Endogenous green preferences*

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Abstract

Stringent environmental policies often lack public support. But after policies are enacted, do individual preferences about them change? Using surveys covering 38 countries around the world, we study the effect of exposure to environmental policies on policy preferences. Exploiting within-country-year, across birth-cohort variation, we find that individuals exposed to more stringent environmental policies during early adulthood are more supportive of environmental policies later on in life. This relationship suggests that a society's environmental policy attitudes evolve endogenously, with implications for forecasting the path of these economic measures, as well as for how to evaluate their normative appropriateness.

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I. Introduction

Environmental externalities impose societal costs that can be reduced with sufficiently stringent policies. However, such policies frequently garner low public support, a prominent example being carbon taxes (Douenne & Fabre, 2022). While public support naturally influences policy outcomes (List & Sturm, 2006), a relationship that is bidirectional, wherein public preferences influence subsequent policy outcomes and policy outcomes influence subsequent public preferences for policy, would have meaningful implications for how public policy evolves. If voter preferences are exogenous and information perfect, personal experience with policies would not shape an individual's views. Alternatively, voters could change their views of the normative appropriateness of policies, once exposed to them, due to variation in preferences or variation in the information set that they consider.

Consider environmental policies that have been met with controversy in the past, such as fuel taxes (Knittel, 2014), the removal of lead from gasoline (Newell & Rogers, 2003), or the phase out of incandescent bulbs (Atkins, 2023; Dong & Klaiber, 2019). Suppose that such a rule is initially unpopular with the public, but passed by a majority of politicians nonetheless. If support were positively endogenous, the politicians supporting the policy might experience wide rebuke in the immediate term. Yet, after a period sufficient to have engendered a shift in the public's familiarity and preferences for the rules, it might be that politicians proposing the act's removal who experience wide rebuke. If so, through exposure to the policy, public support evolves endogenously.

In this paper, we empirically test for this hypothesis and examine whether environmental policy preferences are endogenous to exposure to environmental policies. We combine individual survey data with an internationally comparable measure of environmental policy stringency for 38 countries over 20 years to study whether birth cohorts exposed to more stringent environmental policies during their adulthood are more supportive of such policies at the time of the interview. To identify the causal effect on environmental preferences, we exploit within-country-year, cross-cohort variation in exposure to environmental policies, accounting for country-year specific shocks, generational variations, and country-specific age trends, and control for potential confounders, including environmental quality and economic conditions.

We find that individual experience with more stringent environmental policies strengthens subsequent support for them. Increasing environmental policy stringency exposure by one standard deviation increases individual support for government intervention to reduce pollution by 0.18 of a standard deviation. That is equivalent to saying that increasing environmental policy stringency from the U.S. level to Sweden's level in 2019 leads to a 5.7% increase in support for government to reduce pollution on a four-point Likert scale. This positive endogenous effect is also evident on specific types of environmental policy instruments. Exploiting the richness of the environmental policy stringency measure and questions in the surveys, we document that environmental tax exposure has a strong positive effect on subsequent individual preferences for environmental taxes. We also show that environmental policy exposure does not significantly affect survey responses on policy opinions unrelated to the environment, suggesting that our results are not driven by broader social and political changes.

Consistent with a larger literature on preference formation, we examine whether exposure during different periods of life affects preferences differentially (see Giuliano and Spilimbergo (2024) for a review). We find strong evidence that exposure to stringent environmental policies between ages 18 and 25 strengthens individual environmental preferences at the time of the interview, whereas exposure in other age windows does not meaningfully alter them. This result corroborates the "formative age" (or "impressionable years") hypothesis, which states that individual values are formed during a period of great mental plasticity in early adulthood and remain relatively unmalleable afterward (Krosnick & Alwin, 1989).

Leveraging our estimated effects of policy exposure on environmental support, we conduct a set of counterfactual exercises. We assign individuals in our sample the historical environmental policy trajectories of three countries representing distinct levels of stringency — Brazil, the United States, and Sweden — and estimate resulting global preferences. We document stark differences in public support under each counterfactual, with 23% of countries in our sample having a majority of respondents expressing the strongest possible support for environmental policies if exposed to Sweden's policy history, compared with 11% of countries if exposed to the U.S. policy history.

Our results suggest that strong opposition to certain environmental policies may not reflect lasting preferences. Lived policy experience could foster higher availability of knowledge concerning a policy's costs and benefits, as an example of learning by doing (Arrow, 1962), as well as shifts in tastes that can arise from attraction to the familiar (Furnham & Boo, 2011; Tversky & Kahneman, 1974) or from the establishment of cultural norms (Bezin, 2015; Bisin & Verdier, 2001, 2011; Schumacher, 2015). If a society's norms and knowledge can change, we would expect differences in support between an ex-ante proposal and an ex-post review of a policy. Therefore, success or failure in enacting a policy can play a pivotal role in how similar measures are perceived, understood and valued thereafter.

Previous theoretical analyses model how bidirectional causation between preferences and policy complicates the evolution of policies (Alesina & Giuliano, 2015; Alesina & Rodrik, 1994; Besley & Persson, 2019; Gerber & Jackson, 1993). Prior empirical work documents endogenous preferences to institutions, including the East Germany political regime (Alesina & Fuchs-Schündeln, 2007), and democratic institutions (Acemoglu et al., 2025; Fuchs-Schündeln & Schündeln, 2015). While other factors, including more education (Angrist et al., 2024) and information provision (Dechezleprêtre et al., 2025), can generate stronger environmental policy preferences, our paper is the first to document the endogeneity of individual preferences to previous exposure to environmental policies.

Growing interest in the co-dynamics of climate policy stringency and public support has spurred recent theoretical work modeling endogenous preferences over consumption in the context of climate change policy (Besley & Persson, 2023; Konc et al., 2021; Mattauch et al., 2022). Empirically, however, there is only piecemeal anecdotal evidence from single country-policy case studies that support for green policies evolves endogenously. Murray and Rivers (2015) document rising support for British Columbia's carbon tax following implementation. Vice versa, in France, after a carbon tax failed amid protest, public support for a carbon tax and rebate further declined from 38% in early 2019 (Douenne & Fabre, 2020) to 29% in 2021 (Dechezleprêtre et al., 2025). Experience has also increased support for congestion pricing in Sweden (Andersson & Nässén, 2016; Schuitema et al., 2010), garbage taxation in Switzerland (Carattini et al., 2018), and in experimental settings evaluating Pigouvian taxes (Cherry et al., 2014; Janusch et al., 2021). Our paper provides the first global empirical evidence of endogenous environmental preferences, estimating the causal impact of exposure to environmental policies on individual preferences over more than twenty years, and strengthening the evidence of a dynamic interplay between policy implementation and public support.

Finally, we also contribute to a growing literature documenting that preferences can be shaped by exposure to conditions and events in early adulthood. The impressionable years hypothesis has been tested for preferences for redistribution (Carreri & Teso, 2023; Roth & Wohlfart, 2018), job preferences (Cotofan et al., 2023), attitudes toward democracy (Magistretti & Tabellini, 2022) and toward migrants (Cotofan et al., 2024), confidence in political institutions and leaders (Eichengreen et al., 2024), political preferences (Barone et al., 2022), trust in science (Eichengreen et al., 2021), and driving behavior (Severen & Van Benthem, 2022).

We also propose two co-existing mechanisms that can explain why support for environmental policies evolves endogenously, through learning and dynamic societal norms. We theoretically show how both mechanisms could rationalize our results and propose an empirical test for the role of learning, which does not seem to be supported by the data, suggesting that changes to attitudes about government's role in addressing pollution are primarily driven by changes in individuals' utility functions. Endogenous support alters the predictability of the policy path over time, with implications for notions of paternalism and the moral and political economy of policy selection. To conclude, our findings suggest that, in the face of mounting environmental challenges, policymakers might consider implementing scientifically grounded policies that, while initially unpopular, can foster public support through firsthand exposure and subsequent updating of preferences. This feedback loop underscores the importance of accounting for endogenous preference formation when designing and evaluating environmental policies.

II. Data

Our empirical approach relies on three main sources of data to measure environmental policy preferences, environmental policy stringency, and environmental quality, which we describe below, with complementary information and additional data sources in Appendix Section A.

Environmental preferences. We combine survey data from the European Values Study (EVS) and the World Value Survey (WVS). These large-scale cross-national surveys gather data on socio-political, environmental attitudes, and other individual characteristics in nationally representative samples.

We measure environmental preferences as support with the statements "Government should reduce environmental pollution, but it should not cost me any money",[1] and "I would agree to an increase in taxes if the extra money were used to prevent environmental pollution".[2] For both questions, answers range from one ("strongly disagree") to four ("strongly agree"). To exploit all the variation, we use the four-point Likert scale as the main outcome (see Appendix Section A.1 for details).

Environmental policy. Environmental policy data come from the OECD Environmental Policy Stringency (EPS) Index, an annual country-specific internationally-comparable measure of environmental policy stringency available between 1990 and 2020 (Kruse et al., 2022). Stringency is defined as the degree to which environmental

[1] Respondents can interpret the question as the appropriate role of government or as support for additional action to reduce pollution. Each is relevant to our question on the endogeneity of preferences and on the implications of such endogeneity on how policy evolves.

[2] Aghion et al. (2023) use this question to measure environmental preferences, which has been shown to predict green voting behavior (Patulny & Norris, 2005). in Appendix Section B, we provide evidence that our survey measures of past environmental preferences predict future environmental policy outcomes.

policies put an explicit or implicit price on polluting or environmentally harmful behavior. The index is constructed by assigning a score from zero to six in terms of policy stringency for 14 different types of environmental policy (where higher levels are associated with more stringent policies), grouped into market-based policies, non-market based policy, and technology support, and subsequently aggregating the score of each policy into an index (see Appendix Section A.2 for details).[3]

Our main variable of interest, $policy\ exposure_{bct}$, measures exposure to environmental policy stringency for an individual born in year b in country c interviewed in year t:

$$policy\ exposure_{bct} = \frac{1}{t-(b+18)} \sum_{\tau=b+18}^{t} policy\ stringency_{c,\tau}, \tag{1}$$

in essence, it is the average stringency in environmental policy that an individual is exposed to in their country of residence between age 18 and the year of interview. Environmental policy preferences are recorded with gaps from 1990 to 2010. Respondents interviewed in the same year and country can have different treatment exposure because of variation driven by their year of birth. When we test for the "formative age" hypothesis, we construct the exposure measure averaging the environmental policy index when the respondent was aged between 18 to 25. Starting from the formative age window, we then create subsequent eight-year age windows (26-33, 34-41, ...).

Environmental quality. Finally, we use the Environmental Performance Index (Wolf et al., 2022) to measure environmental quality, which might confound the effect of environmental policy on preferences. We focus on two salient measures of environmental quality, particulate matter (PM2.5) and household air pollution (HAP), measured as the number of age-standardized disability-adjusted life-years lost per 100,000 people, respectively due to exposure to fine air particulate matter smaller than 2.5 micrometers

[3]Many studies document the salience of a variety of environmental policy instruments both in the business community (Noailly et al., 2021), and on consumers' behavioral responses, including small financial incentives regulating disposable bag use (Homonoff, 2018), carbon, fuel, and road taxes (Huse & Koptyug, 2022; Li et al., 2014; Rivers & Schaufele, 2015), and non-market instruments, such as low emissions zones (Sarmiento et al., 2023).

and to household air pollution from the use of household solid fuels. We recode the measures such that higher values indicate higher quality and construct environmental quality exposure similar to policy exposure.

III. Empirical approach

To test whether experience with policies feeds back into preferences for policies, we adopt an empirical approach that exploits within-country-year, across-birth-cohort variation in policy stringency, and removes confounds such as national economic and environmental conditions at the time of interview. Our baseline specification is

$$Y_{ibctw} = \beta policy\ exposure_{bct} + X'_{it}\boldsymbol{\gamma} + Z'_{bct}\boldsymbol{\delta} + \kappa_b + \mu_{ct} + \alpha_w + \theta_c \times age_i + \varepsilon_{ibctw}, \quad (2)$$

where Y_{ibctw} is the survey response by individual i born in year b in country c interviewed in year t in survey w (WVS or EVS). Our coefficient of interest is associated with exposure to environmental policy stringency, *policy exposure*, which varies across countries, years of birth, and years of interview.

There are several potential threats to the identification of a causal effect of policy exposure on environmental preferences. Spurious correlations may arise due to reverse causality (i.e., countries have more stringent policies because citizens have strong environmental values), or other confounders that could co-determine individual preferences and policy levels in place, including historic events, economic conditions, or institutional and political changes. In our research design, we exploit within-country-year variation at the birth-cohort level in exposure to environmental policy stringency to establish a plausibly causal effect on individual preferences. In essence, we compare individuals' preferences between cohorts that were more (or less) exposed to stringent environmental policies, relative to other cohorts interviewed in the same year in a given country. Below, we detail how our specification addresses a number of potential threats to identify such an effect.

First, generational factors could matter if different birth cohorts are exposed to different policies with different probabilities. The global positive trend in environmental policy stringency may suggest that younger generations are more likely to experience more stringent policies. We control for birth-year fixed effects, κ_b, which account for cohort-specific attitudes.

Second, contemporaneous levels of environmental policy, environmental quality, and any national and global economic and political condition may drive differences in preferences and are a major threat to the identification of the effect of past exposure. We account for any contemporaneous country-specific characteristics with country-year of interview fixed effects, μ_{ct}. This approach mitigates concerns that the results are driven by other structural time-varying differences between countries and strengthens the assertion that observed differences in attitudes towards environmental policies constitute a change in intrinsic preferences due to differences in the stringency of environmental policy exposure.

Third, there could be heterogeneous age trends in environmental preferences across countries. Countries could lie on differential trends in the evolution of individual values which can lead to larger differences across generations. To rule out such a possibility, we include country-specific linear age trends $\theta_c \times age_i$.

Finally, we also account for survey source α_w fixed effects, to account for different sampling methodologies and other differences across the two survey sources.

Our comprehensive set of fixed effects ensures that the identifying variation comes from changes in exposure to environmental policy stringency across birth cohorts within a country interviewed in a given year. Although we saturate our specifications with fixed effects, there could remain confounding cohort-country-year variation that is correlated with environmental policy exposure and that influences environmental preferences. We address this concern by controlling for other experiences, Z'_{bct}, including exposure to environmental quality, using the Environmental Performance Index, and economic conditions using data from the World Bank World Development Indicators, computing a measure of recession as in Barro and Ursúa (2008). We also control for a set of individual covariates X'_{it} at time of interview (gender; employment status; education; ten country-specific income decile dummies).

All regressions are estimated using OLS for ease of interpretation, with robustness checks using probit and ordered probit specifications. We cluster standard errors at the country-year-of-interview level. To ensure national representativeness, we apply survey sample weights. The sample is restricted to individuals born in the country in which they are interviewed, strengthening the assumption that respondents were exposed to that country's historical policy trajectory.

To emphasize the role of the fixed effects in our specification, Appendix Figure C1 shows the unconditional correlation between our primary survey answer and environmental policy stringency exposure, which is negative and statistically significant at the 95% level (Panel a), and the strongly positive and statistically significant relationship between the residual variation in preferences and policy exposure from our baseline specification (Panel b). Our set of fixed effects accounts for potential confounders that change the direction of the association between preferences and policies. For instance, consider that a relatively stringent country is likely to have been relatively stringent in the past and have lower pollution levels at time of interview. Low pollution levels should predict weaker support for government action than would be expected in countries with high pollution. Including country-year of interview fixed effects allows us to purge the variation in past policy exposure across birth cohorts out of confounding influence of, for example, contemporaneous environmental quality, policy stringency, and economic conditions.[4]

[4]The negative partial correlation in Panel (a) suggests the survey question is interpreted as an elicitation of support for additional policy because countries with higher stringency would correspond to lower demand for additional stringency and higher support of the notion that government has some role to address pollution.

IV. Baseline results

A. Exposure to environmental policy during adulthood

Table 1 reports the estimates from our baseline specification in Equation (2). The coefficient on environmental policy stringency exposure is positive and statistically significant. In our preferred and most conservative specification in column (5), which controls for past exposure to environmental quality and economic conditions, we find that increasing environmental policy stringency exposure by one standard deviation (SD) increases individual support for government to reduce pollution by 0.18 SD. In other words, an increase in policy stringency from the U.S. level (2.91) to Sweden's level (3.61) in 2019 corresponds to a 5.7% increase in the support for government to reduce pollution on a four-point scale. Our results provide evidence of endogenous environmental policy preferences, highlighting a bidirectional relationship between policy and preferences.

Types of environmental policies. Different environmental policy instruments produce different perceptions or experiences with cost burden or incidence (Huse & Koptyug, 2022; Rivers & Schaufele, 2015). Using sub-indices of the Environmental Policy Stringency index (market-based instruments, non-market-based instruments, environmental taxes, and carbon trading schemes), we find evidence that not only is the overall exposure to policy stringency predictive of future support, but also that exposure to types of environmental policy produce the same positive endogeneity. Figure 1 displays the estimated coefficients on exposure to various environmental policy instruments using our two measures of environmental preferences. In Panel (a), we document that only exposure to non-market-based policy instruments is a statistically significant predictor of support for government action on pollution without direct costs to voters. This indicates positive endogeneity in support for non-market-based environmental policies, such as mandates or controls, which reduce externalities without imposing direct costs on consumers.[5] In Panel (b), we find that exposure to more stringent environmental taxes increases individual support for a tax to reduce pollution. A one SD increase in environmental tax stringency exposure is associated with a 0.12 SD increase in the support for an increase in environmental tax. Using the same real-world comparison as before, an increase from the 2019 U.S. level of environmental tax stringency (0.25) to Sweden's level (3.75) corresponds to a 18% increase in the support for a tax increase to prevent pollution at the mean. Importantly, past exposure to non-tax green policies are not predictive of support for environmental taxes. Specific policy types appear to reflect the dynamics of positive feedback that we document at the composite index level. Well-documented high salience and initial skepticism about taxes (Anderson et al., 2023; Dechezleprêtre et al., 2025; Douenne & Fabre, 2020) could make tax policies well-suited to the positive endogeneity that arises from experience.

Robustness. We conduct several tests to probe the robustness of our results (reported in Appendix Section C.2). We construct two alternative measures of exposure. First, we use policy stringency levels de-meaned from the annual cross-country average stringency. This approach accounts for policies implemented at supra-national levels, which would contemporaneously increase several countries' stringency in environmental policies (e.g., the EU Emissions Trading System). Second, we use de-trended policy stringency levels from a country-specific linear time trend. In both cases, we find coefficients quantitatively similar to our baseline results (Appendix Table C2). We also examine the influence of different starting ages to compute our measure of exposure. We find that the effect becomes more robust from age 16 (Appendix Table C3), supporting our hypothesized channel of norm formation, which requires awareness of and influence by policy stringency, and becomes increasingly likely approaching adulthood. We also show robustness employing alternative estimation methods, including ordered probit, probit and linear probability models, and alternative fixed effects (Appendix Tables C4, C5, C6, and C7). In a linear probability model, increasing stringency expo-

[5] The indirect effects of non-market policies are typically obscured, despite being substantial (Austin & Dinan, 2005; Douenne & Fabre, 2020; Jacobsen, 2013; Jones, 1998; Keohane et al., 2019).

sure from the U.S. level to Sweden's level in 2019 increases the probability of strongly agreeing that government should reduce pollution by 9.4 percentage points (31% at the mean). We also relax the linearity assumption by estimating a flexible response function using restricted cubic splines, and find that the linearity assumption holds well over all exposure support (Appendix Figure C3). Finally, we allay potential reverse causality concerns by showing that future preferences do not affect past levels of policy stringency (see Appendix Section B).

Falsification and placebo. To mitigate concerns that the effect of environmental policy exposure on environmental preferences conflates general social and political changes, we consider 13 alternative attitudinal survey questions unrelated to the environment on family relationships, societal well-being, and economic values. We find no statistically significant effect, except for one, at the 5% level, consistent with sampling variation attributable to multiple tests (see Appendix Section C.3). We also conduct a placebo test and construct six measures of exposure to non-environmental tax using data from the OECD (2024), and find no statistically significant effect on support for environmental tax to reduce pollution (see Appendix Section C.4).

B. Exposure across age windows

We examine whether exposure across different age windows has heterogeneous effects on environmental preferences to formally test for the formative age hypothesis. We use measures of policy exposure for different eight-year age windows, starting from the 18-25 window. Figure 2 reports the coefficients on each eight-year age window. The formative age window's coefficient (in red) is the only statistically significant estimate, with exposure in any other age windows having a small and statistically insignificant effect on environmental preferences. The formative age effect of exposure to environmental policy stringency is comparable in magnitude to the effect of adulthood exposure, from age 18 to the year of interview, suggesting that the effect is not getting smaller as an individual acquires more information throughout their life. A standard deviation increase in formative age exposure to environmental policy stringency is associated with 0.16 SD increase in support for government intervention to reduce pollution.

Robustness. A critical concern is that societal preferences during an individual's formative age might confound the role of exposure to environmental policies. We show that controlling for the national average environmental preferences or limiting them to those of the peers during the respondent's formative age does not significantly alter the effect of policy exposure (see Appendix Section D.1). In doing so, we rule out exposure to societal beliefs potentially correlated with policy stringency during the respondent's formative age as an alternative explanation. This result bolsters the causal interpretation of the effect of exposure to environmental policy stringency. in Appendix Section D.2, we also probe the robustness of our results to binary versions of the outcome (Appendix Figure D1), to exposure over four-year age windows (Appendix Figure D2), to alternative definitions of formative age (Appendix Table D4), and to alternative exposure measures from de-meaned and detrended stringency levels (Appendix Table D5).

V. Additional results

We complement our baseline findings with additional results we describe below.

A. Asymmetric effects of environmental policy stringency

The formative age hypothesis indicates that experiences distant in time play a role in shaping preferences today. Nevertheless, policies can vary widely over time, and a natural question arises about whether present-day positive or negative deviations from exposure levels in the formative age lead to different effects on present-day preferences. Without specifically testing for this heterogeneity, one might incorrectly assume that past exposure shapes preferences symmetrically (De Neve et al., 2018). While contemporaneous levels of environmental policy are absorbed by country-year of interview fixed effects, we test for potential asymmetric effects by constructing a binary variable that compares formative age exposure with contemporaneous stringency levels, and is equal to one if the contemporaneous level is below the formative age exposure (i.e., less stringent), and zero, otherwise.

Figure 3a displays the marginal effects of formative age policy exposure, indicating that this asymmetry exists. The effect of environmental policy stringency exposure in the formative age is more pronounced for individuals interviewed when the policy environment is more lax and the difference is statistically significant at any conventional level. For two individuals in the same birth-cohort - hence with the same formative age exposure - but interviewed in different years, experiencing a more lenient policy in the year of interview drives a stronger reaction to support for government intervention against pollution.

We also conduct a similar exercise for exposure in any other age window, and fail to recover an effect similar to the one documented with exposure during formative age (see Appendix Section E.1). This result suggests that this age window has a prominent and unique role as a reference point against which individuals evaluate the current state, driving asymmetric responses.

B. Role of environmental quality

The salience of past environmental policy and its lasting impact on environmental preferences could depend on whether these policies were experienced in polluted or cleaner environments. We conjecture that more stringent policies where environmental quality is low might increase the policy salience and the perceived value to individuals. This, in turn, might increase lasting support for government to reduce pollution.

To test for this hypothesis, we interact formative age policy stringency exposure with a binary variable equal to one if environmental quality exposure in the form of either outdoor or indoor air pollution is below the sample median (i.e., worse environmental quality), and zero, otherwise. Figure 3b shows the marginal effects of environmental policy exposure. The positive effect of policy exposure on support for government action is conditional on lower levels of environmental quality, greater in magnitude and statistically different than the effect on individuals exposed to higher levels of environmental quality. Tabular results (reported in Appendix Section E.2) reveal that the uninteracted term of exposure to environmental quality below the median is negative and, in certain cases, not significant. The interacted term identifies the effect of experience of both poor conditions and more stringent policies meant to address them. The significance of the interaction term shows that stringent policies targeting poor environmental conditions increase lasting public support for government action.

C. Heterogeneous effects by individual characteristics

Last, we summarize heterogeneous effects of environmental policy exposure by respondents' characteristics (see Appendix Section E.3). There is no substantial heterogeneity across most characteristics (gender, employment status, income, political orientation), except for education: lower-educated individuals are more likely to have stronger environmental preferences in response to more stringent environmental policies. We also document that the effect of policy exposure is driven by individuals less interested in politics and with less confidence in the government. This might be because individuals with limited political knowledge may be more influenced by their formative experiences than those who regularly update their views. This adds evidence that policy outcomes are critical to convey societal norms. Finally, individuals who think the government should take more responsibility are more prone to support government action to reduce pollution and their support for such actions is more responsive to past policy exposure.

VI. Counterfactual policy stringency

We use our reduced-form estimates to assess the importance of preferences endogenous to policy exposure in the environmental political process. Specifically, we ask: if individuals were exposed to different levels of historical environmental policy stringency — holding all else equal— how would the change in policy preferences predicted by our model be? We examine three counterfactual trajectories corresponding to countries with distinct long-run average policy stringency: Brazil (cross-cohort average policy stringency exposure is 0.46), United States (1.75, near the cross-country average in our sample, 1.74), and Sweden (2.57).

We predict how environmental preferences would change in counterfactuals using our estimated effect of policy exposure and the difference between the observed level of policy stringency and the counterfactual policy level in each of the three countries in each year (see Appendix Section F for details). Figure 4 shows the national shares of respondents with *strong* environmental preferences under each counterfactual (as defined by respondents who strongly agree with government action to reduce pollution) and as observed in the data. Exposure to the U.S. policy trajectory yields an average predicted support across countries and over time of 28.1%, nearly identical to the observed 28.2% in the data. In contrast, assigning all cohorts to Brazil's policy history lowers average support to 14.2%, while the Sweden counterfactual increases it to 38.4%. These shifts are substantial: 85% of countries are predicted to have lower environmental support than observed if exposed to Brazil's policy path, while 77% would exhibit higher support under Sweden's.

We also consider the implications for majority support at the country level. Under the Sweden counterfactual, nine countries (24% of the sample) would have more than half of the population expressing the strongest level of environmental policy support (countries are reported in red in the histogram). Under the U.S. trajectory, that number falls to four countries (10%). If we simplistically assume a one-to-one mapping between stated environmental preferences and revealed voting preferences in a majority voting rule system, these cases would indicate that countries, upon passing more stringent environmental policies, might set in motion a dynamic loop where stringent policies feed back into higher future demand for policies and further policy adoption.

VII. Discussion and conclusions

Using data across 38 countries, we document that support for environmental policies increases significantly when individuals have been exposed to more stringent environmental policies, in particular during their formative age. We find that exposure to more stringent environmental taxes increases subsequent preferences for them, and not for other environmental policy instruments. We also document that our effect is stronger among cohorts exposed to a more lenient environmental policy mix in the year of the interview relative to their formative age, as well as among cohorts exposed to lower environmental quality.

Our paper shows that the relationship between environmental policy and public support is bi-directional, and thus endogenous. While implementing major environmental policies may initially face political resistance, our findings indicate that public support for such policies tends to increase over time post-implementation. This dynamic interplay complicates the prediction of equilibrium policy stringency levels, as the path to an equilibrium policy level would be different and longer in the presence of endogenous policy support, with negative welfare implications.

Endogenous environmental policy preferences have implications for our understanding of paternalism and its ethical implications. Consider a social planner who enacts an unpopular policy, anticipating that it will gain public appreciation over time. Imposing any policy, even policies judged to be welfare-improving, in a manner that contradicts the preferences of individuals is considered paternalistic and can draw objections on ethical grounds. Our findings suggest that evolving support may mitigate such objections. Inertia of policy to appropriately respond to new scientific information or new conditions could be a result of the endogeneity we document, rather than reflecting theoretical stable preferences of a public that has carefully considered the costs and benefits of action.

Consequently, regulators and politicians who are accountable to the public over medium- or long-term may opt to set policy closer to the current optimum, or even overshoot, instead of adopting a gradual approach traditionally deemed more acceptable to opponents. Moving faster could be more effective in eventually generating the endogenous support that we document.

Our findings point to the question of why support for environmental policies evolves endogenously, with past exposure shaping policy preferences in the present. Policy support could vary as a result of differences – in knowledge, in utility functions, or both – that arise as a result of different policy exposures. Hereinafter, we discuss both cases. First, the argument that information plays a role can be thought of as a form of endogenous learning by doing (D'Acunto et al., 2021; Malmendier & Nagel, 2016). In a classical framework, two individuals would choose the same policy, *ceteris paribus*, because their sets of information, even if imperfect, would be identical. After all, the knowledge gained from historical policy is equally available to all, regardless of having lived during the policy. But if learning requires direct, lived experience (or is only salient when directly lived through), different exposure histories could result in different information sets and policy perceptions. Second, apart from learning, it may be that policy exposure affects individual desires, as represented by their utility functions. If an individual's policy preferences are shaped by their own past - through attraction to the familiar or the establishment of a policy reference or norms - then such path dependence would also offer a plausible explanation for our empirical findings, where a history of exposure to specific policy types and to more stringency predicts more support at the time of interview. We shed light on these two co-existing mechanisms with additional theoretical and empirical results in Appendix Section G.

Were learning an important channel to correct systematically biased ex ante beliefs about policy, exposure to greater policy experimentation would be predictive of support.[6] To distinguish learning effects from norms, we estimate three variants of our baseline specification, each incorporating controls that proxy for policy learning. Our empirical results suggest that the role of endogenous learning is negligibly small in our

[6] A literature on learning via policy experimentation discusses the importance of varying policy in order to provide regulators and voters with necessary data to assess causal impacts (Aghion et al., 1991; Warren & Wilkening, 2012; Wieland, 2000; Zhao & Kling, 2003). Severen and Van Benthem (2022) also find that gasoline price volatility (rather than price level) can imprint later driving behavior.

setting. For learning to generate the endogeneity we document, initial baseline policy beliefs would need to be systematically biased at the population level. If ex ante assessments of a policy are equally likely to be pessimistically and optimistically biased, then the net effect of endogenous learning would be zero. Our empirical results (in Appendix Table G1) show that the relatively large effect of average exposure remains unaltered when including our learning proxies as controls, suggesting a robust role for a direct effect of experience on an individual's utility function.

If experience were to affect utility in this positive endogenous manner, the dynamics resulting from the interaction of policy and public preferences could be complex, foster feedback loops, and fail to converge to an equilibrium. Further investigation about these two mechanisms, perhaps in experimental settings, would be a valuable complement to our findings and a promising avenue for future research.

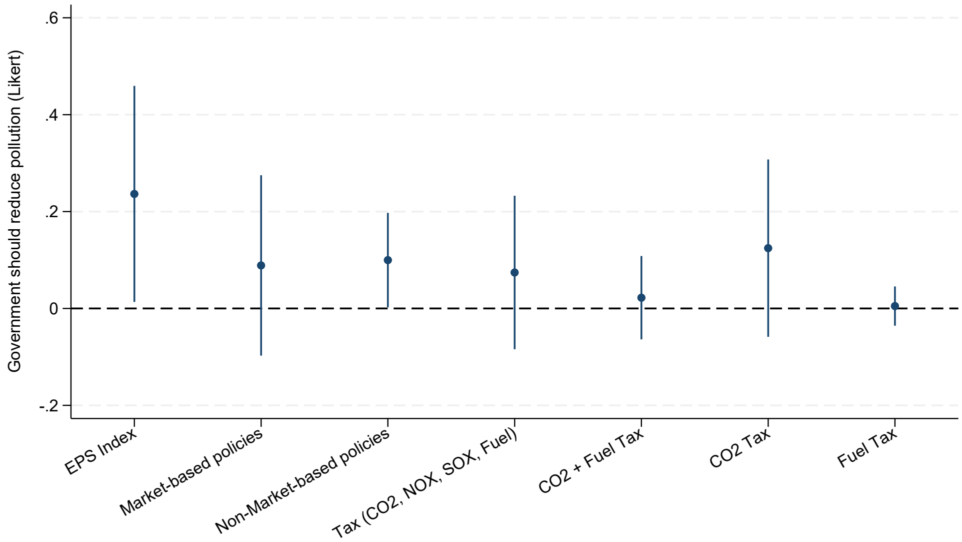
Table 1: Effects of Environmental Policy Stringency exposure during adulthood on environmental preferences

	Government should reduce pollution (Likert)				
	(1)	(2)	(3)	(4)	(5)
Environmental Policy Stringency exposure	0.228**	0.225**	0.219**	0.228**	0.236**
	(0.109)	(0.110)	(0.107)	(0.109)	(0.111)
Recession exposure		-0.515	-0.528	-0.534	-0.518
		(0.381)	(0.406)	(0.378)	(0.392)
PM2.5 exposure			0.0144		0.217
			(0.281)		(0.291)
HAP exposure				-0.305	-0.377
				(0.298)	(0.307)
Individual controls	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓
Country $\times$ Year of interview FE	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓
Mean Outcome	2.909	2.909	2.909	2.909	2.909
SD Outcome	0.896	0.896	0.896	0.896	0.896
Mean Environmental Policy Stringency exposure	0.9	0.977	0.977	0.977	0.977
SD Environmental Policy Stringency exposure	0.696	0.696	0.696	0.696	0.696
N	16889	16889	16889	16889	16889
adj. R^2	0.1324	0.1324	0.1323	0.1324	0.1323

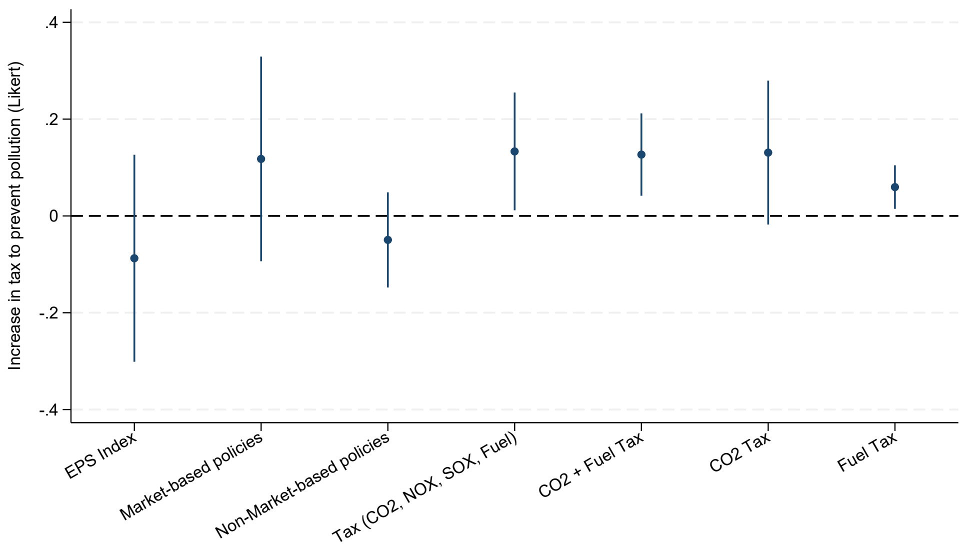
Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). Environmental Policy Stringency exposure is defined in Equation (1). All regressions control for male dummy, unemployment dummy, 3-category education (Lower, i.e., primary education, Middle, i.e., secondary education, Upper, i.e., tertiary education), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. PM2.5 and HAP exposure variables are inverted such that higher values imply higher quality and divided by 1000 to improve readability of coefficients. All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year of interview. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Appendix Table C1 reports the full estimates including controls.

Figure 1: Effects of exposure to types of environmental policies on environmental preferences

(a) Preferences for government to reduce pollution

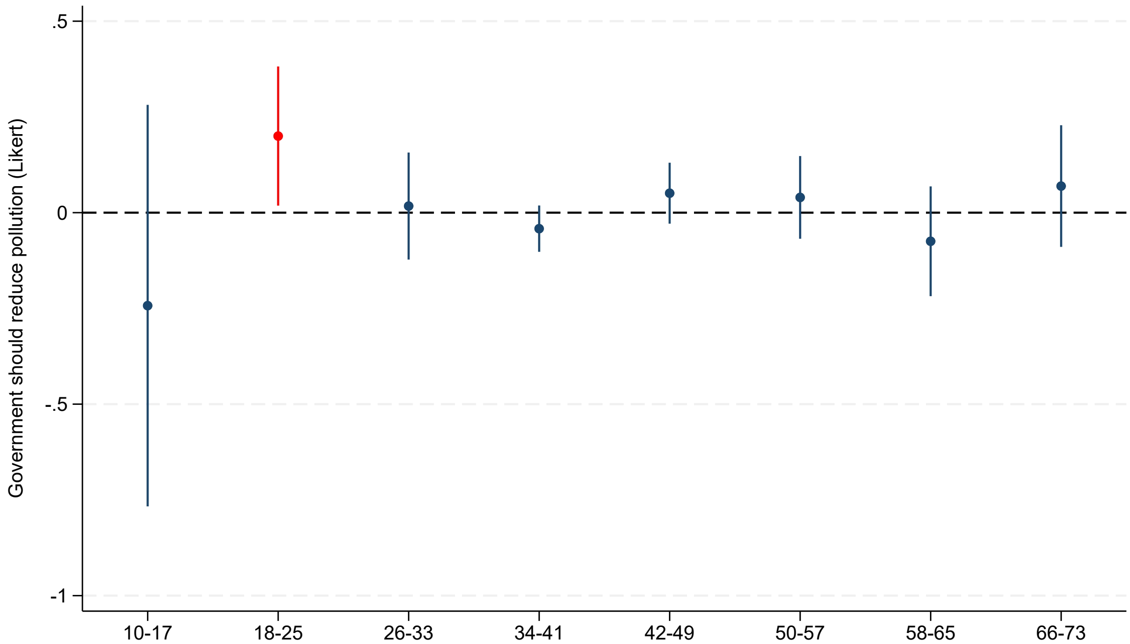


(b) Preferences for increase in environmental tax



Notes: The figure plots the coefficients associated with the average level of different dimensions of policy stringency in the x-axis during the adulthood of an individual. Each coefficient is estimated from a separate regression. Exposure to policy stringency is defined in Equation (1). Panel (a) uses as an outcome the question "Government should reduce environmental pollution", Panel (b) uses as an outcome the question "Increase in tax to prevent pollution", both in Likert scale from 1 to 4 (with higher values reflecting stronger agreement with the statement). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure, PM2.5 and HAP exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates. Tabular results are reported respectively in Appendix Tables C8 and C9.

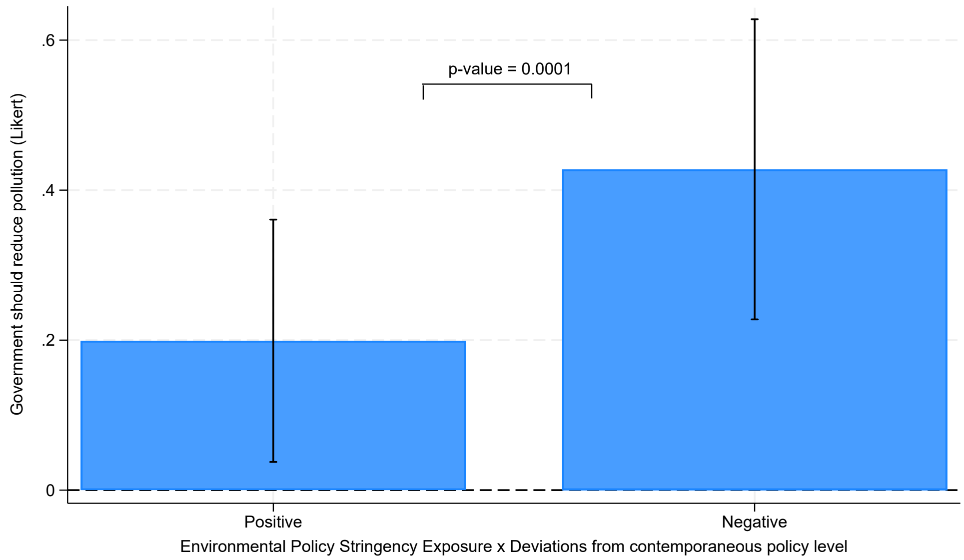
Figure 2: Exposure to environmental policy stringency and environmental preferences by age windows



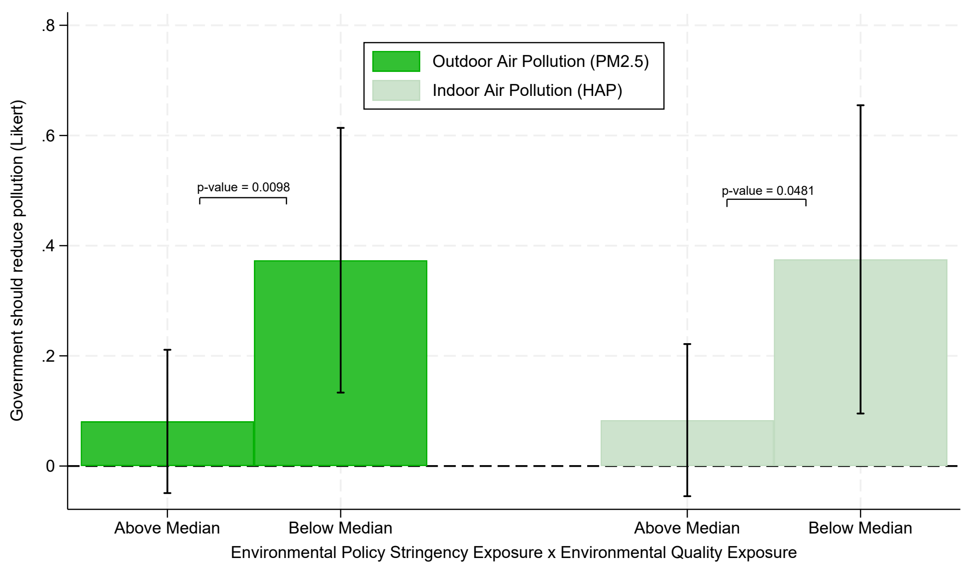
Notes: The figure plots the coefficients associated with the average level of environmental policy stringency during each eight-year age window reported in the x-axis using support with the statement that government should reduce environmental pollution as outcome in Likert scale, estimated from eight separate regressions. The regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure, PM2.5 and HAP exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates. Tabular results are reported in Appendix Table D3.

Figure 3: Heterogeneous effects of environmental policy exposure on environmental preferences

(a) By deviations from contemporaneous policy stringency levels

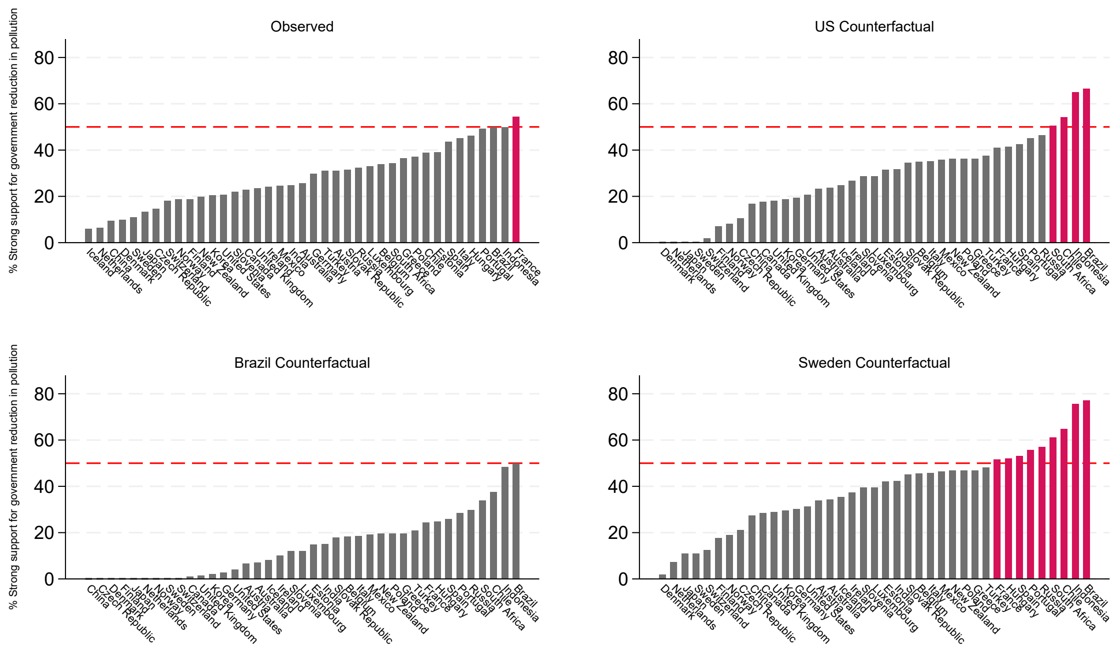


(b) By environmental quality (PM2.5 and HAP) exposure



Notes: The figures plots the marginal effect of exposure to environmental policy stringency during the formative age by three dimensions of heterogeneity. Panel (a) shows the estimates of a regression where formative age exposure to environmental policy stringency is interacted with a dummy equal to one (i.e., "Negative") if the policy stringency level in the year of the interview is lower than the formative age average. Panel (b) shows the estimates of two separate regressions where formative age exposure to environmental policy stringency is interacted with a dummy equal to one (i.e., "Below Median") if formative age exposure to environmental quality as measured by Outdoor Air Pollution (PM2.5) or indoor household air pollution (HAP) is below the median in the sample (higher values indicate higher environmental quality). Each regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure and year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates. p-value is reported for the hypothesis test of equality of the marginal effects.

Figure 4: Environmental preferences under observed and counterfactual policy stringency exposure



Notes: Each bar histogram reports the average share of respondents in each country that strongly agree with the statement that government should reduce environmental pollution, across survey waves (top-left corner histogram), and predicted using three different counterfactual policy experiments. From the top-right corner histogram clockwise, each histogram reports the model-predicted support induced by the difference between the birth-cohort exposure in policy stringency in the country and the exposure in policy stringency experienced by the same birth cohort in the U.S., in Sweden, and in Brazil. The horizontal red dashed line indicates 50%, and countries that have a share of respondents that strongly agree above 50% are color-coded in red.

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Online Supplementary Material

“Endogenous Green Preferences”

Ravi Vora, Guglielmo Zappalà

Table of Contents

A Data Appendix

A.1 Survey data

The data on environmental attitudes comes from the Integrated Value Surveys (IVS), which harmonize the European Values Study (EVS) and the World Value Survey (WVS). We focus on two measures of environmental preferences that are related to environmental policies and elicit individuals' agreement in a scale from 1 to 4 where responses can be "strongly disagree", "disagree", "agree" or "strongly agree". The first question asks whether "Government should reduce environmental pollution, but it should not cost me any money". The second question is "Can you tell me whether you with the following statement: 'I would agree to an increase in taxes if the extra money were used to prevent environmental pollution' ". We also test for robustness by constructing two binary versions equal to one if the respondent chooses either "Agree" or "Strongly agree", and zero otherwise, and a more conservative equal to one only if the respondent chooses "Strongly agree".

The IVS also contains socio-demographic information about the respondents which we use as individual controls in our estimation. In particular, all our regressions control for gender; employment status (defined using a dummy indicating whether the person is unemployed); education (measured using a three-category variable, where lower education means at most primary education, middle education corresponds to at most secondary education, upper education means at least tertiary education). We also control for income in a non-parametric way by including 10 dummies on the country-specific subjective income decile scale.

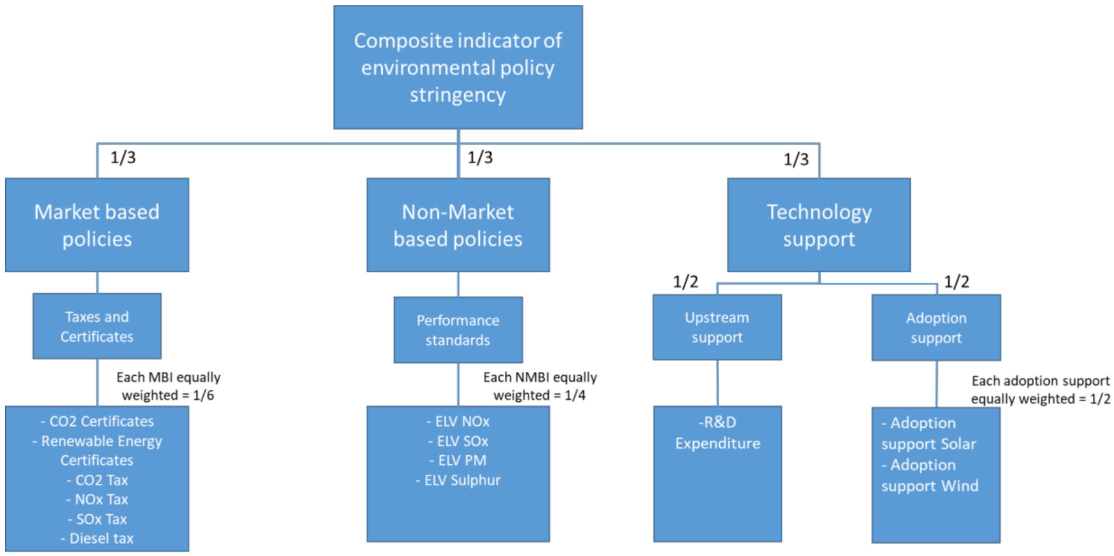
A.2 Environmental Policy Stringency

The Environmental Policy Stringency index comprises three sub-indices with equal weight that, in turn, are composed of several policies. The index aggregates the scores given to each policy's stringency on a scale of zero to six. The stringency of environmental policies is measured in different units. As an example, the carbon tax is measured by the tax rate for CO2 emissions, with the raw values in national currency converted to USD/tonne CO2 for international comparison. As another example, the stringency of the fuel (diesel) tax is measured using the tax for a litre of diesel fuel used in transport for industry as a share of the pre-tax diesel price. It is computed by dividing the tax on diesel by the national pre-tax price paid by industry for diesel and the values are converted to USD/Litre.

To aggregate several policy types into a composite index of policy stringency, their stringency is measured on a common scale. For each policy instrument, the raw data is ordered from the least to the most stringent observation across the 1990-2020 period. The lowest score of zero is assigned to observations with no policy in place. The remaining scores are assigned using the distribution of observations that have the policy in place. The highest score of six is assigned to observations with values above the 90th percentile of observations that have the respective policy implemented. To assign the remaining scores, the difference between the 90th and the 10th percentile is divided into five equal bins that define the thresholds (Kruse et al., 2022).

The first sub-index is market-based instruments (MBI) that group policies that put a price on pollution. In particular, it accounts for CO2 Trading Schemes, Renewable Energy Trading Scheme, CO2 Taxes, Nitrogen Oxides (NOx) Tax, Sulphur Oxides (SOx) Tax, Fuel Tax (Diesel). The second sub-index includes Non-Market Based instruments (NMBI), entailing policies that mandate emission limits and standards: Emission Limit Value (ELV) for nitrogen oxides (NOx); ELV for sulphur oxides (SOx); ELV for Particulate Matter (PM); Sulphur content limit for diesel. The final sub-index, Technology Support (TS), entails that support innovation in clean technologies and their adoption, including Public research and development expenditure (R&D) and Renewable energy support for Solar and Wind. Each component of the sub-index has equal weight within each sub-index (i.e. MBI components have 1/6 weight, NMBI components have 1/4 weight and TS components have 1/2 weight). Figure B2 shows the country-specific time series in the Environmental Policy Stringency Index between 1990 and 2020.

Figure B1: Construction of Environmental Policy Stringency Index

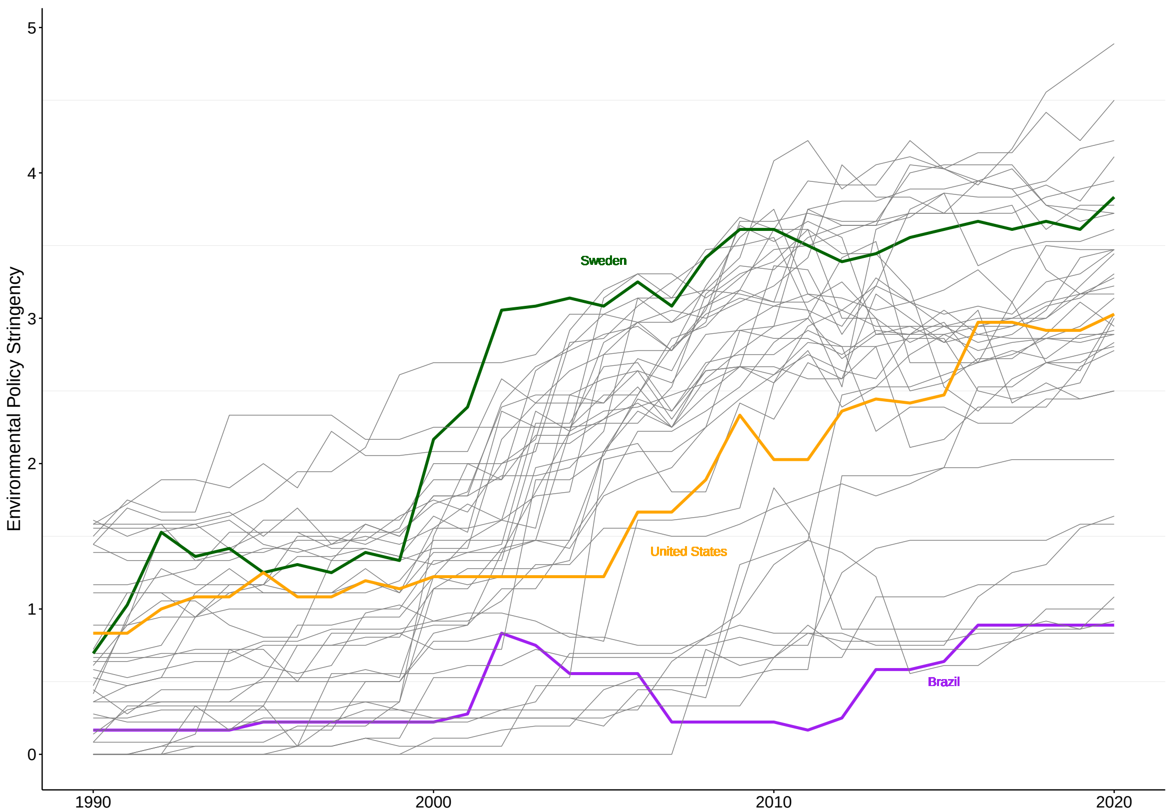


Notes: The figure shows the aggregation structure of the revised Environmental Policy Stringency index from Kruse et al. (2022).

We construct policy exposure as detailed in the main text in Section II.. Environmental policy preferences are recorded from 1990 to 2010, with certain gaps. Respondents interviewed in the same year and country can have different treatment exposure because of variation in their year of birth. Figure B3 shows the distribution by country. Since some countries exhibit a positive trend over time, we also construct two alternative measures of policy stringency. First, we de-mean each country's level of environmental policy from the annual cross-sectional average. This procedure accounts for policies implemented at supra-national levels which would contemporaneously make more stringent several countries (e.g., the EU Emissions Trading System). One could also de-mean values by the relevant supra-national region, however, results would be different than a global de-meaning procedure such as the one we operate only if the positive change in stringency in a region is fully offset but a negative change in another one. This case is ruled out in the data. Second, we de-trend the policy stringency from a country-specific linear trend. This is different than controlling for annual trends in the regression (where we control for country-specific age trends), since these would effectively de-trend cohort policy exposure (our main treatment) instead of the raw annual values of the Environmental Policy Stringency index. Figure B4 shows the time series of the birth-cohort exposure for each country (averaged across years of interview) for the two alternative measures of exposure to environmental policy stringency.

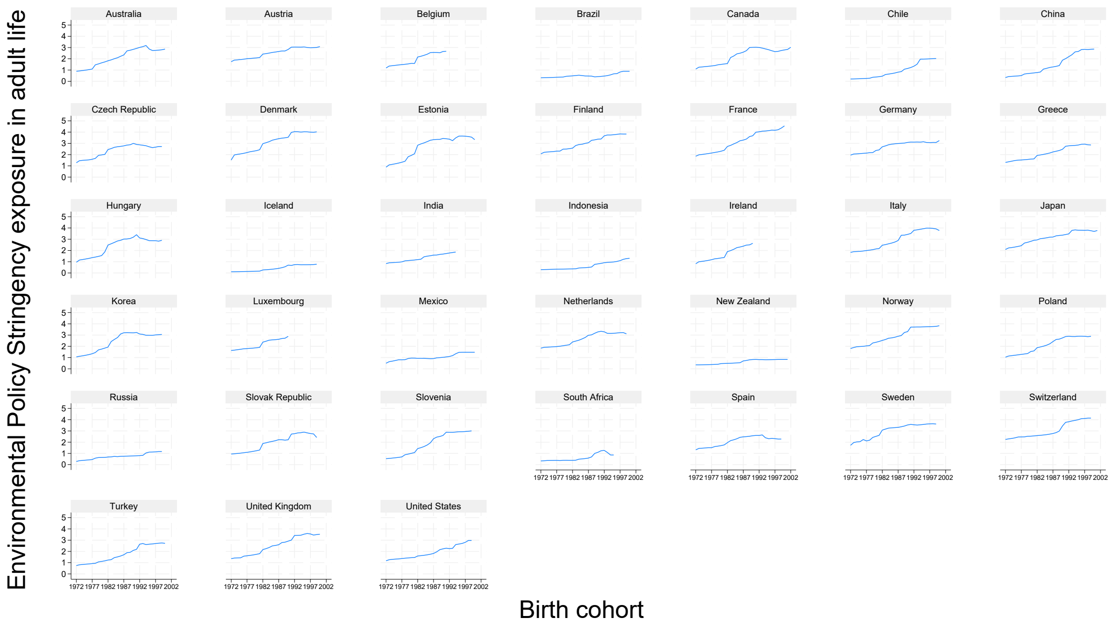
To test for the "formative age" hypothesis, we construct the average policy exposure when the respondent was aged 18 to 25. Appendix Figure B5) displays the formative age exposure for each birth cohort (averaged across years of interview). We construct the other eight-year age window exposures starting from the range of the impressionable years. For the subset of individuals who are either too young or too old, we use all available years over the 8-year formative age window. Results are robust to dropping these individuals. We also test for the robustness of the main results using alternative definitions of formative age (Table D4), alternative exposure measures that are de-meaned and de-trended (Table D5), and using four-year age windows to construct exposures in Figure D2.

Figure B2: Evolution of environmental policy stringency over time by country



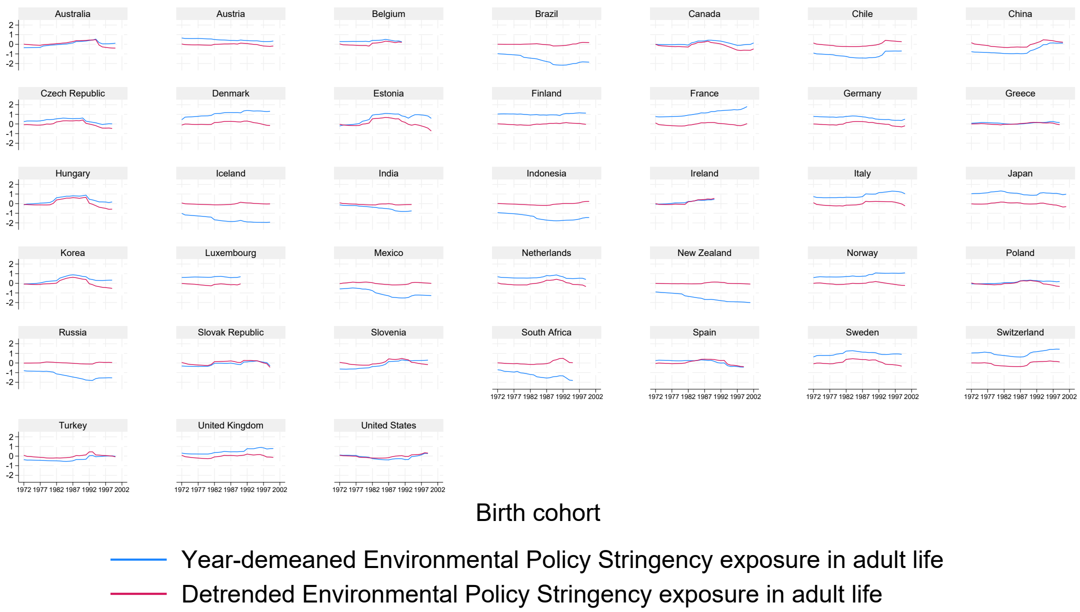
Notes: The figure shows the time series of Environmental Policy Stringency index in each country over time using data from Kruse et al. (2022).

Figure B3: Country-specific environmental policy stringency exposure by birth cohort



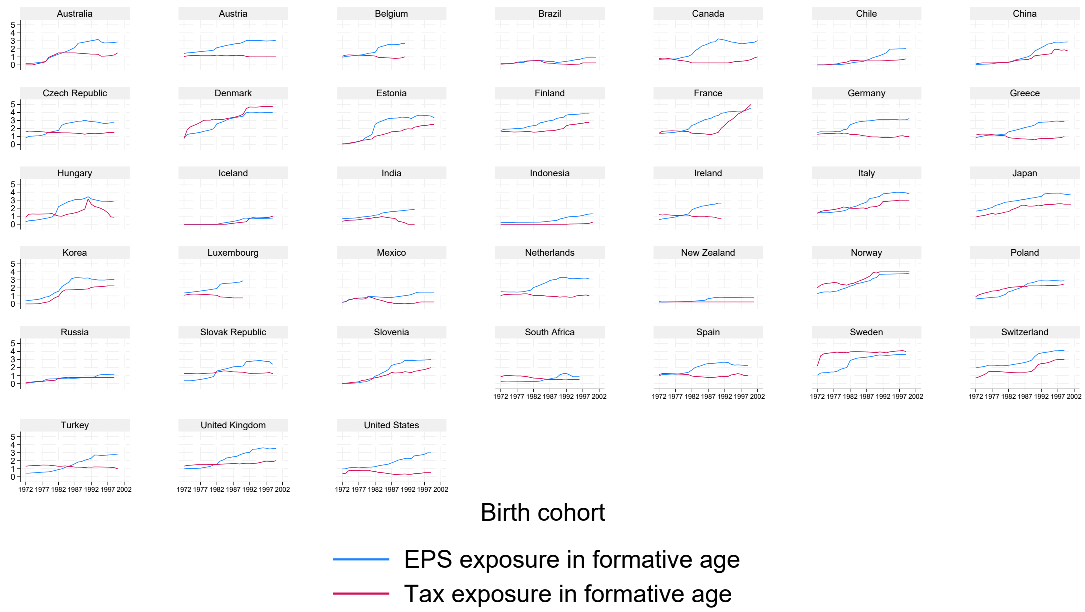
Notes: The figure shows the time series of adulthood mean environmental policy stringency exposure by cohort for each country over the 30 years available.

Figure B4: Country-specific relative environmental policy stringency exposure in adulthood by birth cohort



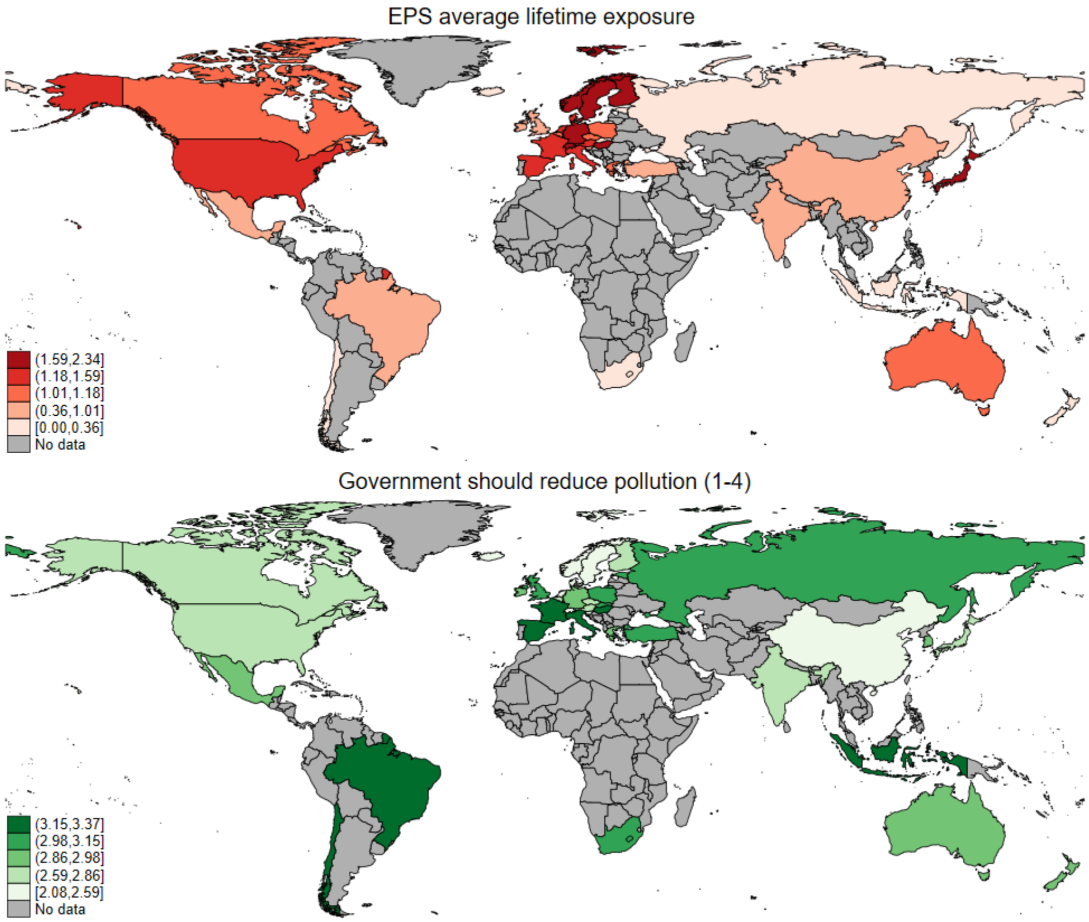
Notes: The figure shows the time series of adulthood mean year-demeaned (in green) and de-trended from a country-specific linear trend (in red) exposure to environmental policy stringency by cohort for each country over the 30 years available.

Figure B5: Environmental policy stringency and environmental tax exposure in formative age (18-25) by country across birth cohorts



Notes: The figure shows the average Environmental Policy Stringency Index and environmental tax stringency exposure across birth cohorts in each country in the survey sample.

Figure B6: Country averages of exposure to environmental policy stringency and environmental preferences across cohorts in baseline sample



A.3 Environmental quality

We measure environmental quality using the Environmental Performance Index (EPI) (Wolf et al., 2022), a comprehensive index of global sustainability which combines 40 performance indicators categorized into 11 issues to assess the performance in environmental quality issues. These issues encompass climate change performance, environmental health, and ecosystem vitality, offering a comprehensive overview of a nation's environmental policies and practices. The indicators serve as benchmarks, measuring how closely countries align with established environmental targets and providing insight into areas for improvement to advance sustainability efforts worldwide.

The EPI employs a diverse set of indicators across various issue categories to assess environmental performance comprehensively. The issue categories include climate change mitigation, air quality, sanitation and drinking water, heavy metals, waste management, biodiversity and habitat, ecosystem service, For instance, in the climate change category, indicators such as projected greenhouse gas emissions in 2050, GHG emissions per capita, and CO2 growth rate are evaluated, with each indicator weighted according to its significance. In the environmental health category (HLT), air quality indicators including PM2.5 exposure and household solid fuels are given substantial weight, reflecting the critical importance of addressing air pollution for public health.

The EPI utilizes a weighted scoring system to reflect the relative importance of each issue category and indicator. For example, in the climate change category, mitigation efforts (CCH) hold the highest weight (36.3%), with indicators such as projected GHG emissions and CO2 growth rate receiving significant emphasis. In contrast, household air pollution (HAD) and PM2.5 exposure (PM2.5) are weighted at 38% and 47%, respectively, within the air quality subcategory of environmental health (HLT), underscoring their significance in assessing environmental health risks.

In our empirical analysis, we focus on two of the most salient indicators of environmental quality and that can be directly related to air pollution issues as in the World Value Survey questions. We consider household air pollution from solid fuels (HAP) and ambient particulate matter pollution (PM2.5). HAP is measured by the number of age-standardized disability-adjusted life-years lost per 100,000 persons due to exposure to household air pollution from solid fuels. Similarly, PM2.5 exposure is quantified by the number of age-standardized disability-adjusted life-years lost per 100,000 persons due to exposure to fine particulate matter smaller than 2.5 micrometers. These indicators provide crucial insights into the health impacts of air pollution, informing environmental health policies and interventions. Throughout the empirical analysis, we construct a measure of environmental quality exposure such that higher values indicate higher quality.

A.4 Descriptive statistics

Table B1 reports the descriptive statistics for the main variables in the final baseline estimation sample. Environmental Quality exposure measures are expressed in terms of the average number of age-standardized disability-adjusted life-years lost per 100,000 people, and in the estimation sample the measures of environmental quality are transformed for ease of interpretation such that higher values are associated with better environmental conditions (and rescaled as a measure of number of life-years lost per 100 million people). Recession exposure is the average number of years during the exposure window of an individual in which the national GDP growth rate dropped by at least 10% (Barro & Ursúa, 2008). Results are robust to alternative definitions of economic conditions, including the average number of years during the respondent's exposure window in which national GDP growth rate was in the bottom ten percentile in the whole sample and in each single country. To compute these measures, we use GDP data from the World Bank - World Development Indicators.

Table B1: Summary statistics

	N	mean	SD	min	max
Government should reduce environmental pollution	16889	2.909	0.896	1	4
Environmental Policy Stringency Exposure					
Environmental Policy Stringency (EPS) Index	16889	0.977	0.696	0	3.639
Market-based policies	16889	0.696	0.547	0	4
Non-Market-based policies	16889	1.568	1.219	0	5.250
Tax (CO2, NOX, SOX, Diesel)	16889	1.001	0.771	0	4
CO2 + Fuel Tax	16889	1.718	1.168	0	5.038
CO2 (Tax/Cap-and-Trade)	16889	0.238	0.655	0	5
CO2 (Tax/Cap-and-Trade) + Fuel Tax	16889	1.179	0.810	0	4.667
Fuel (Diesel) Tax	16889	3.060	1.862	0	6
Environmental Quality Exposure					
PM2.5	16889	1184.094	679.706	148.837	2302.446
HAP	16889	847.243	1419.208	0.429	7043.224
Recession exposure	16889	0.010	0.037	0.000	0.286
Number of countries	38				
Number of birth cohorts	20				

Notes: Summary statistics are computed using the final estimation sample and observations are weighted by survey weights.

B Environmental preferences predict subsequent policy changes

One of our primary results is the positive effect of past policy exposure on subsequent environmental preferences. This result, when combined with evidence of the effect of preferences on subsequent policy, can be interpreted as a case of positive endogeneity of environmental preferences, which has been previously documented in the case of democratic values and institutions (Acemoglu et al., 2025; Besley & Persson, 2019; Fuchs-Schündeln & Schündeln, 2015).

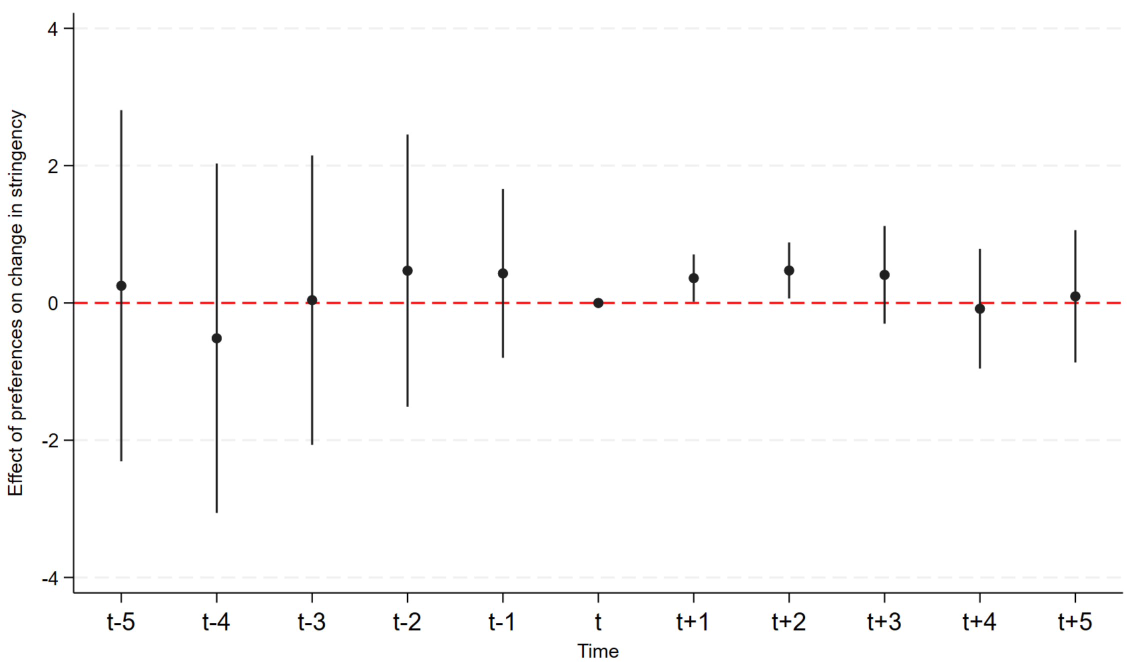
We empirically document that preferences predict subsequent policy outcomes in our setting, the relatively uncontroversial direction of the bidirectional relationship that we study in our paper. This exercise also has the added benefit of confirming that our survey measures of environmental preferences are meaningfully related to economically relevant policy outcomes, and in turn, our policy stringency measure can be influenced by them. We test for the association between these variables at the country level. We regress the change in the Environmental Policy Stringency (EPS) index in country c in year t on the average environmental preferences at the country level (weighted by survey weights) recorded in year t, estimating a set of equations:

$$\begin{aligned}(EPS_{c\tau} - EPS_{ct}) = &\beta_\tau preferences_{ct} + \alpha_c + \mu_t + \varepsilon_{ct} \\ &\forall \tau \in \{-5, -4, .., -1, 1, ..5\}\end{aligned} \tag{B.3}$$

In doing so, for each regression we estimate using Equation (B.3), we obtain a coefficient β_τ that tests the hypothesis that our main survey question predicts policy levels. Figure B1 plots the estimated β_τ's coefficients. We find that our primary survey measure of environmental policy preferences significantly predicts subsequent changes to environmental stringency for up to two years following the year of interview t. As a placebo test, we also estimate the association between preferences and past policy deviations from contemporaneous policy levels (for $\tau < 0$). Reassuringly, there is no statistically significant relationship between the survey measure and changes to policy stringency levels in any of the five prior years to the survey.

This exercise allays concerns on the relevance of our environmental preferences and policy measures. Moreover, these results do not affect the internal validity of our approach for two main reasons. First, we consider simultaneous changes between preferences on policy deviations. Our baseline empirical approach focuses on changes in past policy exposure and the effect on subsequent long-lasting policy preferences measured at the time of the survey. Second, to the extent that past policy preferences may still be a confound to the effect of past policy stringency on subsequent preferences, our results are robust to controlling for aggregate country-level preferences during each individual's formative age, as reported in Appendix Table D1.

Figure B1: Event-study of environmental survey preferences on changes in policy stringency levels



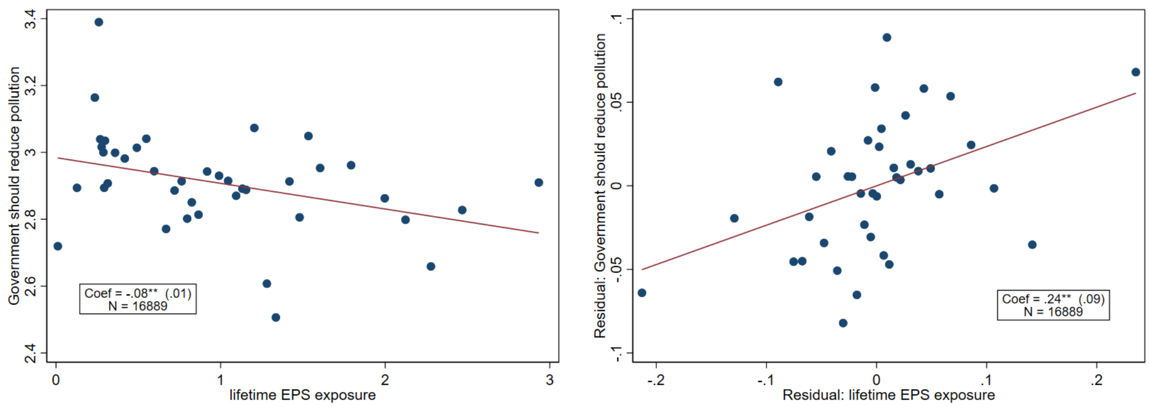
Notes: The figure reports the coefficients associated with environmental preferences on changes in environmental policy stringency. Each coefficient is obtained from a regression of environmental preferences on a lag/lead of changes in policy stringency with respect to the level of policy stringency contemporaneous to the year of the survey. Environmental preferences are measured as the country-average level of agreement with the statement that government should reduce environmental pollution on a scale from 1 to 4. The regression also controls for country and year fixed effects. Bins represent the 95% confidence intervals.

C Adulthood exposure - Results

C.1 Additional results

Figure C1: Binned scatter plot of environmental preferences and Environmental Policy Stringency exposure

(a) Partial correlation (b) Residualized partial correlation



Notes: The baseline estimation sample is split into 40 equal-sized bins. Panel (a) shows the raw partial correlation of each mean of that bin between Environmental Policy Stringency exposure and the government's role in reducing pollution. In Panel (b) each data point shows the mean residual of that bin after controlling for year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted by the survey weights.

Table C1: Environmental Policy Stringency exposure during adulthood and environmental preferences (with controls' estimates)

	Government should reduce pollution (Likert)				
	(1)	(2)	(3)	(4)	(5)
Environmental Policy Stringency exposure	0.228**	0.225**	0.219**	0.228**	0.236**
	(0.109)	(0.110)	(0.107)	(0.109)	(0.111)
Recession exposure		-0.515	-0.528	-0.534	-0.518
		(0.381)	(0.406)	(0.378)	(0.392)
PM2.5 exposure			0.314*		0.354**
			(0.186)		(0.173)
HAP exposure				-0.198***	-0.221**
				(0.0713)	(0.0905)
Male	0.0268	0.0267	0.0267	0.0269	0.0269
	(0.0183)	(0.0183)	(0.0183)	(0.0183)	(0.0183)
Education: Reference category: Lower education					
Middle	-0.0716**	-0.0718**	-0.0718**	-0.0718**	-0.0718**
	(0.0307)	(0.0307)	(0.0307)	(0.0307)	(0.0307)
Upper	-0.243***	-0.243***	-0.243***	-0.243***	-0.243***
	(0.0433)	(0.0433)	(0.0433)	(0.0433)	(0.0433)
Unemployed	0.0660***	0.0661***	0.0660***	0.0656***	0.0656***
	(0.0221)	(0.0221)	(0.0221)	(0.0221)	(0.0221)
Income deciles: Reference category: Bottom decile					
2nd	-0.00528	-0.00519	-0.00521	-0.00526	-0.00524
	(0.0361)	(0.0362)	(0.0362)	(0.0363)	(0.0363)
3rd	-0.0444	-0.0443	-0.0443	-0.0441	-0.0441
	(0.0391)	(0.0391)	(0.0391)	(0.0392)	(0.0392)
4th	-0.0779**	-0.0779**	-0.0779**	-0.0776**	-0.0775**
	(0.0339)	(0.0338)	(0.0339)	(0.0339)	(0.0339)
5th	-0.0277	-0.0281	-0.0281	-0.0279	-0.0278
	(0.0321)	(0.0321)	(0.0321)	(0.0322)	(0.0322)
6th	-0.0415	-0.0418	-0.0418	-0.0414	-0.0414
	(0.0392)	(0.0392)	(0.0392)	(0.0393)	(0.0393)
7th	-0.0853**	-0.0857**	-0.0857**	-0.0854**	-0.0853**
	(0.0401)	(0.0400)	(0.0400)	(0.0401)	(0.0401)
8th	-0.0671*	-0.0671*	-0.0671*	-0.0668*	-0.0667*
	(0.0385)	(0.0385)	(0.0385)	(0.0386)	(0.0386)
9th	-0.151***	-0.152***	-0.152***	-0.152***	-0.152***
	(0.0553)	(0.0553)	(0.0553)	(0.0554)	(0.0554)
10th	-0.0983*	-0.0990*	-0.0991*	-0.0987*	-0.0985*
	(0.0555)	(0.0555)	(0.0554)	(0.0555)	(0.0555)
Survey FE	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓
Mean outcome	2.909	2.909	2.909	2.909	2.909
SD Outcome	0.896	0.896	0.896	0.896	0.896
N	16889	16889	16889	16889	16889
adj. R^2	0.132	0.132	0.132	0.132	0.132

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively the average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. PM2.5 and HAP exposure variables are inverted such that higher values imply higher quality and divided by 1000 to improve readability of coefficients. All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

C.2 Robustness

We report the results of the major robustness checks conducted and summarized in Section IV. First, we find coefficients quantitatively very similar to our baseline with alternative measures of policy stringency de-meaned from the annual cross-sectional average and de-trended from a country-specific linear trend (Appendix Table C2). Second, we examine the influence of starting age, and find that the effect becomes more robust from age 16 across all policy exposure measures, including demeaned and detrended (Appendix Table C3). This result supports our hypothesized channel of norm formation, which requires awareness of and influence by policy stringency, and becomes likelier approaching adulthood.[7] Third, we use alternative estimation methods, including ordered probit (Appendix Table C4), probit and linear probability models for binary outcomes (Appendix Tables C5 and C6). Results remain quantitatively comparable. In the latter exercise, increasing stringency exposure from the U.S. level to Sweden's level in 2019 increases the probability by 5 percentage points (7.5% at the mean) of expressing that government should reduce pollution and of strongly agreeing by 9.4 p.p. (31%). Results are also robust to alternative fixed effects (Appendix Table C7) and to "leave-one-country-out" (Appendix Figure C2). Finally, we also relax the linearity assumption of environmental preference response to exposure to environmental policies, modelling it using restricted cubic splines with knots at the 5, 25, 50, 75, and 95 percentile of the exposure distribution. Such an approach forces the response to be linear below the minimum knot and above the maximum knot, but uses third-order polynomials in between the five knots. The linearity assumption still holds reasonably well over all distribution support both for exposure to the index of environmental policy stringency and to environmental tax stringency, supporting our choice to use a linear model (Appendix Figure C3).

[7] Environmental policies and their effects are posited to be internalized from adult life (Aklin et al., 2013).

Table C2: Environmental Policy Stringency exposure with relative measure (starting from 18 years)

	Government should reduce pollution (Likert)			
	(1)	(2)	(3)	(4)
Panel A: Year-demeaned relative exposure				
Environmental Policy Stringency exposure	0.190*	0.182*	0.190*	0.194*
	(0.109)	(0.106)	(0.107)	(0.109)
Panel B: Country-detrended exposure				
Environmental Policy Stringency exposure	0.220*	0.214**	0.224**	0.231**
	(0.110)	(0.107)	(0.109)	(0.111)
Recession exposure	✓	✓	✓	✓
PM2.5 exposure		✓		✓
HAP exposure			✓	✓
Individual controls	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C3: Environmental Policy Stringency exposure in adulthood with different starting ages

	Government should reduce pollution (Likert)			
	(1)	(2)	(3)	(4)
Panel A: Baseline exposure measure				
Environmental Policy Stringency exposure	0.226	0.367	0.345*	0.398***
	(0.349)	(0.240)	(0.185)	(0.140)
Panel B: Year-demeaned relative exposure				
Environmental Policy Stringency exposure	0.263	0.467**	0.331*	0.400**
	(0.324)	(0.224)	(0.187)	(0.152)
Panel C: Country-detrended exposure				
Environmental Policy Stringency exposure	0.201	0.353	0.335*	0.390***
	(0.351)	(0.241)	(0.184)	(0.141)
Starting age	14 years	15 years	16 years	17 years
Recession exposure	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓
N	11730	13129	14449	15605

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C4: Ordered Probit: Environmental Policy Stringency average exposure during adulthood

	Government should reduce pollution (Likert)			
	(1)	(2)	(3)	(4)
Environmental Policy Stringency exposure	0.129*	0.130*	0.130*	0.355**
	(0.0703)	(0.0704)	(0.0676)	(0.157)
Recession exposure	0.00229	-0.00384	-0.0186	-0.00549
	(0.0565)	(0.0574)	(0.0557)	(0.0514)
PM2.5 exposure		-0.0838		0.564**
		(0.158)		(0.275)
HAP exposure			0.201***	-0.203**
			(0.0494)	(0.0942)
Individual controls	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓
Mean Outcome	2.923	2.923	2.923	2.923
SD Outcome	0.90	0.90	0.90	0.90
N	16889	16889	16889	16889

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels (PM2.5 and HAP exposure variables are divided by 1000 to improve readability of coefficients). All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C5: Environmental Policy Stringency exposure with binary outcomes. Probit estimates.

	Government should reduce pollution			
	(1)	(2)	(3)	(4)
Panel A: Agree & Strongly Agree				
Environmental Policy Stringency exposure	0.265*	0.191	0.275*	0.221
	(0.145)	(0.141)	(0.141)	(0.143)
Recession exposure	0.000541	-0.0105	-0.00919	-0.0142
	(0.0666)	(0.0728)	(0.0684)	(0.0720)
PM2.5 exposure		-1.186**		-0.824
		(0.579)		(0.536)
HAP exposure			-0.983*	-0.714
			(0.524)	(0.530)
Environmental Policy Stringency Marginal effect	0.095*	0.068	0.098**	0.079
	(0.052)	(0.050)	(0.050)	(0.050)
Mean outcome	0.67	0.67	0.67	0.67
SD Outcome	0.47	0.47	0.47	0.47
Panel B: Strongly Agree				
Environmental Policy Stringency exposure	0.368**	0.434**	0.366**	0.447**
	(0.181)	(0.182)	(0.184)	(0.190)
Recession exposure	-0.0316	-0.0227	-0.0303	-0.0227
	(0.0635)	(0.0602)	(0.0621)	(0.0609)
PM2.5 exposure		0.990**		1.143*
		(0.504)		(0.647)
HAP exposure			0.213	-0.238
			(0.452)	(0.470)
Environmental Policy Stringency Marginal effect	0.125**	0.147**	0.124**	0.152**
	(0.061)	(0.062)	(0.062)	(0.065)
Mean outcome	0.30	0.30	0.30	0.30
SD Outcome	0.46	0.46	0.46	0.46
N	16889	16889	16889	16889

Notes: All regressions are estimated using a Probit model and control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels (PM2.5 and HAP exposure variables are divided by 1000 to improve readability of coefficients). All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C6: Effect of Environmental Policy Stringency exposure with binary outcomes. OLS estimates.

	Government should reduce pollution			
	(1)	(2)	(3)	(4)
Panel A: Agree & Strongly Agree				
Environmental Policy Stringency exposure	0.0862*	0.0634	0.0895**	0.0718
	(0.0441)	(0.0431)	(0.0429)	(0.0438)
Recession exposure	0.00137	-0.00180	-0.000247	-0.00203
	(0.0202)	(0.0219)	(0.0206)	(0.0217)
PM2.5 exposure		-0.355*		-0.259
		(0.178)		(0.173)
HAP exposure			-0.265*	-0.179
			(0.154)	(0.158)
Mean outcome	0.67	0.67	0.67	0.67
SD Outcome	0.47	0.47	0.47	0.47
Panel B: Strongly Agree				
Environmental Policy Stringency exposure	0.113*	0.132**	0.112*	0.134**
	(0.0573)	(0.0577)	(0.0584)	(0.0596)
Recession exposure	-0.00756	-0.00490	-0.00708	-0.00493
	(0.0217)	(0.0208)	(0.0213)	(0.0209)
PM2.5 exposure		0.298*		0.310
		(0.174)		(0.193)
HAP exposure			0.0797	-0.0232
			(0.151)	(0.142)
Mean outcome	0.30	0.30	0.30	0.30
SD Outcome	0.46	0.46	0.46	0.46
N	16889	16889	16889	16889

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels (PM2.5 and HAP exposure variables are divided by 1000 to improve readability of coefficients). All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C7: Environmental Policy Stringency exposure and environmental preferences. Alternative specifications.

	Government should reduce pollution (Likert)				
	(1)	(2)	(3)	(4)	(5)
Environmental Policy Stringency exposure	0.227**	0.181**	0.175**	0.127**	0.124**
	(0.108)	(0.0898)	(0.0860)	(0.0527)	(0.0521)
Recession	✓	✓	✓	✓	✓
EQ controls	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓
Country $\times$ Year of interview FE	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓
Age FE		✓		✓	
Continent $\times$ Age FE			✓		✓
Continent-age linear trends				✓	✓
Mean Outcome	2.909	2.909	2.909	2.909	2.909
SD Outcome	0.896	0.896	0.896	0.896	0.896
N	16889	16889	16889	16889	16889
adj. R^2	0.132	0.133	0.134	0.132	0.133

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure and PM2.5 and HAP exposure. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C8: Effect of exposure to Environmental Policy Stringency sub-indices during adulthood on government intervention preferences

	Government should reduce pollution (Likert)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Environmental Policy exposure	0.236**	0.0889	0.0998**	0.0742	0.125	0.00492	0.00889
	(0.111)	(0.0930)	(0.0487)	(0.0791)	(0.0914)	(0.0202)	(0.0650)
Policy	EPS Index	Market	Non-Market	Tax	CO2+Diesel	CO2	Diesel
Recession exposure	✓	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓
Mean Outcome	2.909	2.909	2.909	2.909	2.909	2.909	2.909
SD Outcome	0.896	0.896	0.896	0.896	0.896	0.896	0.896
Mean Exposure	0.977	0.696	1.568	1.001	1.718	0.377	3.060
SD Exposure	0.696	0.547	1.219	0.771	1.168	1.202	1.862
N	16889	16889	16889	16889	16889	16889	16889
adj. R^2	0.132	0.132	0.132	0.132	0.132	0.132	0.132

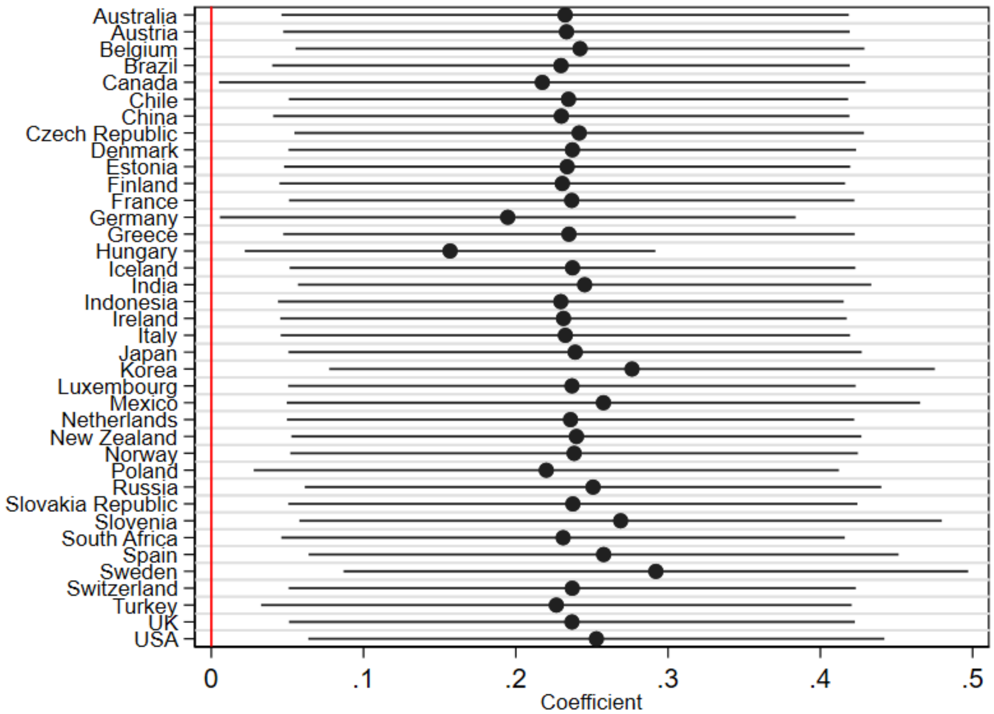
Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. Environmental Quality exposure are PM2.5 and HAP exposure, respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Estimated coefficients are visually reported in Figure ??.

Table C9: Exposure to Environmental Policy Stringency sub-indices during adulthood on tax increase preferences

	Increase in tax if used to prevent pollution						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Likert							
Environmental Policy exposure	-0.0875	0.118	-0.0495	0.133**	0.127***	0.131*	0.0596**
	(0.107)	(0.106)	(0.0494)	(0.0611)	(0.0428)	(0.0747)	(0.0226)
Mean Outcome	2.587	2.587	2.587	2.587	2.587	2.587	2.587
SD Outcome	0.859	0.859	0.859	0.859	0.859	0.859	0.859
Panel B: Binary (Agree & Strongly Agree)							
Environmental Policy exposure	-0.0474	0.0968**	-0.0274	0.0828**	0.0794***	0.0904**	0.0368***
	(0.0520)	(0.0482)	(0.0247)	(0.0325)	(0.0237)	(0.0388)	(0.0129)
Mean Outcome	0.581	0.581	0.581	0.581	0.581	0.581	0.581
SD Outcome	0.493	0.493	0.493	0.493	0.493	0.493	0.493
Panel C: Binary (Strongly Agree)							
Environmental Policy exposure	-0.00174	-0.0139	0.00483	0.0136	0.0282	0.0111	0.0144
	(0.0342)	(0.0453)	(0.0154)	(0.0278)	(0.0187)	(0.0387)	(0.00995)
Mean Outcome	0.133	0.133	0.133	0.133	0.133	0.133	0.133
SD Outcome	0.339	0.339	0.339	0.339	0.339	0.339	0.339
Policy	EPS Index	Market	Non-Market	Tax	CO2+Diesel	CO2	Diesel
Recession exposure	✓	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓
Mean Exposure	0.914	0.671	1.443	0.971	1.683	0.374	2.991
SD Exposure	0.689	0.545	1.206	0.776	1.202	1.217	1.918
N	20480	20480	20480	20480	20480	20480	20480
adj. R^2	0.090	0.090	0.090	0.090	0.090	0.090	0.090

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. Environmental Quality exposure are PM2.5 and HAP exposure, respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

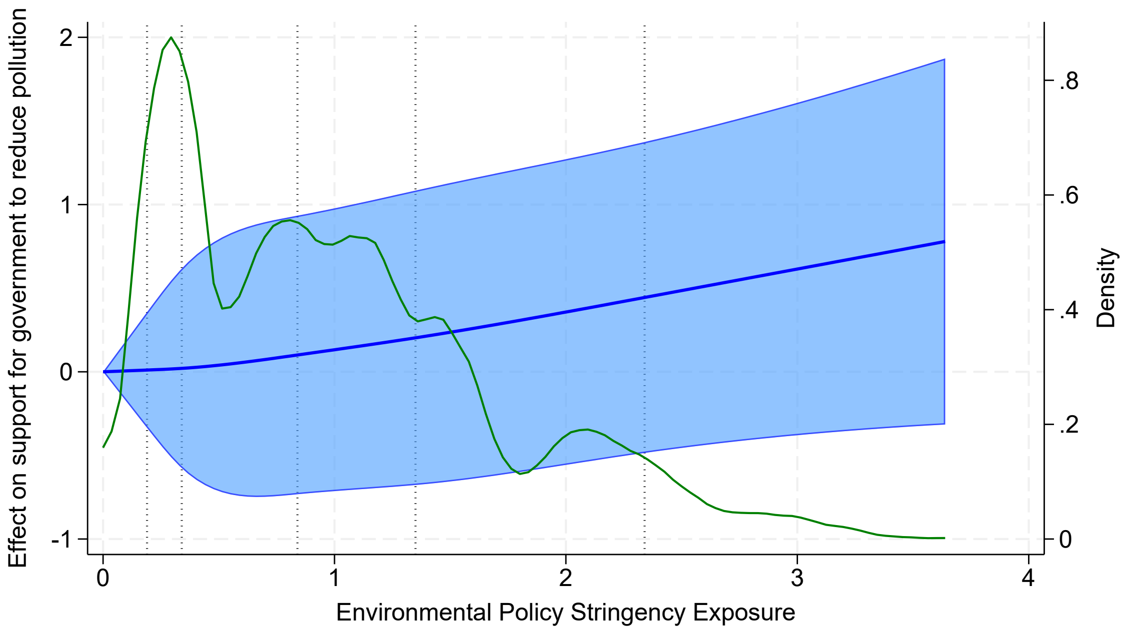
Figure C2: Effect of Environmental Policy Stringency exposure on environmental preferences - leave-one-country-out



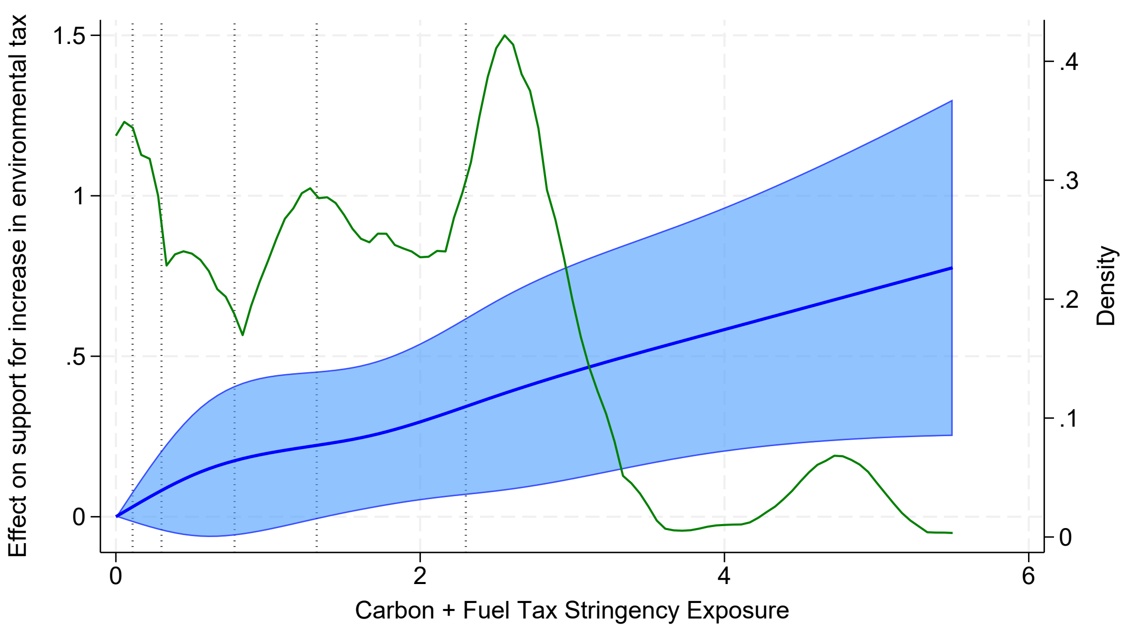
Notes: We plot the marginal effect of Environmental Policy Stringency exposure in adulthood in 38 different regressions where we exclude each time a country as reported in the y-axis. The regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure, PM2.5 and HAP exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level.

Figure C3: Allowing nonlinear relationships between environmental policy exposure and environmental preferences

(a) Environmental Policy Stringency and support for government to reduce pollution



(b) Environmental Tax Stringency and support for environmental tax increase



Notes: Figure plots the effect of exposure to environmental policy stringency on support for government intervention to reduce pollution in Panel (a) and to environmental tax stringency (CO2 and Fuel) on support for environmental tax increase to reduce pollution in Panel (b), allowing for a non-linear relationship. Specifically, we use restricted cubic splines with 5 knots (indicated by dashed lines). The point estimates (blue line) as well as the 95% confidence band are shown on the left y-axis. The density in exposure to policy stringency is shown in green on the right axis.

C.3 Falsification test using non-environmental attitudes

We conduct a falsification test to ensure that the effect of environmental policy exposure does not simply conflate changes in broader social and political attitudes and only affects environmental preferences. We use 13 alternative outcomes (detailed in Table C10) and regress each of these on our main measure of environmental policy stringency. In Table C11, we report the results. We find no effect of environmental policy stringency exposure that is statistically distinguishable from zero, except for one at the 5% level, consistent with sampling variation attributable to multiple tests. This result allays concerns on general social and political changes conflating changes in environmental preferences.

Table C10: Description of other values used as outcomes in the falsification exercise

Variable	Description	Categories
A025	Respect and love for parents	1 = Respect if earned 2 = Neither 3 = Always respect
A026	Parents responsibilities to their children	1 = Parents have a life of their own and should not be asked to sacrifice their own well-being for the sake of their children 2 = Neither 3 = Parents' duty is to do their best for their children even at the expense of their own well-being
A048	Abortion when woman not married	0 = Disapprove 1 = Approve
A049	Abortion if not wanting more children	0 = Disapprove 1 = Approve
A165	Most people can be trusted	0 = Can´t be too careful 1 = Most people can be trusted
C001	Jobs scarce: Men should have more right to a job than women	1 = Disagree 2 = Neither 3 = Agree
C002	Jobs scarce: Employers should give priority to (nation) people than immigrants	1 = Disagree 2 = Neither 3 = Agree
C036	To develop talents you need to have a job	1 = Strongly agree 2 = Agree 3 = Neither agree nor disagree 4 = Disagree 5 = Strongly disagree
C037	Humiliating to receive money without having to work for it	1 = Strongly agree 2 = Agree 3 = Neither agree nor disagree 4 = Disagree 5 = Strongly disagree
C038	People who don´t work turn lazy	1 = Strongly agree 2 = Agree 3 = Neither agree nor disagree 4 = Disagree 5 = Strongly disagree
C039	Work is a duty towards society	1 = Strongly agree 2 = Agree 3 = Neither agree nor disagree 4 = Disagree 5 = Strongly disagree
D018	Child needs a home with father and mother	0 = Tend to disagree 1 = Tend to agree
E124	Respect for individual human rights nowadays	1 = There is a lot of respect for individual human rights 2 = There is some respect 3 = There is not much respect 4 = There is no respect at all

Table C11: Falsification test of exposure to Environmental Policy Stringency using non-environmental attitudes as outcomes

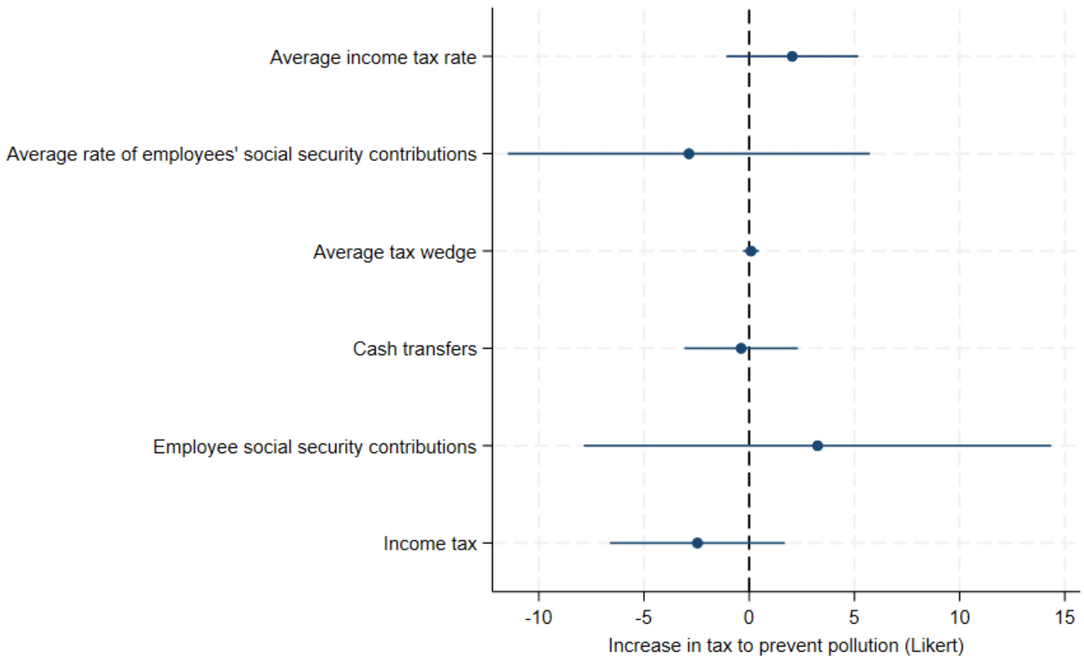
	(1) A025	(2) A026	(3) A048	(4) A049	(5) A165	(6) C001	(7) C002	(8) C036	(9) C037	(10) C038	(11) C039	(12) D018	(13) E124
Environmental Policy Stringency exposure	0.0853	0.0505	0.0839	0.0173	-0.000162	0.0495**	0.0356	-0.0455	0.0602	-0.0216	0.000166	-0.0112	-0.0283
	(0.107)	(0.0977)	(0.0805)	(0.0712)	(0.0169)	(0.0249)	(0.0342)	(0.0545)	(0.0621)	(0.0588)	(0.0407)	(0.0273)	(0.0273)
Recession exposure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country $\times$ Year of interview FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Outcome	2.404	2.451	0.569	0.550	0.325	1.616	2.332	2.204	2.714	2.384	2.368	0.797	2.294
SD Outcome	0.915	0.851	0.495	0.497	0.468	0.841	0.864	1.093	1.194	1.143	1.048	0.402	0.821
N	21602	21803	12514	12744	69889	71638	71332	38440	38276	50954	50862	31194	44904
adj. R^2	0.158	0.083	0.129	0.137	0.187	0.276	0.169	0.127	0.088	0.108	0.070	0.157	0.160

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Description of each outcome is reported in Appendix Table C10.

C.4 Placebo test using non-environmental tax data

We conduct a placebo test to ensure that the effect of environmental tax exposure does not simply conflate changes in stringency in taxes not related to the environment. We use data from the OECD (2024) that provide information on both the average and marginal tax burden for income taxes paid by workers, their social security contributions, the family benefits they receive in the form of cash transfers as well as the social security contributions and payroll taxes paid by their employers. We construct six measures of exposure to non-environmental tax stringency during the respondent's formative age as measured using the percentage of gross wage earnings or percentage of labour costs for average income tax rate, average rate of employees' social security contributions, average tax wedge, cash transfers, employee social security contributions, and income tax. We then regress the survey response to the statement "I would agree to an increase in taxes if the extra money were used to prevent environmental pollution" in Likert scale on each of the six measures of non-environmental tax stringency. In all six cases, we find no statistically significant effect of non-environmental tax stringency on environmental tax preferences.

Figure C4: Non-environmental tax exposure effect on environmental tax preferences



Notes: The figure plots the coefficients associated with exposure to non-environmental tax levels during the respondent's formative age in the y-axis using support with the statement on an increase in tax to prevent pollution as outcome in Likert scale. The regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure, PM2.5 and HAP exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates.

D Formative age exposure - Results

In this section, we test for the robustness of the baseline results in Section III.B. and provide additional results. In Section D.1, we describe an additional robustness test in which we account for societal preferences at the time of the respondent's formative age to address two concerns: i) societal preferences as a determinants of policies individuals are exposed to; ii) as a measure of the channel of second-order beliefs that might contribute to explaining our results. In Section D.2, we show that results are robust to the use of binary versions of the outcome (Appendix Figure D1), to alternative definitions of formative age (Appendix Table D4), to using de-meaned and detrended exposure measures (Appendix Table D5), and to measuring exposure over four-year age windows (Appendix Figure D2).

D.1 Controlling for societal preferences during formative age window

An alternative explanation to the role of policy stringency in influencing norms is that societal preferences could directly shape both policy stringency and individual norms, resulting in spurious correlation between past stringency and time-of-interview preferences influenced by historical norms. Another concern may be that policymakers might be more likely to implement a policy when they know that public support for it is trending up. To allay these concerns, we show that controlling for national average environmental policy preferences during the respondent's formative age does not meaningfully alter the effect of policy exposure (Table D1). If time of interview preferences were a consequence of conditions prior to the formative window or to social norms independent of stringency levels, then controlling for elicited societal preferences in the formative window should obviate the role of the policy stringency exposure. The fact that controlling for societal preferences in the early part of one's formative years does not meaningfully change the direction or magnitude of our main findings is evidence for a causal interpretation for the role of stringency exposure.

The political success of environmental policy proposals may be informative to individuals of contemporaneous societal attitudes, reducing what is sometimes referred to as "pluralistic ignorance". In this sense, second-order beliefs could indeed play an important role, serving as an intermediate variable that helps to explain how policy outcomes shape norms and influence an individual's policy support years later.

In Table D2, we estimate our main results controlling for environmental policy preferences only of the respondent's peers at the earliest possible year of the formative age window. This additional approach allows us to rule out that cohort preferences are exogenous and formed prior to the formative age window, influencing policy outcomes and shaping cohort norms independently.

We note that there is some risk that controlling for peer support of environmental policy in the early part of the formative age window, as well as societal support across all ages, could be a "bad control", absorbing some of the hypothesized effect of policy exposure we seek to measure and identify. The fact that our results are robust to these controls supports our formative age hypothesis and the role of policy stringency. The magnitude of the effect of policy stringency exposure, when controlling for societal and peer policy attitudes, is likely to be conservative relative to the true effect.

Table D1: Controlling for aggregate country-level preferences during respondent's formative age

	Government should reduce pollution		
	(1)	(2)	(3)
Environmental Policy Stringency exposure	0.172*	0.0766*	0.0837*
	(0.101)	(0.0402)	(0.0423)
Country-level formative-age preferences	-0.0115	-0.0981*	0.0675
	(0.141)	(0.0586)	(0.0856)
Outcome variable	Likert	Strongly agree	Strongly agree & Agree
Recession exposure	✓	✓	✓
PM2.5 exposure	✓	✓	✓
HAP exposure	✓	✓	✓
Individual controls	✓	✓	✓
Survey FE	✓	✓	✓
Year of birth FE	✓	✓	✓
Country × Year of interview FE	✓	✓	✓
Country-age linear trends	✓	✓	✓
Mean Outcome	2.902	0.298	0.662
SD Outcome	0.896	0.457	0.473
N	13569	13569	13569
adj. R^2	0.133	0.082	0.128

Notes: The regression controls for the country-level average support for government action to reduce pollution measured during the earliest available year of the formative age for each individual. The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution") in column (1). The outcome variable is a dummy equal to one if the individual strongly agrees with the statement, and zero otherwise, in column (2). The outcome variable is a dummy equal to one if the individual either strongly agrees or agrees with the statement, and zero otherwise, in column (3). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D2: Controlling for aggregate country-level preferences of individuals of age 18 during respondent's formative age

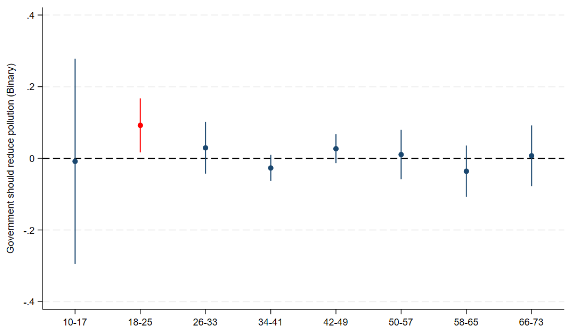
	Government should reduce pollution		
	(1)	(2)	(3)
Environmental Policy Stringency exposure	0.168*	0.0700*	0.0828**
	(0.0946)	(0.0387)	(0.0412)
Country-level formative-age preferences of peers	0.124*	0.0564	0.0442
	(0.0693)	(0.0376)	(0.0342)
Outcome variable	Likert	Strongly agree	Strongly agree & Agree
Recession exposure	✓	✓	✓
PM2.5 exposure	✓	✓	✓
HAP exposure	✓	✓	✓
Individual controls	✓	✓	✓
Survey FE	✓	✓	✓
Year of birth FE	✓	✓	✓
Country × Year of interview FE	✓	✓	✓
Country-age linear trends	✓	✓	✓
Mean Outcome	2.902	0.299	0.661
SD Outcome	0.896	0.458	0.473
N	13377	13377	13377
adj. R^2	0.133	0.083	0.129

Notes: The regression controls for the country-level average support for government action to reduce pollution measured during the earliest available year of the formative age for each individual. The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution") in column (1). The outcome variable is a dummy equal to one if the individual strongly agrees with the statement, and zero otherwise, in column (2). The outcome variable is a dummy equal to one if the individual either strongly agrees or agrees with the statement, and zero otherwise, in column (3). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

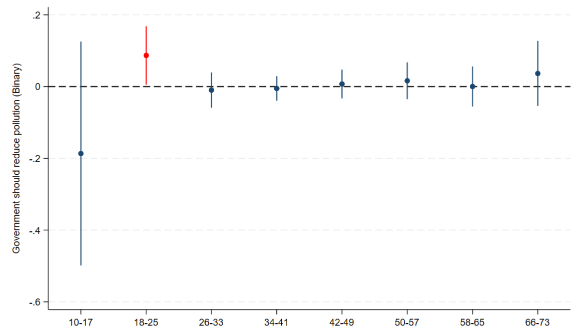
D.2 Robustness

Figure D1: Effect of Environmental Policy Stringency exposure in each eight-year age window using binary outcomes

(a) Agree & Strongly Agree

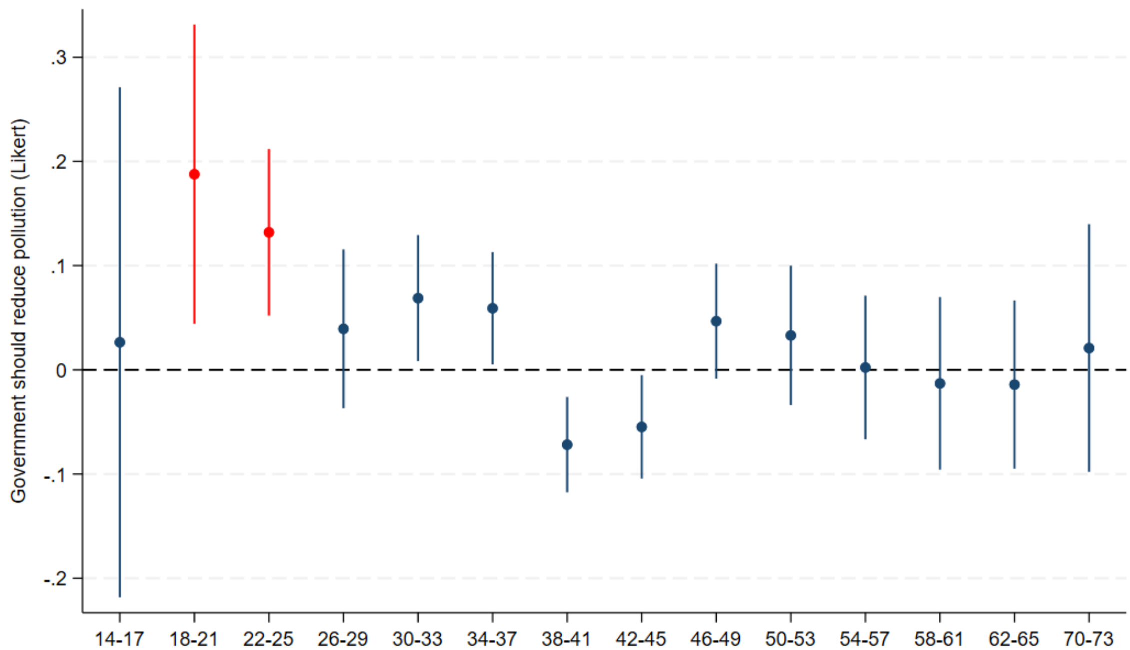


(b) Strongly Agree



Notes: The figure plots the coefficients associated with the average level of Environmental Policy Stringency during each eight-year age window reported in the x-axis using support with the statement that government should reduce environmental pollution as outcome recoded in two different binary versions. In panel (a), the binary variable takes value one if respondents state either agree or strongly agree. In panel (b), the binary takes value one if respondents state strongly agree. The regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure, PM2.5 and HAP exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates. Tabular results are reported in Table D3.

Figure D2: Effect of Environmental Policy Stringency exposure on environmental preferences by four-year age window



Notes: The figure plots the coefficients associated with the average level of Environmental Policy Stringency during each four-year age window reported in the x-axis using support with the statement that government should reduce environmental pollution as outcome in Likert scale. The regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure, PM2.5 and HAP exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates.

Table D3: Effect of Environmental Policy Stringency exposure by age windows on environmental preferences

	Government should reduce pollution							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Likert								
Environmental Policy Stringency exposure	-0.243	0.207**	0.0173	-0.0417	0.0509	0.0399	-0.0747	0.0695
	(0.262)	(0.0914)	(0.0698)	(0.0302)	(0.0397)	(0.0539)	(0.0716)	(0.0793)
Age window	10-17	18-25	26-33	34-41	42-49	50-57	58-65	66-73
Mean outcome	2.962	2.912	2.899	2.901	2.879	2.884	2.944	3.000
SD Outcome	0.875	0.896	0.912	0.909	0.906	0.917	0.905	0.888
Panel B: Binary (Agree & Strongly Agree)								
Environmental Policy Stringency exposure	-0.00840	0.0920**	0.0293	-0.0270	0.0269	0.0105	-0.0361	0.00717
	(0.143)	(0.0377)	(0.0360)	(0.0182)	(0.0201)	(0.0343)	(0.0358)	(0.0423)
Age window	10-17	18-25	26-33	34-41	42-49	50-57	58-65	66-73
Mean outcome	0.698	0.667	0.654	0.654	0.647	0.649	0.679	0.708
SD Outcome	0.459	0.471	0.476	0.476	0.478	0.477	0.467	0.455
Panel C: Binary (Strongly Agree)								
Environmental Policy Stringency exposure	-0.187	0.0868**	-0.00985	-0.00535	0.00722	0.0161	0.000245	0.0365
	(0.156)	(0.0406)	(0.0246)	(0.0170)	(0.0201)	(0.0256)	(0.0279)	(0.0453)
Age window	10-17	18-25	26-33	34-41	42-49	50-57	58-65	66-73
Mean outcome	0.314	0.303	0.307	0.307	0.295	0.302	0.324	0.342
SD Outcome	0.464	0.460	0.461	0.461	0.456	0.459	0.468	0.475
Recession exposure	✓	✓	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓	✓
Country $\times$ Year of interview FE	✓	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓	✓
N	6623	16889	20300	20211	17904	14522	11179	7788

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D4: Environmental Policy Stringency exposure and environmental preferences. Alternative definitions of formative age.

	Government should reduce pollution (Likert)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Environmental Policy Stringency exposure	0.398	0.516**	0.287***	0.392*	0.318	0.198**	0.185*
	(0.246)	(0.242)	(0.0901)	(0.198)	(0.200)	(0.0819)	(0.0944)
Age window	16-24	16-25	17-23	17-24	17-25	18-23	18-24
Recession exposure	✓	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓
Mean Outcome	2.923	2.921	2.919	2.911	2.916	2.913	2.915
SD Outcome	0.880	0.881	0.890	0.886	0.884	0.896	0.893
Mean Exposure	0.964	0.979	0.859	0.982	0.991	0.879	0.885
SD Exposure	0.719	0.722	0.664	0.717	0.722	0.673	0.681
N	6064	5919	14805	7418	7185	17215	16282
adj. R^2	0.126	0.127	0.135	0.136	0.132	0.132	0.135

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D5: Environmental Policy Stringency exposure during formative age on environmental preferences

	Government should reduce pollution (Likert)			
	(1)	(2)	(3)	(4)
Panel A: Baseline exposure measure				
Environmental Policy Stringency average exposure	0.190**	0.190**	0.206**	0.207**
	(0.0887)	(0.0880)	(0.0917)	(0.0914)
Mean Exposure	0.914	0.914	0.914	0.914
SD Exposure	0.681	0.681	0.681	0.681
Panel B: Year-demeaned relative exposure				
Environmental Policy Stringency average exposure	0.156	0.183*	0.156	0.183*
	(0.0982)	(0.102)	(0.0980)	(0.102)
Mean exposure	-0.230	-0.230	-0.230	-0.230
SD exposure	0.684	0.684	0.684	0.684
Panel C: Country-detrended exposure				
Environmental Policy Stringency average exposure	0.160*	0.181*	0.166*	0.190*
	(0.0948)	(0.0982)	(0.0952)	(0.0995)
Mean exposure	-0.112	-0.112	-0.112	-0.112
SD exposure	0.230	0.230	0.230	0.230
Recession exposure	✓	✓	✓	✓
PM2.5 exposure		✓		✓
HAP exposure			✓	✓
Individual controls	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓
Mean Outcome	2.909	2.909	2.909	2.909
SD Outcome	0.896	0.896	0.896	0.896
N	16889	16889	16889	16889

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

E Additional results

In this section, we report additional complementary results to Section V. in the main text.

E.1 Asymmetric effect of environmental policy stringency

We report the tabular results of the heterogeneous effects of Environmental Policy Stringency exposure conditional on the direction of the change in policy with respect to the contemporaneous level (Table E1). We also document that this heterogeneity is specific to the exposure during the formative age, and the effect is not statistically significant in any other age window to which the contemporaneous policy level is compared (Table E2).

Table E1: Exposure to Environmental Policy Stringency during formative age and contemporaneous policy level

	Government should reduce pollution (Likert)	
	(1)	(2)
Environmental Policy Stringency prior exposure	0.199**	0.274**
	(0.0824)	(0.108)
$\mathbb{1}${Contemporaneous stringency level lower than prior exposure}	-0.258***	-0.234***
	(0.0416)	(0.0423)
Environmental Policy Stringency exposure × $\mathbb{1}${Contemporaneous stringency level lower than prior exposure}	0.229***	0.194***
	(0.0549)	(0.0520)
Prior exposure	Formative age	Adulthood
Individual controls	✓	✓
Recession exposure	✓	✓
Environmental Quality exposure	✓	✓
Survey FE	✓	✓
Year of birth FE	✓	✓
Country × Year of interview FE	✓	✓
Country-age linear trends	✓	✓
Mean Outcome	2.912	2.909
SD Outcome	0.896	0.896
Mean $\mathbb{1}${Contemporaneous stringency level lower than prior exposure}	0.126	0.135
SD $\mathbb{1}${Contemporaneous stringency level lower than prior exposure}	0.332	0.342
N	17070	16889
adj. R^2	0.133	0.133

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is a dummy variable that takes value one if, during her formative age, the individual has experienced at least one year in which the real GDP per capita growth rate of its country is at least 10% below the previous year's growth rate. Environmental Quality exposure includes PM2.5 and HAP exposure, which are respectively the formative age's average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table E2: Environmental Policy Stringency exposure across age windows and contemporaneous policy level

	Government should reduce pollution (Likert)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Environmental Policy Stringency age window exposure	0.199**	0.0153	-0.0539	0.0576	0.0360	-0.0746	0.0582
	(0.0824)	(0.0721)	(0.0326)	(0.0403)	(0.0491)	(0.0732)	(0.0752)
$\mathbb{1}$\{Contemporaneous stringency level lower than age window\}	-0.258***	-0.130	-0.0834*	0.0816	0.115	0.103	-0.110
	(0.0416)	(0.143)	(0.0468)	(0.0613)	(0.0959)	(0.0926)	(0.110)
Environmental Policy Stringency age window exposure × $\mathbb{1}$\{Contemporaneous stringency level lower than age window\}	0.229***	0.124	0.117*	-0.0948	-0.0819	-0.0814	0.122
	(0.0549)	(0.140)	(0.0654)	(0.0575)	(0.123)	(0.0821)	(0.119)
Age window	18-25	26-33	34-41	42-49	50-57	58-65	66-73
Individual controls	✓	✓	✓	✓	✓	✓	✓
Recession exposure	✓	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓
Mean Outcome	2.912	2.899	2.901	2.879	2.884	2.944	3.000
SD Outcome	0.896	0.912	0.909	0.906	0.917	0.905	0.888
Mean $\mathbb{1}$\{Contemporaneous stringency level lower than age window\}	0.132	0.123	0.111	0.106	0.090	0.094	0.096
SD $\mathbb{1}$\{Contemporaneous stringency level lower than age window\}	0.338	0.328	0.314	0.308	0.286	0.292	0.295
N	17070	20300	20211	17904	14522	11179	7788
adj. R^2	0.133	0.135	0.142	0.162	0.163	0.171	0.168

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. Environmental Quality exposure includes PM2.5 and HAP exposure, which are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

E.2 Role of environmental quality

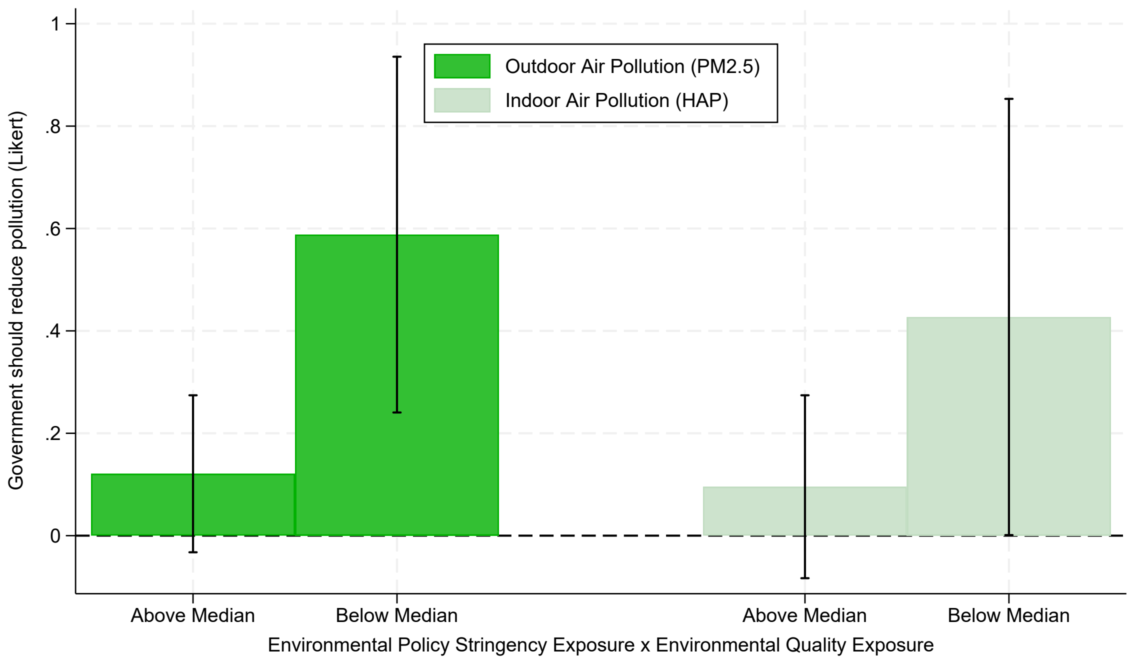
We also explore whether the effect of more stringent environmental policies on individual support is conditional on environmental quality. In Figure 3b in the main text, we show that the effect of exposure to environmental policy stringency is stronger when environmental quality exposure is below the median. In Table E3, we report the same results in tabular form. We probe the robustness of this result when using exposure over adulthood (Figure E1 and tabular results in Table E4). In all cases, the uninteracted term of exposure to environmental quality below the median is negative and in certain cases not significant, suggesting that environmental conditions downgrade individual support of the government's role in reducing pollution and we are not identifying a "poor environmental quality effect". Rather, we are identifying the effect of experience of both poor conditions and more stringent policies meant to address them. This combination induces support for government pollution actions. Similar results are also obtained when estimating the effect of exposure to environmental policy stringency splitting the sample between above and below median of environmental quality (Table E5). The result underlines the importance of stringent policies targeting poor environmental conditions to sustain support for government to reduce pollution.

Table E3: Effect of Environmental Policy Stringency exposure on environmental preferences by environmental quality exposure during formative age

	Government should reduce pollution (Likert)	
	(1)	(2)
Environmental Policy Stringency exposure	0.0810	0.0833
	(0.0650)	(0.0690)
Below median Environmental Quality	-0.246*	-0.267*
	(0.156)	(0.245)
Environmental Policy Stringency exposure × Below Median Environmental Quality	0.293***	0.292***
	(0.109)	(0.144)
Environmental Quality	PM2.5	HAP
Recession exposure	✓	✓
Individual controls	✓	✓
Survey FE	✓	✓
Year of birth FE	✓	✓
Country × Year of interview FE	✓	✓
Country-age linear trends	✓	✓
N	17070	17070
adj. R^2	0.133	0.132

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. Below median EQ is a binary variable equal to one if individuals have been exposed to an environmental quality measure (PM2.5 or HAP) that is strictly below the median exposure value. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure E1: Effect of Environmental Policy Stringency exposure on environmental preferences by environmental quality exposure during adulthood



Notes: The figure shows the marginal effect of exposure to environmental policy stringency in adulthood when exposure to environmental quality measures in the same period is above or below the median in the sample on support with the statement that government should reduce environmental pollution as outcome in Likert scale. The regression controls for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale, recession exposure. The regression also includes year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered at the country-year of interview level. Bins represent the 95% confidence intervals around point estimates.

Table E4: Effect of Environmental Policy Stringency exposure on environmental preferences by environmental quality exposure during adulthood

	Government should reduce pollution (Likert)	
	(1)	(2)
Environmental Policy Stringency exposure	0.129*	0.102
	(0.0759)	(0.0869)
Below median Environmental Quality	-0.468***	-0.374
	(0.156)	(0.245)
Environmental Policy Stringency exposure × Below median Environmental Quality	0.448***	0.325
	(0.132)	(0.220)
Environmental Quality	PM2.5	HAP
Recession exposure	✓	✓
Individual controls	✓	✓
Survey FE	✓	✓
Year of birth FE	✓	✓
Country × Year of interview FE	✓	✓
Country-age linear trends	✓	✓
N	16889	16889
adj. R^2	0.133	0.132

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. Below median EQ is a binary variable equal to one if individuals have been exposed to an environmental quality measure (PM2.5 or HAP) that is strictly below the median exposure value. All regressions also control for survey, year of birth, country-by-year of interview fixed effects and country-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table E5: Environmental Policy Stringency and Environmental Quality exposure above/below median during adulthood - Sub-sample analysis

	Government should reduce pollution (Likert)			
	(1)	(2)	(3)	(4)
Environmental Policy Stringency exposure	0.516**	0.170	0.446**	0.0858
	(0.212)	(0.108)	(0.210)	(0.125)
Environmental Quality exposure	-0.0658	-0.127*	-0.0790	0.0152
	(0.0525)	(0.0673)	(0.0586)	(0.0745)
Environmental Quality	PM2.5		HAP	
Sample	Below	Above	Below	Above
Recession exposure	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓
Mean outcome	2.962	2.878	3.005	2.826
SD outcome	0.877	0.923	0.881	0.912
N	8885	8004	9013	7876
adj. R^2	0.095	0.172	0.100	0.159

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's adulthood in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels (PM2.5 and HAP exposure variables are inverted such that higher values imply higher quality and divided by 1000 to improve the readability of coefficients). All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

E.3 Heterogeneity by socio-demographics

Table E6: Environmental Policy Stringency and Individual Preferences for Government Intervention: Heterogeneous Effects

	Government should reduce pollution (Likert)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Environmental Policy Stringency	0.263**	0.276**	0.326***	0.274**	0.277**	0.225**	0.210**
	(0.114)	(0.116)	(0.118)	(0.115)	(0.116)	(0.104)	(0.103)
Uninteracted Term 1	0.00127	0.0625**	-0.0387	0.0859	-0.0775	0.0567	-0.0883
	(0.0310)	(0.0303)	(0.0479)	(0.0647)	(0.0761)	(0.0443)	(0.0765)
Uninteracted Term 2			-0.110*				
			(0.0634)				
Environmental Policy Stringency ×							
Interaction Term 1	0.0260	0.00406	-0.0380	0.0111	-0.0201	0.00451	0.0968
	(0.0249)	(0.0325)	(0.0362)	(0.0384)	(0.0611)	(0.0456)	(0.0597)
Interaction Term 2			-0.138***				
			(0.0467)				
Interaction Term	Male (=1)	Unemployed (=1)	Education (Middle=1; Upper=2)	Poor (=1)	Rich (=1)	Left-wing (=1)	Right-wing (=1)
Recession exposure controls	✓	✓	✓	✓	✓	✓	✓
EQ exposure controls	✓	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓	✓
Mean Outcome	2.922	2.922	2.922	2.922	2.922	2.915	2.915
SD Outcome	0.900	0.900	0.900	0.900	0.900	0.900	0.900
N	16889	16889	16889	16889	16889	13719	13719
adj. R^2	0.132	0.132	0.133	0.132	0.132	0.121	0.121

Notes: The outcome variable ranges from 1 to 4 (with higher values reflecting stronger agreement with the statement "Government should reduce environmental pollution"). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels (PM2.5 and HAP exposure variables are inverted such that higher values imply higher quality). Poor is a dummy variable equal to one if individuals report belonging to the first two lowest deciles of the income scale, and zero otherwise. Rich is a dummy variable equal to one if individuals report belonging to the first two highest deciles of the income scale, and zero otherwise. Left-wing is a dummy variable equal to one if individuals report belonging to the first two steps in a ten-point political scale that goes from one (Left) to ten (Right). Right-wing is a dummy variable equal to one if individuals report belonging to the last two steps in a ten-point political scale that goes from one (Left) to ten (Right). All regressions also include year of birth, country-by-year of interview, survey fixed effects, and country-by-age linear trends. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table E7: Environmental Policy Stringency and environmental preferences for government action: Heterogeneous Effects

	Government should reduce pollution (Likert)			
	(1)	(2)	(3)	(4)
Environmental Policy Stringency (EPS) exposure	-0.0126	-0.00539	0.197*	0.220*
	(0.0852)	(0.113)	(0.113)	(0.112)
Interest in politics				
Somewhat interested	0.0204			
	(0.0519)			
Not very interested	0.0486			
	(0.0522)			
Not at all interested	0.0312			
	(0.0494)			
Somewhat interested× EPS exposure	0.0788*			
	(0.0398)			
Not very interested × EPS exposure	0.121**			
	(0.0465)			
Not at all interested× EPS exposure	0.220***			
	(0.0533)			
Confidence: The Government (Baseline: A great deal)				
Quite a lot		0.0440		
		(0.0653)		
Not very much		0.0201		
		(0.0724)		
None at all		0.0270		
		(0.0815)		
Quite a lot × EPS exposure		0.0208		
		(0.0605)		
Not very much × EPS exposure		0.0610		
		(0.0780)		
None at all × EPS exposure		0.187**		
		(0.0761)		
Government vs People Responsibility				
Government responsibility			0.0722**	
			(0.0347)	
Government responsibility × EPS exposure			0.0674**	
			(0.0323)	
People responsibility				-0.0529
				(0.0620)
People responsibility × EPS exposure				0.0586
				(0.0501)
Recession exposure	✓	✓	✓	✓
EQ exposure	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓
Mean Outcome	2.926	2.950	2.922	2.922
SD Outcome	0.896	0.892	0.900	0.900
N	15414	12102	16646	16646
adj. R^2	0.132	0.120	0.136	0.132

Notes: All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. All regressions control for survey, country-year of interview, year of birth fixed effects. Recession exposure is the average number of years during the respondent's exposure window in which the real GDP per capita growth rate was at least 10% below the previous year's growth rate. PM2.5 and HAP exposure are respectively the average of age-standardized disability-adjusted life-years lost per 100,000 people due to exposure to fine air particulate matter smaller than 2.5 micrometers (PM2.5) and due to exposure to household air pollution (HAP) from the use of household solid fuels. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

F Counterfactual details

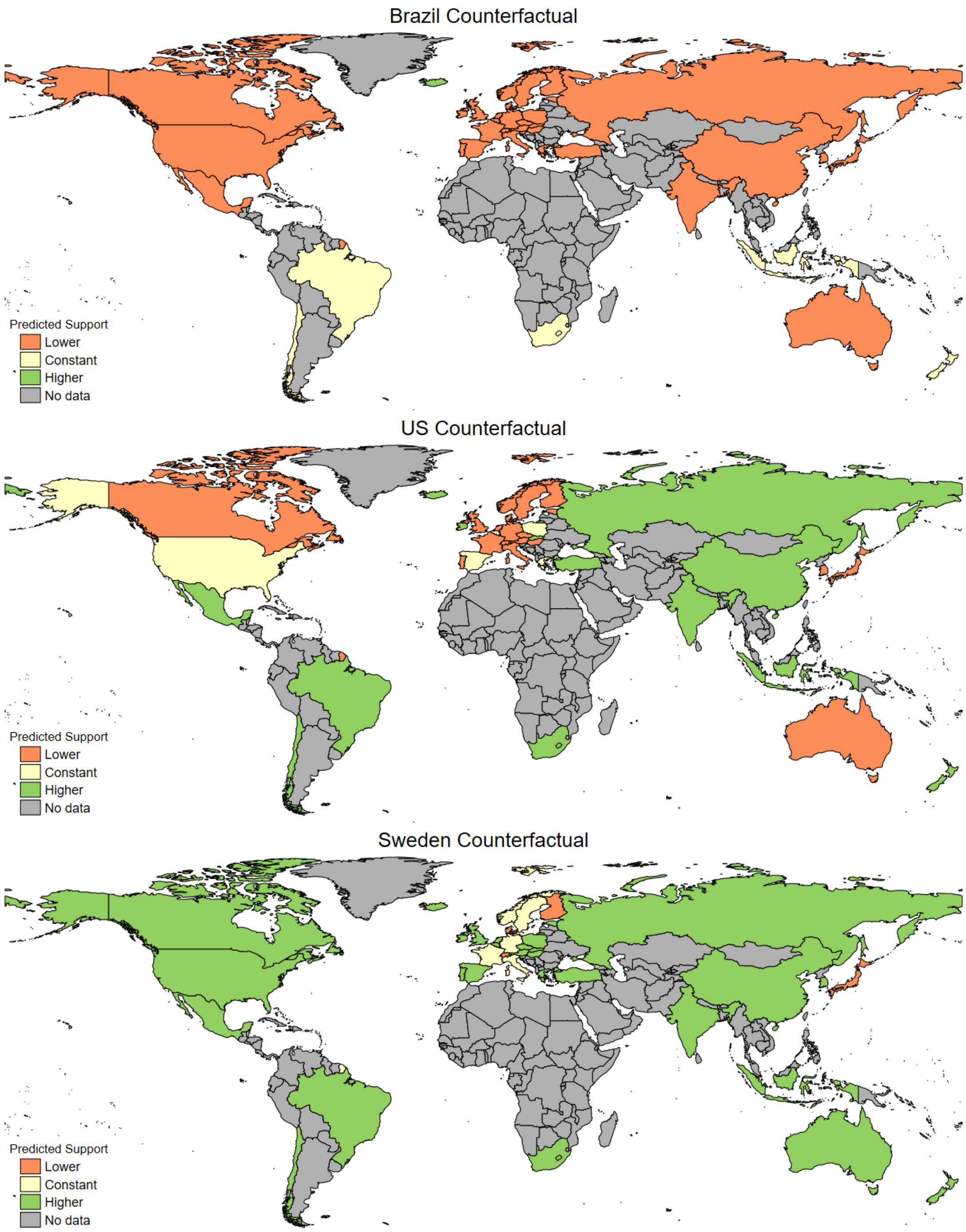
We use our reduced-form estimates to estimate predicted policy preferences under different policy counterfactual scenarios. We answer the following question: if individuals were exposed to another counterfactual policy level, all else equal, how would the change in policy preferences predicted by our model be? We choose as counterfactuals three countries with notable historically different policy stringency levels: Brazil (cross-cohort average policy stringency exposure is 0.46), United States (average policy exposure 1.75, close to the cross-country average 1.74), and Sweden (average policy exposure 2.57).

We take the estimated marginal effect of exposure to environmental policy stringency on the probability to *strongly agree* with the statement "Government should reduce environmental pollution" in column (4), Panel B, Table C6. We choose this approach to define environmental preferences in the most possible conservative manner and to facilitate the interpretation of our results in terms of shares of respondents that strongly support environmental policies.

Using the estimated coefficient on exposure to environmental policy stringency, we predict the counterfactual change in green preferences using the difference between the observed level of policy stringency and the counterfactual policy level in each of the three countries. We take the average across years of interview and report in Figure 4 the model-predicted shares of respondents with *strong* green preferences under each counterfactual.

Figure F1 displays world maps under each counterfactual policy experiment showing which countries have a predicted support for green policies that is lower, constant, or higher than observed in the data.

Figure F1: Predicted support for government reduction in pollution using Brazil, U.S., and Sweden counterfactual policy stringency exposures



Notes: Each map shows the predicted change in the share of respondents that strongly agree with the statement "Government should reduce environmental pollution", using, respectively, Brazil, U.S. and Sweden's levels of birth-cohorts exposure to past environmental policy stringency, and using the coefficient on exposure to environmental policy stringency in column (4), Panel B, Table C6.

G Endogenous preferences and learning

For past direct exposure to environmental policies to influence subsequent support for such policies, as we document, there are two potential channels: changes to preferences and learning. To illustrate the difference, consider two individuals interviewed at the same time and in the same country about increasing stringency, but with distinct policy exposure histories (because of different ages). Suppose that the level of stringency at the time of interview is ψ_0, individual i has experienced history $h_i = \{\psi_0\}$ while individual j has experience history $h_j = \{\psi_0, \psi_1\}$, where $\psi_1 > \psi_0$ in terms of stringency, and individual j experienced the two policy stringency levels in equal parts. It is possible that individual j's norms have been influenced by the higher mean level of policy exposure than individual i because $\frac{\psi_0+\psi_1}{2} > \psi_0$. But it is also possible that individual j has better knowledge about policy level ψ_1, having experienced it directly, than does individual i. In addition to any effect on individual j's norms, greater knowledge could influence individual j's policy preferences. In the next subsections, we outline two co-existing theoretical models that rationalize our results, and we then exploit variation in policy exposure levels and dispersion to empirically disentangle the respective roles of norms and learning.

G.1 Endogenous preferences

Traditionally, an individual's preferences over environmental policy can be represented by a conventional well-behaved utility function, such that $U(\psi) = \mu(c(\psi), q(\psi))$, where c and q represent consumption and environmental quality, each a function of policy stringency ψ.

If individuals form policy norms based on past experience (as documented, e.g., in Acemoglu et al., 2025; Fuchs-Schündeln & Schündeln, 2015), we can represent individual k utility as follows:

$$
\begin{aligned}
V_k[\Psi, \psi_R, \alpha, \beta, \gamma] = & \mu(c(\Psi + \psi_R)), q(\Psi + \psi_R)) && \text{(G.4)} \\
& - \alpha \cdot d_1(c(\Psi + \psi_R), c(\psi_R)) && \text{(G.5)} \\
& - \beta \cdot d_2(q(\Psi + \psi_R), q(\psi_R)) && \text{(G.6)} \\
& - \gamma \cdot d_3(\Psi + \psi_R, \psi_R) && \text{(G.7)}
\end{aligned}
$$

The first line (G.4) corresponds the standard utility function, lines (G.5)-(G.7) represent the consequences to utility of any deviation Ψ from the policy norm, ψ_R, which we define as the average of policy stringency levels experienced by individual k. Deviations from norms could affect utility through many channels: consumption, environmental quality and policy preferences themselves, as outlined respectively in each line. Individual K chooses their optimal policy stringency such that

$$
\psi_k^* = \underset{\psi}{\operatorname{argmax}} \; V_k \left[\psi, \psi_R, \alpha, \beta, \gamma\right] \tag{G.8}
$$

Given that α, β, and $\delta \geq 0$, with at least one strictly positive, in keeping with positively endogenous preferences, then the total derivative of ψ^* with respect to the policy norm ψ_R is unambiguously positive.[8] Changes in policy norms do not affect the traditional utility element (line G.4), but exert an influence on the optimal stringency level through lines (G.5)-(G.7). In each of these lines an increase in the reference point would produce an increase in the optimal policy stringency.

G.2 Endogenous learning

A potentially co-existing mechanism is through an information channel. If individuals are inaccurate about their true utility under policy ψ because of imperfect information, then experience with the policy would induce changes in beliefs toward accuracy. In

[8] See Furnham and Boo (2011) and Tversky and Kahneman (1974) for literature on comfort and familiarity, and Bezin (2015), Bisin and Verdier (2001, 2011), and Schumacher (2015) for cultural norms with intrinsic value, all of which are common arguments for positively endogenous preferences.

particular, a case of positive endogeneity would arise if individuals hold beliefs that result in low subjective expected utility about an increase in policy stringency prior to its enactment. Experience will result in updated beliefs and is impossible if the policy is not enacted.[9]

Let's consider an individual k who has accurate views of policy levels experienced in their policy history, h_k - which includes the contemporaneous level ψ_0 - but pessimistic views of higher stringency levels than those experienced. We can characterize beliefs about the expected gains (or losses) from shifting to policy regime, ψ, as follows:

$$EU_k(\psi) - U_k(\psi_0) = \begin{cases} U_k(\psi) - U_k(\psi_0), & \forall \psi \in h_k \\ G_k(\psi) - U_k(\psi_0), & \forall \psi \notin h_k \end{cases} \tag{G.9}$$

Experience with a variety of policies expands the set h_k and updates previously pessimistic beliefs about the net costs or benefits of stringency, represented by $G_k(\psi)$, where $G_k(\psi) < U_k(\psi)$ when $\psi > \psi_0$.[10] The accuracy of posterior beliefs improves with the variety in experienced stringency levels, which we define as the sum of distinct policy levels that an individual experiences.

Alternatively, individuals may have more accurate posterior beliefs when the span of experienced policy levels, defined by the highest level minus the lowest level, is larger. By exploring a wider range of policy levels, they can observe how utility changes with dramatic policy adjustments and may choose to extrapolate utility within the experienced span, such that:

[9]Misperceptions are evident and well documented in climate policies. For example, citizens tend to ignore that pricing pollution reduces pollution (Kallbekken et al., 2011) and they wrongly think that a carbon tax with equal per capita rebates would be regressive (Douenne & Fabre, 2022).

[10]We focus on the case of pessimistic beliefs because it is only learning that corrects pessimistic beliefs that can exert a positive influence on the coefficient on environmental policy stringency exposure that we estimate in our empirical analysis. If beliefs, on average, are neither pessimistic nor optimistic, then learning would exert neither positive nor negative influence on the coefficient on environmental policy stringency exposure. If beliefs are initially optimistic, learning would exert negative influence on the coefficient on environmental policy stringency exposure.

$$EU_k(\psi) - U_k(\psi_0) = \begin{cases} U_k(\psi) - U_k(\psi_0), \ \forall \psi \in [\underline{\psi}, \bar{\psi}] \\ G_k(\psi) - U_k(\psi_0), \ \forall \psi \notin [\underline{\psi}, \bar{\psi}] \end{cases} \tag{G.10}$$

Finally, the standard deviation of experienced policy stringency levels could serve as a more comprehensive proxy for policy learning than span or variety alone. To illustrate, span and variety, taken alone, can be limited in capturing the degree to which experience policies deviate from the mean. Experiencing many policy levels, evenly spaced across a wide range, would foster more learning and would have a higher standard deviation than would many years of experience at a policy level at one end of a wide range and a single year of experience at a policy level at the opposite end of the range. Although both of these exposure windows can span the same range, the second has a higher standard deviation and fosters greater learning. Separately, a high level of policy variety may be clustered in a small span and not capture the limited breadth of learning due to small deviations from the mean. The standard deviation takes into account the magnitude of these deviations.

In all three cases described above, learning requires dispersion in the policy history (Aghion et al., 1991; Warren & Wilkening, 2012; Wieland, 2000; Zhao & Kling, 2003). We focus on these three measures of dispersion of policy stringency levels in one's history, the variety, the span, and the standard deviation, to test for the relevance of the endogenous learning channel on our empirical results. While standard deviation measures the volatility in the policy stringency level that an individual is exposed to during their exposure window (respectively, adulthood or formative), we define variety as the number of distinct policy levels that an individual experienced during their exposure window. To simplify the interpretation, the variable is the number of policy levels experienced minus one. Therefore, if someone only experienced one policy level throughout their exposure window, their policy variety is equal to zero. Finally, we define span as the difference between the most and least stringent level of policy in an individual's exposure window, which, by construction, is equal to zero if an individual only experiences one policy level during their exposure window.

We find that the inclusion of these measures for policy learning in our baseline specification does not meaningfully alter the role of the stringency exposure measure, which, as before, we express using the mean level of stringency during the formative age window or during adulthood, in respective analyses reported in Table G1. Estimates associated with our three measures of learning are always statistically insignificant and close to zero in magnitude, whereas the coefficients on mean exposure to environmental policy stringency is quantitatively similar in magnitude to our baseline estimates.

Table G1: Effects of Environmental Policy Stringency exposure and measures of policy variability on environmental preferences

	Government should reduce pollution (Likert)					
	(1)	(2)	(3)	(4)	(5)	(6)
Environmental Policy Stringency exposure	0.194**	0.206**	0.209**	0.241**	0.224	0.258*
	(0.0887)	(0.0855)	(0.0865)	(0.113)	(0.149)	(0.136)
Learning measure						
Environmental Policy Stringency variety	0.00473			0.00426		
	(0.0111)			(0.0169)		
Environmental Policy Stringency span		0.00295			-0.0114	
		(0.0308)			(0.0653)	
Environmental Policy Stringency standard deviation			-0.00666			0.0493
			(0.0693)			(0.105)
Exposure age window	Formative age (18-25)			Adulthood (18-interview year)		
Recession exposure	✓	✓	✓	✓	✓	✓
Environmental Quality exposure	✓	✓	✓	✓	✓	✓
Individual controls	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Year of birth FE	✓	✓	✓	✓	✓	✓
Country × Year of interview FE	✓	✓	✓	✓	✓	✓
Country-age linear trends	✓	✓	✓	✓	✓	✓
Mean of learning measure	2.205	0.361	0.147	3.066	0.556	0.206
SD of learning measure	1.608	0.413	0.165	2.522	0.643	0.224
N	16889	16889	16889	16889	16889	16889
adj. R^2	0.133	0.133	0.133	0.132	0.132	0.132

Notes: Table shows the estimates of regressions where outcome is the 4-point Likert scale question about "Government should reduce environmental pollution", and main regressors are mean, variety, spna, and standard deviation of the Environmental Policy Stringency index during an individual's formative age (from the year of age 18 to the year of age 25), in columns (1)-(3), and in their adulthood (from the year of age 18 to the year of interview), in columns (4)-(6). All regressions control for male dummy, unemployment dummy, 3-category education (lower, middle, and upper), 10-class subjective income decile scale. All regressions control for survey, country-year of interview, year of birth fixed effects. Observations are weighted using survey weights. Standard errors are clustered by country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.