Weather-driven asylum flows raise the political priority of climate change

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Abstract

Public concern is widely treated as a prerequisite for climate action and policy support. Prior work ties climate concern to socio-political factors and to the direct experience of local weather, but rarely to its human consequences. This paper examines one such consequence: the arrival of asylum seekers from origin countries under climatic stress. Combining asylum applications from non-OECD origins to the European Union between 2000 and 2019 with a gravity model that isolates flows driven by origin-country weather shocks, I find that weather-driven inflows increase the priority citizens place on climate change without raising their belief in its severity. The effect concentrates among right-leaning and less-educated citizens and does not translate into pro-environment voting. These findings are consistent with a salience channel through which the human consequences of climate change feed back into the politics that govern the transition.

Climate mitigation ambitions continue to outpace the public support required to deliver them, which makes the determinants of public climate concern a first-order question for climate policy[1,2]. Because the transformations that sustainability requires must be sustained politically over decades, how the human consequences of climate change, as they arrive in receiving societies, reshape that support bears directly on whether those transformations happen. Climate change carries far-reaching socio-economic consequences, including human migration[3–6]; yet what is known about the formation of climate concern comes almost entirely from socio-political predispositions[7–11], and, more recently, from the personal experience of local weather[12–20], whose attitudinal effects tend to concentrate among already-progressive citizens[21,22], and to dissipate quickly[23,24]. Whether exposure to the human consequences of climate change shifts how citizens weigh the issue, and if so through what mechanism, remains largely unexplored. In this paper I investigate the effect of one such consequence, asylum migration, on the political standing of climate change in host countries.

There are two separate mechanisms that the notion of concern tends to run together: the salience of climate change, meaning the weight it carries on the political agenda relative to competing priorities, and the individual belief in its severity, meaning how serious a problem citizens judge it to be. The two need not move together, and it is the former on which climate policy most immediately depends. To see how a socio-economic consequence of climate change might raise its salience, I draw on a reception model of the survey response, in which an expressed opinion is not the readout of a fixed belief but an average over the considerations that happen to be accessible to a respondent at the moment of answering[25,26]. The guiding intuition of my underlying hypothesis is that the arrival of people displaced by climate-related hardship supplies citizens in host locations with an accessible mental association between climate change and a consequence they already weigh heavily, namely migration. European publics already recognise climate migrants as a distinct category[27], and a substantial share of citizens perceive migration as a consequence of climate change (Figure S1). When European institutions and the media frame migration in terms of its climatic "root causes"[28–31], a visible inflow can bring that association to mind and, for citizens who find migration threatening, can lend it weight when climate is set against competing concerns.

The reception model makes two predictions that separate it sharply from the channel of direct experience of local weather. First, exposure should raise the priority that citizens assign to climate change on the political agenda without necessarily raising their belief in its severity, because a change in migration inflows alters what comes to mind when opinion is expressed rather than what citizens hold to be true. Second, the response should concentrate among the groups that a newly accessible and negatively charged consideration moves most, that is, the less politically informed and the political right, precisely the groups that the direct experience of local weather tends to leave untouched[12,21]. The model requires neither that these migrants be objectively climate-driven nor that citizens correctly attribute their movement to climate change; it requires only that an association between climate and migration be available in the European information environment, so that a visible inflow can bring it to mind when opinion is expressed. Whether a visible inflow moves expressed priorities is not assumed but is precisely what the empirical design sets out to test. Therefore, a reaction to migration as a threat is not a rival hypothesis but one of the potential underlying mechanisms, since for citizens who find migration threatening it is that perceived threat that lends the consideration its negative charge, and hence its weight, when climate is set against competing priorities; whether that threat operates through a material stake or a broader cultural salience is something the

subgroup response heterogeneity can test.

I test these predictions using bilateral asylum applications from non-OECD countries of origin to the European Union between 2000 and 2019, individual climate attitudes drawn from the Eurobarometer surveys[32], and outcomes from European Parliament and national elections. Because observed applications reflect both climatic and non-climatic forces and are correlated with conditions in the destination, I isolate their weather-driven component using a gravity model in which origin-country temperature and precipitation shocks, interacted with bilateral migration costs, predict flows to each destination. Intuitively, a country is more exposed to weather-driven migration when the origins to which it is most strongly connected are experiencing climatic stress, and it is this predicted, weather-driven inflow that instruments observed applications in an individual-level two-stage least squares design absorbing destination, age, region-by-year and cohort variation and conditioning on local weather in the host country, so that the estimated effect is separated from the direct-experience channel. Throughout, I interpret the estimand as exposure to climatic hardship in migration-connected origin countries, transmitted primarily through asylum flows. Migration responds to a changing climate along many margins[33]; I focus here on international asylum flows to the European Union, a setting of considerable importance in its own right: asylum applications are projected to rise by between 28% and 188% by the end of the century as a result of climate change[6], against a backdrop in which migration and climate change rank among the most salient issues in European politics[34,35]. I find that greater exposure to weather-driven migration raises the political priority of climate change without raising belief in its severity, that the effect concentrates among right-leaning and less-educated citizens and among cohorts exposed during their formative years, and that it does not translate into greater support for green parties, so that the shift in the political agenda leaves no trace in electoral outcomes or in party platforms.

Results

Table 1 reports the effect of weather-driven asylum applications on two survey-based measures of the political priority of climate change. For each outcome I report an ordinary least squares (OLS) estimate alongside a two-stage least squares (2SLS) estimate that instruments observed applications with their gravity-predicted, weather-driven component. The OLS associations are small and statistically indistinguishable from zero (columns 1 and 3), whereas the 2SLS estimates are positive and considerably larger (columns 2 and 4). A doubling of a country's cumulative weather-driven applications over the survey year and the five preceding years raises the probability that a respondent names climate change as an important theme of the European Parliament electoral campaign by around 2.3 percentage points, around 33% of that outcome's mean, and the probability that a respondent names it as a priority for European Parliament deliberation by around 4.4 percentage points, around 42% of its mean. These effects are comparable in size to standard individual-level correlates of climate priority, such as employment status and left-right self-placement (Table S6). The instrument is strong, with effective first-stage F statistics above conventional thresholds, and because inference rests on only 28 destination-country clusters, I also report weak-instrument and cluster-robust 95% confidence intervals obtained from a wild-cluster-bootstrapped Anderson-Rubin test.

These magnitudes are best read against the movements European countries actually experience. Over the two decades spanned by the sample, a typical country's cumulative five-year

inflow moves up and down by roughly a factor of two, very close to the within-country standard deviation, and such swings are common, since 24 of the 28 countries in the sample see their inflow at least double between 2000 and 2019. At the height of the 2015 refugee crisis, Germany's cumulative inflow rose almost fivefold, from 0.35 to 1.6 million applications between 2013 and 2016, a movement of more than two standard deviations that the estimates imply raised the political priority of climate change by close to 7 percentage points.

The gap between the null OLS estimates and the positive 2SLS estimates is to be expected: observed applications combine climate- and non-climate-driven flows and are measured with error, so the OLS coefficient need not recover the effect of interest; the instrument isolates the weather-driven margin, for which the climate–migration relationship is legible (Figure S12), and recovers a local average treatment effect[36]. A transparent reduced form makes the same point without relying on the 2SLS design: regressing survey responses directly on the predicted weather-driven component of asylum applications yields a positive and statistically significant effect for both outcomes (Figure 1, panel a). A complementary shift-share design reaches the same conclusion while dispensing with the gravity model altogether and relying only on the exogeneity of the origin-country weather shocks[37]. Combining each destination's baseline asylum-network shares with a measure of both cold and hot anomalies in origin countries, and regressing attitudes directly on the resulting exposure, yields positive effects on both measures (Figure 1, panel b). Because this design uses no predicted regressor and imposes no functional form on the migration response, it isolates the exposure interpretation transparently: destinations whose asylum-origin networks are more exposed to harmful weather place greater priority on climate change.

Several features of the setting speak to how these inflows might shift host attitudes. Asylum applicants cannot list climate change as a recognised ground for asylum[38], and rarely narrate their own displacement in those terms[39–41], so the channel is unlikely to run through the applicants' own attribution of their movement; it can, however, run through the way in which these inflows are understood in the destination countries. Consistent with this reading, weather-driven asylum applications are strongly and positively correlated with the share of host residents who report believing that climate change already influences migration in their own country (Figure S13).[1] The estimates also do not appear to be driven by a broader wave of online attention, since controlling for Google search volumes for "climate" and "migration" leaves the effect on the priority measure essentially unchanged, and attenuates the effect on the campaign measure (Table S22), and actual and predicted asylum applications are, if anything, only weakly positively correlated with searches for "climate change" and imprecise or negative for other terms (Table S23). While an independent role for online attention cannot be fully ruled out, these patterns limit the scope for it to confound the estimate. Finally, splitting destinations by their cumulative asylum inflows yields a positive and significant effect only above the median (Table S24), which is consistent with actual asylum applications, rather than discourse alone, driving the result.

A large number of robustness checks and extensions are reported in the *Supplementary Information*. The estimates are robust to alternative sets of fixed effects (Table S12), to alternative gravity-based instruments (Table S13), to changes in the exposure time window (Table S14), and to alternative measures of exposure (Tables S15 and S16). A placebo instru-

[1] This is a cross-sectional correlation drawn from a single 2019 survey wave and does not identify the direction of the relationship, and it is therefore best read as suggestive, contextual evidence that the climate–migration association is legible to host publics, rather than as causal.

ment, in which asylum applications are predicted from non-climatic disasters, has no effect on climate concern (Table S17), and non-climate concerns, including terrorism, the euro, food safety and economic growth, are likewise unaffected (Table S18). Excluding the five largest origin countries by volume, namely Afghanistan, Iraq, the Russian Federation, Serbia and Syria, yields very similar estimates (Table S19), and a leave-one-out exercise confirms that identification does not rest on a handful of origins and that no single origin drives the result[37] (Figure S19, see *Supplementary Information* for additional details). Pre-trend tests find no correlation between past climate concern and leads of observed or predicted asylum applications (Table S20). Finally, trade does not appear to confound the estimate, since replacing asylum with an analogously instrumented trade measure gives small and statistically insignificant coefficients, while adding predicted weather-induced trade leaves the asylum coefficient positive and significant and the trade coefficient negative and imprecise (Table S21).

Salience without severity

An awareness channel and a salience channel make different predictions about which attitudes should move. If exposure operated by teaching citizens that climate change is real and dangerous, that is, by raising awareness rather than salience, it should also raise how seriously they rate the problem and how highly they rank it among the challenges facing the world. The estimates in Table 2 suggest that it does neither. Column 1, which records whether respondents place climate change among the most serious problems facing the world as a whole, returns a precisely estimated null, while column 2, which records how serious a problem they judge it to be in its own right, returns a small and imprecisely estimated negative coefficient. What appears to move instead is the salience of migration itself, reported in columns 3 and 4, which is the very consideration through which climate is brought to mind, alongside the rise in the political priority of climate documented in the previous section. The guiding intuition is that agenda priority and belief in severity are separable objects: exposure changes what citizens bring to mind when they are asked what matters, and how urgent it feels as a political question, without changing what they hold to be true about the underlying problem. This divergence is what distinguishes a salience mechanism from an awareness one. Whether the shift it reflects is better described as climate concern, or as something closer to self-interest, is a question that the subgroup patterns examined below are designed to test.

Who responds: the mirror image of the direct-weather-experience channel

The identity of the respondents who respond to greater inflows is informative, because it disentangles between climate salience and the readings that would explain the result away. The reception model carries a prediction about who should respond: a newly accessible and negatively charged consideration tends to shift most those who have the fewest competing considerations already in mind, that is, the less politically informed, and those for whom migration registers as a threatening signal, that is, citizens on the political right. The estimates in Figure 2 are consistent with this prediction: the effect is statistically distinguishable from zero among respondents who place themselves on the right and among those without tertiary education, precisely the groups that the direct experience of local weather tends to leave

untouched.[2] This pattern is the mirror image of the one documented in the literature on the direct experience of extreme weather, where the attitudinal response tends to concentrate among citizens who are already progressive and highly educated[10,14,22].

Taken together with the results of the previous section, this result helps to rule out three alternative interpretations. The first is that exposure works through awareness after all, a reading that is difficult to sustain, because a learning channel would be expected to raise belief in the severity of climate change, which the estimates do not, and because the direct experience that does appear to raise concern moves the left and the educated rather than the right and the less educated[12]. A second interpretation is that what I detect is anti-immigrant sentiment relabelled as climate concern, which also seems unlikely, since hostility towards migrants would be expected to raise anti-immigration attitudes and the vote share of nationalist parties (see *Electoral outcomes* below). A third interpretation is that the response reflects personal economic self-interest or strategic voting, a reading that is hard to reconcile with the finding that even respondents just below their country's voting-age threshold, who have no current labour-market or fiscal stake in migration, appear to respond in a comparable way on the campaign-theme measure, while the above-voting-age response is concentrated in the deliberation-priority measure, a contrast consistent with a wedge between expressed priorities and electoral behaviour (Figure S15).

Exposure during formative age

The reception model also has an implication for timing: a consideration made salient while political identities are still forming may become chronically accessible, remaining near the top of the mind long after the initial exposure has passed, in line with the "impressionable years" hypothesis, according to which the priorities that citizens acquire between roughly 16 and 24 years of age tend to change only slowly thereafter[42]. Leveraging variation in formative exposure across countries and birth cohorts, net of country, survey-year, birth-cohort and age effects together with country-specific age trends, I find a pattern that is consistent with such a mechanism (Table 3). A 50% increase in formative exposure appears to raise the probability that a respondent names climate change as a campaign theme by around 15% of its mean, and the probability that they name it as a political priority by around 19%. Exposure experienced in other age windows tends to be smaller in magnitude and more imprecisely estimated (Table S25), and the result is robust to alternative definitions of the impressionable years (Table S26). Taken together, these findings are consistent with a window specific to the period in which values and priorities form, rather than with a generic age or cohort trend.

Electoral outcomes

A natural question is whether the rise in expressed priority of climate change translates into political choices, and so I turn to voting behaviour. To examine this question in a setting where incentive distortions are muted, I study voting in European Parliament elections, where proportional representation reduces the incentive to vote strategically and voters tend to exhibit lower levels of strategic or utilitarian calculation, being more inclined to 'vote with the heart'[43].

[2] Among left-leaning and tertiary-educated respondents the estimates are smaller or too imprecise to sign, although the subgroup point estimates and confidence intervals across subgroups partly overlap.

Even in this setting, I find that weather-driven applications do not raise the vote share of green parties, and that the point estimate is, if anything, negative (Table S27). Four mutually consistent facts help to account for this gap between attitudes and votes.

First, voters may not distinguish between migrants driven by weather and those driven by other economic causes, so that any electoral shift could in principle favour nationalist and anti-immigrant parties rather than pro-environment ones. The estimates suggest that this is not what happens, in that nationalist vote shares do not rise and are, if anything, negatively affected at the 5% level (Table S28), which indicates that the salience citizens express is not anti-immigrant sentiment cast at the ballot box. Second, the vote share of green parties could decline because turnout falls among their traditional supporters, and consistent with this I document a negative relationship between weather-driven asylum applications and voter turnout (Table S29), which suggests that part of the negative effect on green votes may reflect electoral exit rather than a change of preference. Third, the citizens who hold the priority most strongly appear to be the least likely to act on it at the polls, since the young tend to favour green parties[44] but to vote at low rates in European elections[45]. In line with this reading, respondents just below voting age report climate as an important theme in the European Parliament campaign (Figure S15). Re-estimating the baseline specifications with asylum applications received over the previous electoral mandate, so as to capture any delayed electoral response to earlier inflows, yields a positive although imprecisely estimated effect of lagged applications on green party votes, consistent with the possibility that cohorts previously too young to vote may later express their climate concern at the ballot box (Table S30). Fourth, I turn to the supply side of the environmental political process, exploiting within-party variation in environmental platforms across national elections (see *Supplementary Information* for additional details). Weather-driven asylum applications do not appear to shift parties towards a greener agenda (Table S31), a null that extends to an election-level environmentalism index and to other dimensions of the political agenda (Tables S32 and S33). Taken together, these findings suggest that the gap between rising climate priority and unchanged pro-environment voting could be explained by low turnout among young voters and a muted supply-side response from political parties, echoing evidence that public priorities and the supply of sustainability policy can move apart[46].

Discussion

A large literature has sought to explain why citizens come to regard climate change as a pressing concern, emphasising socio-political predispositions and the personal experience of local weather anomalies. In this paper, I explore a different channel, whereby exposure to the socio-economic consequences of climate change, rather than to its physical realisations, influences how citizens weigh the issue politically, and does so especially among the citizens the direct-experience channel leaves untouched. Examining the arrival in the European Union between 2000 and 2019 of asylum seekers from countries experiencing extreme temperatures and precipitation, I find that exposure raises the political salience of climate change without raising belief in its severity, that it does so most among right-leaning and less-educated citizens, and that it does not translate into support for green parties. My underlying theory is consistent with each element of this pattern: the visible arrival of migrants from origins under climatic stress appears to supply citizens with an accessible association between climate

change and a consequence they already weigh heavily, and for citizens who regard migration as a social cost or a threat[47], this association may raise the standing they accord to climate change on the political agenda without requiring any revision of their underlying beliefs about how serious a problem it is. Within this salience channel, several components are likely to operate together: the accessibility of the climate–migration association, the negative charge that migration carries for citizens who regard it as threatening, and the possible displacement of competing considerations. The patterns documented here separate a salience channel from an awareness one and are difficult to reconcile with a purely material reading of the survey response, but it is beyond the scope of this paper to weigh the relative importance of these components, and I leave their decomposition to future work.

A natural question is whether the asylum seekers whose arrival I study are themselves climate migrants, and whether the citizens who respond to them perceive them as such. The mechanism I propose requires neither. Environmental stress is understood to be one of several interacting drivers of human migration, and is seldom its sole or primary reported motive[39–41]; sweeping narratives of a distinct category of "climate refugees" have accordingly been treated with caution in the literature[48–50]. What the mechanism requires is not that these flows be caused by climate change, but that the association between climate change and migration be available in the public information environment, and so cognitively accessible when citizens are asked what matters. A channel operating instead through the accurate attribution of migration to climatic causes would, if anything, be expected to raise perceptions of climate severity, which I do not observe.

Several limitations qualify my findings. Although the results survive an extensive battery of robustness checks, the possibility of spurious correlation cannot be entirely excluded. Two more specific concerns deserve attention. The first is that origin weather shocks may reach opinion in European destinations through channels other than asylum applications. The most immediate alternative is economic migration, which moves along many of the same bilateral corridors, shaped by distance, shared language, colonial history and contiguity, that carry asylum seekers; origin hardship may also travel through settled diaspora communities, remittance links, trade and media coverage of distant suffering. The evidence suggests that these channels are unlikely to drive the result. Weather-driven anomalies in asylum applications are associated with higher acceptance rates (Table S4, see *Supplementary Information*), which indicates that the flows the instrument isolates are largely non-economic in nature, and the estimated effect is little changed when I control directly for exposure to bilateral trade with origin countries and for online attention. The absence of annual bilateral data on economic migration prevents a direct test of that channel; if weather-driven economic migration nonetheless moves climate salience in the same way as asylum flows, however, its presence would reinforce rather than overturn the substantive conclusion, broadening the margin of migration to which it applies. Since the remaining channels cannot all be excluded, I interpret the estimand throughout as exposure to climatic hardship in migration-connected origin countries, transmitted primarily through asylum flows. The second concerns external validity: the estimate is a local average treatment effect for the weather-driven margin of migration, that is, for the component of inflows that origin weather shocks move along established bilateral corridors, and it need not generalise to migration as a whole.

These findings open several avenues for future work. This paper offers, to my knowledge, the first cross-national evidence on how exposure to climate-induced migration shapes the political salience of climate change. Country-specific analyses, within the European Union and in other

major migrant-receiving settings such as the United States, together with attention to the characteristics of host and migrant populations, would help to isolate the institutional, cultural and media environments that mediate how publics respond. More broadly, different subgroups appear to respond to different socio-economic consequences of climate change, right-leaning and less-educated citizens to the salience of migration, older citizens perhaps to proximate health risks such as the well-documented mortality effects of extreme heat[51], and this mapping matters for the design of climate communication and policy, particularly in light of evidence that some forms of climate information and policy design are ineffective or even counterproductive[52,53]. The pattern documented here also bears on how climate impacts translate into political change: exposure raises the standing of climate change on the political agenda without raising belief in its severity, and that shift is not accompanied by changes in green party support or in party platforms, which suggests that agenda salience and electoral expression are separable objects. The human consequences of climate change can raise its political priority, and can do so precisely among the citizens whom conventional climate communication has struggled to reach.

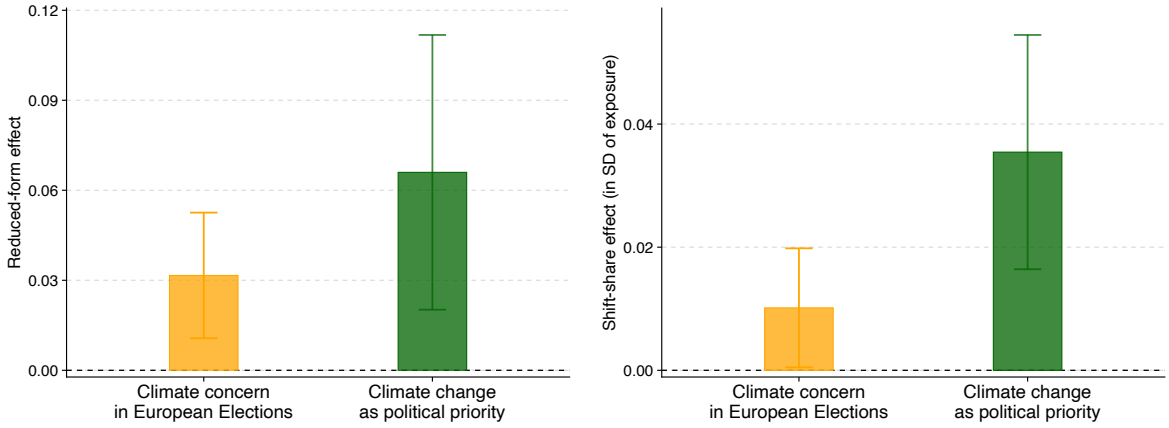
Table 1. Weather-induced asylum applications and the political priority of climate change. OLS and 2SLS estimates.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	-0.00147	0.0226**	0.00746	0.0444**
	(0.00384)	(0.0106)	(0.00651)	(0.0213)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
Mean outcome	0.068	0.068	0.106	0.106
F-Statistic		14.434		21.448
Weak-IV & cluster-robust 95% CI		[0.0119, 0.0432]		[0.004, 0.075]
Observations	106,614	106,614	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns (1) and (2) is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns (3) and (4) is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating. Asylum Applications is the sum of the asylum applications in a given country in the survey year and the five preceding years. Columns (2) and (4) report the 2SLS estimates using the predicted asylum applications constructed from the gravity-predicted weather-induced asylum applications as described in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. F-Statistic refers to the Kleibergen–Paap F-statistic, which corresponds to the effective F-statistic Olea-Pflueger. The weak-IV and cluster-robust 95% confidence interval is obtained by inverting the Anderson–Rubin test with critical values from a wild cluster bootstrap (Rademacher weights resampled at the country level), and is therefore robust both to weak instruments and to the small number of clusters. Robust standard errors, clustered at the country level, in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure 1. Reduced-form evidence on weather-driven asylum application exposure and climate priority

(a) Predicted weather-driven asylum applications (b) Shift-share exposure to origin weather shocks



Notes: The figure reports reduced-form estimates of the effect of exposure to weather-driven asylum migration on two indicators of climate change as a political priority (an important theme of the European Parliament electoral campaign, and a priority for European Parliament deliberation. Exact question wording in Table S1) under two alternative constructions of the exposure. Panel (a) regresses each attitude directly on the gravity-predicted, weather-driven component of asylum applications that instruments observed applications in the main analysis. Panel (b) uses a shift-share (Bartik) measure that dispenses with the gravity model: the exposure of destination d in year t is $Z_{dt} = \sum_o s_{od}\, g_{ot}$, where the shares s_{od} are destination d's bilateral asylum-application shares across non-OECD origin countries o, computed over the baseline period 2000–2004 and normalised to sum to one within each destination, and the shifter g_{ot} measures harmful weather in origin o, defined as the population-weighted number of growing-season days above the 90th and below the 10th percentile of the origin's own temperature distribution (hot and cold extremes) cumulated over the current and five preceding years to match the window of the endogenous variable. The exposure index in panel (b) is standardised, so its coefficient is the effect of a one-standard-deviation increase in exposure; the coefficient in panel (a) refers to the (log) predicted component. Both panels include the individual and local-weather controls and the fixed effects of the baseline specification. Bars are point estimates and whiskers are 95% confidence intervals from standard errors clustered by destination country.

Table 2. Effect of weather-induced asylum applications on other survey outcomes. 2SLS estimates.

Outcome variable	Climate change world problem	Seriousness climate change	Migration in European Elections	Migration as political priority
	(1)	(2)	(3)	(4)
log(Asylum Applications)	0.00108	-0.116	0.0318**	0.0383**
	(0.00666)	(0.079)	(0.0181)	(0.0162)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
Mean outcome	0.37	7.57	0.073	0.085
F-Statistic	20.995	21.172	11.672	21.434
Weak-IV & cluster-robust 95% CI	[-0.028, 0.030]	[-0.519, 0.027]	[0.013, 0.068]	[0.003, 0.078]
Observations	116,879	116,110	100,707	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. All columns report the 2SLS estimates where the (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications as described in the Methods section. Column 1 is a dummy for naming climate change among the most serious problems facing the world as a whole; column 2 is the perceived seriousness of climate change on a 1–10 scale; columns 3 and 4 are dummies defined as in Table 1 but for migration. Exact question wording in Table S1. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic, which takes the same value as the Olea and Pflueger F-Statistic. The weak-IV and cluster-robust 95% confidence interval is obtained by inverting the Anderson–Rubin test with critical values from a wild cluster bootstrap (Rademacher weights resampled at the country level), and is therefore robust both to weak instruments and to the small number of clusters. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

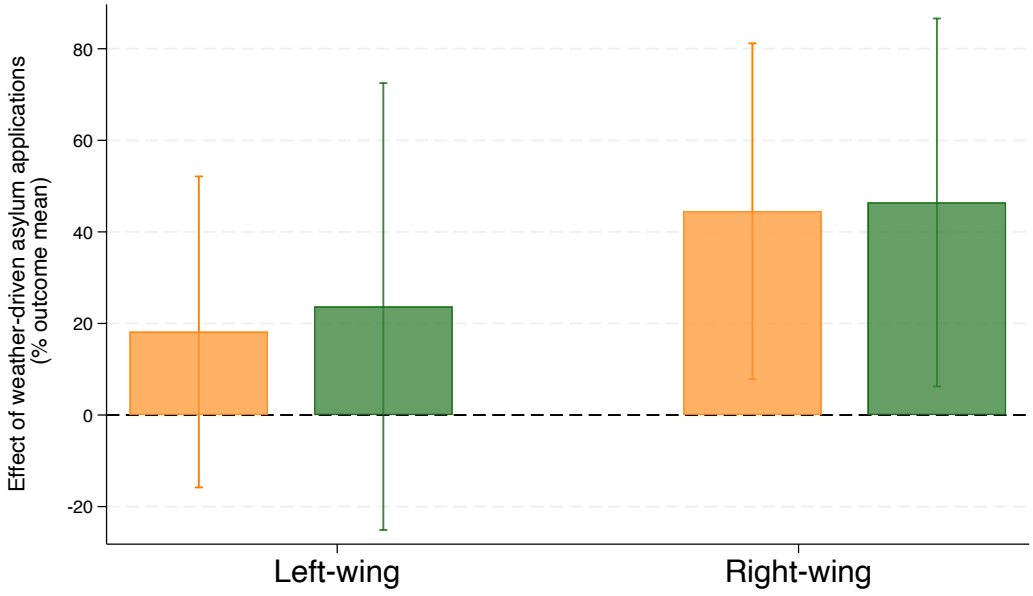
Table 3. Formative age exposure to weather-induced asylum seeker flows and political priority of climate change

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log(Exposure to asylum applications during age 16-24)	0.00203	0.0235**	0.0165**	0.0390**
	(0.00455)	(0.00959)	(0.00775)	(0.0180)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Birth-cohort FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
Mean outcome	0.079	0.079	0.099	0.099
F-Statistic		26.023		46.351
Weak-IV & cluster-robust 95% CI		[0.001, 0.050]		[0.003, 0.073]
Observations	17,554	17,554	21,661	21,661

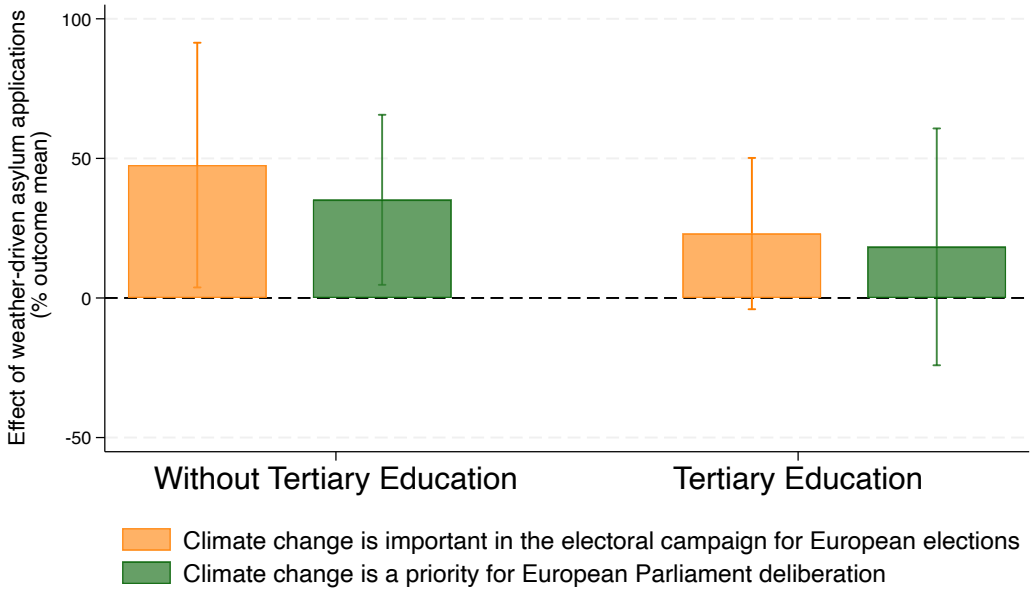
Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed and whose formative age (between 16 and 24 years) occurs in the time period in which asylum applications data are available (i.e., after 2000). Columns (1) and (3) report the OLS estimates using the (log) of the sum of asylum applications while the individual was between 16 and 24 years old. Columns (2) and (4) report the 2SLS estimates where the (log) of exposure to asylum applications is instrumented with gravity-predicted asylum application flows as described in the Methods section. Table S25 reports the estimates for all the other age windows. Robust standard errors, clustered at the country level, in parentheses. *Individual controls*: gender, education level, employment status, political orientation. *Local weather controls*: exposure to average temperature and precipitation. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea and Pflueger F-Statistic. The weak-IV and cluster-robust 95% confidence interval is obtained by inverting the Anderson–Rubin test with critical values from a wild cluster bootstrap (Rademacher weights resampled at the country level), and is therefore robust both to weak instruments and to the small number of clusters. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure 2. Heterogeneous effects of weather-driven asylum applications on political priority of climate change

(a) Heterogeneity by political orientation



(b) Heterogeneity by education attainment



Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The bars represent the 2SLS estimates (normalized by the outcome mean) where the (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications as described in the Methods section. All estimates control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Vertical lines represent the 95% confidence intervals with standard errors clustered at the country level.

Methods

Asylum application data

Bilateral data on asylum applications from non-OECD countries to European Union member countries (EU27+UK) are sourced from the United Nations High Commissioner for Refugees for the period 2000-2019.

Weather data

I gather temperature and precipitation data from two different sources. The primary source is reanalysis ERA-5 data by the European Centre for Medium-Range Weather Forecasts[54], available at the daily level on a 0.25° grid resolution (≈ 28km at the Equator) from 1950 to the present. For robustness, I also use the gridded Climatic Research Unit of the University of East Anglia (CRU) data at a 0.5° spatial resolution (≈ 55km at the Equator) and a monthly resolution. To maintain weather variability, I compute nonlinear transformations at the grid level before averaging values across space using grid-level weights, and account for fractional grid cells that partially fall within a country[55]. Since a large share of the population in origin countries works in agriculture, I aggregate weather over space using agricultural land devoted to maize[56], a staple commodity accounting for the largest share of humans' caloric intake[6], and over the year using country-specific growing season[57].[3] For robustness, I also consider an unweighted average of weather across grid cells in the whole year, and a weighted average by population density using Gridded Population of the World data set.

Individual survey data

I use the Eurobarometer surveys that include questions on perceptions, awareness, and attitudes towards climate change and typically cover 25,000-30,000 respondents across all European Union member states. The Eurobarometer is a repeated cross-sectional programme conducted on behalf of the European Commission since 1974 to monitor public opinion across the member states[32]. Each standard wave interviews about 1,000 residents aged 15 and over per country face to face, drawn by multistage random (probability) sampling stratified by region and locality size, yielding samples designed to be representative of each country's resident population aged 15 and over; European Union aggregates apply population weights. Anonymised microdata and questionnaires are archived and freely available through GESIS – Leibniz Institute for the Social Sciences and the European Commission's public-opinion portal.

My two primary binary outcomes indicate whether respondents consider climate change i) important in the electoral campaign for the European Parliament elections, ii) a priority for European Parliament deliberations. The surveys also contain additional questions on attitudes towards climate change and public concern towards other salient topics, including migration, which I use in supplementary analyses to explore potential mechanisms. Table S1 reports the exact question wording, temporal coverage, and summary statistics for the outcome variables.

[3]For daily weather data, I compute measures from the median planting to the median harvest date. For monthly data, the growing season spans from the first day of the planting month to the last day of the harvest month. For crops with multiple growing cycles per year, I focus on the first season.

Electoral outcomes

I use data on European Parliament election results, covering six election rounds between 1994 and 2019 at the NUTS-2 level[58]. Parties are classified as Green based on their party family designation in the Manifesto Project electoral program database[59] and their membership in the European Green Party, a federation of parties advocating green politics across Europe and forming the G-EFA parliamentary group. Table S2 reports the timing of European Parliament elections for each country and the number of years of national elections in the data.

Party political agenda

I retrieve information for 622 European political parties contesting elections between 2000 and 2019 from the Manifesto Project Database[59], which provides content-coded analyses of party platforms and vote shares. The dataset classifies 56 policy positions across economic, social, foreign policy, and environmental domains (Table S3 reports the wording for each topic). I measure party environmental agenda as the share of quasi-sentences that positively refers to environmental protection, fighting climate change and other green policies, including preservation of natural resources, protection of countryside and forests, safeguarding national parks, and animal rights.

Additional covariates

I retrieve variables on geographic time-invariant bilateral characteristics that are included in the estimation of the gravity equation. The geographic controls come from the BACI dataset and provided by CEPII[60]. In particular, I include variables on whether countries have a common border, a common official language, a common colonial history and a variable measuring the natural logarithm of bilateral (geodesic) distance between capitals[61].

In the country-level specification, I include time-varying country-level covariates to account for potential confounders of the determinants of voting behavior that are also correlated with changes in asylum seeker inflows. I retrieve GDP and population data from the Penn World Table, version 10.0. In particular, I use Output-side real GDP at chained PPPs (in millions 2017 US$) and population in the country in millions. I also obtain yearly unemployment rate data from the World Bank indicator on total unemployment (as a percentage of total labor force based on International Labor Organization estimates), tertiary-level educational attainment (in the percentage of the total population) from Eurostat and the percentage of population between 18 and 23 years old from the United Nations Department of Economics and Social Affairs.

Google Trends Data

Google Trends data consist of the volume of daily searches by word, or list of words, in a given country, over time in all languages. I leverage these data to measure public attention to migration, refugees, and climate change. I collect the volume of searches for several keywords to construct a measure of relative attention to the following topics (keywords in parentheses) "climate change" (climate change, drought*, flood*, heat wave*, global warming, storm*), "climate protests" (climate protest*, climate strike*, Fridays for future), "migration" (migration,

migrants) and "refugee" (refugee*, asylum seeker*). Search trends are computed based on a random sample of the total searches on Google, and this might produce measurement error issues. To diminish such concerns, I draw the time series three times and take an average. I construct four indices as an unweighted average of the searches of each keyword.

Individual-level regressions

I test whether asylum applications increase concern about climate change as a political priority in the host country with individual-level regressions of the form:

$$Y_{ibdrt} = \beta_1 \log\left(\sum_{\tau=s}^{S} \text{Asylum Applications}_{d,t-\tau}\right) + X_i'\boldsymbol{\gamma} + Z_{dt}'\boldsymbol{\delta} + \mu_d + \kappa_{t-b} + \zeta_{rt} + \theta_d \times age + \varepsilon_{ibdrt} \tag{1}$$

where Y_{ibdrt} is a vector of survey responses of individual i born in year b in country d in region r interviewed in year t. The main explanatory variable is the sum of asylum applications from non-OECD countries in host country d over the survey year and the five preceding years ($s = 0$ and $S= 5$), capturing diffusion dynamics and typical electoral cycles (in robustness checks, I use alternative intervals). Due to right skewness, I use logged values, interpreting coefficients as semi-elasticities. Controls include individual covariates X_i' (gender, education, political orientation, and employment status), and a second-order polynomial of historical and current local temperature and precipitation Z_{dt}' to isolate migration effects from local weather influences on the political priority of climate change.

I also include destination fixed effects, μ_d, to partial out country-specific factors (e.g., political, cultural) that could drive unobserved heterogeneity in climate attitudes, age-specific fixed effects, κ_{t-b}, to partial out unobserved age-specific determinants of preferences and attitudes (e.g., preferences specific to life-cycle), and region-year fixed effects, ζ_{rt}, that absorb international shocks but also region-specific events (both climatic and economic). Country-specific linear age trends $\theta_d \times age$ account for country-specific cohort effects. Standard errors are clustered at the country level. Because the number of clusters is small (28 countries), conventional cluster-robust standard errors can overstate precision; I therefore also base inference on a wild cluster bootstrap that resamples Rademacher weights at the country level[62], and for the instrumented specifications I report weak-instrument- and few-cluster-robust confidence intervals obtained by inverting the Anderson–Rubin test with wild-bootstrap critical values.

Instrument for asylum applications

A naive ordinary least squares (OLS) regression of the political priority of climate change on asylum seeker inflows may be biased for several reasons. Observed inflows reflect a combination of climate-related and non-climate-related migration pressures, and host-country factors that shift attitudes, such as socio-political and economic conditions or the salience of extreme weather, can also influence migration inflows. In addition, measurement error arising from the fact that only a subset of asylum seekers are displaced by climate shocks mechanically attenuates any estimated relationship. The ideal thought experiment would compare host-country climate concern in several otherwise identical countries except for the component of

asylum seeker inflows driven solely by unexpected weather shocks in origin countries. To emulate this comparison, I estimate a gravity model that leverages plausibly random year-to-year changes in temperatures and precipitation in origin countries, combined with bilateral measures of migration costs, after accounting for origin, destination-year, region-of-origin-year unobserved factors[63]. The bilateral gravity equation is written as:

$$\log\left(\text{Asylum Applications}_{odt}\right) = f(\boldsymbol{W_{ot}}; \boldsymbol{X_{od}}; \alpha) + \theta_o + \psi_{dt} + \chi_{r(o)t} + u_{odt} \tag{2}$$

where the dependent variable is the natural logarithm of the asylum applications from origin o to destination d in year t. To obtain bilateral time-varying variation, I include interaction terms between origin weather $\boldsymbol{W_{ot}}$ and bilateral characteristics that measure migration costs, $\boldsymbol{X_{od}}$, including common border, common official language, common colonial history, and distance between the two capital cities.

The baseline specification uses contemporaneous weather, modeling daily average temperatures over the maize growing season with a fourth-order polynomial to capture nonlinearities. Precipitation is modeled similarly using a second-order polynomial. The model includes fixed effects for origin, θ_o, destination-year, ψ_{dt}, and region-of-origin-year, $\chi_{r(o)t}$, with the latter purging out spatial correlation from weather and time-varying heterogeneity in migration preferences at origin. Destination-year fixed effects absorb all time-varying destination factors, including local temperatures. Robustness checks consider alternative functional forms (lower-order polynomials, binned temperatures) and weather lags. Standard errors are clustered by origin-year.

I use the estimated parameters $\widehat{\alpha}$'s to construct an instrument for asylum applications at the destination-year level. Let $\boldsymbol{X_{odt}}$ be the matrix of temperature and precipitation, both uninteracted and interacted with bilateral characteristics. The predicted weather-induced asylum seeker inflows for country d in year t are $\widehat{\text{Asylum Applications}}_{dt} = \sum_o \exp\left(\widehat{\alpha} X_{odt}\right)$. For robustness, I also construct alternative instruments: a gravity model excluding destination-year fixed effect, but including destination-specific weather as a measure of pull factor, and using destination-specific response functions to origin-country weather shocks (see *Supplementary Information).* Because this predicted quantity enters only as an instrument, the multiplicative log-normal retransformation factor $\exp\left(\widehat{\sigma_u^2}/2\right)$ is absorbed by the first-stage coefficient and does not affect the 2SLS estimates; I apply the correction explicitly where the level of predicted flows is itself of interest[64].

For my approach to be valid, the instrument must be relevant and exogenous, and three further conditions must hold: weather-driven inflows should not affect climate concern via any other channel than migration (exclusion restriction); they should not alter outflows from other origin countries or concern in other destinations (stable unit treatment value assumption); and they should shift treatment probabilities in a common direction across units (monotonicity). I discuss each of these in the *Supplementary Information.*

Birth cohort-country level regressions

For individuals born in year b in country d, I define exposure as:

$$exposure_{bd} = \sum_{s=0}^{8} (\text{Asylum Applications})_{d,b+16+s}$$

This measure allows me to construct exposure for all cohorts between 2000 and 2019, as respondents in the same country and survey year can differ in birth cohort. Using this exposure measure, I estimate:

$$Y_{ibdrt} = \beta_1 \log(exposure_{bd}) + X_i'\boldsymbol{\gamma} + Z_{bdt}'\boldsymbol{\delta} + \mu_d + \zeta_{r(d)t} + \kappa_{t-b} + \xi_b + \theta_d \times age + \varepsilon_{ibdrt} \quad (3)$$

where Y_{ibdrt} is the same vector of survey outcomes, $exposure_{bd}$ in logs allows for concavity in the response. I also control for a set of individual covariates, X_i', and for birth-cohort specific exposure to local weather conditions Z_{bdt}'. I include a wide set of fixed effects (country, region-by-year, age, birth-cohort), and country-age linear trends, so that β_1 is estimated from changes across birth cohorts within a country, as compared to changes across the same age groups in other countries within the same region, in a given year of interview.

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Data and materials availability: All data and code will be made available to replicate the figures and tables in the main text and in the supplementary materials.

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References

[1] Dechezleprêtre, A. *et al.* Fighting climate change: International attitudes toward climate policies. *American Economic Review* **115**, 1258–1300 (2025).

[2] Woerner, A., Imai, T., Pace, D. D. & Schmidt, K. M. How to increase public support for carbon pricing with revenue recycling. *Nature Sustainability* **7**, 1633–1641 (2024).

[3] Benveniste, H., Huybers, P. & Proctor, J. Global climate migration is a story of who and not just how many. *Nature Communications* **16**, 7752 (2025).

[4] Carleton, T. A. & Hsiang, S. M. Social and economic impacts of climate. *Science* **353** (2016).

[5] Hoffmann, R., Abel, G., Malpede, M., Muttarak, R. & Percoco, M. Drought and aridity influence internal migration worldwide. *Nature Climate Change* 1–9 (2024).

[6] Missirian, A. & Schlenker, W. Asylum applications respond to temperature fluctuations. *Science* **358**, 1610–1614 (2017).

[7] Bez, C., Bosetti, V., Colantone, I. & Zanardi, M. Exposure to international trade lowers green voting and worsens environmental attitudes. *Nature Climate Change* **13**, 1131–1135 (2023).

[8] Carlsson, F. *et al.* The climate decade: Changing attitudes on three continents. *Journal of Environmental Economics and Management* **107**, 102426 (2021).

[9] Czarnek, G., Kossowska, M. & Szwed, P. Right-wing ideology reduces the effects of education on climate change beliefs in more developed countries. *Nature Climate Change* **11**, 9–13 (2021).

[10] Duijndam, S. & van Beukering, P. Understanding public concern about climate change in Europe, 2008–2017: The influence of economic factors and right-wing populism. *Climate Policy* **21**, 353–367 (2021).

[11] Hornsey, M. J., Harris, E. A., Bain, P. G. & Fielding, K. S. Meta-analyses of the determinants and outcomes of belief in climate change. *Nature Climate Change* **6**, 622–626 (2016).

[12] Hoffmann, R., Muttarak, R., Peisker, J. & Stanig, P. Climate change experiences raise environmental concerns and promote green voting. *Nature Climate Change* **12**, 148–155 (2022).

[13] Arias, S. B. & Blair, C. W. In the eye of the storm: Hurricanes, climate migration, and climate attitudes. *American Political Science Review* **118**, 1593–1613 (2024).

[14] Lee, T. M., Markowitz, E. M., Howe, P. D., Ko, C.-Y. & Leiserowitz, A. A. Predictors of public climate change awareness and risk perception around the world. *Nature Climate Change* **5**, 1014–1020 (2015).

[15] Bergquist, P. & Warshaw, C. Does global warming increase public concern about climate change? *The Journal of Politics* **81**, 686–691 (2019).

[16] Deryugina, T. How do people update? The effects of local weather fluctuations on beliefs about global warming. *Climatic Change* **118**, 397–416 (2013).

[17] Egan, P. J. & Mullin, M. Turning personal experience into political attitudes: The effect of local weather on Americans' perceptions about global warming. *The Journal of Politics* **74**, 796–809 (2012).

[18] Hilbig, H. & Riaz, S. Natural disasters and green party support. *The Journal of Politics* **86**, 241–256 (2024).

[19] Constantino, S. M., Cooperman, A. D., Keohane, R. O. & Weber, E. U. Personal hardship narrows the partisan gap in COVID-19 and climate change responses. *Proceedings of the National Academy of Sciences* **119**, e2120653119 (2022).

[20] Zaval, L., Keenan, E. A., Johnson, E. J. & Weber, E. U. How warm days increase belief in global warming. *Nature Climate Change* **4**, 143–147 (2014).

[21] Hazlett, C. & Mildenberger, M. Wildfire exposure increases pro-environment voting within democratic but not republican areas. *American Political Science Review* **114** (2020).

[22] Djourelova, M., Durante, R., Motte, E. & Patacchini, E. Experience, narratives, and climate change beliefs. *Working Paper* (2024).

[23] Moore, F. C., Obradovich, N., Lehner, F. & Baylis, P. Rapidly declining remarkability of temperature anomalies may obscure public perception of climate change. *Proceedings of the National Academy of Sciences* **116**, 4905–4910 (2019).

[24] Weber, E. U. Experience-based and description-based perceptions of long-term risk: Why global warming does not scare us (yet). *Climatic change* **77**, 103–120 (2006).

[25] Zaller, J. R. *The Nature and Origins of Mass Opinion* (Cambridge University Press, Cambridge, 1992).

[26] Zaller, J. & Feldman, S. A simple theory of the survey response: Answering questions versus revealing preferences. *American Journal of Political Science* **36**, 579–616 (1992).

[27] Helbling, M. Attitudes towards climate change migrants. *Climatic Change* (2020).

[28] European Commission. A European Union emergency trust fund for stability and addressing root causes of irregular migration and displaced persons in Africa (2015). Valletta Summit on Migration, 11–12 November 2015. Press release IP-15-6055.

[29] Bonini, E. Climate refugees: in 2024 the highest number ever recorded. One of the EU's key political issues resurfaces. Eunews (2026). URL https://www.eunews.it/en/2026/06/16/climate-refugees-in-2024-the-highest-number-ever-recorded-one-of-the-eus-key-political- Published 16 June 2026; accessed 24 June 2026.

[30] Butros, D., Brodén Gyberg, V. & Kaijser, A. Solidarity versus security: Exploring perspectives on climate induced migration in UN and EU policy. *Environmental Communication* **15**, 842–856 (2021).

[31] Sakellari, M. Climate change and migration in the UK news media: How the story is told. *International Communication Gazette* **83**, 63–80 (2021).

[32] European Commission. Standard and special Eurobarometer surveys (2019). Repeated cross-sectional public-opinion surveys conducted on behalf of the European Commission; microdata distributed by GESIS – Leibniz Institute for the Social Sciences.

[33] Cattaneo, C. *et al.* Broadening climate migration research across impacts, adaptation and mitigation. *Nature Climate Change* **16**, 255–260 (2026).

[34] Jones, M. G. 'Two extinction rebellions': Climate and migration fears to shape EU election, study says. Euronews (2024). Accessed 11 May 2026.

[35] Krastev, I. & Leonard, M. A crisis of one's own: The politics of trauma in Europe's election year. ECFR Policy Brief, European Council on Foreign Relations (2024).

[36] Imbens, G. W. & Angrist, J. D. Identification and estimation of local average treatment effects. *Econometrica* 467–475 (1994).

[37] Borusyak, K., Hull, P. & Jaravel, X. Quasi-experimental shift-share research designs. *The Review of Economic Studies* **89**, 181–213 (2022).

[38] UN. *Convention Relating to the Status of Refugees, 28 July 1951* (United Nations, Treaty Series, vol. 189, p. 137, 1951).

[39] Black, R. *et al.* The effect of environmental change on human migration. *Global Environmental Change* **21**, S3–S11 (2011).

[40] Koubi, V., Stoll, S. & Spilker, G. Perceptions of environmental change and migration decisions. *Climatic Change* **138**, 439–451 (2016).

[41] Warner, K. & Afifi, T. Where the rain falls: Evidence from 8 countries on how vulnerable households use migration to manage the risk of rainfall variability and food insecurity. *Climate and Development* **6**, 1–17 (2014).

[42] Krosnick, J. A. & Alwin, D. F. Aging and susceptibility to attitude change. *Journal of Personality and Social Psychology* **57**, 416 (1989).

[43] Hix, S. & Marsh, M. Punishment or protest? Understanding European Parliament elections. *The Journal of Politics* **69**, 495–510 (2007).

[44] Lichtin, F., Van Der Brug, W. & Rekker, R. Generational replacement and Green party support in Western Europe. *Electoral Studies* **83**, 102602 (2023).

[45] Bhatti, Y. & Hansen, K. M. The effect of generation and age on turnout to the European Parliament–How turnout will continue to decline in the future. *Electoral Studies* **31** (2012).

[46] Kaufmann, D., Wicki, M., Wittwer, S. & Stephan, J. Democratic discrepancies in urban sustainable development. *Nature Sustainability* **7**, 1409–1418 (2024).

[47] Baldwin, A. Racialisation and the figure of the climate-change migrant. *Environment and Planning A* **45**, 1474–1490 (2013).

[48] Selby, J., Dahi, O. S., Fröhlich, C. & Hulme, M. Climate change and the Syrian civil war revisited. *Political Geography* **60**, 232–244 (2017).

[49] Boas, I., Farbotko, C., Adams, H., Sterly, H. *et al.* Climate migration myths. *Nature Climate Change* **9**, 901–903 (2019).

[50] Piguet, E. Linking climate change, environmental degradation, and migration: A methodological overview. *WIREs Climate Change* **1**, 517–524 (2010).

[51] Carleton, T. *et al.* Valuing the global mortality consequences of climate change accounting for adaptation costs and benefits. *The Quarterly Journal of Economics* **137**, 2037–2105 (2022).

[52] Mildenberger, M. *et al.* Unintended consequences of using maps to communicate sea-level rise. *Nature Sustainability* **7**, 1018–1026 (2024).

[53] Schmelz, K. & Bowles, S. An empirically based dynamic approach to sustainable climate policy design. *Nature Sustainability* **9**, 212–221 (2026).

[54] Copernicus Climate Change Service, C. D. S. ERA5 hourly data on single levels from 1940 to present (2023).

[55] Hsiang, S. Climate econometrics. *Annual Review of Resource Economics* **8**, 43–75 (2016).

[56] Monfreda, C., Ramankutty, N. & Foley, J. A. Farming the planet: 2. Geographic distribution of crop areas, yields, physiological types, and net primary production in the year 2000. *Global Biogeochemical Cycles* **22** (2008).

[57] Sacks, W. J., Deryng, D., Foley, J. A. & Ramankutty, N. Crop planting dates: an analysis of global patterns. *Global Ecology and Biogeography* **19**, 607–620 (2010).

[58] Schraff, D., Vergioglou, I. & Demirci, B. B. EU-NED: The European NUTS-Level Election Dataset (2022). URL https://doi.org/10.7910/DVN/IQRYP5.

[59] Merz, N., Regel, S. & Lewandowski, J. The manifesto corpus: A new resource for research on political parties and quantitative text analysis. *Research & Politics* **3** (2016).

[60] Head, K. & Mayer, T. Gravity equations: Workhorse, toolkit, and cookbook. Chapter 3 in the Handbook of International Economics Vol. 4, eds. Gita Gopinath, Elhanan Helpman, and Kenneth S. Rogoff. *Elsevier Ltd., Oxford* **131**, 195 (2014).

[61] Bosetti, V., Cattaneo, C. & Peri, G. Should they stay or should they go? Climate migrants and local conflicts. *Journal of Economic Geography* 33 (2020).

[62] Cameron, A. C., Gelbach, J. B. & Miller, D. L. Bootstrap-based improvements for inference with clustered errors. *The Review of Economics and Statistics* **90**, 414–427 (2008).

[63] Beine, M., Bertoli, S. & Fernández-Huertas Moraga, J. A practitioners' guide to gravity models of international migration. *The World Economy* **39**, 496–512 (2016).

[64] Wooldridge, J. M. *Introductory econometrics a modern approach* (South-Western cengage learning, 2016).

Supplementary Materials for "Weather-driven asylum flows raise the political priority of climate change"

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Supplementary Text

Asylum application data

Around 13.4 million asylum applications were registered in the European Union between 2000 and 2019, of which more than 95% from non-OECD countries. Asylum seekers have already received substantial attention in academia[65,66] and in the policy debate[67,68]. Figure S3 shows the outflows by origin country, and Figure S4 displays the inflow distribution across the European Union.

The motivation to use asylum applications as a measure to derive migration induced by climate is three-fold. First, asylum-seeking can be linked to climate-related migration more directly than regular economic migration which is influenced by multiple push and pull factors. Weather-induced conflicts in developing countries spill over to developed countries through asylum flows[6], with increases associated with droughts[70] and conflicts[71]. Second, while refugee flows may also reflect climate-induced conflict, they are endogenous to host-country policies. Asylum procedures differ across countries and can take over two years from application to formal status[72], making asylum applications a preferable measure over refugee stocks. Finally, annual bilateral economic migration data from non-OECD countries are unavailable and only obtained through estimation[73].

The applications generally refer to the number of applicants or persons, rather than the number of applications or families. Only those persons who have officially filed a formal request for asylum are included. Other refugees who, for whatever reason, are either unwilling or unable to file an asylum request, and illegal immigrants are not included. The UNHCR data lists the year an application was filed, which allows for a clear temporal link on the intention to migrate, even if asylum is granted with a delay. The UNHCR also provides, at the same spatial and temporal resolution, the number of decisions. A decision corresponds to the closure of an application because the refugee status has been either granted ("recognized"), denied ("rejected"), denied but the applicant is given a complementary form of protection ("other decision"), or not determined before the application got closed for administrative reasons ("otherwise closed").

The asylum application process can substantially differ across European countries, however, there are certain common characteristics that they share which are described in what follows. Individuals fleeing their country have the right to ask for protection in a European country they have entered if they are afraid to return to the country of their current residence because their life or that of their family members is in danger. To register the request for asylum, individuals usually contact the national Police upon their arrival and, if needed, can ask to be hosted in a reception center, and have the right to be welcomed in a special center, have a temporary residence permit, and remain on the national territory waiting for their application to be examined. As long as their status as asylum seekers last, individuals cannot leave the national territory. Labor market integration of refugees differs across countries with lasting negative consequences of delayed entry into the destination country labor market due to employment

restrictions while waiting for asylum[74]. In Denmark since 2013, refugees can work before asylum adjudication[75]; in Italy, two months after the compilation of the application form at the Immigration Office of the Police, asylum seekers have the right to work regularly[72]. Other countries, such as Germany in 2017, grant asylum seekers access to training and employment program during the pre-asylum phase[74].

A natural concern is that the country in which an asylum application is lodged need not be the country of first entry. Within the Schengen area applicants can cross internal borders, so a person entering through a frontline state may move onward and file elsewhere; this decoupling was most visible during the 2015–16 crisis, when arrivals through Greece, Hungary and Italy travelled toward northern Europe. Throughout the study period, however, the allocation of responsibility across Member States was governed by the Dublin framework—the 1990 Dublin Convention and the subsequent Dublin II and Dublin III Regulations[76,77]—whose hierarchy of criteria assigns a claim, absent family ties, to the state of first irregular entry or, failing that, of first application. The European Union quantifies departures from this rule through the Eurostat "Dublin" statistics on take-charge and take-back requests and transfers between Member States[78]. These show that the decoupling is limited in the aggregate: such requests are a modest fraction of applications and only a small share of them result in an actual transfer[79], and the divergence is concentrated in space and time, being largest for frontline entry states and during the 2015–16 surge.

This measurement gap does not threaten the design, for three reasons. First, the mechanism operates through the locally visible presence of asylum seekers—their registration, accommodation in reception centres, and salience in destination media and politics—which materialises where a claim is lodged and processed rather than at a transit border, so the country of application is the relevant unit of exposure for the mechanism rather than a mismeasurement of it. Second, to the extent that onward movement still introduces error into the destination-year count, the design instruments observed applications with gravity-predicted, weather-driven flows; instrumental variables correct precisely the attenuation that classical measurement error induces, and secondary movements within Schengen—driven by destination labour markets, language and diaspora networks—have no reason to correlate with origin-country weather shocks, leaving the exclusion restriction intact. Third, if, as the concern suggests, onward movement causes recorded applications to understate a destination's true exposure and this understatement is unrelated to the instrument, it attenuates the estimated effect toward zero, so the reported coefficients are if anything conservative.

Extensive research shows agricultural productivity as the main pathway linking temperature and migration[5,6,80–84,86]. Elevated temperatures can also generate other migration-relevant disruptions, including heightened conflict and war, as well as adverse effects on health and fertility. However, under the 1951 Refugee Convention[38], only certain of these conditions constitute valid grounds for asylum. While it is beyond the scope of this paper to isolate the precise channels through which weather fluctuations drive asylum applications, in *Supplementary Text* "Weather-induced anomalies in asylum applications lead to higher acceptance rate"

and in Table S4. I present evidence consistent with the agricultural productivity channel: seasonal weather shocks leading to output conflicts over scarce resources[88–90] can trigger spikes in asylum applications and increase acceptance rates.

Electoral outcomes

I focus on European Parliament elections because their proportional representation rules reduce incentives for strategic voting, making outcomes a closer reflection of voters' revealed preferences than in national elections[91]. As "second-order elections"[92], they tend to feature lower levels of strategic or utilitarian voting, with voters more likely to "vote with the heart"[43]. This makes them a useful setting for capturing underlying political support for environmental parties. Although Green parties' electoral destinies vary, ranging from sustained success in countries such as Germany, Belgium, Finland, and France to limited relevance in parts of Central and Eastern Europe, they remain a consistent presence in European politics and share a strong focus on environmental, ecological, and climate-related issues[94].

Google trends data

Figure S14 plots the evolution of Google searches about the four indices by destination country. Each line represents the annual average of Google searches over time. Before averaging, the value is normalized, assigning 100 to the weekly maximum. Google searches strongly correlate with news articles[95]. Ideally, one would gather data from news articles to compare the two and include them in the estimating equation. This channel would be particularly relevant since newspapers' language and sentiment largely respond to readers' demands[96]. Given the wide cross-national scope of this analysis, it is difficult and beyond the aim of this paper to construct a comprehensive dataset of EU member states' newspaper coverage of climate and migration issues. This is left as a promising avenue for future research.

Identifying assumptions and instrument validity

The instrument exploits variation from deviations in temperature and precipitation in non-OECD origin countries combined with bilateral measures of migration costs. These weather shocks occur far from destination countries and cannot be influenced by public attitudes or policies in Europe, ensuring that the variation they generate is effectively independent of local social or demographic conditions. The instrument is thus free from reverse causality and is exogenous to any destination, and within countries, to any specific age cohort characteristics. Table S5 shows that the instrument is relevant, with a strong first-stage on survey. For validity, the instrument must also satisfy the exclusion restriction, the stable unit treatment value assumption, and monotonicity. I consider potential threats to these three assumptions.

Exclusion. The exclusion restriction would fail if the predicted weather-driven asylum flows correlate with climate attitudes through channels other than actual asylum applications. The

key assumption is that, conditional on destination and region-year fixed effects,[4] only asylum applications directly respond to the predicted weather-induced flows. This assumption is less restrictive than the traditional use of local weather as an instrument, which requires ruling out many alternate pathways[97,98]. Here, it suffices that asylum applications predicted by origin weather and bilateral migration costs affect climate concern solely through observed asylum applications. Below, I address five main concerns about this assumption.

First, climate attitudes may trend differentially with baseline origin-destination networks and migration enclaves, making some host countries more aware of weather in origin countries, and thus affect climate concern. I mitigate this by using gradual climatic variation and not natural disasters, such as droughts or floods, which may affect the attitudes through other channels than migration inflows, and by including time-varying destination-country fixed effects in the gravity equation, which absorb the effects of any shocks at destination, for instance, through colonization history, geographical accessibility, as well as the country's institutions. In robustness exercises, I also empirically test for this channel by expanding the baseline specification with exposure to weather shocks at the origin weighted by the country's baseline propensity to receive asylum seekers from a origin country in a shift-share fashion.

Second, origin weather shocks might increase climate change salience in host countries via news and media coverage of those events instead of their social effects through migration. Using weather variation in temperature and precipitation — which attracts less coverage in cross-border news that usually covers earthquakes, disasters, and wildfires[99] — allays concerns. Furthermore, while cross country media coverage is not available for the whole time period in my analysis, I show that Google searches about climate and migration have limited correlation with asylum applications and the instrument, and in additional robustness tests, controlling for these does not alter my results.

Third, spatial correlation of weather shocks could confound my analysis if individuals exposed to weather-induced asylum surges also experience correlated local weather shocks affecting climate concern. To address this, all specifications always include local temperature and precipitation controls and account for destination-region-by-year unobserved heterogeneity.

Fourth, since the instrument exploits variation from differential weather changes in origin countries combined with bilateral dyadic characteristics, one may wonder whether results are due not only to asylum applications, but also other components of bilateral interaction. One example is trade — in particular agricultural — which could be influenced by both weather and bilateral ties[100], and may confound results if correlated with asylum applications. Three considerations mitigate this concern. First, international trade is negatively associated with environmental attitudes[7], hence, omitting trade would bias against a positive migration effect. Second, refugees have negligible correlation with trade compared to other migrants[102]. Third, global production networks are relatively rigid, and agricultural international supply-chain

[4]Regions are defined following the UN M49 nomenclature: Eastern Europe (Bulgaria, Hungary, Poland, Romania, Slovakia); Northern Europe (Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Sweden, United Kingdom); Southern Europe (Croatia, Greece, Italy, Malta, Portugal, Slovenia, Spain); Western Asia (Cyprus); Western Europe (Austria, Belgium, France, Germany, Luxembourg, Netherlands).

linkages do not adjust to annual temperature shocks[103]. To further allay any remaining concerns, I also document that trade flows between non-OECD and EU27+UK countries do not respond to agricultural-season temperatures (Figure S6), and are uncorrelated with predicted and observed asylum applications (Table S11). Finally, I confirm robustness by augmenting my baseline specification with weather-induced trade flows estimated via a gravity equation.

Fifth, although application motives are unobserved, climate and weather-related reasons are not, per se, grounds for refugee status under the 1951 Convention[38]. Climate change may nonetheless indirectly generate valid claims by contributing to disputes, armed conflict, or violence. For this reason, institutional bodies avoid the term "climate refugee", preferring "persons displaced in the context of disasters and climate change"[104]. I show that weather-induced spikes in asylum applications are associated with higher acceptance rates, suggesting these surges are not driven by economic reasons, but are recognized as legitimate refugee claims by host countries.

Stable Unit Treatment Value Assumption. Identification also requires that the weather-driven component of asylum applications does not affect asylum flows from other origin countries nor climate concern in other destination countries. This assumption applies to the instrument, i.e., the predicted weather-induced portion of asylum applications differentially driven by bilateral migration costs, not to actual weather itself, which may be spatially correlated or jointly salient. While spillovers across destinations are plausible (e.g., the 2015 refugee crisis influencing political discourse and public concern beyond directly affected countries), destination-region-by-year fixed effects, absorb Europe-wide shocks, including anomalies in migrant inflows, but also flexibly account for differential spatial trends, including regional media coverage or targeted regional coordinated European Union responses. To further allay concerns, I conduct a randomization inference test[105] by shuffling migration flows 500 times across countries and years, finding no spurious associations with climate concern, with estimates centered at zero (Figure S18).

Monotonicity. Finally, the instrumental variable strategy requires that the instrument does not induce increases in asylum applications for some origin–destination pairs while causing decreases for others in the same treatment dimension. This condition applies to the instrument, not raw origin weather shocks. In other words, this assumption does not require that weather shocks always raise migration, but rather that the weather-induced component of asylum applications shifts the probability of treatment (i.e., asylum application flows) in the same direction across units. This is plausible because the instrument draws on variation in weather interacted with stable bilateral characteristics capturing migration frictions. For this reason, any non-monotonic effect of weather on migration allowed by high-order polynomials in the gravity equation does not violate the monotonicity of the instrument itself. The gravity equation captures potential declines in asylum applications over the temperature distribution, but the instrumental variable approach remains valid so long as the instrument moves migration in the same direction over the distribution of the instrument's variation.

Finally, in *Supplementary Text*, I also assess the robustness of the instrumental variable esti-

mates conducting sensitivity analyses[106]. I report weak-instrument confidence intervals[107,108], the robustness value, and the extreme robustness value, and present contour plots mapping confounder strength to critical t-values[109]. The results indicate that unobserved confounders twice as strong as observed covariates in my model traditionally indicated as strong predictors of climate concern, such as political orientation, local temperatures, gender, and education, would not account for sufficient variation to overturn the main findings.

Gravity results

Figure S5 plots the marginal effect of temperatures on asylum applications, showing a robust asymmetric U-shaped relationship relative to a 20°C day. Effects are strongly positive and significant only for days hotter than 25°C. Total precipitation is not a significant predictor (Table S8), in line with prior work[81]. Including up to three lags of weather variables captures delayed asylum responses; the contemporaneous temperature effect remains significant, and past temperature fluctuations show similar patterns (Table S9).

Table S7 reports the gravity model estimates from Equation (2) with interaction terms, using three measures of temperature and precipitation: (1) unweighted annual averages, (2) maize-area-weighted growing-season weather, and (3) population-weighted growing-season weather. I also assess robustness to alternative functional forms. A non-parametric specification with 5°C bins for growing-season daily temperatures (Figure S7) yields similar patterns, as does a quadratic specification (Figure S8), mitigating concerns about high-order polynomials exaggerating small variations[110]. Monthly CRU climate data produce similar results (Figure S9).

Figure S11 shows the residual correlation between actual asylum inflows and the predicted weather-driven component, purged of destination and year fixed effects, across six alternative instruments. These variants, respectively, include uninteracted bilateral controls' coefficients; destination weather instead of destination-year fixed effects; allow for destination-specific effects of origin weather; and use alternative measures of origin weather including second-order polynomial and binned temperatures. The correlation is strongly statistically significant and positive across specifications, suggesting that these instruments effectively predict observed asylum applications.

Figure S12 plots average annual changes in the instrument, revealing that weather-induced asylum flows originate mainly from Sub-Saharan Africa, the Middle East, and partly Latin America, with notable within-region variation and lower flows from much of Central America and Southeast Asia. In the presence of heterogeneous treatment effects, the 2SLS estimates identify a local average treatment effect (LATE) on "compliers" in destination countries where asylum inflows strongly respond to exogenous weather shocks in origin countries.

Gravity equation accounting for weather in host countries

To introduce additional bilateral source of variation in the predicted values of asylum applications, I include a second-order polynomial in temperature and precipitation in host countries as measures of pull factors. This comes at the cost of removing destination-year fixed effects, which makes the identifying assumption more restrictive. The alternative gravity equation is written as

$$\log\left(\text{Asylum Applications}_{odt}\right) = f(\boldsymbol{W_{ot}}, \boldsymbol{X_{od}}, \alpha) + g(\boldsymbol{W_{dt}}, \beta) + \theta_{od} + \chi_{rt} + u_{odt} \tag{4}$$

This alternative specification does not account for destination-by-year fixed effect, collinear with the pull factors. Predicted values of asylum applications are then constructed as $\widehat{\text{Asylum Applications}}_{dt} = \sum_{o \neq d} \exp\left(\widehat{\alpha}_M X_{odt} + \widehat{\beta}_M W_{dt}\right)$. Table S10 displays the results for the three different alternative measures of temperature and precipitation.

Destination-specific response function to weather fluctuations

To account for the fact that weather deviations in the origin country have differential effects for each destination country, I estimate destination-specific response functions. The estimating gravity equation is written as

$$\log\left(\text{Asylum Applications}_{odt}\right) = f(\boldsymbol{W_{ot}}, \alpha_d) + \theta_{od} + \psi_{dt} + \chi_{rt} + u_{odt} \tag{5}$$

where I now allow the response to origin weather α_o to differ by destination country. By estimating destination-specific responses to weather fluctuations in origin countries, the predicted values obtained leveraging only weather variation are time-varying and pair-specific, so I can now include origin-destination specific fixed effects in place of measures of migration costs.

Figure S10 displays the destination-specific response functions to season-total temperature in origin countries. The country-specific response to hotter temperatures at origin is positive and similar to the average pooled response for all destination countries except Estonia. This exception should not raise concerns for two reasons. First, Estonia is the country with the lowest number of asylum applications in the sample, 882 over the time period considered, which is less than 0.01% of the total applications in the sample. Therefore, it is unlikely, and supported by empirical leave-one-country-out tests, that this country drives the results alone. Second, hotter temperatures in origin countries reducing asylum applications to Estonia does not raise concerns on the validity of the monotonicity assumption for my instrumental variable approach. The monotonicity assumption applies to the first-stage relationship between the weather-induced portion of asylum seekers, the instrument, and the observed asylum applications, the endogenous variable, while temperatures are allowed to have non-linear flexible effects on asylum applications in the gravity equation in the "zero" stage.

Weather-induced anomalies in asylum applications lead to higher acceptance rate

Weather anomalies and climate change are not valid criteria for asylum applications[38]. There are two main channels through which weather fluctuations can increase asylum applications. On the one hand, asylum applications can increase due to economic reasons, on the other one, they can increase due to conflict or persecution, for instance, as a result of crop failures or tightening of natural resource constraints. Only in the latter case, asylum applications could be deemed valid by the host countries. I test whether application decisions respond positively to weather-induced asylum applications, providing an indirect test of the validity of weather-induced asylum applications[6].

I compute anomalies in weather-induced asylum applications as the predicted change in the number of applications from an origin country to a destination country as explained by deviations in the weather variables from their respective sample averages. The weather-induced application anomaly (which I also use in a OLS regression as main treatment in further robustness checks) from origin o to destination d in year t is

$$n_{odt} = e^{f(\boldsymbol{W_{ot}};\boldsymbol{X_{od}};\widehat{\alpha})+\widehat{\theta_o}+\widehat{\mu_{dt}}+\widehat{\chi_{rt}}+\frac{\widehat{\sigma_u^2}}{2}} - e^{f(\boldsymbol{W_{ot}};\boldsymbol{X_{od}};\widehat{\alpha})+\widehat{\theta_o}+\widehat{\mu_{dt}}+\widehat{\chi_{rt}}+\frac{\widehat{\sigma_u^2}}{2}} \tag{6}$$

where the parameters are the coefficients from the baseline gravity in Equation (2) of log asylum applications on weather, and $\widehat{\sigma_u^2}$ is the predicted variance of the error term from the same regression. Then, I examine asylum decisions (acceptances) d_{odt} in the following two years.

$$d_{odt} = \sum_{\tau=0}^{2} \gamma \; n_{od(t-\tau)} + \theta_{od} + \psi_{dt} + \chi_{rt} + \nu_{odt} \tag{7}$$

Table S4 displays the coefficients on how weather-induced asylum anomalies translate into additional acceptances accounting for up to two-year lagged application anomalies. Accounting for both recognized refugee status and complementary protections granted (column 2), contemporaneous and one-year lagged anomalies are positive and statistically significant and the sum of the three coefficients is 45.23 (p-value: 0.001) for the baseline fourth-order polynomial model in temperature. These findings suggest that weather-induced shocks to applications are deemed valid by host countries at a much higher rate. I find that weather shocks induce people to flee and be recognized as needing international protection through refugee status.

Individual-level results

The 2SLS coefficients are approximately an order of magnitude larger than their OLS counterparts, consistent with attenuation bias from measurement error in observed asylum applications, which do not isolate the weather-driven portion of asylum applications, or a LATE concentrated among countries receiving larger weather-induced inflows, where residents are

more likely to update climate concern.

Table S5 presents the first-stage and reduced-form estimates. Predicted asylum flows are strongly associated with observed flows. I also report the weak-instrument robust confidence intervals, calculated without the assumption of a strong instrument, which exclude zero in both cases[107,111]. The reduced form results show that predicted weather-induced asylum flows significantly increase climate concern. Combined with the small, insignificant OLS coefficients, this pattern suggests that the weather-driven component of asylum flows drives the effect on host communities' climate attitudes.

Additional validity checks on instrumental variable approach I conduct additional validity checks on my research design[112]. In particular, I conduct both OLS and 2SLS estimation and quantify uncertainties using multiple inferential methods, including the Anderson-Rubin (AR) test with its associated 95% confidence interval computed using the inversion method[113], and the adjusted t-ratio inference (tF)[114] (Figure S17). The 2SLS estimates are larger in magnitude than the OLS estimates, and under just-identification the Anderson–Rubin test is the appropriate weak-instrument-robust procedure, and its wild-cluster-bootstrap confidence sets exclude zero for both outcomes (Table 1); the more conservative tF intervals include zero at the 95% level (but not at 90%), reflecting their reliance on large-sample critical values, and I therefore treat the bootstrap Anderson–Rubin sets as the primary inference.

Sensitivity analysis for instrumental variable I conduct a sensitivity analysis of the baseline instrumental variable estimates[106]. This approach jointly addresses potential violations of the exclusion restriction and of the ignorability of the instrument, allowing for an assessment of how strong such violations would need to be to overturn the main results. It is not necessary to have precisely zero confounding bias in order to arrive at my findings, but it is important to determine how severe confounding would need to be to have meaningfully altered my conclusions through sensitivity analysis.

Table S38 presents the baseline estimates, Anderson–Rubin weak instrument confidence intervals, and corresponding t-values for the two main survey outcomes (Panels A and B), along with robustness values and extreme robustness values[106,109]. To benchmark the potential severity of omitted variable bias, I compare the estimated sensitivity metrics to those implied by four observed covariates that account for a substantial share of the variation in the outcomes: left-wing political orientation, destination temperature, gender (male), and educational attainment above 20 years of age. For example, a hypothetical confounder as predictive as political orientation in Panel A would explain 0.37% of the residual variation in the outcome and just 0.004% of the residual variation in the instrument, resulting in a bias-adjusted critical t-value of 2.08. Since the observed t-value (7.21) remains well above this threshold—as well as all other benchmark-adjusted thresholds—these results indicate that confounding of a magnitude comparable to any of the observed covariates would not meaningfully threaten the validity of the findings. The benchmark t-values in this exercise are based on conventional

standard errors, as required by the omitted-variable-bias framework[106]; the results' primary inference is the cluster-robust bootstrap Anderson–Rubin set of Table 1.

Figure S16 presents sensitivity contour plots illustrating how the t-statistic for testing the null hypothesis of no effect of asylum applications on climate concern varies with the strength of potential unobserved confounding. In both outcomes (Panels A and B), the estimated effects remain statistically significant under a wide range of plausible violations of the exclusion restriction. The benchmark bounds (diamonds) show how confounding "as strong as" (able to explain as much of the instrument and outcome residual variation) as observed covariates would alter the t-statistics associated with asylum applications. Specifically, even hypothetical confounders that are twice as predictive of the outcome and the instrument as key observed covariates—such as destination temperature or left-wing political orientation (as well as gender and tertiary education, omitted from the plot for clarity)—would be insufficient to reduce the t-value below conventional significance thresholds. Therefore, any confounding able to substantially alter the conclusions reached would need to explain far more of predicted weather-induced asylum applications and climate concern than is explained by even these theoretically important variables.

Shift-share structure and leave-one-out robustness. The instrument constructed in Equation 2 can be read as a shift-share (Bartik) design: the shocks are origin-country weather realisations and the shares are quasi-fixed bilateral migration-cost weights, aggregated to a destination-year instrument as the log of summed gravity-predicted flows. Identification in such designs can rest on the quasi-random assignment of the shocks rather than on the exogeneity of the shares[37], and two features indicate that the identifying shock variation is well diversified rather than concentrated in a handful of origins. First, the effective number of independent origin shocks, measured by the inverse Herfindahl index of the shift-share importance weights, is 50.1 across 136 origins (951 at the origin-year level); ranking origins by their Rotemberg weights[116], the ten most important jointly carry under a third of the total weight and none exceeds 5.5%. Second, rebuilding the instrument dropping one origin at a time leaves both estimates essentially unchanged: the leave-one-origin-out coefficients range over $[0.018, 0.023]$ for the campaign-theme outcome and $[0.041, 0.047]$ for the deliberation-priority outcome, with no sign reversals and no single influential origin (Figure S19). As an additional check, I construct a shift-share exposure measure that dispenses with the gravity model altogether. The exposure of destination d in year t is $Z_{dt} = \sum_o s_{od}, g_{ot}$, where the shares s_{od} are destination d's bilateral asylum-application shares across non-OECD origin countries o, computed over the baseline period 2000–2004 and normalised to sum to one within each destination, and the shifter g_{ot} measures harmful weather in origin o, defined as the population-weighted number of growing-season days above the 90th and below the 10th percentile of the origin's own temperature distribution (hot and cold extremes), cumulated over the current and five preceding years to match the window of the endogenous variable. Regressing the outcomes directly on this exposure yields positive and statistically significant effects on both measures (Figure 1,

panel b).

Country-level regressions

I estimate country-level regressions using the vote share in European elections as outcome variable, and instrumenting the sum of national asylum applications in the European Parliament mandate with predicted weather-induced counterpart. I include country-level covariates that may affect both migration and Green votes: share of young people[117], tertiary education attainment[118], unemployment[119], GDP[91], and electoral turnout[120]. I also control for second-order polynomials of temperature and precipitation, given local weather's influence on voting[12], as well as country and year fixed effects. Placebo tests show that Green party vote shares in earlier elections do not predict actual or predicted asylum flows (Table S34).

Party-level regressions

I explore the aspects of the supply side and the political dynamics of the party system. I use the information on parties' political agenda related to the environment from the *Manifesto Project Database* (MPD) to measure the degree of environmentalism of each party in national elections. I exploit within-party variation in the environmental political agenda across elections. The econometric specification writes as follows:

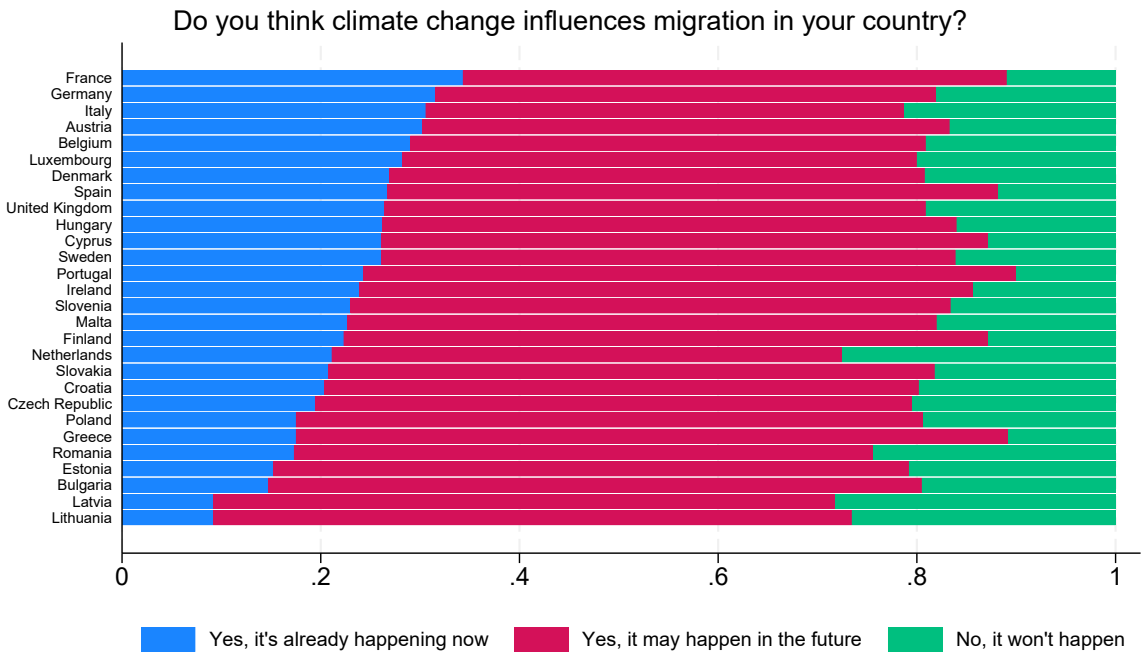
$$environmentalism_{pdt} = \beta_1 \log\left(\sum_{\tau=1}^{s} \text{Asylum Applications}_{d,t-\tau}\right) + X'_{dt}\boldsymbol{\gamma} + Z'_{pt}\boldsymbol{\delta} + \alpha_p + \mu_d + \lambda_t + \varepsilon_{pdt} \tag{8}$$

where $environmentalism_{pdt}$ is the normalized share of quasi-sentences that positively referred to policies in favor of protecting the environment and fighting climate change in the political manifesto of party p in country d in election year t. The main variable of interest is $\sum_{\tau=1}^{s} \text{Asylum Applications}_{d,t-\tau}$, i.e., the cumulative number of asylum applications between one election and the other. In X'_{dt}, I include country-level socio-economic and environmental characteristics averaged over the period between two consecutive elections in a country that may confound the effect of migration flows on electoral outcomes. The use of party-specific fixed effects α_p and country-specific fixed effects μ_d identifies the effect of asylum applications on the political agendas only through changes within parties over time. Any time-invariant feature of countries and parties will not affect identification, since it will be filtered out by these fixed effects. Election-year fixed effects (λ_t) capture common trends over time. Standard errors are clustered at the country level. The inclusion of party- and country-fixed effects guarantees the identification of the effect of weather-induced asylum seeker flows on parties' environmental preferences only through changes in agendas for parties that were present in at least two elections. This approach captures changes in the agendas of existing parties in response to changes in weather-induced flows, rather than the entry or exit of new parties.

In the baseline specification, each party running in multiple elections has the same weight. Nevertheless, small parties do not have the same influence on the political system as large parties, and may change their positions more easily. When I weigh each party by the percentage of votes gained in the elections, I find no significant effect. Results are also robust to considering parties that gained at least 5% of votes, to rule out entry/exit or mergers and splits of small parties and potential measurement error in their agendas. I find a larger and significant negative effect on party environmentalism when only including larger parties that gained at least 10, 15, or 20% of votes in the elections (Table S35). I also examine the presence of heterogeneous effects by party family masked in the average treatment effect but find small and largely imprecise estimates across the seven party families (Table S36).

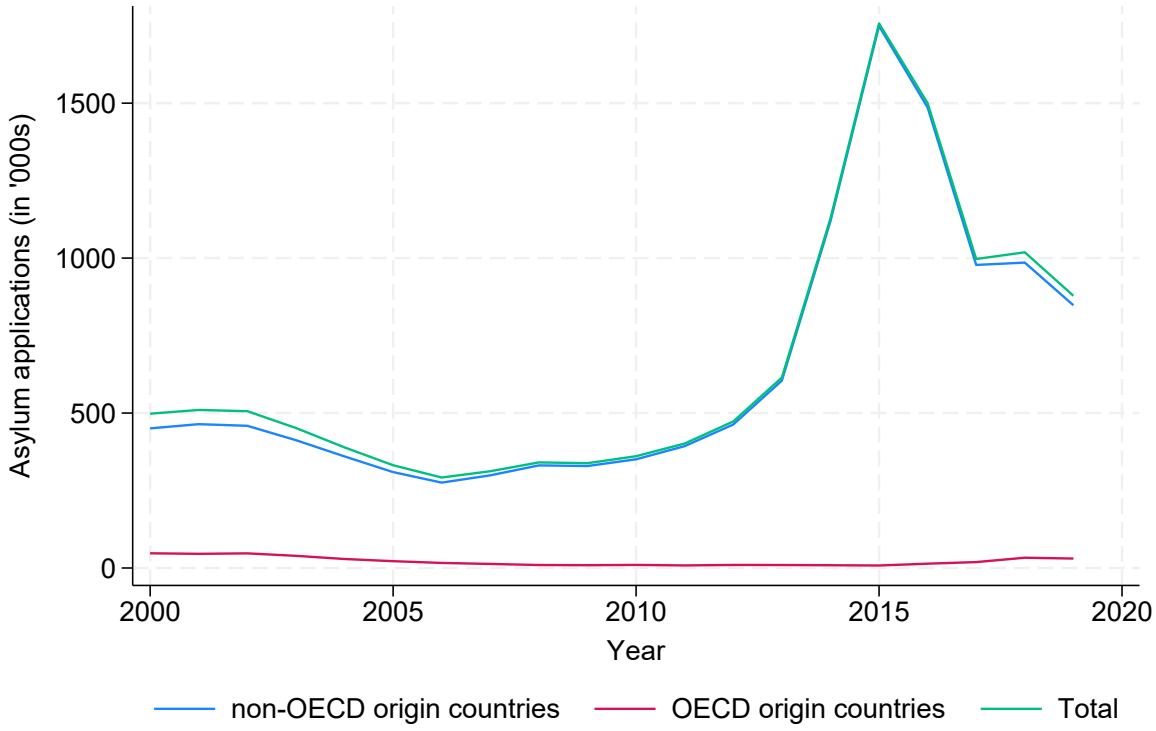
To investigate whether asylum applications induce European parties to endorse platforms less favorable to social welfare, I consider alternative dimensions of the manifesto of parties, including attitudes towards refugees, Europe, and multiculturalism (see Table S3 for the exact definition). I find a negligible negative effect that is not statistically significant across all outcomes (Table S37) in response to higher asylum applications.

Figure S1. Awareness of climate-migration in surveys in the European Union



Notes: The figure uses the question "Do you think climate change influences migration in your country?" from the 2019 European Investment Bank Climate Survey, and shows the country frequency by response category.

Figure S2. Asylum applications in the European Union between 2000 and 2019



Notes: Cumulative annual asylum applications in EU27+UK countries from 2000 to 2019 from UNHCR [104].

Figure S3. Asylum applications (in '000s) from non-OECD countries between 2000 and 2019

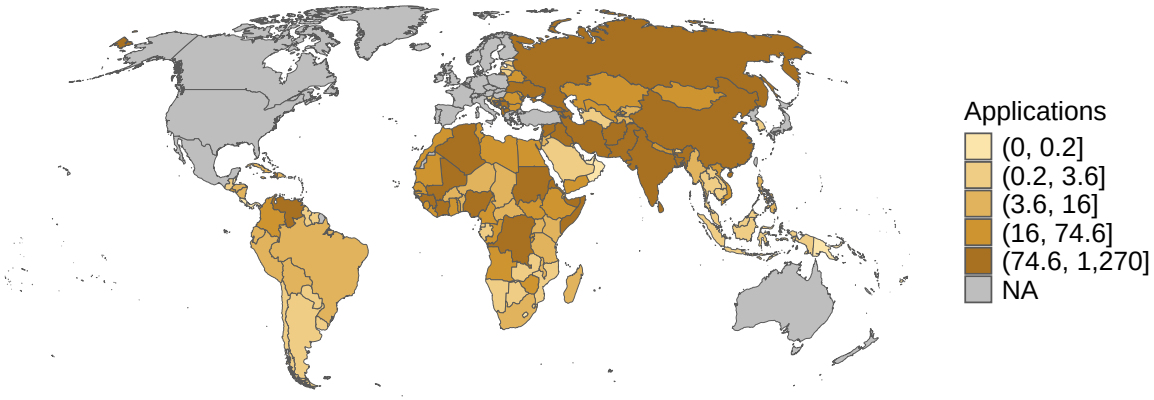


Figure S4. Asylum applications (in '000s) in EU27 + UK between 2000 and 2019

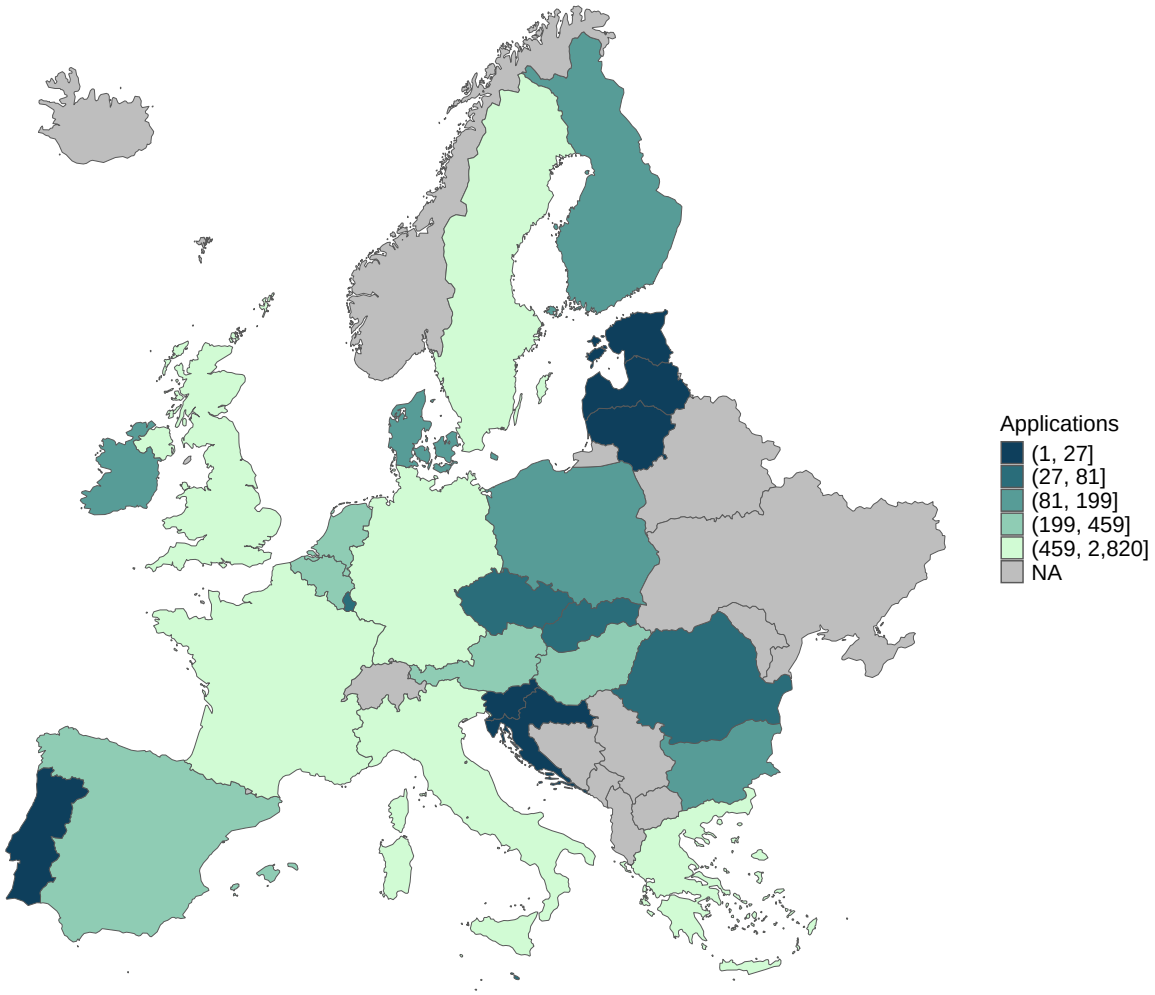
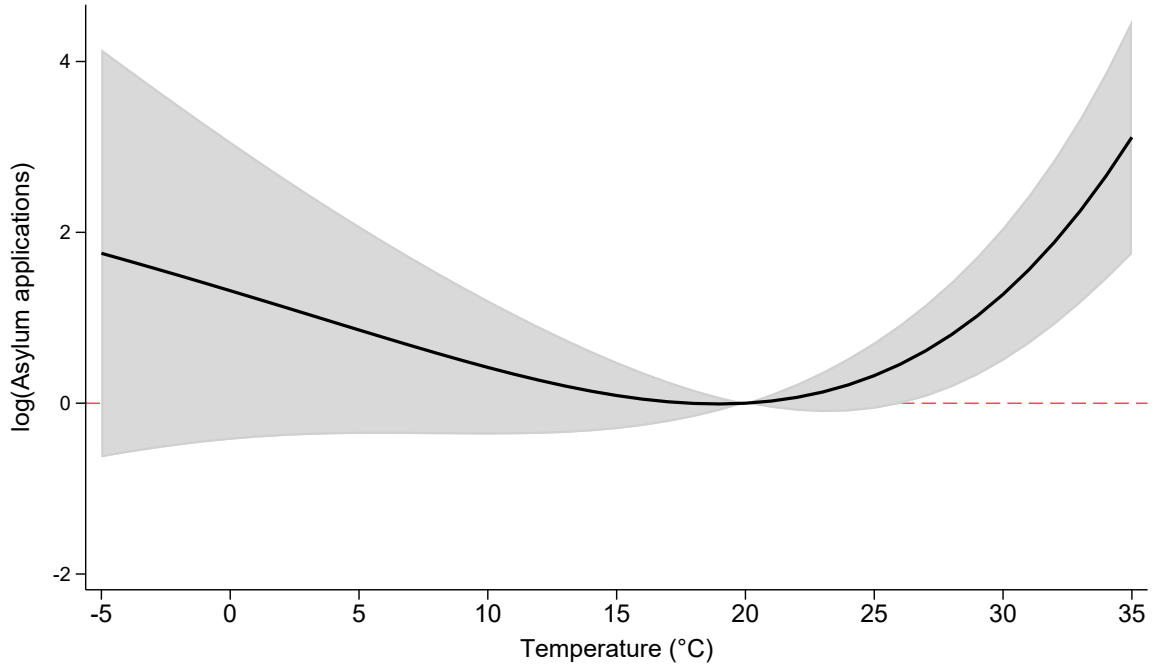
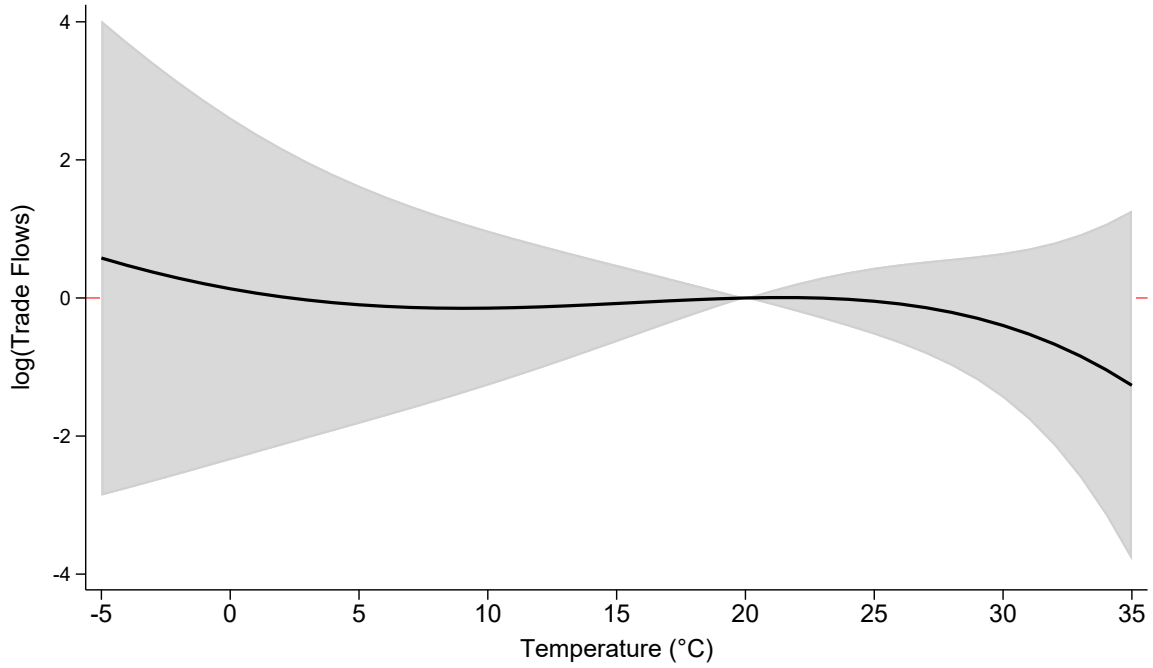


Figure S5. Response of asylum applications in the EU with respect to the origin country temperatures



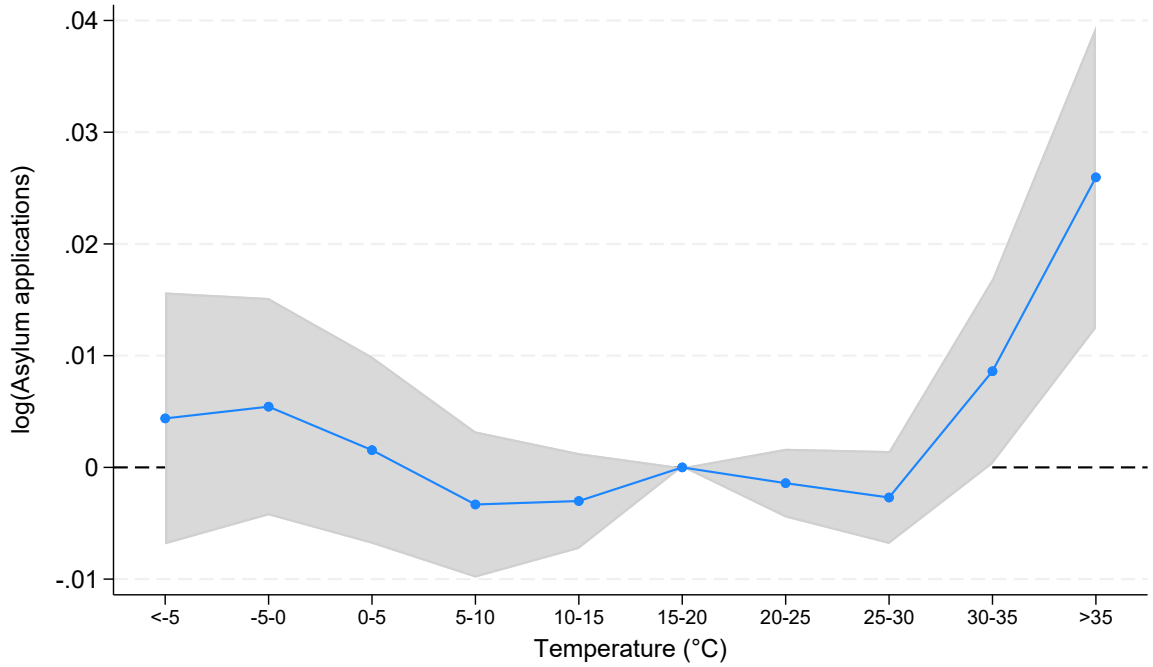
Notes: The figure represents a predicted asylum applications-temperature response function from non-OECD countries in the European Union. Regression estimates are from a fourth-order polynomial in daily average temperature over the maize growing season weighted by maize area in each grid cell. The response function is estimated in a regression model that controls for a quadratic function in season-total precipitation, as well as destination-by-year, region-of-origin-by-year, and dyad-specific fixed effects. Shaded areas are the associated 95% confidence interval using clustered standard errors at the origin country-year level.

Figure S6. Response of trade flows between non-OECD countries and EU27+UK to daily temperatures over the maize growing season



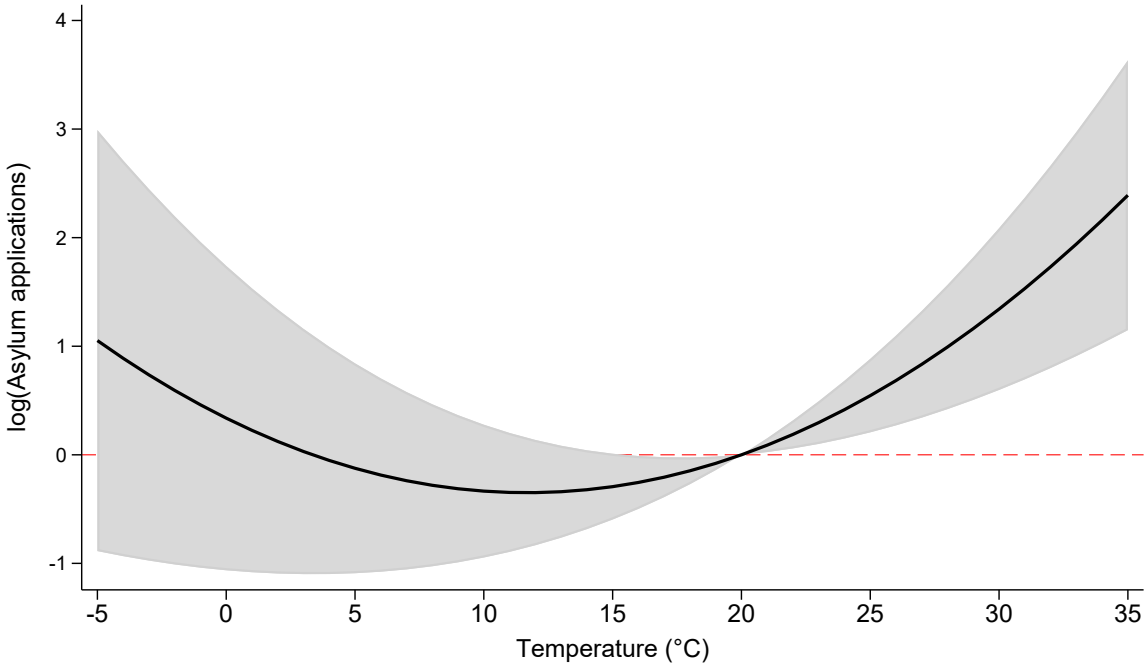
Notes: The figure represents a trade flow-temperature response function for the trade flows from non-OECD countries and the EU27+UK member countries using data from UN Comtrade. Regression estimates are from a fourth-order polynomial in daily average temperature over the maize growing season weighted by maize area in each grid cell. The response function is estimated in a regression model that controls for a quadratic function in season-total precipitation, as well as destination-by-year, region-of-origin-by-year, and dyad-specific fixed effects. Shaded areas are the associated 95% confidence interval using clustered standard errors at the origin country-year level.

Figure S7. Response of asylum applications to 5°C binned daily temperature over the maize growing season



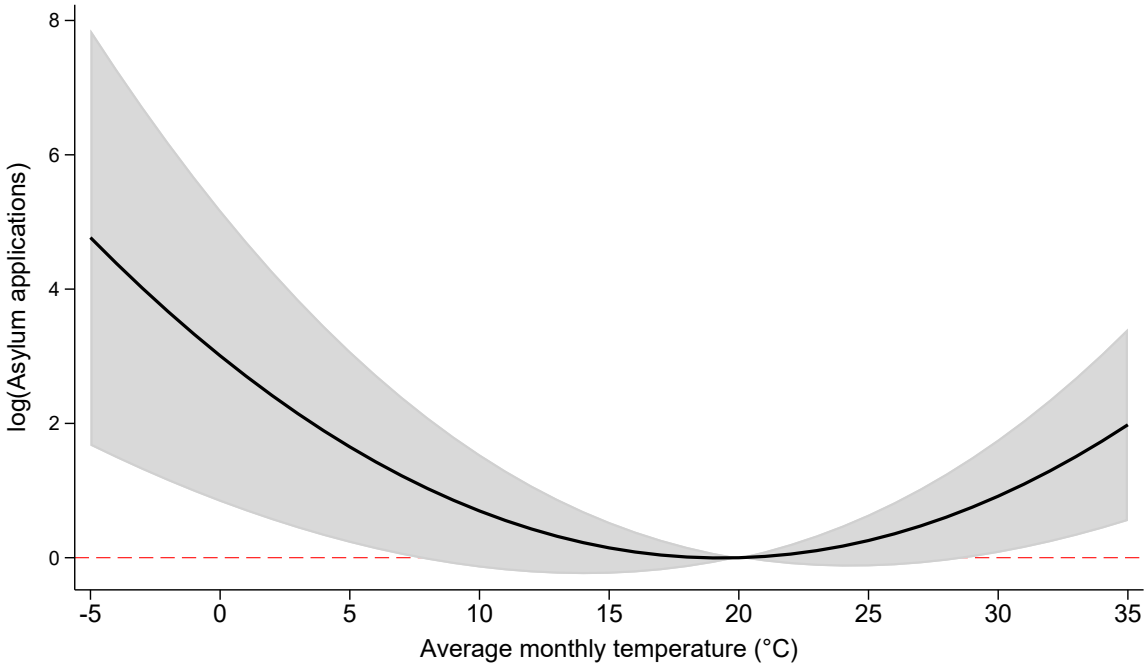
Notes: The figure represents a predicted asylum applications-temperature response function for the applications coming from non-OECD countries in the EU. Regression estimates are from binned daily average temperature over the maize growing season with bins 5°C wide weighted by maize area in each grid cell. The response function is estimated in a regression model that controls for a quadratic function in season-total precipitation, as well as destination-by-year, region-of-origin-by-year, and dyad-specific fixed effects. Shaded areas are the associated 95% confidence interval using clustered standard errors at the origin country-year level.

Figure S8. Response of asylum applications to quadratic daily temperatures over the maize growing season



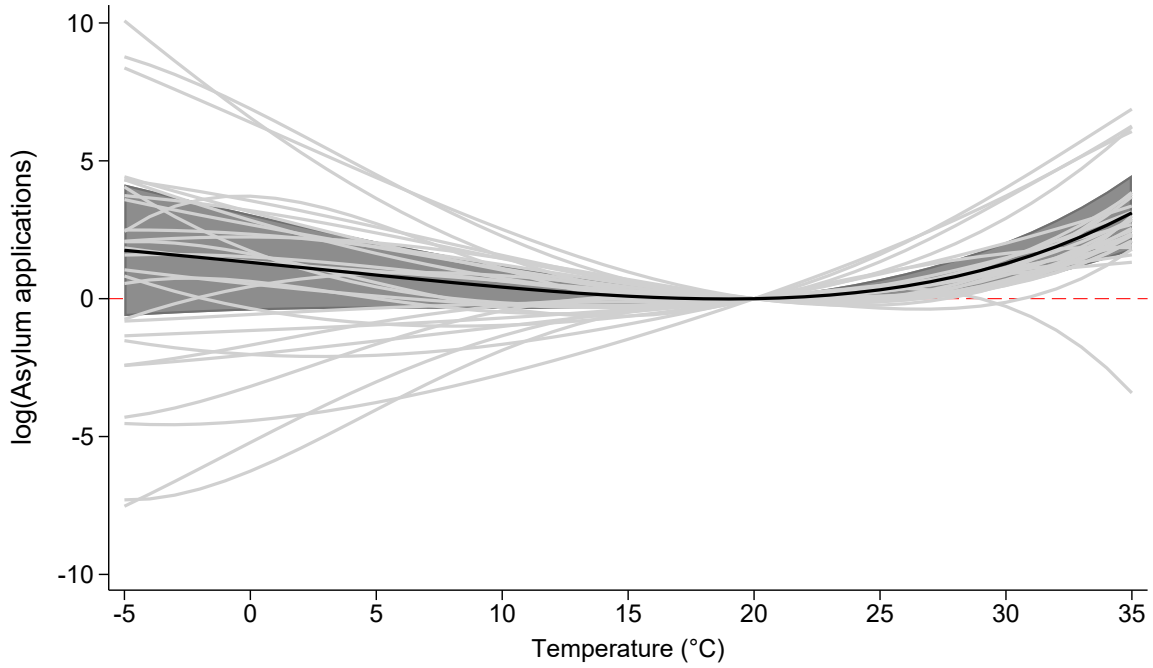
Notes: The figure represents a predicted asylum applications-temperature response function from non-OECD countries in the EU. Regression estimates are from a second-order polynomial in daily average temperature over the maize growing season weighted by maize area in each grid cell. The response function is estimated in a regression model that controls for a quadratic function in season-total precipitation, as well as destination-by-year, region-of-origin-by-year, and dyad-specific fixed effects. Shaded areas are the associated 95% confidence interval using clustered standard errors at the origin country-year level.

Figure S9. Response of asylum applications to quadratic monthly temperatures over the maize growing season using CRU data



Notes: The figure represents a predicted asylum applications-temperature response function from non-OECD countries in the EU. Regression estimates are from a second-order polynomial in seasonal monthly average temperature from CRU climate data over the maize growing season weighted by maize area in each grid cell. The response function is estimated in a regression model that controls for a quadratic function in season-total precipitation, as well as destination-by-year, region-of-origin-by-year, and dyad-specific fixed effects. Shaded areas are the associated 95% confidence interval using clustered standard errors at the origin country-year level.

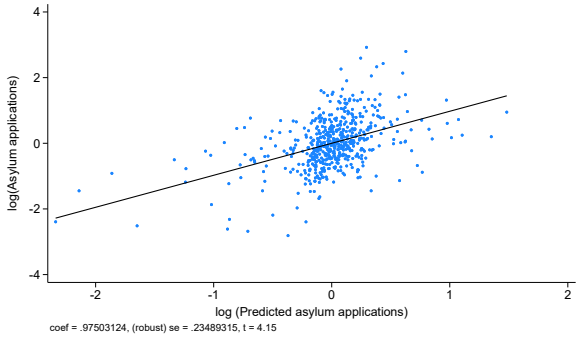
Figure S10. Destination-specific response functions to temperature in origin countries over maize growing season



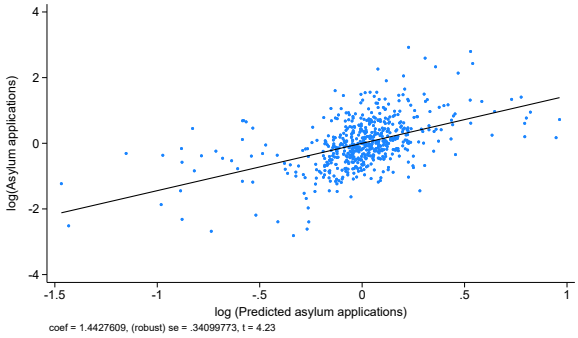
Notes: The figure plots the predicted asylum applications-temperature response function for each destination country for the applications coming from non-OECD countries in the EU27+UK. Regression estimates are from a fourth-order polynomial in daily average temperature over the maize growing season weighted by maize area in each grid cell. The response function is estimated in a regression model that controls for a quadratic function in season-total precipitation, as well as destination-by-year, region-of-origin-by-year, dyad-specific fixed effects. The solid black line reports the pooled average response function as displayed in Figure S5 and its associated 95% confidence interval using country-year clustered standard errors.

Figure S11. Observed and predicted asylum applications with alternative prediction methods

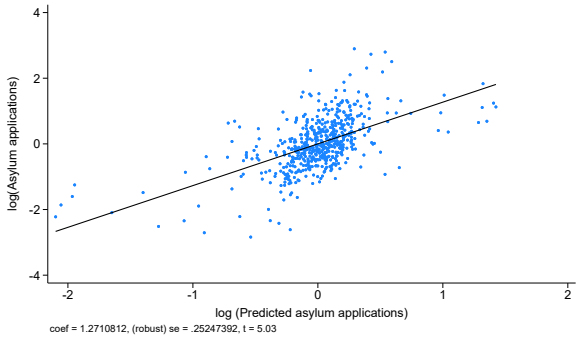
(a) Equation (2)



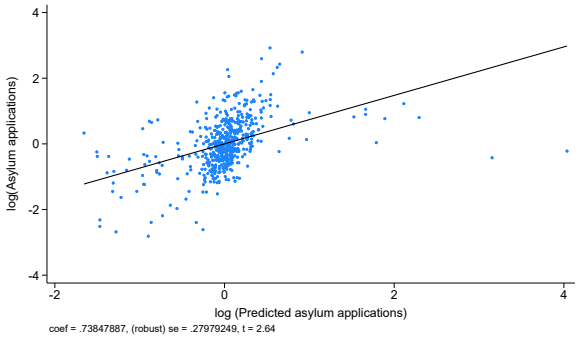
(b) Including migration costs coefficients



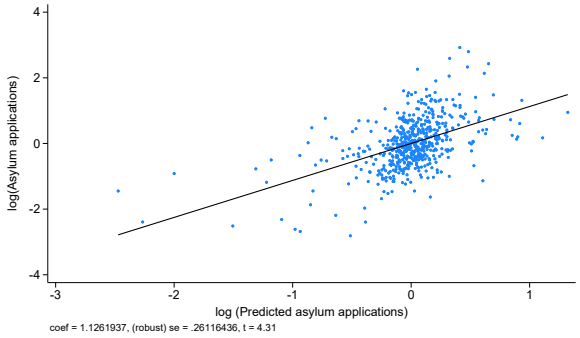
(c) Equation (4)



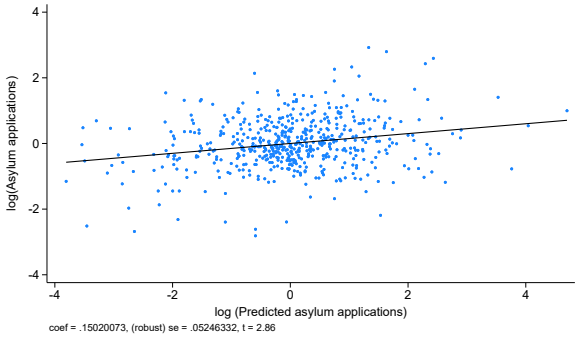
(d) Equation (5)



(e) Equation (2) with squared temperatures

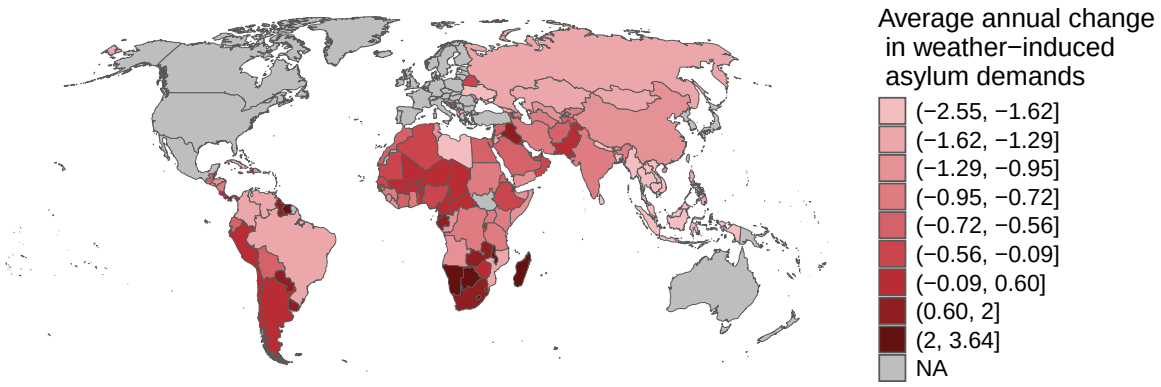


(f) Equation (2) with 5°C-bin temperatures



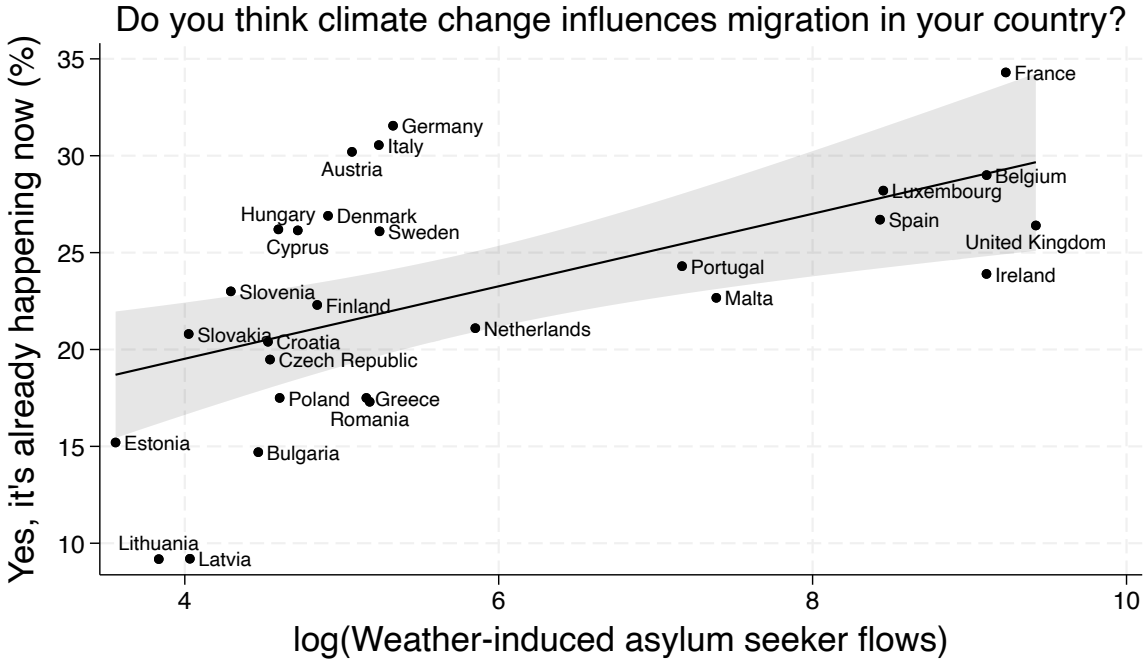
Notes: The vertical axis shows the observed logarithm of flows of asylum applications. The horizontal axis shows the logarithm of predicted weather-induced flows of asylum applications in the EU27+UK obtained by estimating different gravity equations as reported in the title. Each point in the scatterplot represents the residuals of the two variables for each country-year observation, after filtering out country and year fixed effects. Standard errors are clustered at the country level. The black line refers to the slope of the regression of the actual (log) of asylum applications on the predicted weather-driven counterpart.

Figure S12. Average change in predicted weather-induced asylum applications



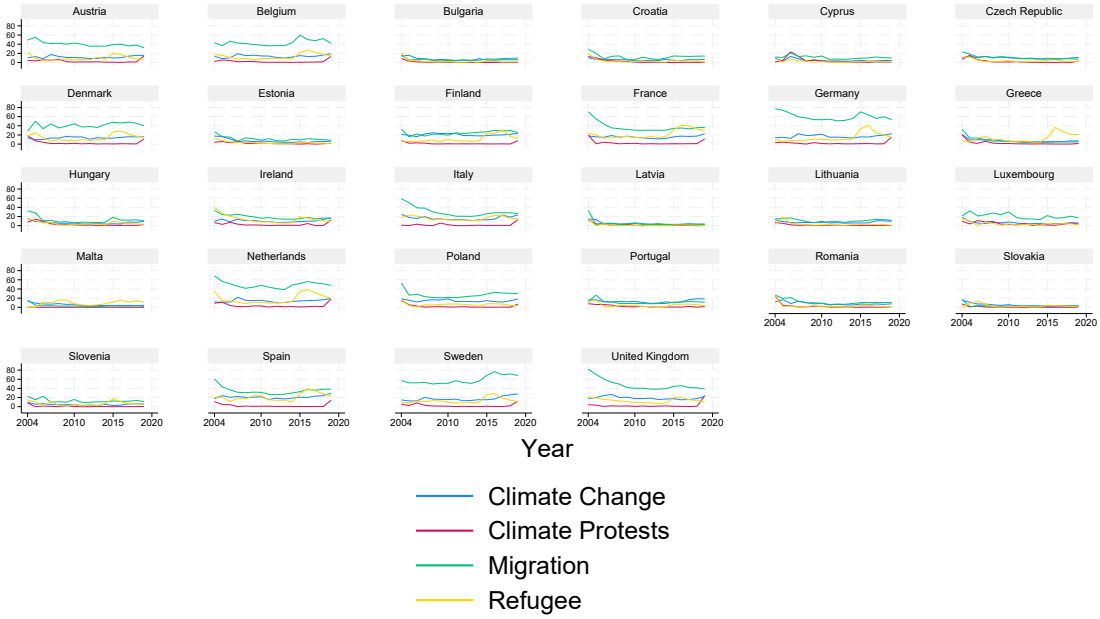
Notes: The figure plots the deciles of the average annual change in the log of predicted weather-induced asylum applications in European Union member countries (EU27+UK) from non-OECD origin countries from the estimation of Equation (2).

Figure S13. Weather-induced asylum applications and climate-migration nexus awareness



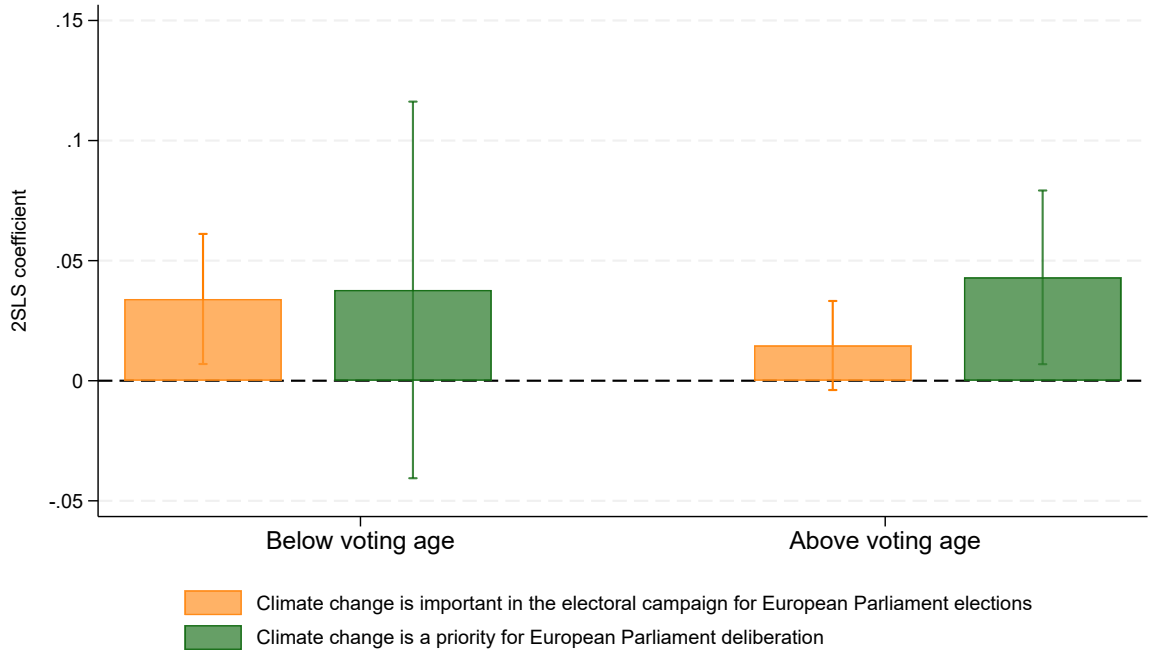
Notes: The figure plots the share of respondents that answered "Yes, it's already happening now" to the statement "Do you think climate change influences migration in your country?" in the European Investment Bank Climate Survey in 2019 against the cumulative predicted weather-induced asylum applications received in the country over the survey year and the five preceding years (in logs). The black solid line is the fitted line (slope equal to 1.87, p-value< 0.0001).

Figure S14. Annual average attention (measured with Google search) for climate change, climate protests, migration and refugee by country



Notes: The figure plots the average annual searches for "climate change", "climate protests", "migration", "refugee" from Google Trends.

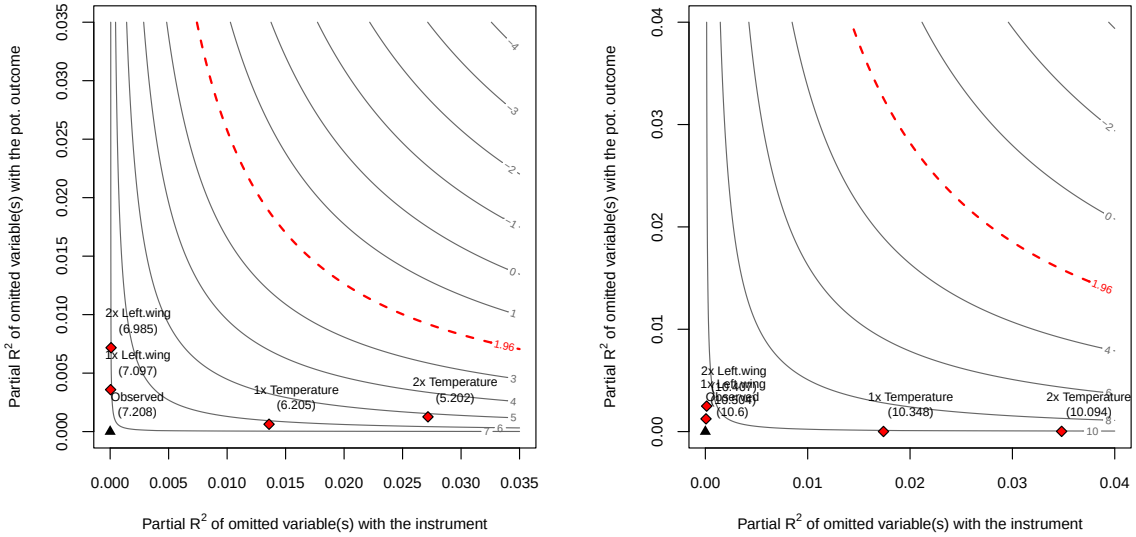
Figure S15. 2SLS coefficients of weather-induced asylum seeker flows exposure by eligibility to vote



Notes: The figure plots the 2SLS coefficients estimated regressing the survey response on asylum applications in the sample of individuals interviewed above or below the voting age threshold in the country. The voting age is a minimum age established by law that a person must attain before they become eligible to vote in a public election. This is set at 18 years for most of the countries in the sample, except for Austria after 2007, Malta after 2018 which set their voting age to 16 years, and Greece after 2017, setting it to 17 years. Whiskers represent the 95% confidence interval.

Figure S16. Sensitivity contour plots for main survey outcomes

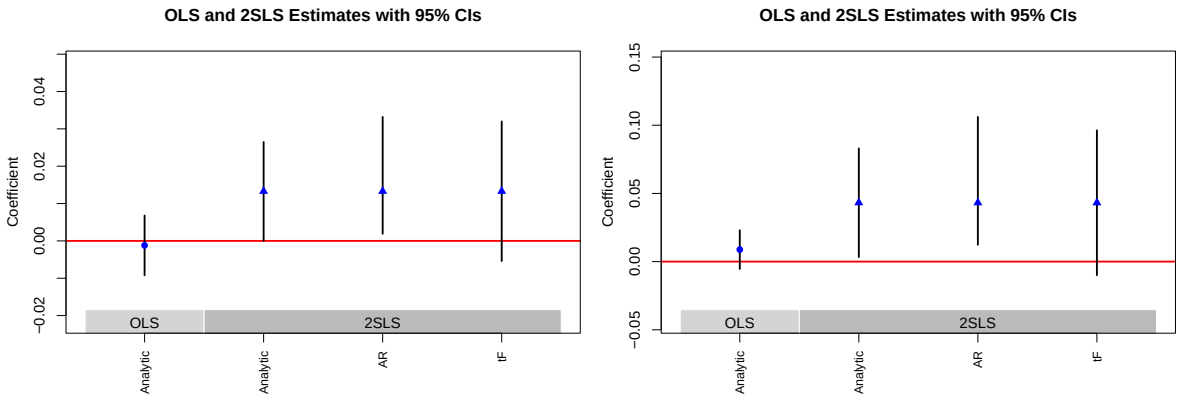
(a) Climate concern in European Elections (b) Climate change as political priority



Notes: Sensitivity contour plots of the t-value in the partial R^2 scale with benchmark bounds for the baseline instrumental variable estimates for the two main survey outcomes (columns 2 and 4 in Table 1). Alternative t-values reported only for temperature and left-wing political orientation to improve visualization (all other simulated confounders' strength are lower). The red dashed line reports the contour for the conventional 1.96 t-value threshold used for hypothesis testing.

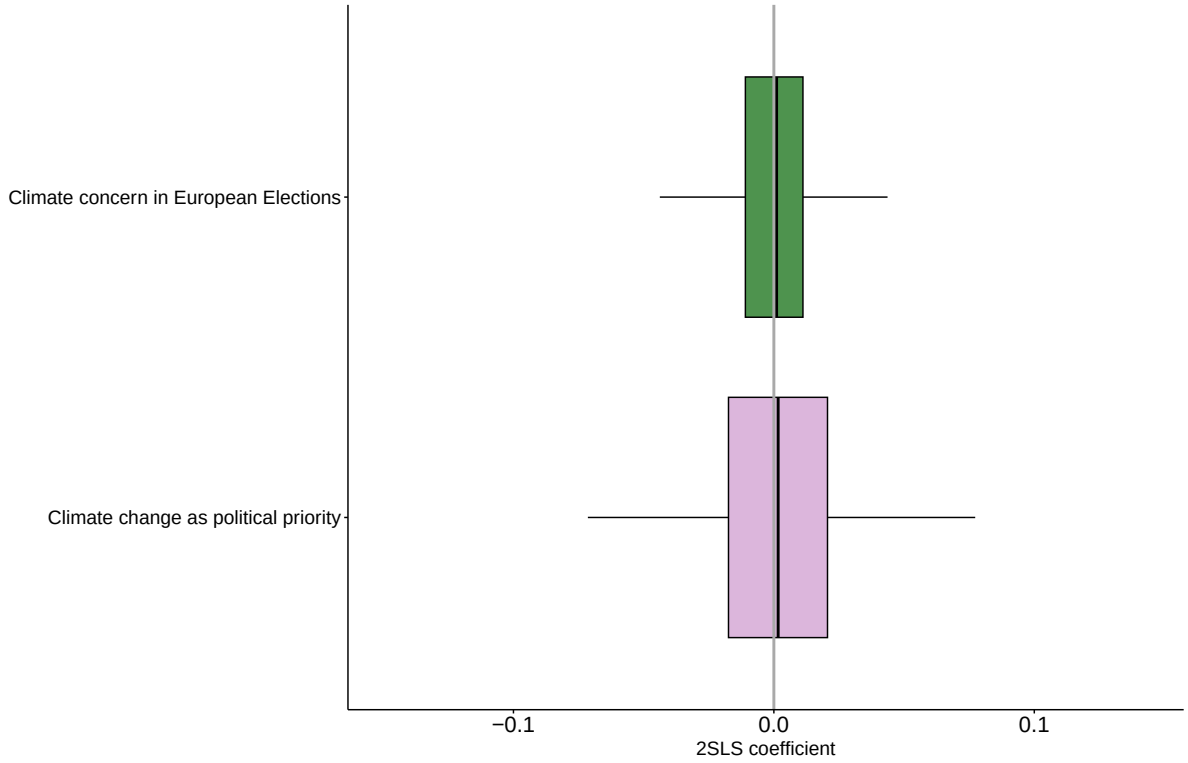
Figure S17. OLS and IV estimates with 95% CIs from various inferential methods on two main survey outcomes

(a) Climate concern in European Elections (b) Climate change as political priority



Notes: The figure reports, for the two baseline outcomes (panel (a): climate change as an important theme of the European Parliament electoral campaign; panel (b): climate change as a priority for European Parliament deliberation), the OLS coefficient and the 2SLS coefficient on (log) asylum applications, each with 95% confidence intervals, following the instrumental-variable diagnostic framework of Lal, Lockhart, Xu and Zu[112]. Three intervals accompany the 2SLS estimate. Analytic intervals use standard errors clustered at the destination-country level. The Anderson–Rubin (AR) confidence set[122] is obtained by inverting the AR test; because the test does not rely on the first-stage F statistic, its coverage is robust to arbitrarily weak instruments, and in just-identified settings it involves no loss of power[107]. The tF interval implements the F-statistic-dependent t-test of Lee, McCrary, Moreira and Porter[114], which inflates the conventional critical values by a factor that decreases in the first-stage F. The AR confidence sets exclude zero for both outcomes. The tF intervals include zero at the 95% level, though not at the 90% level, reflecting their reliance on large-sample critical values that are conservative given the small number of clusters (28); as discussed in Section **??** of this Supplementary Information, the wild-cluster bootstrap Anderson–Rubin confidence sets reported in Tables 1 and 2 of the main text are therefore treated as the primary weak-instrument- and cluster-robust inference. Estimates in this figure are obtained from a specification that replaces the country-by-age linear trends of the baseline specification with country-by-age fixed effects, because the `ivDiag` interface accommodates fixed effects but not continuous interacted trends. Since a full set of country-by-age fixed effects nests the country-specific linear trends, this amounts to a strictly more flexible and hence more conservative specification, absorbing any pattern of variation across age groups within countries rather than only linear ones. The campaign-theme 2SLS coefficient is accordingly smaller than its baseline counterpart in Table 1, while remaining positive, with an Anderson–Rubin confidence set that excludes zero, and the deliberation-priority coefficient is essentially unchanged. The figure is produced with the `ivDiag` package[112].

Figure S18. Randomization-based 2SLS estimates of weather-induced asylum applications on climate concern

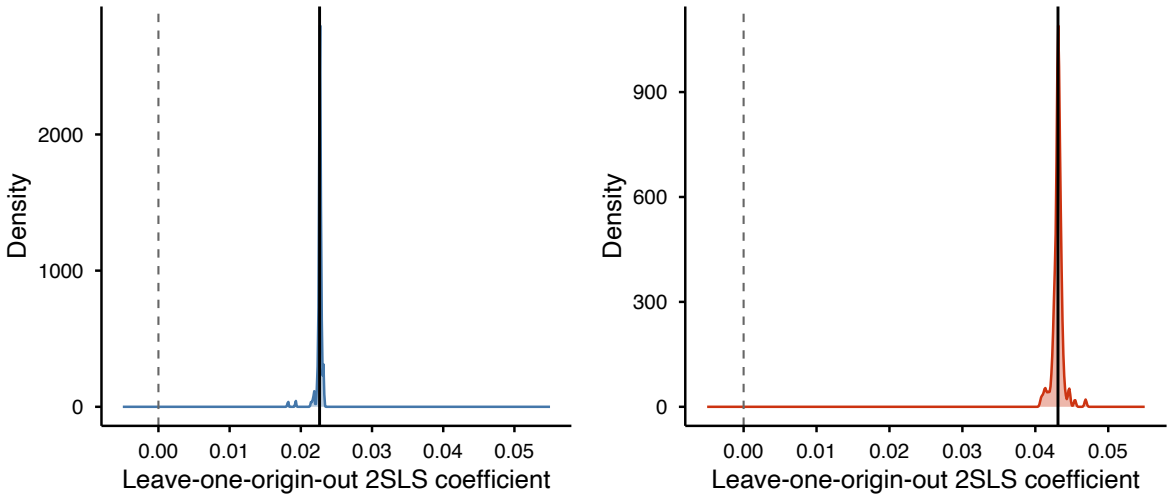


Notes: This figure reports the 2SLS coefficient estimates of the effect of weather-induced asylum applications on "Climate concern in European Elections" and "Climate change as political priority". Estimates are obtained by shuffling 5-year cumulative asylum applications across country-years, with 500 iterations of randomization and model re-estimation. Boxplots show the interquartile range (25th–75th percentiles), whiskers span the full range of simulated estimates.

Figure S19. No single origin drives the estimated effect

(a) Climate concern in European Elections

(b) Climate change as political priority



Notes: Density distribution of leave-one-origin-out two-stage least squares estimates of the effect of (log) asylum applications on climate change as a European Parliament campaign theme (left) and as a political priority (right). Estimates are obtained from the main specification after dropping one of the 136 origin countries from the instrument and rebuilding it. The solid line is the baseline estimate using all origins; the dashed line is zero.

Table S1. *Eurobarometer* Outcome Variable Definition

VARIABLE	DESCRIPTION	MEAN (SD)	SURVEY WAVES [Sample Size]
Climate concern in European Elections (0/1)	Which of the following themes should be discussed as a matter of priority during the electoral campaign for the next European Parliament (EP) elections? (Combating climate change and protecting the environment)	0.068 (0.24)	2008; 2009; 2018 [106,614]
Climate change as political priority (0/1)	The EP makes decisions on European legislation which directly impacts every citizen's life. In your opinion which of the following should be given priority by the European Parliament? (Combating climate change and protecting the environment)	0.107 (0.31)	2008; 2009; 2012; 2013; 2014; 2018 [130,068]
Climate change is a world problem (0/1)	In your opinion, which of the following do you consider to be the most serious problem currently facing the world as a whole? (Global Warming / Climate Change)	0.37 (0.48)	2008; 2009; 2011; 2013; 2015; 2017; 2019 [116,879]
Seriousness of climate change (1-10)	How serious a problem do you think climate change is at this moment? Please use a scale from 1 to 10, '1' would mean that it is "not at all a serious problem" and '10' would mean that "it is a problem extremely serious".	7.57 (2.14)	2008; 2009; 2011; 2013; 2015; 2017; 2019 [116,110]
Migration in European Elections (0/1)	Which of the following themes should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections? (Migration)	0.08 (0.27)	2008; 2009; 2018 [100,707]
Migration as political priority (0/1)	The EP makes decisions on European legislation which directly impacts every citizen's life. In your opinion which of the following should be given priority by the European Parliament? (Migration)	0.08 (0.28)	2008; 2009; 2012; 2013; 2014; 2018 [130,068]
Economic growth in European Elections (0/1)	Which of the following themes should be discussed as a matter of priority during the electoral campaign for the next EP elections? (Economy and growth)	0.16 (0.37)	2008; 2009; 2018 [106,614]
Euro single currency in European Elections (0/1)	Which of the following themes should be discussed as a matter of priority during the electoral campaign for the next EP elections? (Euro as single currency)	0.03 (0.16)	2008; 2009; 2018 [53,799]
Terrorism in European Elections (0/1)	Which of the following themes should be discussed as a matter of priority during the electoral campaign for the next EP elections? (Fight against terrorism)	0.06 (0.23)	2008; 2009; 2018 [106,614]
Food safety in European Elections (0/1)	Which of the following themes should be discussed as a matter of priority during the electoral campaign for the next EP elections? (Consumer protection and food safety)	0.05 (0.21)	2008; 2009; 2018 [106,614]
Terrorism as political priority (0/1)	The EP makes decisions on European legislation which directly impacts every citizen's life. In your opinion which of the following should be given priority by the EP? (Fight against terrorism)	0.11 (0.31)	2008; 2009; 2012; 2013; 2014; 2018 [130,068]

Notes: The survey waves used include Eurobarometer 69.2 (2008), 71.1 (2009), 78.2 (2012), 79.5 (2013),82.5 (2014), 83.4 (2015), 87.1 (2017), 90.1 (2018).

Table S2. European Parliament elections and National elections by country and year in the estimation sample

Country	# European Parliament Elections	Years with Green party votes	# National Elections	Years
Austria	4	2004; 2009; 2014; 2019	4	2006; 2013; 2017; 2019
Belgium	4	2004; 2009; 2014; 2019	4	2003; 2007; 2010; 2019
Bulgaria	0		5	2001; 2005; 2013; 2014; 2017
Croatia	0		4	2007; 2011; 2015; 2016
Cyprus	0		0	
Czech Republic	3	2004; 2009; 2014	5	2002; 2006; 2010; 2013 ; 2017
Denmark	3	2009; 2014; 2019	6	2001; 2005; 2007; 2011; 2015; 2019
Estonia	2	2009; 2019	4	2003; 2007; 2011; 2015
Finland	4	2004; 2009; 2014; 2019	5	2003; 2007; 2011; 2015; 2019
France	4	2004; 2009; 2014; 2019	4	2002; 2007; 2012; 2017
Germany	4	2004; 2009; 2014; 2019	4	2002; 2009; 2013; 2017
Greece	3	2004; 2009; 2019	4	2004; 2009; 2012; 2015
Hungary	2	2014; 2019	4	2002; 2006; 2010; 2014
Ireland	4	2004; 2009; 2014; 2019	3	2002; 2007; 2011
Italy	0		2	2008; 2018
Latvia	0		6	2002; 2006; 2010; 2011; 2014; 2018
Lithuania	2	2014; 2019	0	
Luxembourg	4	2004; 2009; 2014; 2019	2	2009; 2013
Malta	4	2004; 2009; 2014	0	
Netherlands	4	2004; 2009; 2014; 2019	6	2002; 2003; 2006; 2010; 2012; 2017
Poland	0		2	2001; 2005
Portugal	2	2014; 2019	4	2009; 2011; 2015; 2019
Romania	0		2	2012; 2016
Slovakia	0		5	2002; 2006; 2010; 2012; 2016
Slovenia	2	2004; 2019	4	2004; 2008; 2011; 2018
Spain	3	2009; 2014; 2019	6	2004; 2008; 2011; 2015; 2016; 2019
Sweden	4	2004; 2009; 2014; 2019	5	2002; 2006; 2010; 2014; 2018
United Kingdom	4	2004; 2009; 2014; 2019	5	2001; 2005; 2010; 2015; 2019

Table S3. *Manifesto* Outcome Variables Definition

VARIABLE	DESCRIPTION	MANIFESTO VARIABLE
Environmentalism	Environmental Protection. General policies in favour of protecting the environment, fighting climate change, and other "green" policies. For instance: General preservation of natural resources; Preservation of countryside, forests, etc.; Protection of national parks; Animal rights. May include a great variance of policies that have the unified goal of environmental protection.	per501
Europe +	Favourable mentions of European Community/Union in general. May include the: - Desirability of the manifesto country joining (or remaining a member);- Desirability of expanding the European Community/Union; - Desirability of increasing the ECs/EUs competences; - Desirability of expanding the competences of the European Parliament.	per108
Europe -	European Community/Union: Negative. Negative references to the European Community/Union. May include: Opposition to specific European policies which are preferred by European authorities; Opposition to the net-contribution of the manifesto country to the EU budget.	per110
Multiculturalism +	Multiculturalism: Positive. Favourable mentions of cultural diversity and cultural plurality within domestic societies. May include the preservation of autonomy of religious, linguistic heritages within the country including special educational provisions	per607
Multiculturalism -	Multiculturalism: Negative. The enforcement or encouragement of cultural integration. Appeals for cultural homogeneity in society	per608
Refugees +	Favourable mentions of, or need for, assistance to people who left their homes because of the war (for instance, on the territory of ex-Yugoslavia) or were forcibly displaced.	per706_2
Cultural Autonomy +	Cultural Autonomy: Positive. Favourable mentions of cultural autonomy	per607_1

Table S4. Weather-induced asylum application anomalies and acceptance

	(1)	(2)
n_{odt}	31.80*	36.25**
	(18.59)	(17.73)
n_{odt-1}	12.22***	18.90***
	(3.148)	(3.742)
n_{odt-2}	1.207	7.947
	(5.624)	(6.327)
Outcome	Recognized decisions	Recognized decisions & Complementary Protection
p-value ($\gamma_1 + \gamma_2 + \gamma_3 = 0$)	0.024	0.001
F-Statistic($\gamma_1 + \gamma_2 + \gamma_3 = 0$)	5.076	10.822
Mean outcome	150.547	513.577
Average acceptance rate	0.061	0.326
Observations	19125	19125
adj. R^2	0.362	0.442

Notes: The estimated equation includes origin-destination, region-of-origin-by-year, and destination-by-year fixed effects. Robust standard errors, clustered at the origin-destination pair level, in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S5. Weather-induced asylum applications and climate concern. First stage and reduced form results.

Outcome variable	log(Asylum Applications)	Climate concern in European Elections	log(Asylum Applications)	Climate change as political priority
	First stage	Reduced form	First stage	Reduced form
	(1)	(2)	(3)	(4)
log(Predicted asylum applications)	1.397***	0.0316***	1.486***	0.0660***
	(0.368)	(0.0102)	(0.331)	(0.0223)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
Anderson-Rubin p-value	0.02		0.003	
Observations	106,614	106,614	130,068	130,068
Number of countries	28	28	28	28

Notes: Predicted asylum applications is constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. Columns (1) and (3) show the first stage of the baseline instrumental variable regression. Columns (2) and (4) show the reduced form between the predicted weather-induced asylum applications and the main survey outcomes. Robust standard errors, clustered at the country level, in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S6. Weather-induced asylum applications and climate concern. Baseline results with all coefficients.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	-0.00147	0.0226**	0.00746	0.0444**
	(0.00384)	(0.0106)	(0.00651)	(0.0213)
Male	-0.0119***	-0.0118***	-0.00795**	-0.00777**
	(0.00395)	(0.00395)	(0.00367)	(0.00363)
Education categories (baseline: Up to 15 years)				
Between 16 and 19 years	0.0126***	0.0124***	0.00752**	0.00717**
	(0.00225)	(0.00221)	(0.00274)	(0.00278)
20 years or older	0.0377***	0.0378***	0.0193***	0.0193***
	(0.00451)	(0.00451)	(0.00404)	(0.00403)
Still studying	0.0483***	0.0478***	0.0299***	0.0293***
	(0.00693)	(0.00691)	(0.00757)	(0.00770)
No education	-0.0159	-0.0160	-0.0323***	-0.0309***
	(0.00978)	(0.00994)	(0.0110)	(0.0106)
Unemployed	-0.00673*	-0.00592*	-0.00812**	-0.00735**
	(0.00331)	(0.00314)	(0.00346)	(0.00352)
Left Political Orientation	0.0343***	0.0342***	0.0234***	0.0232***
	(0.00943)	(0.00943)	(0.00770)	(0.00768)
Average Temperature previous five years (°C)	-0.144***	-0.146***	-0.000460	-0.0149
	(0.0346)	(0.0473)	(0.0462)	(0.0417)
Average Temperature^2 previous five years (°C)	0.000923	-0.00230	-0.000915	-0.00147
	(0.00206)	(0.00354)	(0.00119)	(0.00138)
Total Precipitation previous five years (m)	-42.74***	-34.27**	32.84**	26.22**
	(12.32)	(14.46)	(12.04)	(10.59)
Total Precipitation^2 previous five years (m)	37982.1***	21882.3	-20203.4	-17776.2
	(10801.5)	(14900.4)	(13120.0)	(12896.4)
Average Temperature (°C)	-0.0271*	0.00246	-0.0149	-0.00198
	(0.0145)	(0.0201)	(0.0160)	(0.0144)
Average Temperature^2 (°C)	0.00320***	0.00344***	0.00116*	0.00117
	(0.000589)	(0.000907)	(0.000674)	(0.000691)
Total Precipitation (m)	18.21***	18.53***	-7.168**	-6.689**
	(3.899)	(4.320)	(3.157)	(3.033)
Total Precipitation^2 (m)	-15416.6***	-17287.7***	8099.0*	7189.3*
	(3830.3)	(3943.3)	(4124.2)	(3741.5)
F-Statistic		14.434		21.448
Panel B: No controls				
log(Asylum Applications)	0.000657	0.0161**	0.0244*	0.0762***
	(0.00333)	(0.00740)	(0.0119)	(0.0267)
F-Statistic		21.876		23.218
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
Observations	106,614	106,614	130,068	130,068
Number of countries	28	28	28	28

Notes: The table replicates Table 1 reporting all individual controls included in the regressions. The 2SLS estimates use the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S7. Gravity model for asylum applications in non-OECD origin countries & EU destination countries with dyadic controls

	log(Asylum Applications)		
	(1)	(2)	(3)
Temperature	-1.436*	-1.782**	-1.803*
	(0.759)	(0.885)	(0.912)
Temperature^2	0.0824**	0.0411	0.0440
	(0.0414)	(0.0321)	(0.0312)
Temperature^3	0.000838	0.00167	0.00189
	(0.00133)	(0.00191)	(0.00217)
Temperature^4	-0.0000331	-0.0000313	-0.0000432
	(0.0000381)	(0.0000424)	(0.0000421)
Temperature * Contiguity	0.803***	0.438	0.407
	(0.220)	(0.283)	(0.302)
Temperature * Common Language	-0.0391	0.188	0.403
	(0.245)	(0.366)	(0.356)
Temperature * Common Colonial History	0.690***	0.427**	0.398*
	(0.232)	(0.202)	(0.214)
Temperature* Log(distance)	0.192**	0.212*	0.217*
	(0.0927)	(0.108)	(0.110)
Temperature^2 * Contiguity	0.0135	0.0222*	0.0161
	(0.0101)	(0.0127)	(0.0116)
Temperature^2 * Common Language	-0.0148	-0.00947	-0.0386
	(0.0198)	(0.0435)	(0.0400)
Temperature^2 * Common Colonial History	-0.0129	-0.00911	-0.00710
	(0.00950)	(0.00954)	(0.00962)
Temperature^2 * Log(distance)	-0.0107**	-0.00532	-0.00568
	(0.00499)	(0.00391)	(0.00377)
Temperature^3* Contiguity	0.0000449	-0.0000907	-0.000164
	(0.000237)	(0.000813)	(0.000845)
Temperature^3* Common Language	0.00109	0.000372	0.00165
	(0.00143)	(0.00193)	(0.00179)
Temperature^3* Common Colonial History	-0.00105*	-0.000375	-0.000279
	(0.000573)	(0.000474)	(0.000563)
Temperature^3* Log(distance)	-0.000131	-0.000205	-0.000236
	(0.000155)	(0.000221)	(0.000250)
Temperature^4 * Contiguity	-0.0000167	-0.0000253	-0.0000149
	(0.0000113)	(0.0000216)	(0.0000214)
Temperature^4 * Common Language	-0.0000160	-0.00000441	-0.0000220
	(0.0000260)	(0.0000276)	(0.0000261)
Temperature^4 * Common Colonial History	0.0000290*	0.0000122	0.00000904
	(0.0000160)	(0.00000875)	(0.0000119)
Temperature^4 * Log(distance)	0.00000527	0.00000436	0.00000582
	(0.00000469)	(0.00000507)	(0.00000498)
Precipitation	13.96	57.91	28.07
	(61.82)	(58.40)	(53.17)
Precipitation^2	1322.5	-31071.0	-13403.8
	(42959.9)	(55904.3)	(46178.8)
Precipitation * Contiguity	19.86	11.38	7.539
	(23.97)	(50.60)	(49.79)
Precipitation * Common Language	2.262	8.100	9.380
	(5.220)	(6.195)	(5.725)
Precipitation * Common Colonial History	10.02	2.529	-4.058
	(15.02)	(21.68)	(19.06)
Precipitation* Log(distance)	-1.665	-6.851	-3.423
	(6.900)	(6.530)	(6.008)
Precipitation^2 * Contiguity	30550.1	15682.9	24834.9
	(20185.6)	(46456.1)	(47742.0)
Precipitation^2 * Common Language	-984.3	-2068.1	-3416.1
	(2459.8)	(3198.1)	(2768.5)
Precipitation^2 * Common Colonial History	490.4	1716.9	3725.7
	(5056.8)	(7668.4)	(6566.9)
Precipitation^2 * Log(distance)	-233.0	3414.2	1481.8
	(4802.8)	(6220.4)	(5181.1)
Weather	Annual	Maize season	Maize season
Weights	None	Maize agricultural land	Population
Origin-destination FE	X	X	X
Destination-year FE	X	X	X
Region of origin-by-year FE	X	X	X
Number of country pairs	2084	2084	2084
Number of origin countries	141	141	141
Destination Sample	EU27 + UK	EU27 + UK	EU27 + UK
Mean outcome	3.733	3.733	3.733
Dep Var SD	1.858	1.858	1.858
Observations	25,951	25,951	25,951
adj. R^2	0.796	0.796	0.796

Notes: Standard errors are clustered by origin country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Column (1) uses annual weather, column (2) uses weather weighted by maize area over maize-growing season, column (3) uses weather weighted by population over maize-growing season.

Table S8. Gravity model for asylum applications without bilateral controls interactions.

	(log) Asylum Applications		
	(1)	(2)	(3)
Temperature origin	0.121	-0.0905	-0.0806
	(0.0988)	(0.0747)	(0.0771)
Temperature origin^2	-0.00453	-0.000517	-0.000177
	(0.00316)	(0.00219)	(0.00220)
Temperature origin^3	-0.000194**	0.0000301	0.00000463
	(0.0000856)	(0.0000766)	(0.0000851)
Temperature origin^4	0.00000852***	0.00000287	0.00000281
	(0.00000293)	(0.00000212)	(0.00000221)
Precipitation origin	0.581	3.096	1.875
	(3.515)	(4.675)	(4.491)
Precipitation origin^2	-820.6	-2278.6	-1302.9
	(1452.4)	(1853.8)	(1690.7)
Weather	Annual	Maize season	Maize season
Weights	None	Maize agricultural land	Population
Origin-destination FE	X	X	X
Destination-by-year FE	X	X	X
Region of origin-by-year FE	X	X	X
Number of country pairs	2138	2138	2138
Number of origin countries	145	145	145
Destination Sample	EU27 + UK	EU27 + UK	EU27 + UK
Mean outcome	3.751	3.751	3.751
SD Outcome	1.873	1.873	1.873
Observations	26,533	26,533	26,533
adj. R^2	0.798	0.799	0.799

Notes: The table reports the coefficients associated with the weather variables in origin country in Equation (2) in the Methods section. The sample is restricted to non-OECD 145 origin countries and to EU27 member countries + UK as destinations. Standard errors are clustered by origin country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Column (1) uses annual weather, column (2) uses weather weighted by maize area over maize growing season, column (3) uses weather weighted by population over maize growing season. The estimated fixed effects are not used in building the predictors for asylum applications. All regressions control for origin-destination, destination-by-year, and region-of-origin-by-year fixed effects.

Table S9. Gravity model for asylum applications with lags of weather

	(log) Asylum Applications			
	(1)	(2)	(3)	(4)
Temperature origin	-0.0905	-0.0745	-0.118	-0.136*
	(0.0747)	(0.0739)	(0.0747)	(0.0739)
Temperature origin^2	-0.000517	-0.000805	0.000291	0.000464
	(0.00219)	(0.00218)	(0.00221)	(0.00221)
Temperature origin^3	0.0000301	0.0000431	0.000118	0.000158*
	(0.0000766)	(0.0000777)	(0.0000886)	(0.0000908)
Temperature origin^4	0.00000287	0.00000269	0.000000433	-0.000000152
	(0.00000212)	(0.00000207)	(0.00000223)	(0.00000228)
Precipitation origin	3.096	7.652	6.963	4.693
	(4.675)	(5.198)	(5.393)	(5.505)
Precipitation origin^2	-2278.6	-3691.6*	-2861.5	-2162.3
	(1853.8)	(2056.9)	(2013.5)	(2023.6)
L1.Temperature origin		-0.0879	-0.0901	-0.121
		(0.0806)	(0.0777)	(0.0774)
L1.Temperature origin^2		0.000103	0.000468	0.00248
		(0.00231)	(0.00230)	(0.00230)
L1.Temperature origin^3		0.0000770	0.0000886	0.000136
		(0.0000795)	(0.0000813)	(0.0000937)
L1.Temperature origin^4		0.00000113	0.000000591	-0.00000161
		(0.00000213)	(0.00000214)	(0.00000224)
L1.Precipitation origin		8.156	10.55*	9.637*
		(5.079)	(5.418)	(5.559)
L1.Precipitation origin^2		-3606.5*	-4332.6**	-3174.5
		(1972.5)	(2056.5)	(2094.9)
L2.Temperature origin			-0.126	-0.125
			(0.0890)	(0.0882)
L2.Temperature origin^2			0.00446*	0.00574**
			(0.00252)	(0.00247)
L2.Temperature origin^3			0.000164*	0.000166*
			(0.0000985)	(0.0000994)
L2.Temperature origin^4			-0.00000413	-0.00000511**
			(0.00000260)	(0.00000254)
L2.Precipitation origin			7.458	8.168
			(5.287)	(5.654)
L2.Precipitation origin^2			-3135.3	-2986.7
			(2063.5)	(2165.7)
L3.Temperature origin				-0.249***
				(0.0961)
L3.Temperature origin^2				0.00612**
				(0.00258)
L3.Temperature origin^3				0.000308***
				(0.000100)
L3.Temperature origin^4				-0.00000725***
				(0.00000261)
L3.Precipitation origin				7.050
				(5.717)
L3.Precipitation origin^2				-2574.3
				(2190.6)
Origin-destination FE	X	X	X	X
Destination-by-year FE	X	X	X	X
Region of origin-by-year FE	X	X	X	X
Mean outcome	3.751	4.029	4.175	4.276
SD Outcome	1.873	1.844	1.828	1.820
Observations	26,533	21,890	19,109	16,942
adj. R^2	0.799	0.799	0.805	0.811

Notes: The table reports the coefficients associated with the weather variables in origin country in Equation (2) in the Methods section. The sample is restricted to non-OECD 145 origin countries and to EU27 member countries + UK as destinations. Standard errors are clustered by origin country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All regressions use weather weighted by maize area over maize growing season with different lags of weather. All regressions control for origin-destination, destination-by-year, and region-of-origin-by-year fixed effects.

Table S10. Gravity model for asylum applications with destination weather

	(log) Asylum Applications		
	(1)	(2)	(3)
Temperature origin	-1.650**	-2.036***	-2.102***
	(0.657)	(0.603)	(0.615)
Temperature origin^2	0.0793**	0.0448	0.0470
	(0.0316)	(0.0289)	(0.0293)
Temperature origin^3	0.000990	0.00206	0.00237
	(0.00119)	(0.00183)	(0.00188)
Temperature origin^4	-0.0000350	-0.0000445	-0.0000578
	(0.0000328)	(0.0000366)	(0.0000352)
Precipitation origin	-16.45	18.63	-9.071
	(55.75)	(66.72)	(63.21)
Precipitation origin^2	28112.6	4645.8	22074.1
	(36210.8)	(48527.1)	(41935.2)
Temperature destination	-0.0564**	-0.0467**	-0.0472**
	(0.0231)	(0.0229)	(0.0228)
Temperature destination^2	0.00391***	0.00395***	0.00395***
	(0.000889)	(0.000879)	(0.000880)
Precipitation destination	6.303*	6.304*	6.292*
	(3.814)	(3.803)	(3.804)
Precipitation destination^2	1034.1	1160.2	1241.9
	(4398.2)	(4393.4)	(4396.6)
Weather	Annual	Maize season	Maize season
Weights	None	Maize agricultural land	Population
Origin-destination FE	X	X	X
Region of origin-by-year FE	X	X	X
Mean outcome	3.748	3.748	3.748
SD Outcome	1.873	1.873	1.873
Observations	25,957	25,957	25,957
adj. R^2	0.749	0.749	0.749

Notes: The table reports the coefficients associated with the weather variables in the origin country in Equation (2) in the Methods section. The sample is restricted to non-OECD 141 origin countries and to EU27 member countries + UK as destinations. Standard errors are clustered by origin country-year. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S11. Trade and asylum applications

Outcome variable	log(Trade)	
	OLS	2SLS
	(1)	(2)
log(Predicted Asylum Applications)	-0.00884	
	(0.00592)	
log(Asylum Applications)		0.232
		(0.144)
Country FE	X	X
Year FE	X	X
F-Statistic		22.303
Observations	550	550
Number of countries	28	28

Notes: The table reports estimates of a reduced form OLS regressions in column (1) using the instrument constructed from Equation (2) of weather-induced asylum applications, and estimates of a 2SLS regressions in column (2). Outcome variable is the log of the trade flows between non-OECD countries and EU27+UK member countries between 2000 and 2019. All columns include country and year fixed effects. Robust standard errors, clustered at the country level, in parentheses. F-statistic refers to the Kleibergen-Paap F-statistic for weak instruments. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S12. Weather-induced asylum applications and individual climate concern. 2SLS estimates. Alternative specifications.

Outcome variable	Climate concern in European Elections			Climate change as political priority		
	(1)	(2)	(3)	(4)	(5)	(6)
log(Asylum Applications)	0.0217**	0.0222**	0.0232**	0.0427**	0.0432**	0.0476**
	(0.0102)	(0.0104)	(0.0108)	(0.0202)	(0.0208)	(0.0218)
Local weather controls	X	X	X	X	X	X
Individual controls	X	X	X	X	X	X
Country FE	X	X	X	X	X	X
Region-by-year FE	X	X	X	X	X	X
Country-by-age FE	X			X		
Birth cohort FE	X			X		
Country-by-birth cohort FE		X	X		X	X
Country-age linear trends	X	X		X	X	
F-Statistic	21.341	21.367	21.427	27.410	27.317	27.438
Observations	106,547	106,613	106,542	130,010	130,067	130,004

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-3 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 4-6 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating. (see Table S1 for exact wording and additional details on the construction of the variable). Asylum Applications is the sum of the asylum applications in the country in the survey year and the five preceding years, as defined in Equation 1. All columns report the 2SLS estimates using the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. All columns control for individual characteristics (Gender, Education (Up to 15 years; 16-19 years; 20 years or older; still studying; no education), Unemployed, Left-wing oriented) and country-level covariates (Linear and squared five-year average temperature and total precipitation, linear and squared annual temperature and total precipitation). Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S13. Weather-induced asylum applications and individual climate concern. 2SLS estimates. Alternative instruments.

Outcome variable	Climate concern in European Elections				
	(1)	(2)	(3)	(4)	(5)
Panel A:					
log(Asylum Applications)	0.0150*	0.0134*	0.0140*	0.0140*	0.0181*
	(0.00816)	(0.00788)	(0.00738)	(0.00791)	(0.00893)
Instrument	with migration costs	Equation (4)	Equation (5)	Origin temperature squared	5°C-bin origin temperature
Weak IV robust 95% CIs	[0.002,0.022]	[0.002,0.022]	[0.002,0.022]	[0.002,0.022]	[0.002,0.042]
F-Statistic	17.243	20.143	20.492	20.528	18.401
Observations	106,614	106,614	106,614	106,614	106,614
Outcome variable	Climate change as political priority				
Panel B:					
log(Asylum Applications)	0.0498**	0.0458**	0.0410**	0.0468**	0.0495**
	(0.0204)	(0.0197)	(0.0194)	(0.0197)	(0.0200)
Instrument	with migration costs	Equation (4)	Equation (5)	Origin temperature squared	5°C-bin origin temperature
Weak IV robust 95% CIs	[0.002,0.102]	[0.002,0.082]	[0.002,0.082]	[0.002,0.082]	[0.002,0.102]
F-Statistic	21.431	26.343	23.397	27.187	25.695
Observations	130,068	130,068	130,068	130,068	130,068
Local weather controls	X	X	X	X	X
Individual controls	X	X	X	X	X
Country FE	X	X	X	X	X
Age FE	X	X	X	X	X
Region-by-year FE	X	X	X	X	X
Country-age linear trends	X	X	X	X	X

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in Panel A is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in Panel B is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Asylum Applications is the sum of the asylum applications in the country in the survey year and the five preceding years, as defined in Equation 1. Each column uses a different instrument for predicted weather-induced asylum applications. In particular, the instruments used in columns 2 and 3 are obtained from Equation (4) and Equation (5), that account respectively for weather in host countries and allow for destination-specific response to origin-country weather shocks. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Weak IV robust 95% confidence intervals are Anderson–Rubin confidence sets; these differ from the wild-cluster-bootstrap Anderson–Rubin sets reported in Table 1, which are additionally robust to the small number of clusters and are the paper's primary inference. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S14. Weather-induced asylum applications and individual climate concern. 2SLS estimates. Alternative time windows.

Outcome variable	Climate concern in European Elections				Climate change as political priority			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(Asylum Applications)	0.0226**	0.0209**	0.0154*	0.0174**	0.0444**	0.0383*	0.0369*	0.0359*
	(0.0106)	(0.00993)	(0.00798)	(0.00807)	(0.0213)	(0.0212)	(0.0196)	(0.0188)
Local weather controls	X	X	X	X	X	X	X	X
Individual controls	X	X	X	X	X	X	X	X
Country FE	X	X	X	X	X	X	X	X
Age FE	X	X	X	X	X	X	X	X
Region-by-year FE	X	X	X	X	X	X	X	X
Country-age linear trends	X	X	X	X	X	X	X	X
Window exposure	5 years	4 years	4 years (excl. contemp.)	5 years (excl. contemp.)	5 years	4 years	4 years (excl. contemp.)	5 years (excl. contemp.)
F-Statistic	22.106	17.934	20.835	26.397	27.252	28.695	31.225	31.223
Observations	106,614	106,614	106,614	106,614	130,068	130,068	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-4 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 5-8 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Asylum Applications is the sum of the asylum applications in the country in the survey year and the five preceding years, as defined in Equation 1. The 2SLS estimates are obtained using the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S15. Weather-induced asylum applications and individual climate concern. 2SLS estimates. Alternative treatments.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	(1)	(2)	(3)	(4)
Asylum Applications	0.0151*	0.0244***	0.0213*	0.0204**
	(0.00776)	(0.00629)	(0.0120)	(0.00927)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
Regressor	log annual flow	weather-induced asylum anomaly	log annual flow	weather-induced asylum anomaly
F-Statistic	29.737		11.569	
Observations	106,614	106,614	130,068	130,068
Number of countries	28	28	28	28

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-2 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 3-4 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Columns (1) and (3) report the 2SLS estimates where Asylum Applications is the log of asylum applications in the country in the survey year and is instrumented using the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2). Columns (2)-(4) report the OLS estimates where Asylum Applications is the measure of weather-induced asylum application spikes n_{dt}. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S16. Weather-induced asylum applications per capita and individual climate concern. 2SLS estimates.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications/Population)	-0.00123	0.0203**	0.00775	0.0397**
	(0.00385)	(0.00940)	(0.00650)	(0.0193)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
F-Statistic		16.688		23.726
Observations	106,614	106,614	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-2 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 3-4 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Both actual and predicted asylum applications are scaled by the total population in the country. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S17. Asylum applications and climate concern using volcanic eruptions and earthquakes in origin country.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	-0.00147	0.00396	0.00746	0.0176
	(0.00384)	(0.0115)	(0.00651)	(0.0294)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
F-Statistic		12.393		5.062
Observations	106,614	106,614	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-2 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 3-4 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Asylum Applications is the sum of the asylum applications in the country in the survey year and the five preceding years, as defined in Equation 1. Columns (2) and (4) report the 2SLS estimates using the predicted asylum applications constructed from the gravity-predicted asylum application flows using earthquakes and volcanic eruptions from EM-DAT data. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S18. Weather-induced asylum applications and individual concern on other topics. 2SLS estimates.

Outcome variable	Economic growth in European Elections	Euro single currency in European Elections	Terrorism in European Elections	Food safety in European Elections	Terrorism as political Priority
	(1)	(2)	(3)	(4)	(5)
log(Asylum Applications)	-0.00226	-0.0458	-0.00383	-0.0193	0.0126
	(0.0165)	(0.0814)	(0.00804)	(0.0130)	(0.0153)
Local weather controls	X	X	X	X	X
Individual controls	X	X	X	X	X
Country FE	X	X	X	X	X
Age FE	X	X	X	X	X
Region-by-year FE	X	X	X	X	X
Country-age linear trends	X	X	X	X	X
F-Statistic	14.434	9.437	14.434	14.434	21.434
Observations	106,614	53799	106,614	106,614	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable is a dummy equal to 1 if the respondent reports economic growth (in col. 1), euro single currency (col. 2), terrorism (col. 3) and food safety (col. 4) as a theme that the European Parliament should give priority to when deliberating. The dependent variable in column 5 is a dummy equal to 1 if the respondent reports terrorism as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections (see Table S1 for exact wording). The estimates refer to the 2SLS coefficients obtained using the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S19. Weather-induced asylum applications and climate concern. No top-5 countries of origin for asylum seekers.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	-0.000120	0.0160*	0.0145*	0.0507***
	(0.00437)	(0.00854)	(0.00760)	(0.0178)
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
F-Statistic		23.737		22.552
Observations	106,614	106,614	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-2 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 3-4 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Asylum applications do not account for the top-5 countries of origin for asylum seekers in the sample (Afghanistan, Iraq, Russian Federation, Serbia, Syria). All columns reporting the 2SLS estimates (2 and 4) instrument the (log) of asylum applications with the gravity-predicted (log) of asylum applications described in Equation (2) in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S20. Country average climate concern and leads of actual and predicted asylum applications.

Outcome variable	Asylum Applications		5-year Asylum Applications		Predicted Asylum Applications	
	(1)	(2)	(3)	(4)	(5)	(6)
Climate concern in European Elections	-2.045		0.132		-2.498	
	(3.103)		(4.075)		(2.382)	
Climate change as political priority		1.483		1.659		1.005
		(1.282)		(1.224)		(0.674)
Local weather controls	X	X	X	X	X	X
Country FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
Observations	83	164	83	164	83	164

Notes: All estimates are obtained from country-level regressions. The main regressors are country-average responses for "Climate concern in European Elections" and "Climate change as political priority". The first two columns use one-year ahead asylum applications, columns 3 and 4 use five-year ahead cumulative asylum applications, and columns 5 and 6 use the one-year ahead predicted weather-induced asylum applications. The predicted measure of weather-induced asylum applications is constructed from the estimation of Equation (5). All columns control for linear and squared five-year average temperature and total precipitation, linear and squared annual temperature and total precipitation, and country, and survey year fixed effects. Robust standard errors, clustered at the country level, in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S21. Weather-induced asylum applications and climate concern. Controlling for trade.

Outcome variable	Climate concern in European Elections			Climate change as political priority		
	(1)	(2)	(3)	(4)	(5)	(6)
log(Asylum Applications)		0.157	0.0334*		0.0511	0.0443**
		(0.346)	(0.0195)		(0.0312)	(0.0213)
log(Trade/GDP)	0.0295		-0.0681	0.0894		-0.0132
	(0.0264)		(0.0509)	(0.0855)		(0.0340)
log(Predicted Trade/GDP)		-0.148			-0.0124	
		(0.360)			(0.0333)	
Local weather controls	X	X	X	X	X	X
Individual controls	X	X	X	X	X	X
Country FE	X	X	X	X	X	X
Age FE	X	X	X	X	X	X
Region-by-year FE	X	X	X	X	X	X
Country-age linear trends	X	X	X	X	X	X
F-Statistic	7.256	0.234	1.947	9.873	5.393	5.138
SW F-Statistic (Asylum applications)			8.38			14.75
SW F-Statistic (Trade)			7.95			13.12
Observations	106,614	106,614	106,614	130,068	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-3 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 4-6 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Trade is defined as the sum of bilateral trade flows with all non-OECD countries and then scaled by country GDP, and logged. Columns (1) and (4) replicates the baseline specification replacing asylum applications with observed trade flows (scaled by country-level GDP). Columns (2) and (5) control for predicted weather-induced trade flows. Columns (3) and (6) augment the preferred specification by including trade flows and instrumented it with the weather-induced predicted counterpart. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. F-statistic refers to the Kleibergen-Paap F-statistic for weak instruments. SW F-stats refer to joint significance of the instruments in the various separate first-stage regressions. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S22. Weather-induced asylum applications, climate concern, and Google Trends. 2SLS estimates.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	(1)	(2)	(3)	(4)
log(Asylum Applications)	0.0181*	0.0162*	0.0454**	0.0417***
	(0.00934)	(0.00890)	(0.0191)	(0.0142)
Google search "Climate change"	0.00209*	0.00282**	-0.00243	0.000430
	(0.00102)	(0.00125)	(0.00266)	(0.00227)
Google search "Climate protests"	-0.000550	0.000628	0.0243**	0.0185**
	(0.00441)	(0.00488)	(0.00943)	(0.00835)
Google search "Migration"		0.00187		-0.00345*
		(0.00137)		(0.00202)
Google search "Refugee"		-0.00198		-0.00118
		(0.00278)		(0.00310)
Local weather controls	X	X	X	X
Individual controls	X	X	X	X
Country FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
F-Statistic	12.923	11.982	29.273	43.921
Observations	106,614	106,614	130,068	130,068

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-2 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 3-4 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). All columns report the 2SLS estimates where the (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equation (2) in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic, which corresponds to the effective Olea and Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S23. Asylum applications and Google Trends. OLS and 2SLS estimates.

Google Trends for	Climate change		Climate protests		Migration		Refugee	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(Predicted Asylum Applications)	0.333		-0.705**		-1.037		-0.624	
	(0.381)		(0.308)		(0.690)		(0.738)	
log(Asylum Applications)		0.372		-0.786*		-1.157		-0.696
		(0.415)		(0.433)		(0.826)		(0.966)
Country FE	X	X	X	X	X	X	X	X
Year FE	X	X	X	X	X	X	X	X
Mean outcome	11.15	11.15	2.38	2.38	23.92	23.92	9.36	9.36
SD outcome	5.96	5.96	3.82	3.82	18.32	18.32	8.54	8.54
F-Statistic		12.76		12.76		12.76		12.76
Observations	444	444	444	444	444	444	444	444

Notes: Country-level estimates regressing annual average Google Searches for "Climate change" (columns 1-2), "Climate protests" (columns 3-4), "Migration" (columns 5-6), "Refugee" (columns 7-8) on the instrument (odd columns) and the actual flows instrumented with the instrument (even columns). The gravity-predicted (log) of asylum applications is obtained from the predicted values from Equation (2) in the Methods section. All columns control for country and survey year fixed effects. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S24. Weather-induced asylum applications and climate concern. Heterogeneity by total asylum applicants in destination country. 2SLS estimates.

Outcome variable	Climate concern in European Elections		Climate change as political priority	
	(1)	(2)	(3)	(4)
log(Asylum Applications)	0.00807	0.0193*	0.0213	0.0515*
	(0.00585)	(0.0115)	(0.0167)	(0.0301)
Destination country asylum applications	Below median	Above median	Below median	Above median
Country FE	X	X	X	X
Year FE	X	X	X	X
Age FE	X	X	X	X
Region-by-year FE	X	X	X	X
Country-age linear trends	X	X	X	X
F-Statistic	13.865	11.286	14.272	12.929
Observations	49,384	57,228	59,095	70,972

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-2 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 3-4 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Odd columns report the estimates in the sub-sample of countries below the median number of asylum applications received, even columns report the estimates in the sub-sample of countries above the median number of asylum applications received (Austria, Belgium, Denmark, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Spain, Sweden, United Kingdom). All columns report the 2SLS estimates where the (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equation (2) in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S25. 2SLS Estimates: Exposure to weather-induced asylum applications by age range

	(1) Climate concern in European Elections	(2) Climate change as political priority
$\text{Log(Exposure}_{16-24}\text{)}$	0.0235**	0.0390**
	(0.00959)	(0.0180)
F-statistic	26.023	46.351
Observations	17554	21661
$\text{Log(Exposure}_{25-33}\text{)}$	0.00990	0.0209
	(0.00635)	(0.0169)
F-statistic	41.019	37.483
Observations	21324	26359
$\text{Log(Exposure}_{34-42}\text{)}$	0.00889	0.0203
	(0.00661)	(0.0150)
F-statistic	41.939	40.211
Observations	24389	30320
$\text{Log(Exposure}_{43-51}\text{)}$	0.00815	0.0209
	(0.00673)	(0.0135)
F-statistic	38.166	36.681
Observations	25698	31544
$\text{Log(Exposure}_{52-60}\text{)}$	0.00605	0.0167
	(0.00792)	(0.0145)
F-statistic	40.667	37.419
Observations	27558	33144
$\text{Log(Exposure}_{61-69}\text{)}$	0.00971	0.0226
	(0.00573)	(0.0131)
F-statistic	34.782	35.594
Observations	24344	29936
$\text{Log(Exposure}_{70-78}\text{)}$	0.00484	0.00553
	(0.00740)	(0.0255)
F-statistic	28.925	22.865
Observations	15234	18158
$\text{Log(Exposure}_{79+}\text{)}$	0.0120	0.0304
	(0.0376)	(0.0352)
F-statistic	21.008	22.046
Observations	5,269	6,315
Local weather controls	X	X
Individual controls	X	X
Country FE	X	X
Age FE	X	X
Birth-cohort FE	X	X
Region-by-year FE	X	X
Country-age linear trends	X	X

Notes: Each cell reports the 2SLS estimate of the coefficient associated with the (log) exposure to asylum applications as the (log) of the cumulative asylum applications in the country in a given age range of an individual. The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed and whose exposure period occurs in the time period in which asylum application data are available (i.e., after 2000). The dependent variable in column 1 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in column 2 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). The 2SLS estimates use the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. Robust standard errors, clustered at the country level, in parentheses. Individual controls: Gender, Education (Up to 15 years; 16-19 years; 20 years or older; still studying; no education), Unemployed, Left-wing oriented. weather controls: Exposure to average temperature and precipitation over the same time period in which exposure to asylum applications is measured and contemporaneous linear and quadratic terms of temperature and precipitation. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S26. Exposure to weather-induced asylum applications and individual climate concern. 2SLS estimates. Alternative definitions of formative age.

Outcome variable	Climate concern in European Elections						Climate change as political priority					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
log(Asylum Applications)	0.0235**	0.0379**	0.0130*	0.0123*	0.01097	0.01196*	0.0390**	0.0461*	0.0282*	0.0286*	0.0307**	0.0303**
	(0.00959)	(0.0160)	(0.00721)	(0.00750)	(0.00772)	(0.00716)	(0.0153)	(0.0261)	(0.0147)	(0.0148)	(0.0138)	(0.0129)
Local weather controls	X	X	X	X	X	X	X	X	X	X	X	X
Individual controls	X	X	X	X	X	X	X	X	X	X	X	X
Country FE	X	X	X	X	X	X	X	X	X	X	X	X
Age FE	X	X	X	X	X	X	X	X	X	X	X	X
Birth-cohort FE	X	X	X	X	X	X	X	X	X	X	X	X
Region-by-year FE	X	X	X	X	X	X	X	X	X	X	X	X
Country-age linear trends	X	X	X	X	X	X	X	X	X	X	X	X
Formative age	16-24	16-25	17-24	17-25	18-24	18-25	16-24	16-25	17-24	17-25	18-24	18-25
F-Statistic	26.023	20.808	27.368	27.073	29.487	29.414	46.351	33.767	45.758	44.988	43.767	44.128
Observations	17,554	9,542	18,230	18,230	18,704	18,704	21,661	11,915	22,384	22,384	22,956	22,956

Notes: The sample is restricted to survey respondents who have the same nationality as the country in which they are interviewed. The dependent variable in columns 1-6 is a dummy equal to 1 if the respondent reports climate change as a theme that should be discussed as a matter of priority during the electoral campaign for the next European Parliament elections. The dependent variable in columns 7-12 is a dummy equal to 1 if the respondent reports climate change as a theme that the European Parliament should give priority to when deliberating (see Table S1 for exact wording and additional details on the construction of the variable). Asylum Applications is the sum of the asylum applications in the country in the survey year and the five preceding years, as defined in Equation 1. The 2SLS estimates use the predicted asylum applications constructed from the gravity-predicted asylum application flows as described in Equation (2) in the Methods section. All columns control for individual characteristics (gender, education levels; employment status; political orientation) and country-level covariates (linear and squared annual average temperature and total precipitation), and country, age, birth-year, region-by-survey-year fixed effects and country by age linear trends. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S27. Weather-induced asylum applications and Green party votes in European Parliament elections

Outcome variable	% Green votes (*Mean: 9.84)*			
	OLS	2SLS	2SLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	-0.323	-1.609	-2.392	-4.022*
	(1.398)	(1.711)	(1.695)	(2.214)
Local weather controls	X	X	X	X
Country controls	X		X	X
Country FE	X	X	X	X
Year FE	X	X	X	X
Regional linear time trends				X
F-Statistic		12.657	23.060	20.882
Observations	65	65	65	65

Notes: The table reports the OLS (columns 1) and 2SLS (columns 2 to 4) coefficients on (log) of total asylum applications in the five years preceding the European elections. The dependent variable is the share of votes for Green parties. In columns (2) to (4), the (log) of total asylum applications in the five years preceding the elections is instrumented with the gravity-predicted (log) of total asylum applications. Robust standard errors, clustered at the country level, in parentheses. *Local weather controls*: Linear and squared average temperature and total precipitation in the country. *Country controls*: (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, voter turnout. All columns control for country and year-fixed effects. Column 4 adds region-specific linear time trends. F-statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea and Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S28. Weather-induced asylum applications and other parties' votes in European Parliament elections. 2SLS estimates. Other parties.

Outcome variable: % votes	Socialist/Left	Social democrats	Liberal	Christian democrats	Conservative	Nationalist
	(1)	(2)	(3)	(4)	(5)	(6)
log(Asylum Applications)	4.399	-1.287	-0.884	-0.447	2.434	-4.895**
	(2.840)	(1.617)	(3.839)	(2.807)	(2.376)	(2.059)
Country controls	X	X	X	X	X	X
Local weather controls	X	X	X	X	X	X
Country FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
Observations	67	99	83	65	73	84
F-Statistic	15.273	16.410	25.556	10.922	13.949	22.641

Notes: The table reports the 2SLS coefficients on (log) of total asylum applications in the five years preceding the European Parliament elections. The dependent variable is the share of votes of other parties by party family as classified in the Manifesto database in European Parliament elections after 2000 in an European Union member country. The (log) of total asylum applications in the five years preceding the elections is instrumented with the gravity-predicted (log) of total asylum applications. *Country controls*: (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old between the two election rounds and in the year of the elections, voter turnout. *Local weather controls*: Linear and squared average temperature and total precipitation in the country between the two election rounds and in the year of the elections. All countries control for country-specific, year-specific fixed effects. Robust standard errors, clustered at the country level, in parentheses. F-statistic refers to the Kleibergen-Paap F-statistic for weak instrument. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S29. Weather-induced asylum applications and electoral turnout in European Parliament elections

Outcome variable	% Voter Turnout (*Mean: 46.134)*			
	OLS	2SLS	2SLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	1.097	-3.785	-2.428*	-3.256*
	(1.617)	(3.061)	(1.360)	(1.912)
Country controls	X	X	X	X
Local weather controls	X	X	X	X
Country FE	X		X	X
Year FE	X	X	X	X
Regional linear time trends				X
F-Statistic		9.468	15.536	11.083
Observations	65	65	65	65

Notes: The table reports the OLS (column 1) and 2SLS (columns 2 to 4) coefficients on (log) of total asylum applications in the five years preceding the European Parliament elections. The dependent variable is the share of electoral turnout in European Parliament elections after 2000 in an European Union member country. The (log) of total asylum applications in the five years preceding the elections is instrumented with the gravity-predicted (log) of total asylum applications described in Equation (2) in the Methods section. *Country controls*: (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old between the two election rounds and in the year of the elections, voter turnout. *Local weather controls*: Linear and squared average temperature and total precipitation in the country between the two election rounds and in the year of the elections. All countries control for country-specific, year-specific fixed effects. Robust standard errors, clustered at the country level, in parentheses. F-statistic refers to the Kleibergen-Paap F-statistic for weak instrument. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S30. Effect of lagged weather-induced asylum applications on Green party vote share in European Parliament elections

Outcome variable	% Green votes (*Mean: 10.42)*			
	OLS	2SLS	2SLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications) - lagged	-0.957	0.761	0.719	2.873
	(2.261)	(2.145)	(3.551)	(6.819)
Local weather controls	X	X	X	X
Country controls	X		X	X
Country FE	X	X	X	X
Year FE	X	X	X	X
Regional linear time trends				X
F-Statistic		24.425	16.513	7.946
Observations	49	50	50	50

Notes: The table reports OLS (column 1) and 2SLS (columns 2–4) estimates of the effect of the (log) total number of asylum applications received during the preceding electoral mandate on the share of votes for Green parties in European Parliament elections. In the 2SLS specifications, the (log) of lagged total asylum applications is instrumented with the gravity-predicted (log) total asylum applications described in Equation (2). Robust standard errors, clustered at the country level, in parentheses. *Local weather controls*: Linear and squared average temperature and total precipitation in the country. *Country controls*: (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, voter turnout. All columns control for country and year-fixed effects. Column 4 adds region-specific linear time trends. F-statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea and Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S31. Weather-induced asylum applications and environmental agenda of parties.

	Party's Environmentalism (Mean=0)			
	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS
log(Asylum Applications)	-0.0739**	-0.0254	-0.154	-0.158
	(0.0359)	(0.103)	(0.112)	(0.116)
Weights			Votes	Votes
Votes				Above 5%
Right-left ideological index	X	X	X	X
Country controls	X	X	X	X
Local weather controls	X	X	X	X
Country FE	X	X	X	X
Year FE	X	X	X	X
Party FE	X	X	X	X
F-Statistic		32.570	28.076	27.312
Observations	641	641	634	469

Notes: The analysis is over a sample of parties that are running in multiple elections. The table reports the coefficients associated with (log) of the sum of asylum applications in the period between one election year and the other. The dependent variable is the (normalized) share of quasi-sentences that positively referred to the environment in each party's manifesto in the national elections. Column (1) reports the OLS estimates, and columns (2) to (4) display the 2SLS estimates where (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equation (2) in the Methods section. Robust standard errors, clustered at the country level, in parentheses. All columns control for the normalized right-left ideological index provided in the MPD. *Country controls*: averages between two elections of (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, and in the year of the elections. *Local weather controls*: averages between two elections of linear and squared temperature and precipitation and in the year of the elections. All columns control for country, year, and party fixed effects. Columns (3) and (4) weigh each party's observation by the vote gained in the national elections. Column (4) only considers parties that gained at least 5% of the votes. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S32. Weather-induced asylum applications and environmentalism in national elections.

Outcome variable	National Elections Environmentalism Index			
	OLS	2SLS	2SLS	2SLS
	(1)	(2)	(3)	(4)
log(Asylum Applications)	-0.0729	0.215	0.232	0.371
	(0.107)	(0.260)	(0.343)	(0.501)
Local weather controls	X	X	X	X
Country controls	X		X	X
Country FE	X	X	X	X
Year FE	X	X	X	X
Regional linear time trends				X
F-Statistic		22.366	16.030	13.664
Observations	119	119	119	119

Notes: The table reports the OLS (columns 1) and 2SLS (columns 2 to 4) coefficients on (log) of total asylum applications in the years between one national election round and the other. The dependent variable is the normalized index of environmentalism of national elections where the share of quasi-sentences that positively referred to the environment in each party's manifesto is weighted by its vote share in the national elections. In columns 2 to 4, the (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equation (2) in the Methods section. Robust standard errors, clustered at the country level, in parentheses. *Country controls*: (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old. *Local weather controls*: Linear and squared average temperature and total precipitation in the country. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S33. Weather-induced asylum applications and other dimensions of national elections. 2SLS estimates.

	Europe + (1)	Europe - (2)	Multiculturalism + (3)	Multiculturalism - (4)	Refugees + (5)	Cultural Autonomy + (6)
log(Asylum Applications)	0.226	0.0865	-0.232	0.156	-0.186	0.287
	(0.182)	(0.174)	(0.160)	(0.343)	(0.150)	(0.353)
Country controls	X	X	X	X	X	X
Local weather controls	X	X	X	X	X	X
Country FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
F-Statistic	16.030	16.030	16.030	16.030	16.030	16.030
Observations	119	119	119	119	119	119

Notes: The dependent variable is the normalized index of each topic of national elections where the share of quasi-sentences that referred to each topic as described in Table S3 in each party's manifesto is weighted by its vote share in the national elections. The table reports the coefficients associated with (log) of the sum of asylum applications in the period between one election year and the other, obtained using an instrumental variable approach, where the instrument is constructed using the predicted values in Equations (2). *Country controls*: averages between two elections of (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, and in the year of the elections. *Local weather controls*: averages between two elections of linear and squared temperature and precipitation and in the year of the elections. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S34. Green party votes and leads of actual and predicted asylum applications

Outcome variable	Actual asylum applications (1)	Predicted asylum applications (2)
Green votes (%)	0.0454	-0.00227
	(0.0300)	(0.00860)
Country controls	X	X
Local weather controls	X	X
Country FE	X	X
Year FE	X	X
Observations	42	42

Notes: The table reports the OLS estimates associated with the % of Green party votes in European Parliament elections on the leads of actual and predicted weather-induced asylum applications in logarithm as constructed in Equation (4). Robust standard errors, clustered at the country level, in parentheses. *Country controls*: (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old. *Local weather controls*: Linear and squared average temperature and total precipitation in the country. All columns account for country- and year-specific fixed effects. F-statistic refers to the Kleibergen-Paap F-statistic for weak instruments. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S35. Weather-induced asylum applications and environmental agenda of parties. 2SLS estimates. Alternative vote cutoffs.

	Party's Standardized Environmentalism			
	(1)	(2)	(3)	(4)
Panel A: Unweighted				
log(Asylum Applications)	-0.0583	-0.334**	-0.365**	-0.347**
	(0.108)	(0.145)	(0.165)	(0.153)
F-Statistic	32.421	25.869	20.066	15.168
Panel B: Weighted by party votes				
log(Asylum Applications)	-0.158	-0.274*	-0.314*	-0.297*
	(0.116)	(0.147)	(0.160)	(0.148)
F-Statistic	27.312	23.909	19.597	14.649
Votes above	5%	10%	15%	20%
Right-left ideological index	X	X	X	X
Country controls	X	X	X	X
Local weather controls	X	X	X	X
Country FE	X	X	X	X
Year FE	X	X	X	X
Party FE	X	X	X	X
Observations	469	293	210	170

Notes: The analysis is over a sample of parties that are running in multiple elections. The table reports the coefficients associated with (log) of the sum of asylum applications in the period between one election year and the other. The dependent variable is the (normalized) share of quasi-sentences that positively referred to the environment in each party's manifesto in the national elections. All columns report the 2SLS estimates where (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equations (2). Panel B weighs each party's observation by the vote gained in the national elections. Column (1) only considers parties that gained at least 5% of the votes, column (2) only considers parties that gained at least 10% of the votes, column (3) only considers parties that gained at least 15% of the votes, column (4) only considers parties that gained at least 20% of the votes. All columns control for the normalized right-left ideological index provided in the MPD. *Country controls*: averages between two elections of (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, and in the year of the elections. *Local weather controls*: averages between two elections of linear and squared temperature and precipitation and in the year of the elections. All columns control for country, year, and party fixed effects. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S36. Weather-induced asylum applications and environmental agenda by party family. 2SLS Estimates.

	Green/Ecologist (1)	Socialist/Left (2)	Social democrats (3)	Liberal (4)	Christian democrats (5)	Conservative (6)	Nationalist (7)
Panel A: Unweighted							
log(Asylum Applications)	-3.200	-0.542	-0.274	-0.0154	0.872	0.353	-0.0183
	(2.885)	(2.005)	(0.171)	(0.149)	(1.104)	(0.206)	(0.0777)
F-Statistic	1.289	2.491	25.802	47.751	2.713	10.025	46.526
Panel B: Weighted by party votes							
log(Asylum Applications)	-3.498	4.474	-0.355**	0.0478	-5.050	0.440	-0.0829
	(3.845)	(14.88)	(0.155)	(0.156)	(24.31)	(0.293)	(0.0916)
F-Statistic	1.605	2.080	34.013	64.349	2.060	5.542	50.383
Right-left ideological index	X	X	X	X	X	X	X
Country controls	X	X	X	X	X	X	X
Local weather controls	X	X	X	X	X	X	X
Country FE	X	X	X	X	X	X	X
Year FE	X	X	X	X	X	X	X
Party FE	X	X	X	X	X	X	X
Observations	52	73	105	84	72	66	68

Notes: The analysis is over a sample of parties that are running in multiple elections. The table reports the coefficients associated with (log) of the sum of asylum applications in the period between one election year and the other. The dependent variable is the (normalized) share of quasi-sentences that positively referred to the environment in each party's manifesto in the national elections. Each column only considers the parties belonging to a specific party family as defined by the Manifesto database. The coefficients reported are the 2SLS estimates where (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equation (2) in the Methods section. All columns control for the normalized right-left ideological index provided in the MPD. *Country controls*: averages between two elections of (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, and in the year of the elections. *Local weather controls*: averages between two elections of linear and squared temperature and precipitation and in the year of the elections. All columns control for country, year, and party fixed effects. Panel B weighs each party's observation by the vote gained in the national elections. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S37. Weather-induced asylum applications and other dimensions of parties' manifestos. 2SLS Estimates.

	Europe + (1)	Europe - (2)	Multiculturalism + (3)	Multiculturalism - (4)	Refugees + (5)	Cultural Autonomy + (6)
Panel A: Unweighted						
log(Asylum Applications)	-0.269	0.0538	0.0161	-0.0953	-0.0899	-0.164
	(0.314)	(0.103)	(0.172)	(0.0791)	(0.0886)	(0.159)
F-Statistic	51.412	51.412	51.412	51.412	51.412	51.412
Panel B: Weighted by party votes						
log(Asylum Applications)	-0.0494	0.0756	-0.0217	-0.135	0.000911	-0.000171
	(0.181)	(0.0803)	(0.0829)	(0.0894)	(0.000963)	(0.00318)
F-Statistic	40.407	40.407	40.407	40.407	40.407	40.407
Right-left ideological index	X	X	X	X	X	X
Country controls	X	X	X	X	X	X
Local weather controls	X	X	X	X	X	X
Country FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
Party FE	X	X	X	X	X	X
Observations	520	520	520	520	520	520

Notes: The analysis is over a sample of parties that are running in multiple elections. The table reports the coefficients associated with (log) of the sum of asylum applications in the period between one election year and the other. The dependent variable is the (normalized) share of quasi-sentences that refers to each dimension as described in Table S3 in each party's manifesto in the national elections. The coefficients report the 2SLS estimates where the (log) of asylum applications is instrumented with the gravity-predicted (log) of asylum applications described in Equation (2). Robust standard errors, clustered at the country level, in parentheses. All columns control for the normalized right-left ideological index provided in the MPD. *Country controls*: averages between two elections of (log) GDP per capita, % tertiary education, unemployment rate, population rate between 18 and 23 years old, and in the year of the elections. *Local weather controls*: averages between two elections of linear and squared temperature and precipitation and in the year of the elections. All columns control for country, year, and party fixed effects. Panel B weighs each party's observation by the vote gained in the national elections. Robust standard errors, clustered at the country level, in parentheses. The F-Statistic refers to the Kleibergen-Paap F-statistic for weak instruments, which corresponds to the effective Olea-Pflueger F-Statistic. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table S38. Minimal sensitivity reporting

Instrument	Estimate	Anderson-Rubin CI	t-value	Extreme Robustness Value (%)	Robustness Value (%)
Panel A: Climate concern in European Elections					
Asylum applications	0.0226	[0.016, 0.029]	7.21	0.05	1.6
Bound (1x Left-wing): $R^2_{Y\sim W\|Z,X} = 0.37\%$, $R^2_{W \sin Z\|X} = 0.004\%$, $t^{\max}_\alpha = 2.08$					
Bound (2x Left-wing): $R^2_{Y\sim W\|Z,X} = 0.75\%$, $R^2_{W \sin Z\|X} = 0.008\%$, $t^{\max}_\alpha = 2.21$					
Bound (1x Temperature): $R^2_{Y\sim W\|Z,X} = 0.37\%$, $R^2_{W \sin Z\|X} = 1.36\%$, $t^{\max}_\alpha = 4.29$					
Bound (2x Temperature): $R^2_{Y\sim W\|Z,X} = 0.73\%$, $R^2_{W \sin Z\|X} = 2.72\%$, $t^{\max}_\alpha = 6.64$					
Bound (1x Male): $R^2_{Y \sin W\|Z,X} = 0.06\%$, $R^2_{W \sin Z\|X} = 0.007\%$, $t^{\max}_\alpha = 2.02$					
Bound (2x Male): $R^2_{Y \sin W\|Z,X} = 0.12\%$, $R^2_{W \sin Z\|X} = 0.013\%$, $t^{\max}_\alpha = 2.09$					
Bound (1x Tertiary education): $R^2_{Y \sin W\|Z,X} = 0.21\%$, $R^2_{W \sin Z\|X} = 0.009\%$, $t^{\max}_\alpha = 2.10$					
Bound (2x Tertiary education): $R^2_{Y \sin W\|Z,X} = 0.42\%$, $R^2_{W \sin Z\|X} = 0.017\%$, $t^{\max}_\alpha = 2.23$					
Panel B: Climate change as political priority					
Asylum applications	0.0444	[0.035, 0.051]	10.6	0.08	2.4
Bound (1x Left-wing): $R^2_{Y\sim W\|Z,X} = 0.14\%$, $R^2_{W \sin Z\|X} = 0.007\%$, $t^{\max}_\alpha = 2.07$					
Bound (2x Left-wing): $R^2_{Y\sim W\|Z,X} = 0.28\%$, $R^2_{W \sin Z\|X} = 0.013\%$, $t^{\max}_\alpha = 2.17$					
Bound (1x Temperature): $R^2_{Y\sim W\|Z,X} = 0.002\%$, $R^2_{W \sin Z\|X} = 1.74\%$, $t^{\max}_\alpha = 2.17$					
Bound (2x Temperature): $R^2_{Y\sim W\|Z,X} = 0.003\%$, $R^2_{W \sin Z\|X} = 3.48\%$, $t^{\max}_\alpha = 2.39$					
Bound (1x Male): $R^2_{Y \sin W\|Z,X} = 0.02\%$, $R^2_{W \sin Z\|X} = 0.15\%$, $t^{\max}_\alpha = 2.02$					
Bound (2x Male): $R^2_{Y \sin W\|Z,X} = 0.04\%$, $R^2_{W \sin Z\|X} = 0.31\%$, $t^{\max}_\alpha = 2.08$					
Bound (1x Tertiary education): $R^2_{Y \sin W\|Z,X} = 0.04\%$, $R^2_{W \sin Z\|X} = 0.001\%$, $t^{\max}_\alpha = 1.98$					
Bound (2x Tertiary education): $R^2_{Y \sin W\|Z,X} = 0.08\%$, $R^2_{W \sin Z\|X} = 0.002\%$, $t^{\max}_\alpha = 2.00$					

References in Supplementary Information

[65] Hatton, T. J. Asylum migration to the developed world: Persecution, incentives, and policy. *Journal of Economic Perspectives* **34**, 75–93 (2020).

[66] Missirian, A. & Schlenker, W. Asylum applications and migration flows. *American Economic Review* **107**, 436–40 (2017).

[67] Byravan, S. & Rajan, S. C. Taking lessons from refugees in Europe to prepare for climate migrants and exiles. *Environmental Justice* **10**, 108–111 (2017).

[68] Wennersten, J. R. & Robbins, D. *Rising tides: climate refugees in the twenty-first century* (Indiana University Press, 2017).

[69] Missirian, A. & Schlenker, W. Asylum applications respond to temperature fluctuations. *Science* **358**, 1610–1614 (2017).

[70] Abel, G. J., Brottrager, M., Crespo Cuaresma, J. & Muttarak, R. Climate, conflict and forced migration. *Global Environmental Change* **54**, 239–249 (2019).

[71] Burke, M., Hsiang, S. & Miguel, E. Climate and conflict. *Annual Review of Economics* **7**, 577–617 (2015).

[72] Campo, F., Giunti, S. & Mendola, M. Refugee crisis and right-wing populism: Evidence from the Italian Dispersal Policy. *European Economic Review* **168**, 104826 (2024).

[73] Abel, G. J. & Cohen, J. E. Bilateral international migration flow estimates for 200 countries. *Scientific Data* **6**, 82 (2019).

[74] Fasani, F., Frattini, T. & Minale, L. Lift the ban? Initial employment restrictions and refugee labour market outcomes. *Journal of the European Economic Association* **19** (2021).

[75] Foged, M., Hasager, L. & Peri, G. Comparing the effects of policies for the labor market integration of refugees. NBER Working Paper 30534, National Bureau of Economic Research (2022).

[76] European Union. Council Regulation (EC) No 343/2003 of 18 February 2003 establishing the criteria and mechanisms for determining the Member State responsible for examining an asylum application [Dublin II] (2003). Official Journal of the European Union, L 50, 25 February 2003.

[77] European Union. Regulation (EU) No 604/2013 of the European Parliament and of the Council of 26 June 2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international protection (recast) [Dublin III] (2013). Official Journal of the European Union, L 180, 29 June 2013.

[78] Eurostat. Statistics on Countries Responsible for Asylum Applications (Dublin Regulation), dataset `migr_dub` (2024). https://ec.europa.eu/eurostat/cache/metadata/en/migr_dub_esms.htm.

[79] Fratzke, S. Not Adding Up: The Fading Promise of Europe's Dublin System. Tech. Rep., Migration Policy Institute, Brussels (2015).

[80] Bohra-Mishra, P., Oppenheimer, M., Cai, R., Feng, S. & Licker, R. Climate variability and migration in the Philippines. *Population and Environment* **38**, 286–308 (2017).

[81] Cai, R., Feng, S., Oppenheimer, M. & Pytlikova, M. Climate variability and international migration: The importance of the agricultural linkage. *Journal of Environmental Economics and Management* **79**, 135–151 (2016).

[82] Cattaneo, C. & Peri, G. The migration response to increasing temperatures. *Journal of Development Economics* **122**, 127–146 (2016).

[83] Falco, C., Galeotti, M. & Olper, A. Climate change and migration: is agriculture the main channel? *Global Environmental Change* **59**, 101995 (2019).

[84] Feng, S., Oppenheimer, M. & Schlenker, W. Climate change, crop yields, and internal migration in the United States. NBER Working Paper w17734, National Bureau of Economic Research (2012).

[85] Hoffmann, R., Abel, G., Malpede, M., Muttarak, R. & Percoco, M. Drought and aridity influence internal migration worldwide. *Nature Climate Change* 1–9 (2024).

[86] Marchiori, L., Maystadt, J.-F. & Schumacher, I. The impact of weather anomalies on migration in sub-Saharan Africa. *Journal of Environmental Economics and Management* **63**, 355–374 (2012).

[87] UN. *Convention Relating to the Status of Refugees, 28 July 1951* (United Nations, Treaty Series, vol. 189, p. 137, 1951).

[88] Burzyński, M., Deuster, C., Docquier, F. & De Melo, J. Climate change, inequality, and human migration. *Journal of the European Economic Association* **20**, 1145–1197 (2022).

[89] Carleton, T., Hsiang, S. M. & Burke, M. Conflict in a changing climate. *The European Physical Journal Special Topics* **225**, 489–511 (2016).

[90] McGuirk, E. & Burke, M. The economic origins of conflict in Africa. *Journal of Political Economy* **128**, 3940–3997 (2020).

[91] Pearson, M. & Rüdig, W. The Greens in the 2019 European elections. *Environmental Politics* **29**, 336–343 (2020).

[92] Reif, K. & Schmitt, H. Nine second-order national elections - A conceptual framework for the analysis of European Election results. *European Journal of Political Research* **8** (1980).

[93] Hix, S. & Marsh, M. Punishment or protest? Understanding European Parliament elections. *The Journal of Politics* **69**, 495–510 (2007).

[94] Richardson, D. & Rootes, C. *The Green challenge: the development of Green parties in Europe* (Routledge, 2006).

[95] Battiston, G. Rescue on Stage: Border Enforcement and Public Attention in the Mediterranean Sea. Marco Fanno Working Papers 292, University of Padova (2020).

[96] Gentzkow, M. & Shapiro, J. M. What drives media slant? Evidence from US daily newspapers. *Econometrica* **78**, 35–71 (2010).

[97] Gallen, T. & Raymond, B. Broken instruments. *Working Paper* (2023).

[98] Mellon, J. Rain, rain, go away: 194 potential exclusion-restriction violations for studies using weather as an instrumental variable. *American Journal of Political Science* (2024).

[99] Fetzer, T. & Garg, P. Network determinants of cross-border media coverage of natural disasters. *Working Paper* (2025).

[100] Dallmann, I. Weather variations and international trade. *Environmental and Resource Economics* **72**, 155–206 (2019).

[101] Bez, C., Bosetti, V., Colantone, I. & Zanardi, M. Exposure to international trade lowers green voting and worsens environmental attitudes. *Nature Climate Change* **13**, 1131–1135 (2023).

[102] White, R. & Tadesse, B. The effects of refugee and non-refugee immigrants on us trade with their home countries. *The Journal of International Trade & Economic Development* **19**, 289–317 (2010).

[103] Zappalà, G. Propagation of extreme heat in agriculture across sectors and space. *Working Paper* (2024).

[104] UNHCR. Climate change and disaster displacement (2021). URL https://www.unhcr.org/climate-change-and-disasters.html. Accessed on 04.11.2021.

[105] Cooperman, A. D. Randomization inference with rainfall data: Using historical weather patterns for variance estimation. *Political Analysis* **25**, 277–288 (2017).

[106] Cinelli, C. & Hazlett, C. An omitted variable bias framework for sensitivity analysis of instrumental variables. *Biometrika* **112** (2025).

[107] Andrews, I., Stock, J. H. & Sun, L. Weak instruments in instrumental variables regression: Theory and practice. *Annual Review of Economics* **11**, 727–753 (2019).

[108] Enikolopov, R., Makarin, A. & Petrova, M. Social media and protest participation: Evidence from Russia. *Econometrica* **88**, 1479–1514 (2020).

[109] Cinelli, C. & Hazlett, C. Making sense of sensitivity: Extending omitted variable bias. *Journal of the Royal Statistical Society Series B: Statistical Methodology* **82**, 39–67 (2020).

[110] Gelman, A. & Imbens, G. Why high-order polynomials should not be used in regression discontinuity designs. *Journal of Business & Economic Statistics* **37**, 447–456 (2019).

[111] Keane, M. P. & Neal, T. A practical guide to weak instruments. *Annual Review of Economics* **16** (2024).

[112] Lal, A., Lockhart, M., Xu, Y. & Zu, Z. How much should we trust instrumental variable estimates in political science? Practical advice based on 67 replicated studies. *Political Analysis* **32**, 521–540 (2024).

[113] Chernozhukov, V. & Hansen, C. The reduced form: A simple approach to inference with weak instruments. *Economics Letters* **100**, 68–71 (2008).

[114] Lee, D. S., McCrary, J., Moreira, M. J. & Porter, J. Valid t-ratio Inference for IV. *American Economic Review* **112**, 3260–3290 (2022).

[115] Borusyak, K., Hull, P. & Jaravel, X. Quasi-experimental shift-share research designs. *The Review of Economic Studies* **89**, 181–213 (2022).

[116] Goldsmith-Pinkham, P., Sorkin, I. & Swift, H. Bartik instruments: What, when, why, and how. *American Economic Review* **110**, 2586–2624 (2020).

[117] Franklin, M. N. & Rüdig, W. The green voter in the 1989 European elections. *Environmental Politics* **1**, 129–159 (1992).

[118] Knutsen, O. *Social structure and party choice in western Europe: A comparative longitudinal study* (Springer, 2004).

[119] Knutsen, O. The impact of sector employment on party choice: A comparative study of eight West European countries. *European Journal of Political Research* **44**, 593–621 (2005).

[120] Van der Eijk, C. & Van Egmond, M. Political effects of low turnout in national and European elections. *Electoral Studies* **26**, 561–573 (2007).

[121] Hoffmann, R., Muttarak, R., Peisker, J. & Stanig, P. Climate change experiences raise environmental concerns and promote green voting. *Nature Climate Change* **12**, 148–155 (2022).

[122] Anderson, T. W. & Rubin, H. Estimation of the parameters of a single equation in a complete system of stochastic equations. *The Annals of mathematical statistics* **20**, 46–63 (1949).