# Working Paper: Affective Climate Polarization and Public Support for Just Transition Policy Bundles in Western Canada

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## Key words

Affective climate polarization; Climate policy; Just transition; Public opinion; Fossil fuel regions; Policy bundling; Polarization, Energy transition

## Abstract

This article examines how affective climate polarization shapes support for climate and just transition policy bundles in western Canada. We draw on an online survey of 3,400 residents in non-metropolitan communities across British Columbia, Alberta, Saskatchewan and Manitoba. The study combines feeling-thermometer measures of emotional warmth toward climate and political groups with a factorial vignette experiment in which respondents evaluate four climate policies (two carbon taxes and two regulatory mandates), each presented alone and in combination with five just transition supports. Mixed-effects models show that affective climate polarization strongly differentiates overall levels of policy support and, crucially, the flexibility of those attitudes. Respondents who scored high on affective climate polarization held relatively stable views and were either largely unmoved by just transition and climate-policy bundling or, in some cases, reacted negatively. By contrast, individuals with weaker or mixed affective attachments were most responsive. Just transition bundling increased support for both consumer and industrial carbon taxes but had more mixed effects for regulatory mandates. The findings highlight how emotional climate identities structure both the reach and the limits of climate policy design in fossil-fuel regions.

## 1. Introduction

Originally grounded in labor movements and the intent to protect vulnerable communities, the phrase 'just transition' has become somewhat of a discursive dead end for politicians in western Canada. In 2019, Liberal Prime Minister, Justin Trudeau, announced plans to enact a *Just Transition Act,* a policy intended to ensure *" that workers have access to the training and support they need to succeed in the new clean economy"* (Liberal Party of Canada, 2019). By 2023, with the introduction of the bill, right-wing populist politicians had sunk their teeth in, with the Premier of Alberta decrying just transitions as an intent to eliminate "*hundreds of thousands of good Alberta jobs deemed too 'dirty' by elites in Ottawa"* (CBC News, 2023). The bill eventually passed as the

"Sustainable Jobs Act" in 2024, with, what commentators argued were, implicit concessions to Canada's oil provinces, and the disappearance of just transition verbiage altogether.

A familiar fate befell Canada's consumer carbon tax, implemented nationwide in 2019. Initially celebrated as a meaningful step toward climate mitigation, it soon became a lightning rod for backlash, as partisan opponents rallied to “Axe the Tax” and framed decarbonization policies as threats to affordability and jobs, and as targeted attacks on fossil fuel producing regions (Conservative Party of Canada, 2025). The tax was repealed in 2025 by the subsequent government on the grounds that the policy was "too divisive" (Major, 2025).

As a contemporary flash point for partisan conflict and identity-based divisions, polarization around climate and energy transition is presenting new and evolving challenges for durable policy design (Atkins, 2023; Wetts, 2025). Effective climate policies are necessary to mitigate climate change, yet public acceptance often conflicts with the very characteristics that make them effective (IPCC, 2023). To bolster and sustain public support for climate policy, scholars and policymakers have sought to address inequalities in the implementation of decarbonization initiatives, ensuring opportunities for communities and workers to benefit from a transition away from fossil fuel economies (Mandelli, 2025; McCauley and Heffron, 2018; UNFCCC-KCI, 2025).

Public opinion research exploring the impact of just transition policy bundling on climate policy support has found mixed results. While some studies find just transition measures effective in improving support for decarbonization (Bolet et al., 2024; Gajevic Sayegh et al., 2025; Gazmararian, 2024), others uncovered persistent resistance from people who perceive just transition efforts as government overreach, a misuse of tax revenue, or threats to livelihoods, communities and identities (Muzzerall, 2024). Inconsistencies in this research may in part be explained by the increasing politicization of climate and energy within an atmosphere of persistent political antagonism.

Considering these dynamics, there is a need for more empirically grounded research to support the design of durable climate policies. While much of the scholarship on climate policy support highlights distributive impacts, institutional design, or partisan affiliation, less attention has been paid to the role of affective polarization in shaping the perceived legitimacy of policy bundles. This is especially true for regions of historical fossil fuel production, which have been underrepresented in climate policy survey research (Clarke et al., 2024; Gazmararian, 2024). Furthermore, too little is known about why just transition initiatives, designed to enhance public support in these regions, succeed in some contexts yet provoke backlash in others.

The aim of our study is therefore twofold. Integrating the concept of affective climate polarization, we utilize original survey data from a broadly representative sample of residents in non-metropolitan communities in western Canada (n = 3,400) to examine public support for climate and just transition policy bundles in a region that produces the bulk of Canada’s fossil fuels, and to provide an empirical case illustrating how identity-based feelings toward climate supporters and opponents shape the prospects for energy transition policy and durable climate action.

Building on existing work on affective polarization, climate identity, and public support for decarbonization, we investigate several interrelated questions. We first consider how affective climate polarization compares to affective political polarization, and whether emotional alignment with either fossil fuels or renewables provides additional explanatory power beyond political ideology. We then assess how affective climate polarization shapes individuals; support for different types of climate and just transition (JT) policies, and whether respondents with weaker or more ambivalent affective attachments exhibit greater variability and responsiveness in their preferences. Finally, because climate policies vary in both distributive implications and symbolic meaning, we explore whether JT elements differentially influence support for cost-imposing policies such as carbon taxes versus regulatory mandates.

Drawing from prior research, we expect affective climate polarization to be substantial and comparable in magnitude to affective political polarization, and to meaningfully predict support for climate policy independent of ideology. Individuals who express strong affective alignment with renewable energy supporters are expected to show higher support for decarbonization policies, while those aligned with fossil-fuel supporters are expected to be more skeptical. We further anticipate that less polarized individuals will be more responsive to just transition policy bundling overall, showing larger shifts in support when JT elements are introduced. Finally, consistent with literature on fairness and compensation framing, JT additions are expected to bolster support for carbon-pricing measures while potentially dampening enthusiasm for command-and-control or technology-specific mandates.

## 2. Literature Review

### 2.1. Climate policy support and fossil fuel regions

Public opinion scholars have explored a number of factors to explain differences in climate policy support. Perceived costs of policies (Umit and Schaffer, 2020), belief in climate change and climate concern (Goldberg et al., 2021), trust in science (Rhodes et al., 2017), perceived disagreement among scientists (McCright et al., 2013), and a range of demographic factors such as gender, income, education and political orientation, have all been found to influence individuals' willingness to support decarbonization policies (Drews and Van Den Bergh, 2016). Recent syntheses also argue that research on public support should move beyond a narrow focus on carbon pricing to consider a wider set of instruments, design features and contextual factors (Kallbekken, 2023). Experimental work on policy bundling further shows that combining climate measures with economic and social policies can broaden support for mitigation, particularly among disadvantaged groups (Bergquist et al., 2020). Economic vulnerability is also a predictor of climate policy attitudes: individuals experiencing financial strain or economic hardship tend to express lower support for cost-imposing climate measures, reflecting concerns about distributive fairness and the potential for regressive impacts (Büchs et al., 2024; Hedegaard and Kongshøj, 2024; Schmidt et al., 2024). Experimental research, however, demonstrates that pairing carbon taxes with compensatory measures can improve perceived fairness, and particularly for people on the ideological right, increase overall support (Jagers et al., 2019).

Recent work adds further insight into why individuals support or oppose specific climate measures. Fairbrother and colleagues (2025) find that perceived economic costs, along with levels of political trust, shape support for a wide range of climate policies across Europe. While their study does not isolate high-risk regions as a distinct category, they draw on a broader body of work that suggests that these mechanisms can become more salient in places where climate action is perceived to threaten local industries or economic security. For example, Colantone et al. (2024) highlights how the imposition of uneven costs associated with climate policies impacted voting behaviors. While Bolet et al. (2024) show that climate-policy interventions can have pronounced political consequences in fossil-fuel-dependent regions, where just transition agreements and other compensatory measures can reshape electoral outcomes by mitigating concentrated economic losses.

Climate and energy transition policies are particularly contentious in regions where energy production is deeply intertwined with livelihoods and identities (Muzzerall, 2024; Tvinnereim and Ivarsflaten, 2016). Not only do intentions to transition fossil fuel economies to cleaner, greener energy sources threaten direct impact on the material livelihoods of fossil fuel workers and dependent municipalities, the identities of people in fossil fuel regions are also leveraged as political tools, strategically bolstering opposition and driving efforts to repeal and undercut government climate action (Bell et al., 2019; Bell and York, 2010; Egler and Morse, 2025).

Discursive tactics used by the fossil fuel industry and its allies to shape public opinions around energy have been studied by communication scholars, citing concerns around political polarization, a rising petro-nationalism, and the prioritization of industry interests over peoples' well-being (Gunster et al., 2021; Kinder, 2024; Kuteleva and Leifso, 2020). However, populist storylines have also been employed in mobilizations against the Canadian fossil fuel industry, as was documented by Neubauer and Gunster (2019) in opposition to the proposed, but never built, Northern Gateway pipeline in western Canada. Egler and Morse ( 2025) spoke with oil and gas workers in northern Alberta and found among them a shared experience of being implicated in discursive battles between those who articulate fossil fuels (and its workers) as essential providers, or as dirty and destructive. The growing polarization, which plays out in climate and energy discourse, has made it difficult for even well-designed decarbonization policies to secure and maintain broad public support (Hochachka et al., 2025; Patterson et al., 2025).

### 2.2. Affective climate polarization

Consistently, studies report stronger support for climate policy among people who self-identify as politically liberal, compared with conservatives (Berkebile-Weinberg et al., 2024; Hornsey et al., 2016). For many years, research attributed the pattern to the fundamental ideological differences in how left- and right-leaning individuals value the environment versus the economy (McCright et al., 2016), and views of the relationship between humans and the non-human environment (Dunlap et al., 2001). More recently, scholars have looked beyond ideology to emotion, in and out group affiliations, and identity as additional factors shaping climate policy attitudes (Kennedy, 2022).

Affective polarization refers to the emotional and identity-based distancing between partisan or ideological groups, where out-groups are not merely disagreed with but actively disliked or distrusted (Druckman and Levendusky, 2019; Iyengar et al., 2019, 2012). Relatedly, issue-based affective polarization occurs when these emotional reactions arise around specific policy debates (Schieferdecker et al., 2024). While it is an important element of democracy for individuals to hold differing views on policy options, the rise of negative emotional reactions toward those in opposing groups is cause for concern. Issue-based affective polarization has been recognized as an emerging challenge to public trust and democracy (Kingzette et al., 2021), and now also, to meaningful climate action (Hochachka et al., 2025).

Affective polarization is often operationalized as the difference between positive, or expressive partisanship (warmth for the in-group) and negative partisanship (hostility toward the out-group). Mayer and Smith (2023) examine how negative and positive partisanship influence support for climate change policy in the United States. They found that at low levels of expressive partisanship, support for climate policy was similar between Republicans and Democrats, while differences amplified as partisan identification increased. Among Republicans, hostility towards Democrats explained a significant amount of variance in climate policy attitudes; the more a Republican disliked a Democrat, the more they disliked climate policy (Mayer and Smith, 2023).

Huddart et al. (2025) argue that climate attitudes are increasingly tied to identity-based boundary-making, leading individuals to perceive those with opposing climate views as morally distinct groups. Drawing on a nationally representative survey of Canadian households (n = 2,503), the authors found that although climate policy support varies by political ideology, ideology alone does not explain differences. They conceptualize affective climate polarization--"*the degree of emotional warmth or hostility expressed between supporters and opponents of climate policy*" (Huddart et al., 2025, p. 2), to help explain the role of social identity and group affiliation, specifically as it relates to climate attitudes.

The findings of Huddart et al. (2025) also help to explain the potential roots of affective climate polarization, specifically in the Canadian context. They suggest that this emotional divide arises largely from mutual frustration—supporters resent opponents' resistance to climate policy, while opponents feel alienated by being morally judged for their hesitation. Drawing on the same survey data, Huddart et al. (In review) further examines heterogeneity in climate policy support within ideological groups in Canada. The study finds that while support for decarbonization is uniformly high among those on the left, it varies widely among conservatives, and reveals that affective polarization, rather than ideology itself, is the strongest predictor of climate policy attitudes on the right. Distrust in science and regional context also shape these differences, indicating that reducing affective polarization and rebuilding trust may be key to fostering broader support for climate action across partisan lines.

Building on this work, our study extends the examination of affective polarization and climate policy support into the specific context of western Canada's non-metropolitan communities. While Huddart et al. (2025) highlight the central role of affective polarization in shaping national-level

climate policy attitudes, particularly within the political right, our research investigates how these emotional and identity-based divides manifest in regions where energy production is deeply tied to local economies and identities. By combining measures of affective polarization with a factorial survey experiment on support for climate and just transition policies, we explore not only how polarization influences policy attitudes, but also whether incorporating justice-oriented policy supports can bridge divides and enhance public acceptance of decarbonization in these politically and economically sensitive regions.

## 3. Western Canada, Fossil Fuels, and the Need for a Just Transition

Canada is the 4th largest oil producer, and the 5th largest gas producer globally, contributing 7.4% of the country's GDP in 2024 (NRCan, 2025). The western Canadian provinces occupy an important position within the country's energy and economic landscape. Alberta, Saskatchewan, and parts of British Columbia (BC) and Manitoba together account for the majority of Canada's fossil fuel extraction, processing, and export capacity. While western Canada accounted for 96% of Canada's oil production in 2023, the provinces of BC and Alberta were responsible for 98% of the country's fossil gas production (Canadian Energy Regulator, 2024).

The oil and gas sector contribute substantially to the economies of all four provinces, most notably Alberta and Saskatchewan, and these economic structures shape regional vulnerability to decarbonization. Although economic diversification efforts have grown in recent decades, many non-metropolitan communities across these provinces remain deeply tied to fossil fuel production through employment, municipal revenues, and related supply-chain activities. Fossil-fuel-dependent communities face heightened exposure to shifts in labour demand and localized economic contraction as global energy markets evolve. And, for many rural and resource-based municipalities, these risks compound existing challenges associated with fluctuating commodity prices, escalating environmental liabilities, and limited alternatives in local labour markets (Carter, 2020; Nwanekezie et al., 2022; Scheer et al., 2022). These material vulnerabilities are intertwined with the cultural and identity-based challenges that shape how transition efforts are interpreted in fossil-fuel regions, and complicate local support for transition efforts (Egler and Morse, 2025; Hodge et al., 2025; Lajoie-O'Malley, 2025). These dynamics create distinct policy challenges across the western provinces, shaping how each jurisdiction approaches climate policy and energy transition.

Table 1. Economic Profiles of the Four Western Provinces

| | British Columbia | Alberta | Saskatchewan | Manitoba |
|---|---|---|---|---|
| Population (thousands) | 5,709 | 5,047 | 1,274 | 1,517 |
| GHG emissions per capita (tonnes CO2e) | 12.0 | 59.8 | 64.4 | 15.3 |
| GDP per capita (CAD, 2024) | 75,662 | 96,544 | 90,425 | 64,421 |
| % of oil production in Canada | 3.0% | 84.0% | 9.0% | 1.0% |
| % of gas production in Canada | 36.0% | 61.0% | 2.0% | 0.0% |

| | | | | |
|---|---|---|---|---|
| % of provincial GDP from mining, quarrying and oil and gas extraction | 4.8% | 26.0% | 19.9% | 2.3% |
| % of employment in mining, quarrying and oil and gas extraction | 1.1% | 6.0% | 3.5% | 0.8% |

Source: Statistics Canada (2023–2024). Values compiled from publicly available provincial statistics on population, GDP, emissions, and industry composition.

British Columbia has historically adopted more ambitious climate policies than the rest of the western provinces, and public support for climate action has traditionally been stronger (Fairbrother and Rhodes, 2023). Policies have included North America's first broadly applied carbon tax in 2008, performance standards for industry, low-carbon fuel regulations, and investments in renewable electricity and transit. Yet the province is not insulated from the tensions surrounding energy transition: debates over LNG development, forestry emissions, and the rights of Indigenous nations continue to influence public and political dynamics (Fairbrother and Rhodes, 2023).

Alberta, by contrast, has experienced persistent political conflict around climate policy. The province introduced a carbon levy briefly between 2017 and 2019, paired with industrial emissions regulations, but these policies were repealed shortly after a change in government (Winter, 2024). Subsequent provincial climate strategies have emphasized carbon capture, technology-driven mitigation, and support for the oil and gas sector, while resisting federal carbon pricing and regulatory requirements. Saskatchewan has taken a similarly adversarial stance toward federal climate policy, engaging in legal and political challenges against carbon pricing and fuel regulations. Manitoba presents a more moderate climate-policy trajectory: with fewer fossil-fuel industries and a hydro-based electricity system, the province faces different transition pressures, though debates over carbon pricing, affordability, and rural equity continue to shape its policy approach (Hamlin and Zhang, 2024; Rutgers, 2023).

These dynamics underscore the importance of just transition policies in western Canada. With a large share of the country's fossil fuel workforce, significant provincial dependence on extraction-based revenues, and strong identity linkages between communities and resource industries, western Canada is uniquely exposed to the social and economic risks of decarbonization. A just transition approach has been proposed as a way to mitigate these risks and ensure that the costs and benefits of climate policy are shared more equitably. However, as the political backlash against federal just transition initiatives demonstrates, support for such measures cannot be assumed. Understanding how affective climate polarization, and justice-oriented policy design shape public acceptance is therefore important for designing durable and legitimate climate policies in this part of Canada.

# 4. Methods

## 4.1 Survey design

Survey data (n = 3,400) were collected in March and April of 2025. The online survey was designed in collaboration with project partners from provincial and federal governments, as well as

organizations working on community energy transitions in Canada (see full questionnaire in the supplementary materials - Appendix B). We used Dillman et al.'s (2009) tailored survey design methods to reduce the overall survey error when designing the questionnaire. The survey targeted residents outside of large urban population centres (defined as communities under 100,000) across the four western Canadian provinces: British Columbia (n = 1255), Alberta (n = 1272), Saskatchewan (n = 457), and Manitoba (n = 416).

Survey respondents were recruited through a combination of probability-based and non-probability online panels administered by The Logit Group, a commercial research and polling firm. Recruitment began with a national probability-based online panel, and once that sample was exhausted, additional respondents were drawn from non-probability online panels to enhance demographic and regional representation. This blended recruitment approach aimed to achieve a sample that was as representative as possible of residents in non-metropolitan areas of western Canada. Standard quality control procedures were applied throughout data collection to identify and remove fraudulent or inattentive responses. All survey respondents provided informed consent, and the study was approved by The Human Research Ethics Board (HREB) at the [information removed to ensure a double-blind peer review].

When compared to Census data for residents living outside major population centres based on forward sortation area (FSA) codes, the sample closely aligns with Census benchmarks for the population size of the province and distribution of income in Western Canada. Our sample modestly overrepresents older and more educated individuals and underrepresents those who are younger and less-educated (see Table 2), which is common in survey-based research. We report results using unweighted raw data, while acknowledging these representational differences.

Table 2. Comparison of Survey Sample and Census Benchmarks for Non-Metropolitan Residents in Western Canada

| | Sample | Census |
|---|---|---|
| **Age** | | |
| Under 35 | 17.97% | 24.60% |
| 35-54 | 34.15% | 32.01% |
| 55-64 | 17.85% | 18.40% |
| 65+ | 30.03% | 24.99% |
| **Education** | | |
| High school or less | 29.03% | 51.32% |
| Post-secondary diploma / cert | 41.38% | 33.07% |
| Bachelors degree | 19.35% | 11.07% |
| Degree beyond bachelors | 10.24% | 4.54% |
| **Province** | | |
| British Columbia | 37.00% | 37.00% |
| Alberta | 37.59% | 37.63% |
| Saskatchewan | 13.41% | 13.67% |

| | | |
|---|---|---|
| Manitoba | 12.00% | 11.70% |
| **Income** | | |
| Under $25,000 | 7.50% | 8.19% |
| $25,000 to $49,999 | 17.74% | 18.03% |
| $50,000 to $74,999 | 18.50% | 17.67% |
| $75,000 to $99,999 | 19.79% | 15.38% |
| $100,000 to $199,999 | 29.06% | 31.80% |
| $200,000 or more | 7.41% | 8.94% |

### 4.2 Key variables

***Climate policy support and just transition policy bundling.*** We measured support for efforts to reduce greenhouse gas emissions by decreasing fossil fuels as a general gauge of energy transition within our sample. We also measured support for climate policies and for climate policies bundled with just transition supports through a factorial vignette experiment.

Support for energy transition, climate policies, and policy bundles was assessed using an 11-point scale ranging from -5 (“Strongly oppose”) to +5 (“Strongly support”). The mid-point at 0 was labeled "Neither oppose nor support". We used an 11-point scale to capture variation in support and avoid bias from threshold effects or unobserved heterogeneity, following best practices in factorial survey design (Kübler et al., 2018; Parkins et al., 2022).

Respondents were presented with a series of climate policy proposals and asked to indicate their level of support for each. These proposals included standalone climate mitigation policies as well as combinations of the same climate policies with just transition (JT) elements presented in a factorial vignette experiment design.

In the factorial vignette experiment, each respondent evaluated a randomized set of policy scenarios, drawn from a 4 (climate policies) × 5 (JT element) design, resulting in 20 unique vignette combinations. Each respondent read a brief script at the beginning of the experiment that informed them of the hypothetical nature of the task and then asked them to rate six randomly assigned vignettes (See figure 1). Climate-only policy ratings are used to establish baseline support for each climate policy.

When governments use policies to reduce greenhouse gas emissions, they can also include supports for people and communities that may be impacted by related changes in energy economies.

We are going to present you with 6 hypothetical policy combinations related to reducing greenhouse gas emissions in Canada. Carefully read each scenario and rate it based on how much you support or oppose the policy combination.

Scenario1: To reduce greenhouse gas emissions, the government could **increase taxes on fossil fuel products purchased by consumers**.

The government would also **provide targeted energy subsidies or rebates to consumers to offset energy-related increases in the cost of living.**

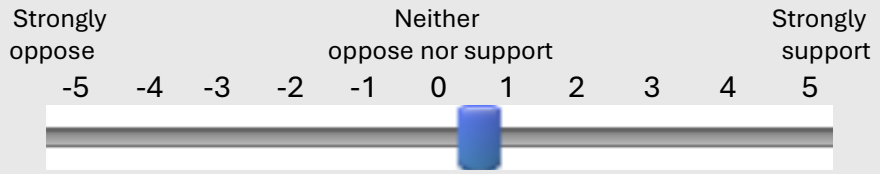


Figure 1. Example of a Climate Policy × Just Transition Vignette Presented to Respondents

The policies used in the study are outlined in Table 3. To capture meaningful variation in public preferences, the climate policy attributes were selected to represent two of the most prominent and contested policy approaches to decarbonization: market-based carbon pricing instruments and prescriptive regulatory mandates. Carbon taxes, applied either to consumers or to industry, serve as demand-management tools that work by increasing the cost of carbon-intensive activities. These instruments are seen as economically efficient but often politically sensitive due to their visibility and perceived impacts on affordability. In contrast, the clean technology and renewable electricity mandates reflect a regulatory approach in which governments specify required technologies or performance standards. Mandates are generally less price-salient and may generate broader public support, but they raise concerns about regulatory burden, competitiveness, and uneven regional effects. Therefore, including both taxes and mandates allows us to assess whether JT bundling differentially influences support across different policy approaches.

The five JT attributes were chosen to reflect distinct logics of justice frequently emphasized in just transition research and policy making. These include addressing labour-market disruptions (training and education); mitigating household energy costs (energy subsidies); expanding community control over energy decisions (community-owned energy); supporting regional economic diversification (low-carbon incentives); and improving mobility and affordability in car dependent regions (public transit). Together, this set of policies captures a broad spectrum of distributive and procedural concerns associated with decarbonization, enabling us to evaluate how different JT policy bundling conditions support for climate policy instruments. It also reflects our interest in understanding the preferences of people in the study regions, as their perspectives are

frequently underrepresented in policy research despite their central role and experience in energy transitions.

Table 3. Policies Used in Study

| Attribute | Tested policy |
|---|---|
| Climate policy | **Consumer carbon tax**: "Increase taxes on fossil fuel products purchased by consumers" |
| | **Industrial emissions tax**: "Increase taxes on fossil fuel emissions produced by industry" |
| | **Clean technology mandate**: "Require companies to adopt clean-energy or low-emissions technologies" |
| | **Renewable electricity mandate**: "Require that a percentage of all electricity produced in Canada must come from renewable sources" |
| Just transition policy | **Training & education**: "Provide free training and education programs for low-carbon and clean-energy careers |
| | **Energy subsidies:** "Provide targeted energy subsidies or rebates to consumers to offset energy-related increases in the cost of living |
| | **Community-owned energy**: "Provide support for community-owned energy infrastructure, specifically in regions with fossil fuel-based economies" |
| | **Low-carbon incentives**: "Provide incentives to increase low-carbon and green manufacturing, specifically in regions with fossil fuel-based economies" |
| | **Public transit investment**: "Support the improvement of regional public transportation between cities and towns" |

***Affective climate polarization*.** Affective climate polarization in our study was measured using a series of feeling thermometer questions, adapted from Iyengar et al. (2012) and Huddart et al. (2025). Huddart et al. (2025) adapted the feelings thermometer, a widely used measure of affective polarization, to assess feelings between two issue-based groups related to decarbonization. With a feelings thermometer, respondents rate their feelings toward different social and political groups on a scale from 0 (very cold/unfavourable) to 100 (very warm/favourable). Specifically, participants evaluated their feelings toward people who support renewable energy versus those who support maintaining fossil fuels, as well as those who identify as politically right and politically left. The questions were worded as: (1) *On the 0-to-100-point scale, how do you feel toward people who support maintaining fossil fuels instead of using renewable energies?;* (2) *On the 0-to-100-point scale, how do you feel toward people who support using renewable energies instead of fossil fuels?*;

(3) *How do you feel toward people who identify as politically right-wing, or conservative?; and (4) How do you feel toward people who identify as politically left-wing, or liberal?*

Respondents were also asked whether they considered themselves a supporter of climate action, with the option to choose neither support nor oppose. This split the sample into three groups based on climate identity: those who identify as a supporter of climate action (n = 1,830), someone in opposition to climate action (n= 1,072), and those who were either uncertain or considered themselves neither (n = 498). Political identity was assessed by asking respondents to place themselves along the left-right spectrum: *Where would you place yourself on a scale of 0 to 10, where 0 means left-wing or liberal and 10 means right-wing or conservative?*, left (n= 959), right (n = 1,552), and centrists (n=781) being considered as those who rated themselves as a 5 on the 11-point scale. Some respondents preferred not to answer this question and therefore were not included (n=108). For regression analyses, affective polarization was operationalized as a continuous net-affect score, calculated by subtracting out-group ratings from in-group ratings (Iyengar et al., 2019). Affective polarization was considered strong when respondents rated one group warmly and the opposing group coldly, with an absolute spread greater than 50 points on the 100-point affective thermometer scale, and weak if they rated one group as warm and one as cold with an absolute spread of less than 50.

### 4.3 Statistical analysis

To examine how climate policy preferences and JT bundling vary across respondents, we employed a combination of descriptive analyses and multivariate regression models. First, we assessed affective climate polarization by comparing mean net-affect scores across identity groups and estimating effect sizes using Cohen's d scores, following Iyengar & Westwood (2015). Cohen's *d* is a standardized measure of effect size, indicating how far apart two group means are in standard deviation units. It reflects the magnitude of difference, independent of sample size. Generally an effect size greater than 0.8 is considered large (Sawilowsky, 2009).

To explore how these identity divides relate to support for energy transition, we examined respondents' ratings of a general question on reducing GHG emissions by decreasing fossil fuel use. Support was plotted using boxplots across political ideology and affective climate polarization groups, highlighting the distribution, median, and spread of response. This descriptive approach allows us to visualize where opinions are tightly clustered versus widely dispersed within groups, and to compare patterns of heterogeneity in support for energy transition across ideological and affective dimensions.

To model support for standalone climate policies, we first estimated a series of ordinary least squares (OLS) regression models using robust standard errors to address heteroskedasticity. Baseline models included age, gender, education, perceived financial hardship, political ideology, and province. We include financial hardship as a measure of subjective income as a control because perceptions of one's own economic vulnerability can be more strongly associated with policy attitudes than objective income (Hacker et al., 2013; Margalit, 2019). Financial hardship was measured with a four-category item asking respondents how they were managing on their present

household income, with response options ranging from "living comfortably" to "finding it very difficult." We then added affective climate polarization to assess whether it improved model fit and accounted for additional variance in policy support beyond demographic and ideological factors.

To assess the effects of just transition (JT) policy bundling, we estimated mixed-effects linear models for each of the four climate policies. Each model included a random intercept for respondents to account for repeated measures within individuals and controlled for demographic covariates, as well as affective climate polarization. The dependent variable for both the OLS and mixed effects models was respondents' support for each policy on an 11-point scale. JT effects were operationalized as the estimated change in support when a JT policy was paired with a climate policy, relative to the same climate policy presented alone.

To examine how affective climate polarization shapes the effect of JT bundling on support for climate policies, we extended the mixed-effects models to include an interaction term between respondents' polarization group and JT policy additions. Specifically, respondents were grouped as (1) Strongly Polarized Against Fossil Fuels (FF), (2) Strongly Polarized Against Renewable Energy (RE), or (3) Everyone Else, serving as the baseline. Each model included a random intercept for respondents to account for repeated measures and controlled for demographic covariates, political ideology, and province. The dependent variable was again support for each climate policy on the 11-point scale. Robustness checks were conducted using ordinal recoding of the support scale and alternative operationalizations of affective polarization.

## 5. Results

### 5.1. Considering Affective Climate Polarization in Climate Policy Support

The net-affect scores for different identity groups: political ideology and climate identity, are illustrated by density distributions in Figures 2 and 3. The Cohen's *d* scores for affective polarization around ideology and decarbonization are 2.1 and 1.79, respectively. Both measures suggest considerable division between those who identify as left or right on the political scale, and supporters and opponents of climate action.

Figure 2 illustrates the distribution of net affect toward political groups (Left – Right). Values above zero indicate warmer feelings toward the political left, while values below zero indicate warmer feelings toward the right. Individuals who identify as left-leaning cluster overwhelmingly on the positive side of the scale, with many exceeding the +50 threshold, which we interpret as a marker of strong affective polarization. Conversely, right-leaning individuals show the opposite pattern, with most respondents positioned below –50. The two distributions have minimal overlap, suggesting that affective orientations toward political out-groups have become bifurcated.

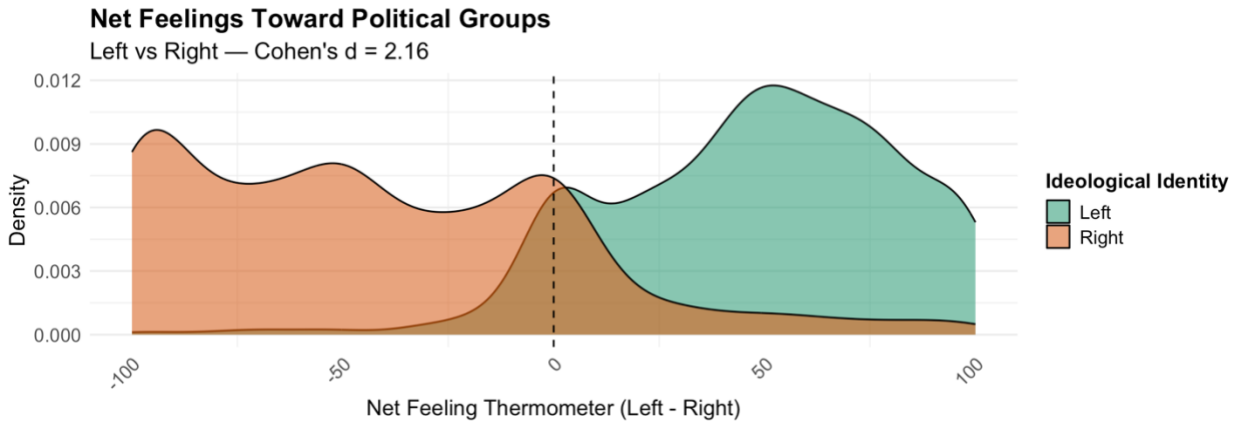


Figure 2. Affective ideological polarization. Measured as net feelings toward left and right political groups.

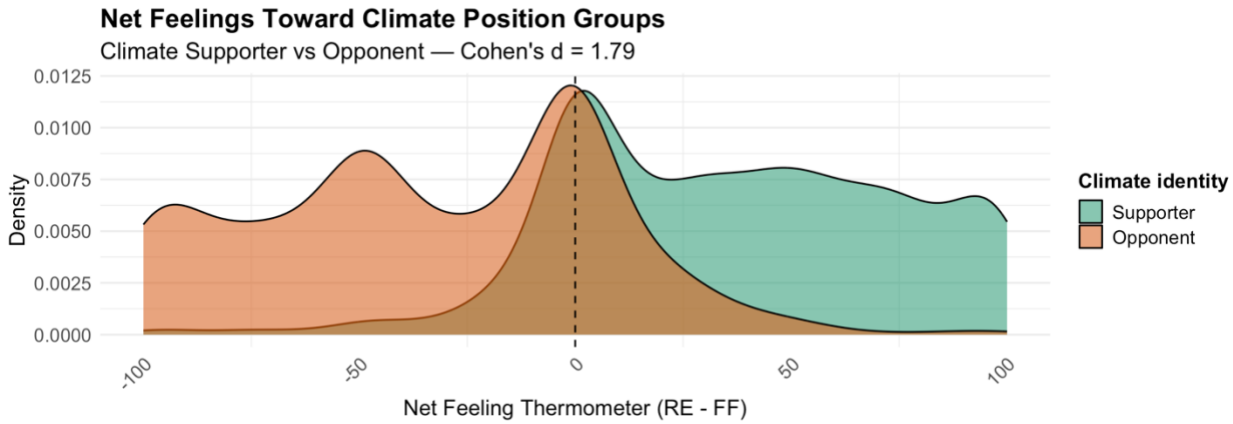


Figure 3. Affective climate polarization. Measured as net feelings toward groups that support the development of renewable energies (RE) and fossil fuels (FF).

A similar pattern emerges for climate identity in Figure 3, which plots net affect toward supporters of renewable energy versus fossil fuel development (RE – FF). Climate supporters show a largely positive distribution, with most respondents falling well above zero and many approaching or exceeding the +50 threshold, which indicates warm, positive feelings towards people who support renewable energy relative to fossil fuels. Climate opponents exhibit the opposite pattern. Their distribution is centered on negative values, reflecting warmer feelings towards those who support fossil fuel development. While the degree of overlap is more that in affective political polarization measures, there is a clear separation of their distributions indicates a substantial degree of affective polarization around climate identity. In other words, both ideological and climate identities have become potentially potent markers of affective separation within the population.

Having established affective climate polarization in our study, we illustrate how it differs from political polarization in its relationship to support for energy transition. In line with the climate policy findings of Huddart (In review), support for energy transition policies varies *most strongly* among right-leaning individuals (see Figure 4). Affective climate polarization presents a different

pattern. In this case, heterogeneity in energy transition support is greater among those who are less strongly polarized in their affective climate identities (see Figure 5). Individuals with more moderate or mixed affective responses toward climate groups exhibit a wider range of opinions on energy transition, suggesting that affective polarization may consolidate attitudes primarily at the extremes rather than across the ideological spectrum.

While political ideology predicts divergence between left- and right-wing groups, affective climate polarization appears to compress variation among the highly polarized for both supporters and opponents of climate action, while leaving greater variability in support among those less emotionally divided. This distinction implies that affective climate polarization operates differently from traditional partisan polarization: rather than driving opposition along ideological lines, it may instead intensify conviction within emotionally aligned groups while leaving greater variability in policy preferences among those who are less affectively committed.

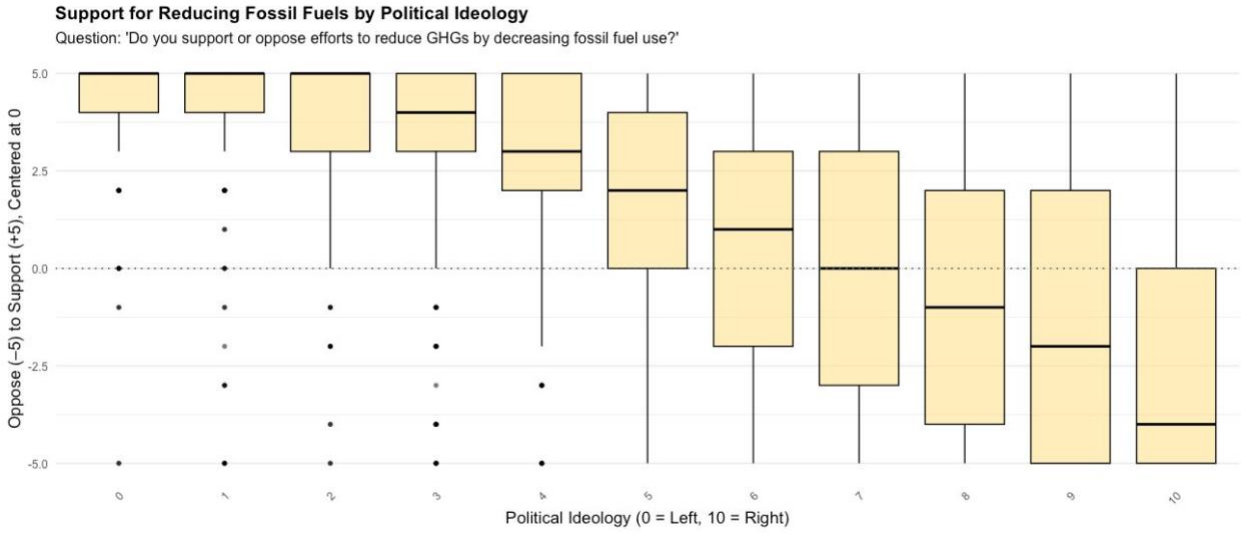


Figure 4. Average range of support for reducing GHG emissions by decreasing fossil fuels by political ideology. Ideology ranges from very left-wing (0) to very right-wing (10).

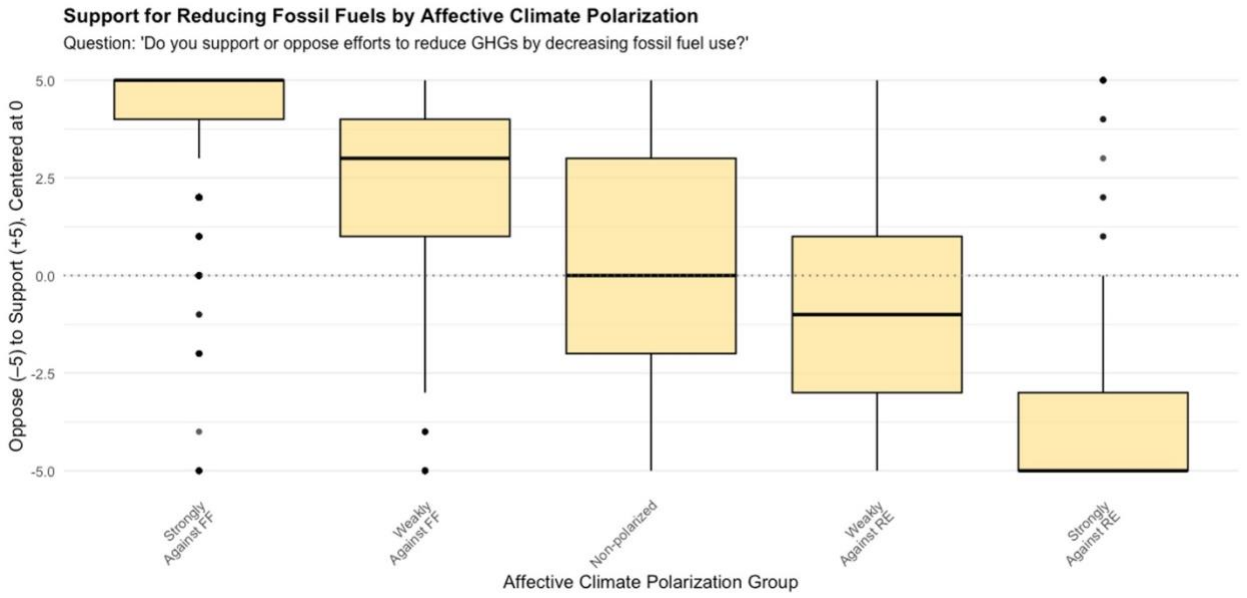


Figure 5. Average range of support for reducing GHG emissions by decreasing fossil fuels by affective climate polarization. Strong polarization groups have net-affect scores greater than 50 points.

To understand how affective polarization relates to climate policy preferences we estimated support for four climate policies as a function of demographic factors, political ideology, and affective climate polarization. Baseline models presented in Table 4 explained between 22% and 31% of the variance in climate policy support. When affective climate polarization was added, categorizing respondents as strongly or weakly polarized against either fossil fuels or renewable energy, model fit improved substantially across all four policies (e.g., $R^2$ adjusted increased from 0.234 to 0.354 for a consumer carbon tax, and from 0.253 to 0.454 for a renewable electricity mandate).

Affective climate polarization was a strong and consistent predictor of support. Respondents who were strongly polarized against fossil fuels expressed significantly greater support for climate policies, while those polarized against renewables were markedly less supportive. These effects held even when controlling for political ideology, suggesting that affective polarization captures dimensions of energy identity not reducible to ideology alone. While political ideology remained a significant predictor, its effect size declined by 40–50% when affective polarization was included. Regional differences also emerged: respondents in Alberta and Saskatchewan were significantly less supportive of climate policies than British Columbia (the baseline), though these gaps narrowed once affective polarization was accounted for. A robustness check using mixed-effects models to account for repeated responses is reported in Appendix Table A1.

Table 4. Results of OLS Linear Regression models for Climate Policy Support and Affective Polarization as Control Variable

**Climate policy support - with and without affective polarization**

| | Consumer carbon tax | | Industrial emissions tax | | Clean technology mandate | | Renewable electricity mandate | |
|---|---|---|---|---|---|---|---|---|
| **Intercept** | **7.792*** ** | **5.723*** ** | **10.702*** ** | **8.307*** ** | **11.076*** ** | **9.159*** ** | **11.803*** ** | **9.515*** ** |
| | -0.297 | -0.298 | -0.283 | -0.28 | -0.245 | -0.237 | -0.26 | -0.252 |
| **age** | **-0.129*** ** | **-0.112*** ** | **-0.100** ** | **-0.074*** | **-0.001** | **0.03** | **-0.115*** ** | **-0.083*** ** |
| | -0.032 | -0.03 | -0.032 | -0.029 | -0.026 | -0.024 | -0.028 | -0.025 |
| **education** | **0.370*** ** | **0.304*** ** | **0.224*** ** | **0.147** ** | **-0.015** | **-0.077+** | **-0.02** | **-0.094*** |
| | -0.054 | -0.05 | -0.055 | -0.049 | -0.047 | -0.042 | -0.05 | -0.043 |
| **gender (male)** | **-0.381*** ** | **-0.157** | **-0.711*** ** | **-0.433*** ** | **-0.685*** ** | **-0.430*** ** | **-0.878*** ** | **-0.586*** ** |
| | -0.111 | -0.102 | -0.113 | -0.1 | -0.095 | -0.084 | -0.101 | -0.087 |
| **financial_hardship** | **-0.909*** ** | **-0.695*** ** | **-0.829*** ** | **-0.575*** ** | **-0.546*** ** | **-0.324*** ** | **-0.496*** ** | **-0.240*** |
| | -0.119 | -0.112 | -0.127 | -0.116 | -0.108 | -0.096 | -0.112 | -0.099 |
| **political_ideology** | **-0.511*** ** | **-0.247*** ** | **-0.661*** ** | **-0.348*** ** | **-0.454*** ** | **-0.187*** ** | **-0.499*** ** | **-0.189*** ** |
| | -0.021 | -0.023 | -0.02 | -0.023 | -0.018 | -0.018 | -0.019 | -0.02 |
| **province: Alberta** | **-0.638*** ** | **-0.333** ** | **-0.781*** ** | **-0.404*** ** | **-0.514*** ** | **-0.178+** | **-0.964*** ** | **-0.581*** ** |
| | -0.124 | -0.115 | -0.128 | -0.115 | -0.109 | -0.095 | -0.117 | -0.099 |
| **province: Manitoba** | **-0.681*** ** | **-0.348*** | **-1.046*** ** | **-0.661*** ** | **-0.670*** ** | **-0.353** ** | **-1.017*** ** | **-0.652*** ** |
| | -0.164 | -0.15 | -0.17 | -0.151 | -0.147 | -0.133 | -0.154 | -0.135 |
| **province: Saskatchewan** | **0.067** | **0.065** | **-0.039** | **-0.053** | **-0.099** | **-0.131** | **0.058** | **0.026** |
| | -0.185 | -0.175 | -0.187 | -0.17 | -0.149 | -0.131 | -0.156 | -0.137 |
| **Strongly Polarized Against FF** | | **2.428*** ** | | **2.644*** ** | | **1.935*** ** | | **2.393*** ** |
| | | -0.154 | | -0.14 | | -0.102 | | -0.107 |
| **Weakly Polarized Against FF** | | **-2.144*** ** | | **-2.942*** ** | | **-3.087*** ** | | **-3.394*** ** |
| | | -0.112 | | -0.141 | | -0.167 | | -0.16 |
| **Strongly Polarized Against RE** | | **1.065*** ** | | **1.213*** ** | | **0.784*** ** | | **1.005*** ** |
| | | -0.147 | | -0.147 | | -0.11 | | -0.116 |
| **Weakly Polarized Against RE** | | **-0.986*** ** | | **-1.108*** ** | | **-1.000*** ** | | **-0.989*** ** |
| | | -0.176 | | -0.187 | | -0.167 | | -0.181 |
| Num.Obs. | 3265 | 3265 | 3265 | 3265 | 3265 | 3265 | 3265 | 3265 |
| R2 | 0.236 | 0.357 | 0.305 | 0.452 | 0.217 | 0.396 | 0.254 | 0.456 |
| R2 Adj. | 0.234 | 0.354 | 0.303 | 0.45 | 0.215 | 0.393 | 0.253 | 0.454 |

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

## 5.2. Climate and Just Transition Policy Support

Figure 6 illustrates base-levels of support for four climate policies across ideological groups with responses ranging from "Strongly Oppose" to "Strongly Support." Mandates for clean technologies and renewable electricity receive broad support across all groups, particularly among those on the left, where a majority express strong support. In contrast, carbon tax policies, both consumer and industrial, are more politically polarizing. Left-leaning respondents largely support these taxes, but support declines among centrists and drops sharply among right-leaning respondents, who show high levels of strong opposition, especially to the consumer carbon tax.

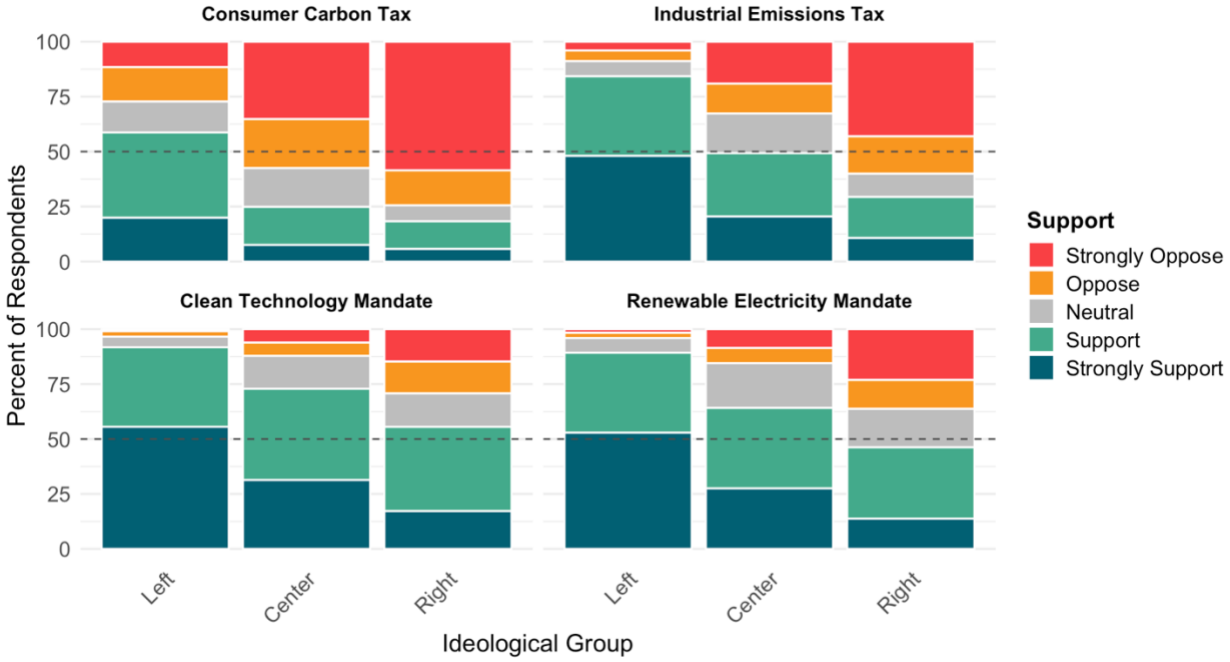


Figure 6. Base-level Support for climate policies by political ideology

Figure 7 presents the estimated change in support when each climate policy is combined with a JT attribute, relative to the same policy presented alone (baseline). Positive coefficients, indicated by a solid circle, show that bundling a JT component increased support, while negative coefficients indicate a decrease. Across the models, JT bundling generally increased support for carbon-pricing policies but had mixed or negative effects for regulatory mandates. For the consumer carbon tax and industrial emissions tax, all JT additions except for the bundling of energy subsidies with the industrial emissions tax, produced significant positive shifts in support. Bundling the clean technology and renewable electricity mandates with JT elements tended to reduce support, particularly when paired with energy subsidies or community-owned energy. These results suggest that while fairness and equity framing enhances the acceptability of carbon-pricing measures, it may dilute enthusiasm for command-and-control or technology-specific mandates. Full mixed-effects model results are provided in Appendix Table A2.

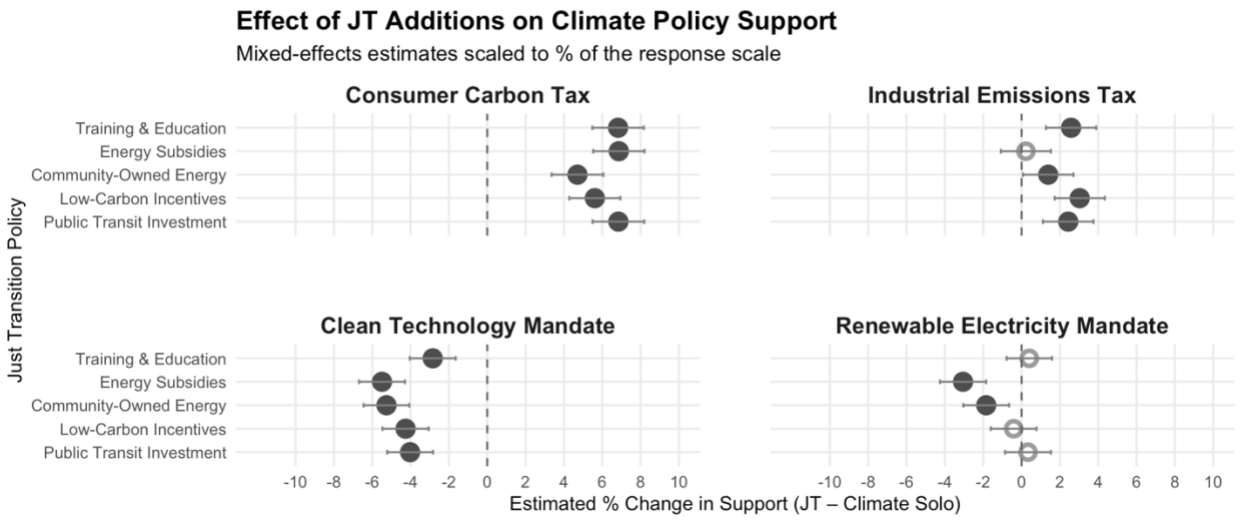


Figure 7. Change in climate policy support with the addition of just transition bundling

## 5.3 Affective Climate Polarization and Just Transition Policy Bundling

Figure 8 presents the interaction between affective climate polarization and just transition (JT) policy bundling on support for four climate policies. The results show that JT additions influence policy support differently across affective polarization groups. Among respondents who were not strongly polarized, those with more moderate or mixed emotional orientations toward fossil fuels and renewables, JT bundling was associated with the most significant shifts in opinion. This suggests that individuals with weaker emotional attachments to either side remain more responsive to policy content.

By contrast, strongly polarized respondents were generally more stable in their views, though the direction of change varied by policy type and the direction of affective polarization. Those strongly polarized against people who support fossil fuels maintained high overall support for climate action but appear to be less supportive of carbon pricing bundled with JT elements compared to those who were not polarized. In the case of industrial carbon pricing (with any JT element), or consumer carbon taxes paired with community-owned renewable energy projects, support for the climate policies declined. Those polarized against fossil fuels also significantly reduced support for renewable electricity mandates when paired with JT elements.

Meanwhile, respondents strongly polarized against people who support renewable energy were largely unresponsive to JT framing. Across most policy combinations, changes in support were statistically insignificant, with the exception of energy subsidies paired with a renewable electricity mandate which saw a small increase in support. This pattern suggests that affective polarization constrains the potential of policy bundling to shift attitudes among those most emotionally opposed to climate action. Full model results are provided in Appendix Table A3.

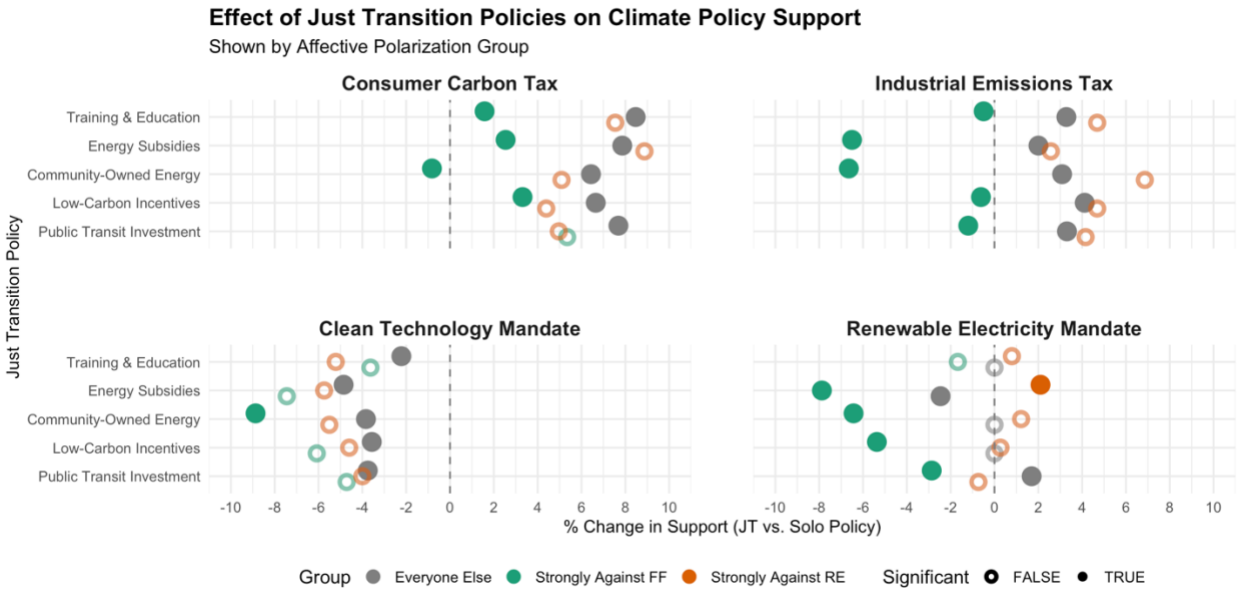


Figure 8. Effect of just transition bundling on climate policy support, by affective climate polarization group.

## 6. Discussion

This study contributes to growing evidence that affective polarization plays a central role in shaping the social legitimacy of climate policy, particularly in regions economically and culturally tied to fossil fuel production. Building on recent work by Huddart et al. (2025) and Mayer and Smith (2023), our findings extend the concept of affective climate polarization beyond its association with ideological identity to show how emotional alignment with either fossil fuel or renewable energy identities conditions responsiveness to climate policy bundling.

One of our aims was to compare the emotional distance between affective climate polarization groups with more familiar ideological divides. It is therefore notable that affective climate polarization in our sample reached levels comparable to affective political polarization, suggesting that climate identities themselves have become meaningful axes of social differentiation. When affective polarization was added to models, it improved explanatory power and reduced the effect size of ideology by 40-50%, indicating that emotional climate identity is a distinct and powerful driver of climate policy attitudes. Affective climate polarization also appears to influence the stability and flexibility of policy attitudes. Individuals with weaker or mixed affective attachments displayed the greater responsiveness to just transition bundling. In particular, just transition bundling increased support for both consumer and industrial carbon taxes, while results were more mixed for mandates. This pattern aligns with our expectations that respondents who were not strongly affectively aligned with either climate "side" would be most open to changing their policy preferences in response to policy bundling, and that fairness-oriented or compensatory measures would be especially effective in improving support for cost-imposing policies such as carbon

pricing. This suggests that emotional distance from polarized climate identities leaves more room for nuance within climate policy design.

Also as anticipated, the responses of strongly polarized groups were less flexible, and in some cases, counterintuitive. Respondents strongly polarized against people who support fossil fuels demonstrated reductions in support for several climate policies when bundled with just transition elements. This reversal is significant given that these individuals are otherwise the most consistently supportive of climate action overall. This finding also aligns with evidence that compensatory or fairness-oriented additions do not uniformly increase support for climate policies. For example, though limited to only carbon taxes, Jagers et al. (2019) found that compensatory measures could enhance perceptions of fairness and increase among individuals on the political right, but decreased support among those on the left. Their lower support for bundled policies could suggest a kind of 'principled resistance,' where support directed toward fossil fuel regions that maybe adversely impacted by climate policy could be perceived as unfair, rewarding those who have already benefited from carbon-intensive industries at the expense of climate progress. These differences in support were particularly evident for carbon-pricing measures and renewable energy mandates. Conversely, respondents strongly polarized against renewable energy were largely unresponsive to just transition framing, with nearly all changes statistically insignificant. The only exception occurred when energy subsidies were paired with a renewable electricity mandate, producing a modest increase in support.

Together, these patterns highlight that affective climate polarization not only divides individuals in their overall levels of support but also shapes how flexible their attitudes are to justice-oriented framing. Rather than uniformly increasing support, just transition bundling interacts with underlying affective orientations, with strengthened endorsement among the less polarized and muted or even negative effects among those with strong emotional commitments to either side of the energy divide. These results directly address how affective climate polarization may condition the effectiveness of policy bundling, showing that the policy details have stronger influence of those with weaker affective attachments, while strongly polarized individuals demonstrate more attitudinal stability. This finding underscores that emotional identity, rather than ideology alone, can structure both the direction and limits of policy responsiveness in polarized contexts. These patterns also resonate with research showing how climate and energy debates in fossil-fuel regions are deeply entangled with identity, belonging, and symbolic boundary-making (Bell et al., 2019; Egler and Morse, 2025). Affective climate polarization appears to capture the emotional dimension of these identity processes, helping to explain why individuals embedded in pro- or anti-fossil-fuel narratives show limited responsiveness to policy design features that aim to mitigate distributive concerns.

Lastly, the study helps reconcile mixed findings in prior experimental work on just transition policy bundling (Bolet et al., 2024; Gajevic Sayegh et al., 2025; Gazmararian, 2024; Muzzerall, 2024). Our results indicate that the effectiveness of JT elements depends on the affective environment in which policies are introduced, making political context an important factor in determining whether fairness-oriented framing is interpreted as credible, necessary, or unwelcome.

Several factors should be considered when interpreting these results. For one, shortly after the survey was fielded (in March of 2025) a federal election was called, in which the carbon tax was a dominant campaign issue. This may have intensified affective reactions toward climate policies, likely amplifying the polarization patterns we observed. This timing also offers a valuable opportunity for understanding the policy responses of those not activated by political cues. Secondly, as with all stated-preference surveys, responses may be influenced by social desirability pressures, strategic considerations about how results might shape policy, or framing effects introduced by the structure of the questionnaire itself. We sought to minimize these risks through established tailored survey design principles (Dillman et al., 2009), yet some degree of bias is unavoidable. Third, although the sample was broadly representative of non-metropolitan residents in the four western provinces, younger and less educated adults were underrepresented, and online surveys can face challenges in reaching residents of remote or northern communities. While our blended recruitment strategy improved coverage relative to many national surveys, some populations that experience climate and energy transitions most acutely may still be less visible in the data. And lastly, the factorial design captures how people evaluate isolated policy bundles in a controlled setting but cannot fully replicate the strategic, partisan and institutional dynamics that shape real-world climate and just transition policymaking. These limitations suggest caution when generalizing effect sizes, while the broader patterns remain analytically informative.

Future research could build on this work in several ways. Longitudinal or repeated cross-sectional surveys would help assess temporal trends and whether affective climate polarization fluctuates with political cycles. Experiments embedded in more context-specific scenarios, such as those involving local industries, Indigenous governments, unions, or regional political actors, may also illuminate how trust and place-based identities shape responses to just transition bundling. Further work is also needed to understand the causal pathways linking affective climate polarization to the interpretation of fairness measures, including whether interventions that reduce perceived social distance between climate “sides” can increase receptivity to climate policy in polarized regions.

## 7. Conclusion and policy implications

A growing body of scholarship bridging climate politics with studies on affective polarization helps explain inconsistencies in public support for climate policy. Prior research has demonstrated that emotional and identity-based divisions shape attitudes toward climate action, however, less is known about how these divisions influence responses to specific policy bundles that combine mitigation with justice-oriented transition measures. Our study helps address this research gap.

The results of our study have direct relevance for climate and just transition policymaking. They highlight that fairness-oriented additions cannot be expected to increase support uniformly across the population. JT bundling appears most effective among residents who are not deeply embedded in polarized climate identities, suggesting that the “moveable middle” may be the most responsive audience for policy design and communication efforts. In contrast, strongly polarized groups showed limited or even negative reactions to JT bundling, indicating that the most emotionally

committed constituencies may interpret distributive or compensatory measures through identity-based lenses rather than through assessments of material fairness.

Our results also direct attention to the importance of political context when designing climate policy packages. Because affective climate identities can be rapidly activated during moments of heightened political contestation, as seen during the 2025 federal election, policy support is likely to shift depending on the salience of elite cues and the framing strategies adopted by political actors. This suggests that the timing, sequencing, and communication of just transition policies are as critical as their substantive content. In less polarized environments, JT measures may be understood as credible attempts to distribute costs and opportunities fairly. In more polarized settings, however, similar measures may be viewed as symbolic concessions or as diluting the intent of climate action.

Our study points to the need for policy approaches that extend beyond adjustments to instrument design. In regions where climate and energy identities are deeply tied to local economies, cultures, and histories, public support for decarbonization may rely as much on building trust and legitimacy as on offering material compensation. Efforts to engage communities, elevate locally credible messengers, and acknowledge the lived experience of transition may therefore be essential components of durable climate policy strategies.

Overall, this study demonstrates that the social acceptance of climate and just transition policies depends not only on distributive features, but on the affective and political landscapes in which those policies are introduced. Recognizing the role of affective climate polarization can help policymakers tailor strategies that are more likely to succeed in the diverse and politically complex regions where climate decisions ultimately unfold.

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