This agnosticism about revenue, however, does not sit well with policy practitioners and citizens[3,4]. To ensure the political feasibility of a transition towards net-zero emissions, policies must provide long-term affordable solutions to meet consumers' basic energy and transportation needs[5,6]. Although a carbon price reduces emissions and direct transfers can compensate low-income households, further market failures and the diversity of situations in which households find themselves call for additional policy instruments (see Supplementary Information Section 1 for the underlying theoretical framework).

Will carbon pricing incentivize people to switch, or force them to pay more?

Indeed, in many countries, people doubt the effectiveness of carbon pricing, especially when its revenues are distributed back to consumers and prefer to see the proceeds go towards green spending[7–9]. One explanation is that citizens see carbon prices predominantly as a revenue-raising instrument and fear a rebound effect if revenues are distributed back to consumers[10]. It is tempting to attribute this to a lack of economic literacy – the people simply have difficulties to grapple with the subtle logic of supply and demand when relative prices of clean and dirty goods change. Especially for low-income households, however, it is probably an accurate intuition, at least over the short run, that carbon prices in sectors such as buildings and transport will do little but making heating and driving more expensive in the near future. Compared to the fossil alternative, green substitutes – heat pumps, electric vehicles – are usually associated with much higher up-front costs. While the capital costs of green substitutes are often more than compensated by lower operating costs in the long run, the high upfront costs can seem prohibitive for people without sufficient savings or access to affordable lending, especially as inflation and interest rates rise. While consumers have three options to respond to carbon prices – swallow the hike, switch to substitutes

or scale down consumption – low-capital households with inelastic consumption needs for heating and transport often see no other way but to pay up.

Moreover, for consumers, being forced to swallow a price hike in heating and transport costs for lack of financial access to cost-competitive substitutes eventually amounts to a question of fairness. To many, the application of the polluter-pays principle only seems fair if they, as polluters, indeed have an economically viable choice not to pollute.

On balance, to secure sufficient support for carbon pricing policies, it seems like their design needs to be attuned more to enhancing people's ability for switching towards low-carbon substitutes – especially in times of high inflation and high interest rates. For illustration of this new argument, we study public opinion regarding the development of the largest and best studied geographical example of carbon pricing: the emissions trading system of the European Union.

EU citizens embrace green investments from emissions trading revenues

Securing sufficient support for carbon pricing and answering hard distributional questions has gained new urgency in European policy making. In May 2023, the European Union has passed legislation that reaffirms carbon pricing as a flagship decarbonization policy as part of the "EU Green Deal". A second emissions trading system (EU ETS II) will be introduced in 2027-2028, covering emissions from buildings and road transport. These are two sectors in which the incidence of carbon pricing would predominantly fall on consumers. As a consequence, the European Union will complement the new trading system with a "Social Climate Fund"[11], where member states will collectively put a share of their auctioning revenues towards financing energy-efficiency related building renovations and sustainable transport, as well as providing direct income support to the most vulnerable. Yet, is this policy mix attuned to the needs and preferences of the European citizenry?

Our survey of 2,251 individuals in France, Germany, and Spain on the support of European Emissions Trading under different forms of revenue recycling (details see Supplementary Information, Section 2-5) indeed affirms that the public cares about providing low-carbon alternatives. Channeling the revenues from carbon pricing towards low-carbon investment yields the highest approval for a hypothesized new emissions trading system, while combining low-carbon investment with direct cash transfers to vulnerable households is the next preferred option (see Figure 1). Distributing the revenues back as uniform cash transfers, either at the European or the country level, yields significantly less support.

Notably, these results robustly hold when the data is disaggregated according to several socio-economic characteristics (e.g., age, education, income, urban-rural divide) and political preferences. Overall, the level of support for climate policies varies much more strongly with voting preferences than socio-economic characteristics. The preference for complementing carbon pricing with low-carbon investment, however, holds across the whole political spectrum

(see Supplementary Information, Section 3 and 4). In sum, it seems that for winning the public over to carbon pricing in road transport and buildings, the European Union ought to highlight its complementary efforts to provide low-carbon investments in these sectors.

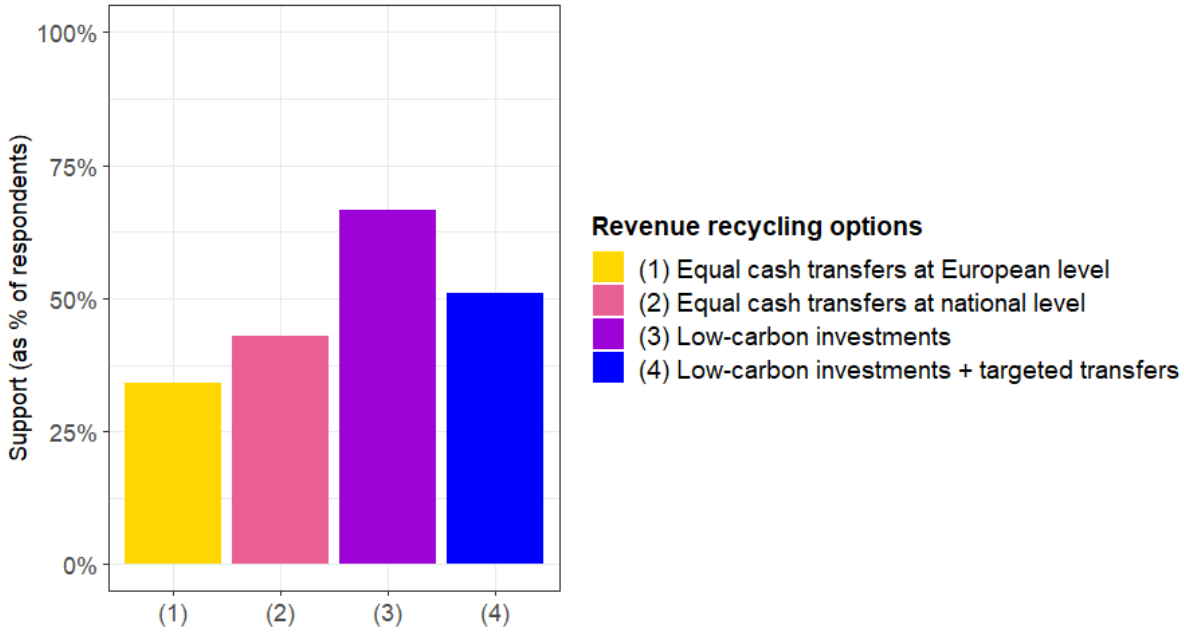

Fig. 1: *Average support for EU-level carbon pricing with different revenue recycling mechanisms (n=2,251 in France, Germany and Spain). Support coded as "somewhat support" and "strongly support" on a five-point Likert scale.*

What follows for climate policy design?

Given the challenging macroeconomic circumstances, there is good reason to critically re-assess policy recommendations on the use of carbon pricing revenues.

Our results reaffirm the role of green spending for increasing support for carbon pricing. For the European case of the EU ETS II, the redistributive principles underpinning the Social Climate Fund are supported by a small majority of our sample, but only second to low-carbon investments alone. Given the recent rise of living costs, direct support to compensate the most affected households for the effects of carbon pricing seems a legitimate priority for the Social Climate Fund. Nevertheless, our results highlight that the EU should primarily focus on communicating its efforts to lower the costs of low-carbon alternatives.

Importantly, the relative neglect of consumer's ability to switch may explain why lump-sum recycling of carbon revenues has turned out far from a silver bullet for making carbon pricing appealing to the public. Many institutions had identified recycling revenues from carbon pricing as a per-capita "climate dividend" as a complementary feature that could both render the measure distributionally progressive and strengthen the public appetite for pricing carbon[3,12]. One appeal

of the fee-and-dividend approach is that different political camps can recognize favorable properties in this policy respectively: while liberals and egalitarians appreciate the progressive distributional effect and find appeal in the simple idea that "everyone gets the same" (much akin to a universal basic income that is widely popular among people on the left), conservatives and libertarians get on board with the idea that fee-and-dividend approaches do not increase the government budget. As a result, the policy has received endorsement from conservatives and progressive groups alike.

However, where fee-and-dividend schemes already exist, such as Switzerland and Canada, the public is largely unaware of them[13]. Moreover, direct cash transfers to everyone seem insufficient to solve people's capital constraints for investing in green substitutes, as they are not targeted enough to enhance the perceived ability to switch to green substitutes (for more details, see Supplementary Information Section 1).

Furthermore, under the current macroeconomic conditions, green subsidies, tax cuts or green loan subsidies ought to be more targeted to financially especially constrained households. High interest rates are further undermining the ability of those with little savings and low income to adapt to carbon prices by retrofitting their homes, installing solar panels, or purchasing electric vehicles. Amidst tight fiscal conditions, targeting of green spending to low-income households is more impactful[14]. In the past, for example, subsidies for electric vehicles were a double-edged sword from a distributional perspective, as they were mainly attractive to higher income earners who could afford new vehicles rather than purchasing through the secondary market[15]. As the diffusion of green technologies is entering a new stage, ensuring that subsidies are targeted to the marginal cases, where they make a difference, is both fiscally responsible and tackles new inequalities in access to green substitutes. At the same time, however, even progressively structured green spending does not ease the burden from carbon pricing on particularly vulnerable groups for whom green upgrades are not an option. Hence, complementary direct income support is needed to insulate the worst-off from price increases implied by carbon pricing.

In conclusion, providing targeted subsidies and subsidized loans for low-carbon investment has become more urgent to deal with the inequalities in financial access to capital-intensive green substitutes currently exacerbated by higher costs of private lending. Targeted use of carbon pricing revenues to enable "switching", while insulating the worst-off from adverse impacts, could solve the competing fiscal objectives of incentivizing the adoption of low-carbon technologies, while managing public debt within and beyond the EU. For garnering sufficient public support of carbon pricing, improving financial access to low-carbon alternatives is crucial to reassure citizens that pricing emissions will be effective in mitigating emissions, instead of just raising consumer costs. To fully offset higher prices for vulnerable households, however, additional distributional policies will be needed, even if it might slightly dampen approval. Our argument is hence complementary to forms of making environmental pricing progressive with fee-and-dividend, targeted direct transfers or higher income taxes. In the future, ensuring that consumers have a financially viable choice not to pollute could make redistributive climate policies, such as the fee-and-dividend approach, more equitable.

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Supplementary Materials for

Supporting carbon pricing when interest rates are higher

F. Funke, L. Mattauch, T. Douenne, A. Fabre

Corresponding author: linus.mattauch@tu-berlin.de

The PDF file includes:

Supplementary Text

We analyzed data from a survey of 2,251 individuals[1] in France, Germany, and Spain on the support of European Emissions Trading (here called "European Climate Scheme") under different forms of revenue recycling. This dataset originates from a larger survey on international attitudes towards global policies[1], conducted between February and March 2023 and implemented by the survey company Bilendi. The survey was designed to ensure representativeness along key dimensions such as gender, income, age, highest diploma, and degree of urbanization (see Table S1). In the first section, we expand on the foundation of our argument in economic and social science theory in more technical terms. In the consecutive sections we provide details of the data collection and present additional results supporting the messages of the main text. The final section reproduces the wording of the questionnaire.

1. Theoretical background

1.1 Economic theory of mitigation policies

In a simple economic model where the only source of inefficiency is the externality associated with carbon emissions, efficiency can be fully restored by a carbon tax. While this tax alone may create winners and losers, individualized lump-sum transfers can then be distributed to achieve any desired efficient allocation according to the Second Fundamental Theorem of Welfare Economics. In particular, losers can theoretically be compensated in such a way as to generate a Pareto improvement.

In less simplified settings, the carbon externality is not the only market failure in the economy., Market failures interact and compromise both the efficiency and potential redistributive properties of carbon taxation.

Regarding efficiency, when people make time-inconsistent decisions (e.g. due to present bias) or are loss averse, a carbon tax that affects the future flow of energy payments is not sufficient to induce the optimal investment choices[2,3]. Subsidies for clean technologies can then usefully complement carbon taxation. Similarly, when people lack information about the right investments to make to save energy, public subsidies can be an indirect way of providing that information. Beyond these two examples, many other market failures call for publicly encouraging green investments (e.g., the positive externalities of network effects, insufficient innovation due to public nature of knowledge) as a complement to carbon taxation.

Regarding equity, individualized lump-sum transfers cannot be implemented.[2] This means that governments cannot precisely target compensation to the losers of climate policy. In particular, it can be difficult for governments to identify the households most affected by carbon taxation, i.e. those at the intersection of poverty and high energy needs. Targeted (i.e. income-contingent) subsidies for green investments can then be a means of selecting these households endogenously,

[1] FR = 729, DE = 979, ES = 543

[2] Transfers can be made conditional on certain observable characteristics, but as Douenne (2020) shows, they are far from sufficient to combat horizontal distributional effects. Moreover, transfers based on manipulable characteristics (such as the energy efficiency of heating or transport technologies) reduce incentives for decarbonization and run counter to the original policy principle.

so that governments can spend more on the subset of those most affected by the policy (the only ones who will take up the subsidy) and improve their targeting compared to uniform transfers[4,5].

Finally, distributional analyses of specific climate policy instruments in the context of inflation are rare. Yet, in a recent contribution, Benmir and Roman[6] study the distributional effects of carbon pricing in a model with idiosyncratic income risk and borrowing constraints, as well as inflation. They maintain that the presence of the borrowing constraint exacerbates the distributional impacts of the green transition in the short run, providing a further rationale for the relevance of our argument.

In sum, the set of additional overlapping market failures and behavioural effects, and additionally the tighter borrowing constraints resulting from current macroeconomic conditions are reasons to think that revenue recycling towards green spending could be an optimal second-best policy response from the perspective of economic efficiency and distributional fairness.

1.2 Public support for carbon pricing in empirical social science

Understanding public attitudes towards carbon taxes and related instruments has now become a mature field in empirical economics[7–11]. While the public's preference for green spending is well documented in survey-based studies[12,13], there are several theories how this public preference ought to be explained, referring, to (lack of) trust in government and lack of understanding of the Pigouvian mechanism[10,14,15].

Crucial for our exposition are theories of mental accounting in psychology and behavioural economics specifically[16]. They suggest that people appraise revenue recycling methods based on what carbon pricing was explicitly designed to deliver[17]. Mental accounting posits that people create compartmentalized mental accounts for climate-relevant consumption and associated payments, and the phenomenon has been found to be highly relevant to energy decision-making and climate-friendly behaviour[18].

The interpretation that the public likes green spending because it seems aligned with the policy's primary objective is congruent with empirical results: in experimental settings, which included but were not limited to the specific setting of carbon taxation, strong preferences for 'matched earmarking' (i.e., where the rebates mirror the thematic category of the regulation) support the mental accounting hypothesis[17]. Generally, the belief that carbon prices are ineffective at reducing emissions has been identified as a main barrier of support[19]. Therefore, using the revenues towards green spending could be perceived as leveraging the policy's effectiveness at reaching its primary environmental goal. At a more individual level, tying rebates to households to green measures may be perceived as a commitment device for spending the money "right" (i.e., aligned with the main purpose of the policy). For climate-friendly upgrades with net-positive investment value, this implies that households are aware of their own (or their fellow citizens') time inconsistency[20] and prefer subsidies because they tie their hands[18].

Theories of mental accounting and compartmentalization plausibly extend to public sentiment about the distributional effects of carbon pricing. When appraising whether a concrete carbon

pricing reform is distributionally fair, the mental accounting heuristic may lead consumers to focus on the narrower issue of inequitable economic access to green substitutes, rather than on broader questions of income and wealth inequality[13]. While progressive recycling mechanism such as the "fee-and-dividend" approach address the regressivity of carbon pricing, such approaches, however, risk coming short on both the broader and the narrower distributional objectives. From a broader distributional perspective, the volume of carbon pricing revenues is too small for progressive recycling to substantially change the distribution of income and wealth. From a narrower, climate-specific, distributional perspective, untargeted redistribution might (in the eye of the public) not mitigate the heterogenous, and sometimes rather horizontal than vertical[21], differences in access to green substitutes, which are exacerbated in an economic environment with high interest rates.

Hence, in the presence of mental accounting heuristics, green spending targeted at increasing the financial ability of high-energy middle- and lower-income households to switch could deliver on the public's double concerns about environmental effectiveness and equitable access to substitutes, and therewith increase support.

2. Survey Structure & Methods

The underlying survey explores citizens' attitudes towards global policies, including a hypothetical "Global Climate Scheme" – a global emissions trading system with redistribution of revenues. For the above comment, we drew from a subset of data that elicited support for such a Climate Scheme at the level of the European Union under different revenue recycling options.

Respondents were first presented with detailed descriptions of the Global Climate Scheme and associated redistributive mechanisms (see Questionnaire in Section 5). They included projections of carbon price levels and cash transfers. To enhance and assess understanding, summaries were provided at several stages of the survey, and comprehension was tested with incentivized questions.

In a subsequent step of the survey, respondents were asked to indicate their support for a European Union version of such an emissions trading scheme, contingent on the following options of EU-wide revenue redistribution: (1) equal cash transfers, (2) cash transfers in proportion to national emissions, (3) low carbon investments (e.g., thermal insulation of buildings, clean sources of heating, public transportation, and charging stations for electric vehicles), (4) transfers targeted to the most vulnerable & low-carbon investments.

The above options were deliberately framed to represent the European Union's new law on a second emissions trading system in the transport and building sectors with redistribution of revenues via an EU-wide Social Climate Fund. For consistency with the survey-wide hypothetical framing of policies, and to reduce complexity, we refrained from mentioning the European Commission proposals on ETS-2 and the Social Climate Fund explicitly.

Respondents were again presented with projections about carbon price levels and cash transfers implied by different distributional mechanisms of the European Climate Scheme (for details on computation, see Box 1).

Support for the above options was elicited on a five-point Likert scale. Among the subset of respondents that indicated opposition to the policy (i.e., "somewhat oppose" and "strongly oppose" on the respective five-points Likert scale), we tested their (binary) agreement with potential reasons for their disapproval.

Box 1: Computation of cash transfers.

Cash transfers per capita (r) have been computed according to the formula $r = p \cdot E \cdot e / pop$, where p is the carbon price, E are projected total EU-wide emissions in road transport and buildings in 2030, e is the region's (i.e., France/Germany/Spain/EU) share of total emissions, and pop is the region's population aged 15 and above. The first part of the equation ($p \cdot E$) refers to the total projected revenues from the European Climate Scheme, the second part specifies the key for revenue redistribution (i.e., equalized across the EU, or based on country's emissions shares). The carbon price ($p = 45€/tCO_2$) was set at the legal price ceiling of the pre-2030 period in the second EU Emission Trading System. The total amount of emissions from road transport and household fuel in 2030 ($E = 900\ MtCO_2$) is estimated from the European Union's objective of 2,2Gt of carbon emissions in 2030 (Climate Action Tracker, 2023), of which 40-45% (hence, 900Mt-1Gt) are included in the in ETS-2. The region's share of total emissions (e) is computed from Eurostat data on greenhouse gas emissions by source sector (corresponding variable: 'env_air_gge'). Population projection pop is taken from UN World Population Prospects (2017) (corresponding variable 'POP/7-1'). Detailed computations available on request.

3. Results

3.1. Support for different revenue recycling options

Across all three surveyed countries, the option of channeling revenues from the European Climate Scheme towards low-carbon investments yielded the highest level of support (more than 60%) and thereby surpasses the option of combining low-carbon investments with targeted transfers to the most vulnerable (see Figure S1). Providing equal cash transfers to everyone in Europe was the least approved option (30-40%). Notably, these findings are specific to revenue recycling at the *European* level and differ substantially from the main findings on attitudes towards *global* policies[1]: while there seems to be appetite for redistributive policies at the global level, including majority support of a global fee-and-dividend scheme with equal cash transfers between high-income and low-income countries, this is not the case in Europe.

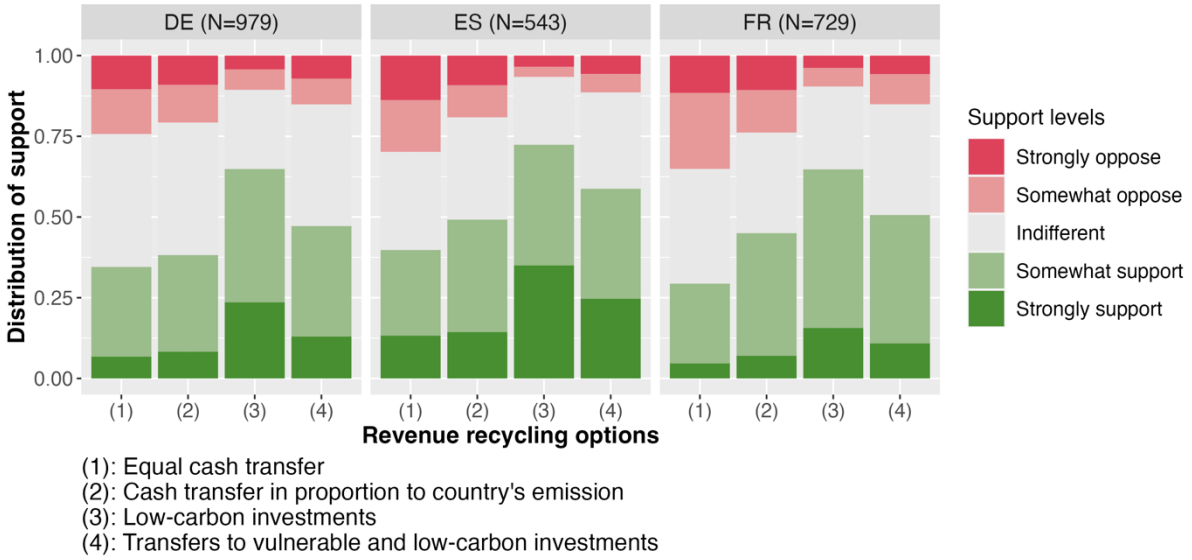

Fig. S1: *Support for the European Climate Scheme with different revenue recycling mechanisms*

Possible interpretations are that European citizens are satisfied (or even saturated) with the level of fiscal integration and redistribution at the European level, or that mitigation results, enhanced by low-carbon spending, are prioritized over further redistribution in the European context.

3.2. Reasons for policy rejection

Among the subset of respondents that did not approve of the European Climate Scheme, more than a quarter of respondents stated that they rejected the policy because they did not fully comprehend how the European Climate Scheme was supposed to work (see Figure S2). Less than a fifth of respondents stated a preference for other means of regulation of carbon emissions as a reason for rejecting the European Climate Scheme.

There are three noteworthy variations between the sampled countries: In Germany, more people (28%) rejected the policy on the grounds that they preferred regulation and redistribution of revenues at the national rather than the European level, while this was a lesser reason in Spain (18%). Two potential interpretations of this variation are, on the one hand, national self-interest: respondents comprehend the fact that people in Spain would benefit on average from redistribution while people in Germany would lose out. On the other hand, the variation might point to national differences in the general attitude towards transferring fiscal competencies towards the European Union. Further, significantly more people in Germany (29%) were generally opposed to more ambitious climate policy compared to the other two countries (Spain: 17%; France: 11%). In France, a substantially larger share (33%) stated “I don’t know”, compared to respondents in Germany and Spain (19%).

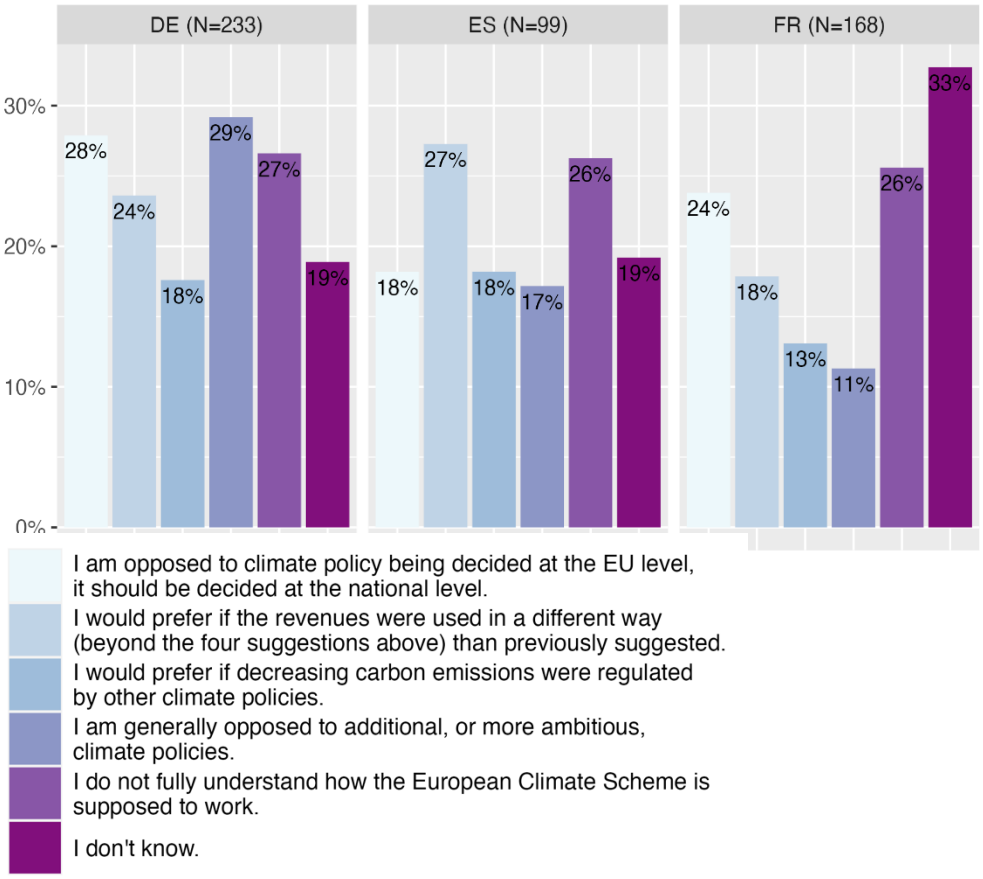

Fig. S2: Reasons for not supporting the European Climate Scheme. *Note: Multiple answers possible. Figure displays share of agreement with the above statement among the subset of the sample that did not support a European Climate Scheme ("strongly oppose" or "somewhat oppose" from Figure S1). For example, 33% of the 168 French respondents that did not support a Climate Scheme in the previous question chose the answer 'I don't know' to explain their lack of support.*

4. Disaggregated Results/Heterogeneity Analysis

Additional insights can be gained from disaggregating the sample along key dimensions (see Tables S.2). Our main observation is that voting preferences are more strongly correlated with policy support than socio-economic characteristics. However, political leaning only influences the level of support across all policy options, while the recycling option of channeling revenues towards low-carbon investment maximizes support within all voting groups. Similarly, low-carbon investments dominate all other policy options, followed by targeted transfers + low-carbon investments when the data is disaggregated according to socio-economic characteristics (age, gender, education, income, employment status and level of urbanity).

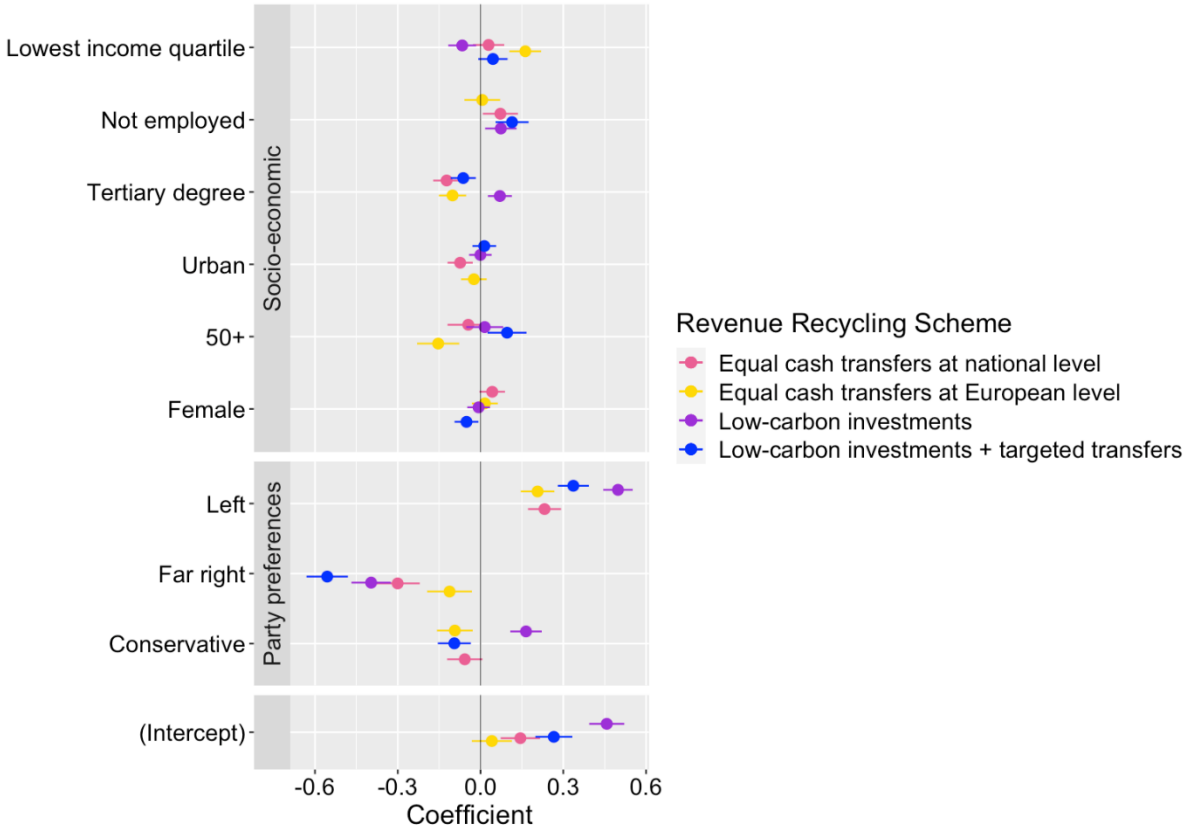

Figure S3: Correlation between support for revenue recycling options and socio-economic characteristics and voting preferences. *Note: the two panels show the coefficients from a single regression, where support for the different policy options is regressed on socio-economic indicators and voting preferences, as well as country-fixed effects (not shown).*

4.1. Which respondents support climate policies?

Socio-economic characteristics are much more weakly correlated with support for redistributive climate schemes than political leanings (see Figure S3). Most notably among the socio-economic characteristics, attainment of tertiary education makes respondents more likely, and being among the bottom 25% earners makes respondents less likely to support redistributing revenue in the form of low-carbon investments. Among the older population strata (50+), respondents are more likely to support low-carbon investments + targeted transfers but less inclined to support equal cash transfers at the European level. Voting left on the political spectrum is robustly associated with more support for all combinations of climate policy and revenue redistribution schemes, while voting on the far right is associated with diminished support for all policy proposals except for equal cash transfers at the European level (likely due to similarly low support levels for this option among conservative voters and non-voters in Germany and France, see Tables S2).

4.2. Disaggregation by socio-economic characteristics and voting preferences

As a recurrent pattern across all three countries, recycling revenues towards *low-carbon investments* dominates the other policy options, even when the data is disaggregated to socio-

economic characteristics (age, gender, income, employment status, education level, degree of urbanity) and voting preferences. Notable exception are the lowest-income quartile and lowest age group (18-25 years) in France, where support is maximized with *targeted transfers + low-carbon investments*.

Targeted transfers + low-carbon investments are recurrently the second preferred option across socio-economic and political groups. Notable exceptions include far-right voters in France and Germany. Among far-right voters in Germany, support for this option is even cut in half (17%), compared to low-carbon investments (32%).

In sum, support for a European Union Climate Scheme among respondents in France, Germany and Spain is strongest when combined with low-carbon investments. The result is robust across different socio-economic characteristics and voting preferences. With low-carbon investments dominating other policy combinations with more distributionally-geared elements – targeted relief for vulnerable households and uniform redistribution at the European or national level – effective mitigation and financial support in the transition towards green substitutes seems to be the highest priority for climate policy among three European citizenries here studied.

5. Questionnaire

The Global Climate Scheme

The GCS consists of global emissions trading with emission rights being auctioned each year to polluting firms, and of a global basic income, funded by the auction revenues. Using the price and emissions trajectories from the report by Stern & Stiglitz (2017), and in particular a carbon price of $90/tCO2 in 2030, we estimate that the basic income would amount to $30 per month for each human above 15 (see details in Appendix E). We describe the GCS to the respondents as a "climate club" and we specify its redistributive effects: The 700 million people with less than $2/day would be lifted out of extreme poverty, and fossil fuel price increases would cost the typical person in their country a specified amount (see Appendix D for details). This median net cost is $85 in the U.S., €10 in France, €25 in Germany, €5 in Spain, £20 in the UK.

(…)[3]

[3] Other questions from this survey were used and are discussed in Fabre, Douenne & Mattauch (2023). The supplementary material of the study also contains the remaining sections of the questionnaire.

The European Climate Scheme

Similar to the Global Climate Scheme, the European Climate Scheme would impose a maximum amount of greenhouse gases we can emit across the EU. It would make polluters pay for their emissions, which in turn would increase fossil fuel prices and discourage polluting activities. Several options are possible regarding the use of the scheme's revenues in the buildings and transport sectors:

- *Provide an equal cash transfer of €105/year to each European adult.*
- *Provide a country-specific cash transfer to each European, proportional to their country's emissions: people in countries with higher emissions per person (like Germany) would receive more than people in countries with lower emissions (like Romania). For information, people in [Germany/Spain] would receive [130/90]€/year.*
- *Finance low-carbon investments: the thermal insulation of buildings, the switch to clean sources of heating, public transportation, and charging stations for electric vehicles.*
- *Provide cash transfers to the most vulnerable half of Europeans and finance low-carbon investments.*

Do you support or oppose the European Climate Scheme in case the revenue is used to…?
(5-point Likert scale)

- *Provide an equal cash transfer to each European*
- *Provide a country-specific cash transfer to each European*
- *Finance low-carbon investments*
- *Provide cash transfers for the most vulnerable Europeans and low-carbon investments*

Conditional on little support (1 or 2 or 3 on 5-likert scale on all four options above):
Why do you not support a European Climate Scheme? (Multiple answers possible)

- *I am opposed to climate policy being decided at the EU level, it should be decided at the national level.*
- *I would prefer if the revenues were used in a different way than previously suggested.*
- *I would prefer if decreasing carbon emissions were regulated by other climate policies.*
- *I am generally opposed to additional, or more ambitious, climate policies.*
- *I do not fully understand how the European Climate Scheme is supposed to work.*
- *Don't know.*

6. Tables

Table S1: Representativeness across sampled countries.

	FR			DE			ES		
	Pop.	Sample	Wght. Sa.	Pop.	Sample	Wght. Sa.	Pop.	Sample	Wght. Sa.
Sample size		729	729		979	979		543	543
Gender									
Gender: Woman	0.52	0.50	0.52	0.51	0.52	0.51	0.51	0.53	0.51
Gender: Man	0.48	0.50	0.48	0.49	0.48	0.49	0.49	0.47	0.49
Income									
Income_quartile: 1	0.25	0.31	0.25	0.25	0.29	0.25	0.25	0.27	0.25
Income_quartile: 2	0.25	0.17	0.25	0.25	0.25	0.25	0.25	0.31	0.25
Income_quartile: 3	0.25	0.19	0.25	0.25	0.28	0.25	0.25	0.26	0.25
Income_quartile: 4	0.25	0.33	0.25	0.25	0.18	0.25	0.25	0.17	0.25
Age									
Age: 18-24	0.12	0.12	0.12	0.09	0.14	0.09	0.08	0.09	0.08
Age: 25-34	0.15	0.14	0.15	0.15	0.17	0.15	0.12	0.16	0.12
Age: 35-49	0.24	0.31	0.24	0.22	0.26	0.22	0.28	0.25	0.28
Age: 50-64	0.24	0.19	0.24	0.28	0.23	0.28	0.27	0.28	0.27
Age: 65+	0.25	0.24	0.25	0.26	0.21	0.26	0.25	0.22	0.25
Diploma									
Diploma_25_64: Below upper secondary	0.11	0.19	0.11	0.10	0.14	0.10	0.24	0.16	0.25
Diploma_25_64: Upper secondary	0.26	0.16	0.26	0.27	0.20	0.27	0.16	0.15	0.16
Diploma_25_64: Post secondary	0.26	0.30	0.26	0.29	0.31	0.29	0.28	0.38	0.27
Urbanity									
Urbanity: Cities	0.47	0.52	0.47	0.37	0.47	0.37	0.52	0.58	0.52
Urbanity: Towns and suburbs	0.19	0.19	0.19	0.40	0.35	0.40	0.22	0.27	0.22
Urbanity: Rural	0.34	0.29	0.34	0.23	0.18	0.23	0.26	0.15	0.26
Employment									
Employment_18_64: Inactive	0.20	0.19	0.18	0.15	0.14	0.11	0.20	0.13	0.12
Employment_18_64: Unemployed	0.04	0.05	0.05	0.02	0.04	0.03	0.07	0.11	0.12
Vote									
Vote: Left	0.23	0.19	0.21	0.37	0.44	0.44	0.33	0.37	0.38
Vote: Center-right or Right	0.26	0.30	0.29	0.28	0.27	0.29	0.18	0.24	0.24
Vote: Far right	0.23	0.22	0.22	0.08	0.07	0.07	0.09	0.08	0.09

Tables S2.: Support by socio-economic characteristics and voting preferences. *Notes: Tables depict the share of people in each group selecting "4" or "5" on a 5-point Likert scale.*

(a) France

	EU-CS with equal cash transfer	EU-CS with cash transfer in proportion to country's emission	EU-CS with low-carbon investments	EU-CS with transfers to vulnerable and low-carbon investments
Gender				
Man	0.29	0.44	0.68	0.53
Woman	0.29	0.46	0.61	0.48
Age				
18-24	0.33	0.58	0.69	0.72
25-34	0.33	0.48	0.65	0.42
35-49	0.34	0.40	0.60	0.46
50-64	0.27	0.40	0.55	0.42
65+	0.21	0.48	0.77	0.58
Rural-urban				
Cities	0.27	0.42	0.68	0.53
Rural	0.30	0.47	0.60	0.48
Towns and suburbs	0.36	0.50	0.65	0.49
Education				
Below upper secondary	0.35	0.38	0.43	0.44
Post secondary	0.28	0.46	0.75	0.52
Upper secondary	0.28	0.48	0.62	0.52
Employment				
Employed	0.31	0.43	0.63	0.44
Inactive	0.31	0.45	0.58	0.57
Unemployed	0.45	0.55	0.50	0.58
Income				
1st quartile	0.35	0.47	0.52	0.54
2nd quartile	0.30	0.45	0.65	0.48
3rd quartile	0.26	0.47	0.67	0.45
4th quartile	0.26	0.41	0.76	0.52
Vote				
Center-right or Right	0.23	0.41	0.78	0.50
Far right	0.33	0.40	0.43	0.34
Left	0.31	0.51	0.81	0.67
PNR/Non-voter	0.32	0.49	0.57	0.52

(b) Germany

	EU-CS with equal cash transfer	EU-CS with cash transfer in proportion to country's emission	EU-CS with low-carbon investments	EU-CS with transfers to vulnerable and low-carbon investments
Gender				
Man	0.36	0.41	0.64	0.49
Woman	0.33	0.36	0.65	0.46
Age				
18-24	0.42	0.40	0.66	0.51
25-34	0.38	0.44	0.64	0.56
35-49	0.33	0.33	0.60	0.41
50-64	0.32	0.38	0.66	0.41
65+	0.32	0.39	0.70	0.51
Rural-urban				
Cities	0.38	0.40	0.66	0.47
Rural	0.35	0.38	0.66	0.45
Towns and suburbs	0.30	0.36	0.63	0.48
Education				
Below upper secondary	0.36	0.40	0.58	0.51
Post secondary	0.35	0.38	0.68	0.45
Upper secondary	0.33	0.38	0.64	0.48
Employment				
Employed	0.35	0.38	0.64	0.46
Inactive	0.33	0.38	0.64	0.49
Unemployed	0.43	0.41	0.49	0.43
Income				
1st quartile	0.39	0.38	0.61	0.50
2nd quartile	0.35	0.39	0.58	0.47
3rd quartile	0.31	0.38	0.70	0.46
4th quartile	0.32	0.38	0.72	0.45
Vote				
Center-right or Right	0.29	0.35	0.63	0.42
Far right	0.28	0.25	0.32	0.17
Left	0.43	0.44	0.79	0.59
PNR/Non-voter	0.27	0.34	0.50	0.40

(c) Spain

	EU-CS with equal cash transfer	EU-CS with cash transfer in proportion to country's emission	EU-CS with low-carbon investments	EU-CS with transfers to vulnerable and low-carbon investments
Gender				
Man	0.43	0.49	0.73	0.63
Woman	0.37	0.49	0.72	0.55
Age				
18-24	0.28	0.47	0.70	0.57
25-34	0.35	0.44	0.62	0.47
35-49	0.46	0.51	0.71	0.56
50-64	0.36	0.45	0.77	0.60
65+	0.46	0.58	0.77	0.69
Rural-urban				
Cities	0.43	0.51	0.73	0.61
Rural	0.29	0.45	0.73	0.52
Towns and suburbs	0.40	0.48	0.72	0.56
Education				
Below upper secondary	0.37	0.44	0.64	0.45
Post secondary	0.40	0.48	0.74	0.60
Upper secondary	0.42	0.56	0.74	0.66
Employment				
Employed	0.40	0.47	0.72	0.57
Inactive	0.30	0.43	0.71	0.54
Unemployed	0.35	0.47	0.68	0.52
Income				
1st quartile	0.42	0.47	0.67	0.58
2nd quartile	0.41	0.52	0.73	0.62
3rd quartile	0.40	0.46	0.71	0.55
4th quartile	0.34	0.51	0.81	0.59
Vote				
Center-right or Right	0.37	0.48	0.73	0.55
Far right	0.25	0.32	0.48	0.34
Left	0.45	0.60	0.84	0.69
PNR/Non-voter	0.39	0.41	0.65	0.56

References from Supplementary Material in Main Document as per Science Submission Guidelines