European climate change attitudes in a cross-country comparative perspective.

Report 3

Project: PopClim

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1. Introduction

This report summarises the results of task 2 (Quantitative exploration of CC attitudes across the countries of Europe) of the PopClim project. In line with the research plan, Task 2 is composed of the following subtasks:

- Sub-Task 2.1. Multi-level comparative analysis of CC attitudes – CEE vs WE countries
- Sub-Task 2.2. Exploration of differences and commonalities in CC attitudes among CEE countries

The perception of climate change varies significantly across European societies, exhibiting marked differences between Northern and Southern Europe and between newer and older EU member states. This variation can be attributed to various factors at both individual and supra-individual levels. Individual-level factors include education, gender, age, religiosity, commitment to democratic values, political orientation, exposure to climate risks, and levels of trust, among others. Supra-individual factors encompass cultural values, experiences of climate impacts, media coverage, influence of opinion leaders, economic interests, CO2 emissions, disaster occurrences, and national wealth. Studies have shown that Central and Eastern European (CEE) countries display unique characteristics in climate change perception, often exhibiting risk perceived and willingness to act lower than Western Europe. Furthermore, political orientation plays a less significant role in shaping climate change opinions in CEE countries, contrasting with the ideological divides observed in Western Europe and Anglophone countries. These regional differences highlight the complex interplay of socio-economic, cultural, and political factors influencing climate change perceptions and underscore the need for tailored policy approaches to address these varied attitudes effectively.

Our analyses focus on the research gaps identified in the literature and leverage the unique advantages of the large-scale cross-project data sets accumulated in the preceding stages of the research project. The analyses were geared towards and organised around publications in academic journals. Work summarised in this report was conducted based on accumulated and harmonised data sets of cross-national surveys, i.e., the end-product of Task 1 (see Report 1). Analyses performed within this research task involved a broad exploration of attitudinal patterns within the available empirical data, which led to the identification of key data points to focus on to respond to the research gaps identified in the existing literature. This report briefly outlines the methodology and results of those analyses, which - together with the results

of qualitative research – will constitute the empirical basis for the final fourth report addressing the key hypotheses and research questions underpinning the whole project. The report is organised around the main threads of analyses performed on the three major data sources: the Eurobarometer, the European Social Survey and the European Values Study. In the relevant subchapters the main focus points have been summarised, with methodological and technical details pushed towards the Annex.

2. Climate change attitudes: state of the art

2.1. Climate change attitudes: underlying factors

Recent studies on public opinion about climate change (CC) show significant variation in opinions, beliefs, and attitudes across European societies (Poortinga et al., 2019; Spence et al., 2011). Notable differences are observed between Northern and Southern Europe, as well as between newer and older EU member states, though a clear pattern remains elusive. Influencing factors on CC opinions can be categorized into individual-level and supra-individual-level variables.

At the individual level, key factors include the level of education and knowledge about CC (Kvaløy et al., 2012), gender (Poortinga et al., 2019), age (VanHeuvelen & Summers, 2019), religiosity (Haller & Hadler, 2008; Kvaløy et al., 2012), commitment to democratic values (Lewis et al., 2019), political orientation (Ballew et al., 2019; Hao et al., 2020; Kvaløy et al., 2012), exposure to climate risks (Lee et al., 2015), social and institutional trust (Hao et al., 2018; Smith & Mayer, 2018; Tranter & Booth, 2019), postmaterialist values (Hao et al., 2018; Kvaløy et al., 2012), income (Hao et al., 2018; Lo, 2014), and self-efficacy versus climate fatalism (Kvaløy et al., 2012; Mayer & Smith, 2019).

At the supra-individual level, researchers have focused on cultural values (the impact of post-materialistic values on environmental concern), experiences of climate impacts (Kim & Wolinsky-Nahmias, 2014; Knight & Hao, 2022), media coverage of CC and the influence of opinion leaders and political leaders (Keys et al., 2016; Kousser & Tranter, 2018), economic interests (Knight, 2018), CO2 emissions and energy consumption (Lo & Chow, 2015), disaster occurrence (Matczak et al., 2015), and wealth measured by GDP per capita (Kim & Wolinsky-Nahmias, 2014; Knight, 2018; Kvaløy et al., 2012; Lo, 2014). Societal levels of trust also play a significant role, with higher aggregate levels of social and institutional trust correlating with greater CC risk perception (Fairbrother, 2017; Smith & Mayer, 2018). These factors contribute to a complex understanding of how European citizens perceive and prioritize climate change

issues. Values significantly influence pro-environmental behaviours, as evidenced by various studies. Huber (2020) found that participants' support for environmental protection versus economic growth varies on an eleven-point scale. Davidovic et al. (2020) identified pro-environmental and leftist political value orientations as key factors favouring government intervention for environmental protection. Mostafa (2017) challenged the affluence hypothesis, showing global warming concern is widespread and not limited to wealthy nations. Concari et al. (2020) explored pro-environmental consumer behaviour through several theoretical models. Sivonen (2020) found that left-wing orientation, generalized trust, and political trust predict support for fossil fuel taxes across Europe. Feng et al. (2019) studied Chinese attitudes towards the environment, while Sintov et al. (2020) linked political identity to electric car acceptance in Ohio. Birch (2020) noted that elite polarization on environmental issues predated mass polarization. Tosun and Mišić (2020) examined why citizens support EU authority in energy policy and their policy priorities based on Eurobarometer data.

2.2. Specific features of Central and Eastern European countries

Several studies demonstrated the peculiar characteristics of the CEE countries in terms of CC-related risks and CC perception. Mostly, citizens of CEE and post-communist countries tend to have lower environmental and climate change risk perception (Chaisty & Whitefield, 2015) and willingness to act or sacrifice to protect the environment or the climate (Haller & Hadler, 2008). Political orientation tends to play a lesser role in the formation of climate change opinions in post-communist countries than in Western European or English-speaking advanced democracies (Marquart-Pyatt, 2012; McCright et al., 2016; Nawrotzki, 2012; Poortinga et al., 2019; Smith & Mayer, 2018). While elite polarisation leads to a rift between citizens with different political orientations in the US and many other countries, such a pattern cannot be observed in post-communist countries (Birch, 2020). As a result, there is no consistent ideological divide in opinions about climate change as compared to Western Europe, where those on the right are less likely to believe that climate change is occurring and is indeed caused by humans, have lower risk perception and level of concern, and are less willing to pay for climate change mitigation (McCright et al., 2016; Smith & Mayer, 2018). Surprisingly, some results indicate that CEE citizens on the right are more willing to pay for mitigation than those on the left (McCright et al., 2016). Moreover, Smith and Mayer (2018) study of 20 countries showed that the effect of party affiliation and free market ideology on the perception of climate change's danger is limited within post-Communist countries as compared with Anglophone states and Western European countries.

The diminished role of political orientation in CEE can be attributed to the low political salience of climate change and the specific form of the left-right identification differences as compared with Western European countries. Furthermore, CEE countries may share a different approach to environmental policy in a broader policy context. There is either a positive relationship between favourable attitudes toward welfare and environmental state policies or no statistically significant relationship in mostly English-speaking Western countries. Therefore, environmental and welfare policies do not compete in these countries, and some can even go hand in hand. In Bulgaria, Czechia, Russia, and, to a lesser degree, Germany, the relationship is negative. Thus, in these countries, a choice or trade-off needs to be made between environmental or welfare policies (Jakobsson et al., 2018).

A lack of broad social and political consensus concerning CC was observed in Poland compared to Norway (Kundzewicz et al., 2018). Contrary to studies showing a correlation between cultural conservatism and scepticism concerning CC, Hiel and Kossowska (2007) found that environmentalism was linked with cultural conservatism in Ukraine. In the specific case of flood risk perception Raška's (2015) review revealed that in CEE countries, a "thin" concept of flood risk reduction was present, i.e. (a) risk reduction is considered as a temporary event rather than a process, (b) risk reduction measures is seen mostly via financial tools; (c) the regional and national authorities are treated as responsible for the risk communication and prevention measures.

3. Results of the analysis

3.1. Multi-level comparative analysis of CC attitudes

3.1.1. Eurobarometer on the environment and climate change

Standard Eurobarometer (EB) surveys include several question items probing the importance of the environment and climate change for their country and the EU. By examining data from 2010 to 2023, excluding the UK post-Brexit, the study evaluates the prominence of Environment or Climate Change issues reported by participants across the 27 EU member states. EB surveys are typically conducted biannually in spring and autumn and sometimes include multiple surveys per wave in member and candidate countries. Despite being a major cross-national comparative survey, EB suffers from documentation inconsistencies and evolving question formats, affecting the reliability of the main-issue questions. These surveys reveal significant variability in public concern over time, necessitating careful recoding of question items to examine the distribution of economic versus non-economic issues. This

analysis aims to provide insights into the changing priorities of EU citizens regarding environmental and climate change issues, visualized through an alluvial plot that captures the temporal dynamics of these concerns.

Since the autumn wave of 2010, Standard Eurobarometer (EB) surveys have included questions identifying the most important issues facing respondents personally, their country, and the EU. This method, aligned with the multi-level governance structure of such questions, establishes EB74.2 (autumn wave, 2010) as the time-series limit for analysis. While the response patterns across these levels offer research opportunities, this analysis focuses exclusively on the EU's main issues, particularly Environment or Climate Change (ENVCC) concerns, which are more prominent at the EU than at the personal or country levels. The study examines the prominence of ENVCC issues in the EU according to survey participants in the 27 member states from 2010 to 2023, excluding the UK post-Brexit due to data unavailability. A query of the GESIS archive identified 28 instances, including the standard main-issue questions, with minor irregularities. The following example comes from EB 98.2, but is broadly representative of the question format in use:

QA3 What do you think are the two most important issues facing Ireland at the moment? [select max. 2] Response options: [Crime, The economic situation, Rising prices/ inflation/ cost of living, Taxation, Unemployment, Terrorism, Cyprus issue, Housing, Government debt, Immigration, Pensions, The environment and climate change, The education system, Energy supply, Health, The international situation, Other, None, Don't know]

QA5 What do you think are the two most important issues facing the EU at the moment? [select max. 2] Response options: [Crime, The economic situation, Rising prices/ inflation/ cost of living, Taxation, Unemployment, Terrorism, The EU's influence in the world, The state of Member States' public finances, Immigration, Pensions, The environment and climate change, Energy supply, Health, The international situation, Other, None, Don't know]

Despite being a major cross-national comparative survey, EB's documentation quality is subpar, and its questionnaires suffer from unpredictability and inconsistency. These shortcomings affect the main-issue questions, with evolving item inventories and wording and sometimes employing unclear split ballots. The survey question, "What do you think are the two most important issues facing the EU at the moment?" allows choosing from a list with rotated options and registering spontaneous responses like "Other," "None," and "Don't know." The variants included "Environment (and/or) Climate Change," separate items "Environment" and "Climate Change," and "Environment, Climate Change, Energy.". Note

that this formulation, with all its minor variations, is only used in Standard EBs, and the Special EBs on Climate Change uses a different formulation, which uses "international" anchoring: "In your opinion, which of the following do you consider to be the most serious problem currently facing the world as a whole?" and the questionnaire protocol then explicitly elicits first and second answers out of a different selection of response options: [Climate change, International terrorism, Poverty, lack of food and drinking water, The spread of an infectious disease, A major global economic downturn, The proliferation of nuclear weapons, Armed conflicts, The increasing world population]. Therefore, the main issue of the Standard and Special EBs is that they lack equivalence and remain incompatible.

To examine the variable importance of climate change and environmental concerns over time, it seems crucial to first investigate the overall distribution of concerns in the EU member states. The variability of EB question items necessitates some degree of recoding, which is documented in the Annex. The crucial distinction among the issues of concern for EU citizens, regarding both their respective Countries and the EU as a whole, pertains to the economic vs. non-economic issues. While the EB does not implement this distinction in ordering the answer prompts, which are subject to random rotation in the interview process, it provides essential insights into the changes over time and the contrast between the two levels of concern. Note, however, that the analysis does not include the third level present in EB measurements – issues pertinent to the respondents themselves – as they differ substantially in response options and the frequency of indications. In Figure 1, the distribution of concerns over time is visualised using an alluvial plot. Each band on the alluvial plot represents the fraction of indications at the aggregate EU level.

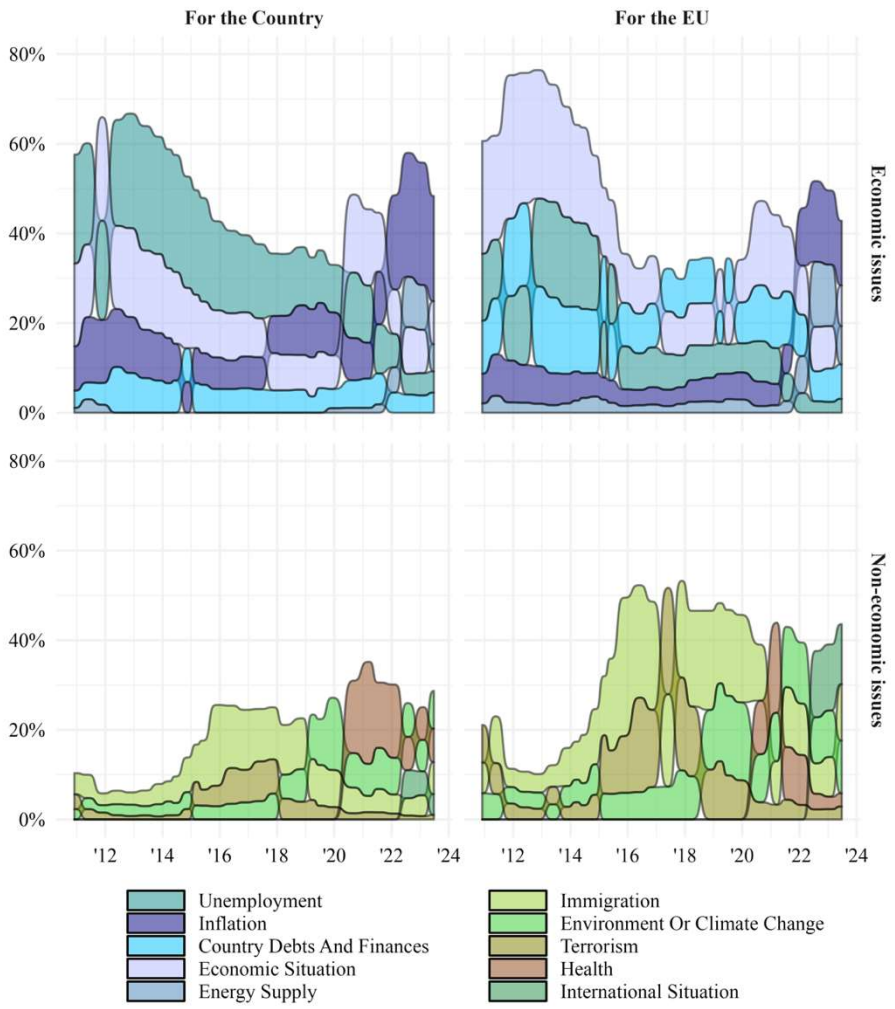

Fig. 1 Economic vs. Non-economic concerns (EB) over time

Tracking surveys probing for a country's main issues typically include questions designed to capture respondents' perceptions of the most pressing challenges at the national level. With the EB, the additional layer concerns issues important for the EU as a whole. As visualised above, and analysed in detail below, respondent choices at the two levels are correlated but do not fully overlap. Over time, the tracking question allows for monitoring of the major crises faced by the EU as well as the EU member-states over the preceding decade. In the early 2010s, economic concerns predominated, resulting from the repercussions of the major economic shock of the Great Recession. In Europe, the effects of the crisis were prolonged due to the difficulties of managing debt levels in some Euro-zone countries, which put the viability of the common currency in question. In 2014, the economic concerns would subside, especially at the EU level, and gave way to new challenges: first, the 2015 migration crisis, which propelled immigration to the top of European concerns, which was then briefly followed by a series of high-profile terrorist attacks in some EU countries; secondly, starting

in 2018-2019 concerns over the environment and climate change would slowly move to the forefront of concerns; however, this brief rise was harshly curtailed by the shock of COVID-19 in 2020-21, elevating health to the principal concern; finally, the post-covid bout of inflation amplified by the repercussions of the full-scale war in Ukraine, brought back economic issues to the forefront of citizen concerns both at the national and European levels.

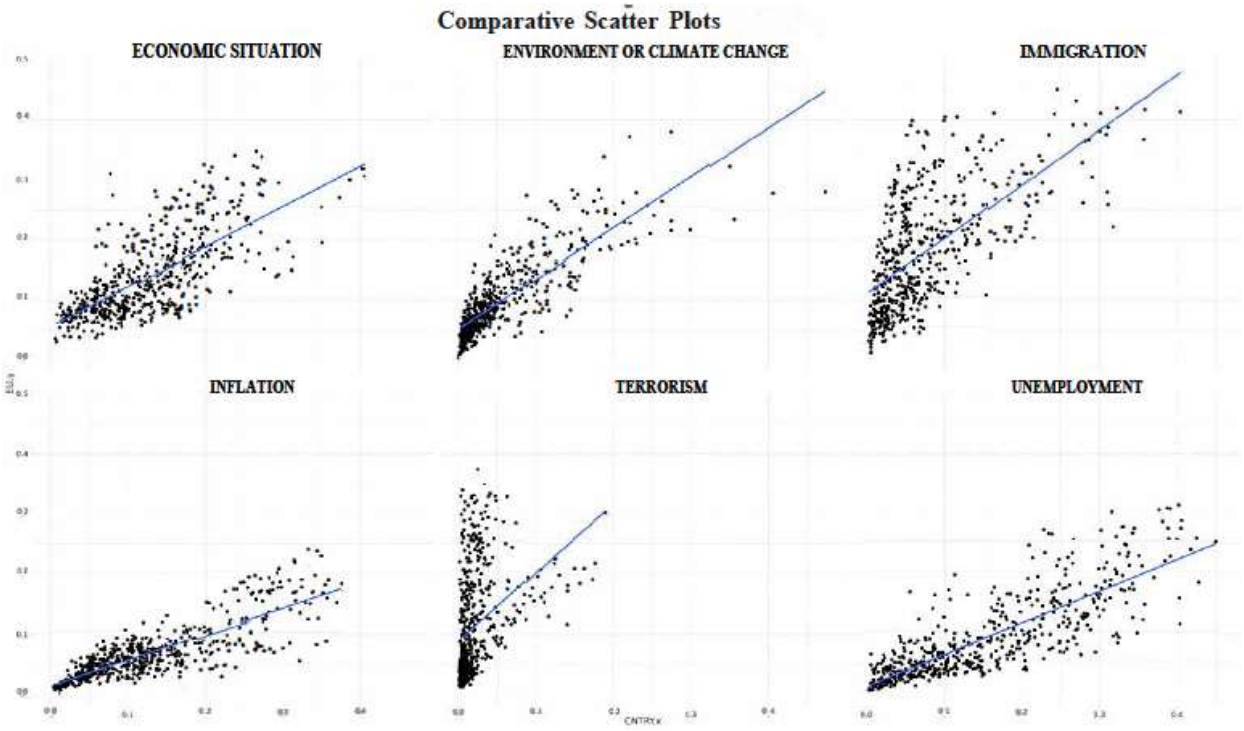

Fig. 2 Country (x-axes) vs. EU (y-axes) issues (EB) all survey waves

Differences between country-level and EU-level issues of concern are not uniform across the different categories (Fig 2). They range from strongly correlated, as in the case of unemployment and inflation, to loosely associated, in most cases, as in the case of terrorism. Concerns with the environment and climate change fall in the middle of the spectrum, with the issue proving its significance for both countries and the EU in most cases when they registered on the spectrum of concerns. As evidenced by the scatterplot (Fig. 2), and visible in the time-series visualization (Fig. 1), for most countries, the environmental and climatic concerns were not pronounced in a major way until 2018.

The concerns with the environment and climate change exhibit not only significant variability in time but also remain strongly differentiated by region, with some countries, especially in Northern Europe, consistently putting those issues at the forefront of concerns voiced by the EB respondents. In the following Fig. 3, the geographical distribution of aggregate concerns is presented for the last of the available EBs in our analysis, at which point

the environmental and climactic concerns for the country were pushed to the background by more pressing issues of politics and economics. However, even in this depressed state, the geographical distribution remains visible.

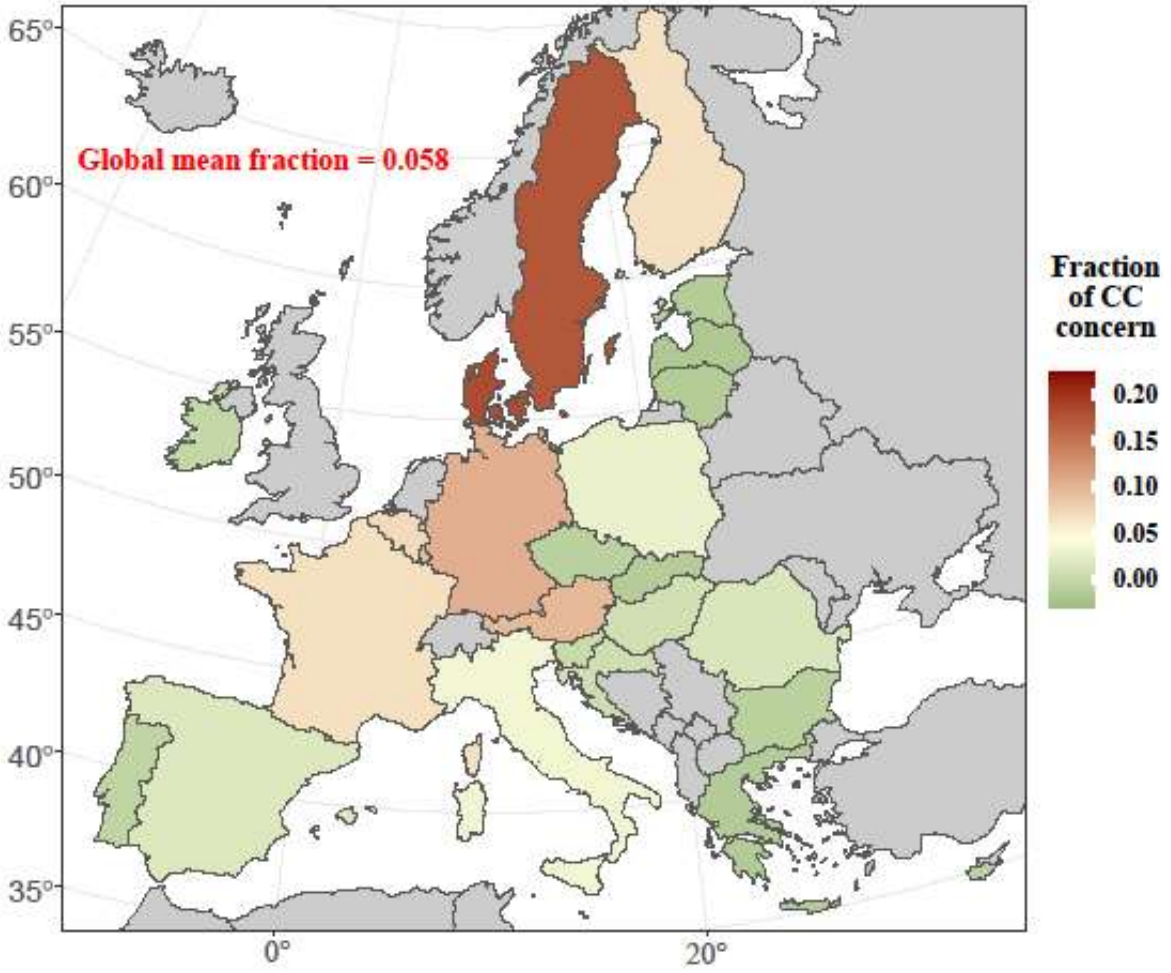

Fig. 3 Environment or climate change as a country issue (EB98.2 - 2023)

As demonstrated in Fig. 3 and Fig. 4, the concerns over CC are heterogeneous from the cross-country comparative perspective, and it is essential to note that this geographical pattern holds steady over time. Most indications responsible for the global mean come from the wealthy countries of north-western Europe. There is also a marked difference between the registered levels of concern from the country's point of view and that of the EU as a whole.

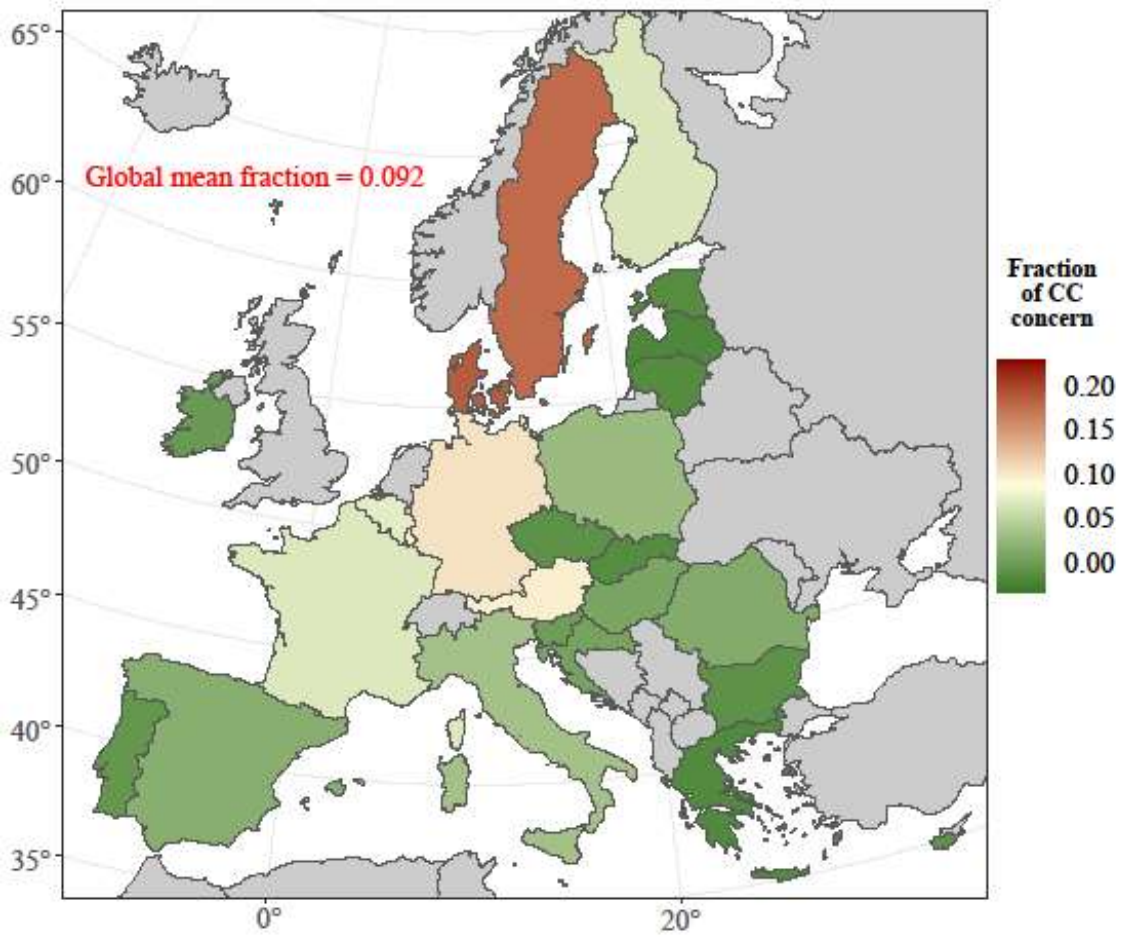

Fig. 4 Environment or climate change as an EU issue (EB98.2 - 2023)

3.1.2. European Social Survey on the environment and climate change

This analysis utilizes data from the 8th round of the European Social Survey (ESS8), a highly respected cross-country survey conducted biennially since 2002. Adhering to stringent methodological standards in questionnaire design and data collection, ESS employs strict random probability sampling, ensuring a representative sample of all individuals aged 15 and over residing in private households. Each participating country is required to achieve a minimum effective sample size of 1,500 respondents, or 800 for smaller populations, with data collected through face-to-face interviews by trained interviewers. To account for selection and response biases, post-stratification weights are applied. A special module in ESS8, developed by researchers including Wouter Poortinga and Lorraine Whitmarsh, assesses attitudes toward Climate Change, Energy Security, and Energy Preferences. This study builds on their work, using five measures of climate change perception to examine cross-national differences: trend skepticism, attribution skepticism, concern, pro-environmental norms, and salience. Additionally, the analysis incorporates Schwartz's Basic Human Values, measured by a 21-

item Portrait Values Questionnaire, to explore covariates influencing climate change perceptions. This comprehensive approach aims to provide a nuanced understanding of how various factors shape public attitudes toward climate change across Europe.

The analysis is conducted based on the results of the 8th round of the European Social Survey (ESS8). ESS constitutes a well-regarded cross-country survey conducted biannually since 2002, and it adheres to stringent methodological standards regarding questionnaire design and data collection. Sampling design involves a strict random probability sampling (based on an individual name, household or address sampling frame), which is "representative for all persons aged 15 and over resident within private households, regardless of their nationality, citizenship, language or legal status" (ESS, 2018). Each participating country must achieve a minimum effective sample size of 1.5k respondents (or 800 in countries with populations up to 3 million). Interviews are collected face-to-face in respondent homes, usually within three months, by trained interviewers. Post-stratification weights (including design weights) are used to take account of both unequal probabilities of selection and unequal propensity to respond.

The special module was developed in ESS8 by Wouter Poortinga, Lorraine Whitmarsh, Gisela Böhm, Linda Steg and Stephen Fisher to assess people's attitudes toward *Climate Change, Energy Security, and Energy Preferences*. Following the analysis presented by these authors in the newest 55th volume of the *Global Environmental Change* (Poortinga et al., 2019), we decided to include five measures of CC perception to study cross-national differences:

CC reality – trend scepticism

QUESTION: *You may have heard the idea that the world's climate is changing due to increases in temperature over the past 100 years. What is your personal opinion on this? Do you think the world's climate is changing? Choose your answer from this card.*

Recoded into dummy variable:

(1) Probably not changing / Definitely not changing

(0) Probably changing / Definitely changing

CC cause – attribution scepticism

QUESTION: *Do you think that climate change is caused by natural processes, human activity, or both?*

Recode into dummy variable:

(1) Mainly by natural processes / Entirely by natural processes

(0) Mainly by human activity / Entirely by human activity / About equally by natural processes and human activity

CC concern

QUESTION: *How worried are you about climate change?*

Coding scheme:

(-2) Not at all worried;

(-1) Not very worried;

(0) Somewhat worried;

(1) Very worried;

(2) Extremely worried;

Pro-environmental norms

QUESTION: *To what extent do you feel a personal responsibility to try to reduce climate change?*

Coding scheme:

(-5) Not at all <---> (5) A great deal

CC salience

QUESTION: *How much have you thought about climate change before today?*

Coding scheme:

(-2) Not at all worried;

(-1) Very little;

(0) Some;

(1) A lot;

(2) A great deal.

Covariates of the perception of climate change

Schwartz's Basic Human Values

A 21-item version of the Portrait Values Questionnaire (PVQ) was used to measure basic human values (Schwartz, 2003). Respondents evaluate a short, two-sentence, gender-matched description of a person on a 6-point scale from 1 (very much like me) to 6 (not like me at all) how similar this person is to themselves (Fig. 6). Schwartz (2006) syntax was used to transform the items into 10 values by taking the means of the items and subtracting their mean rating. The higher scores signify that the particular value is more important for the individual.

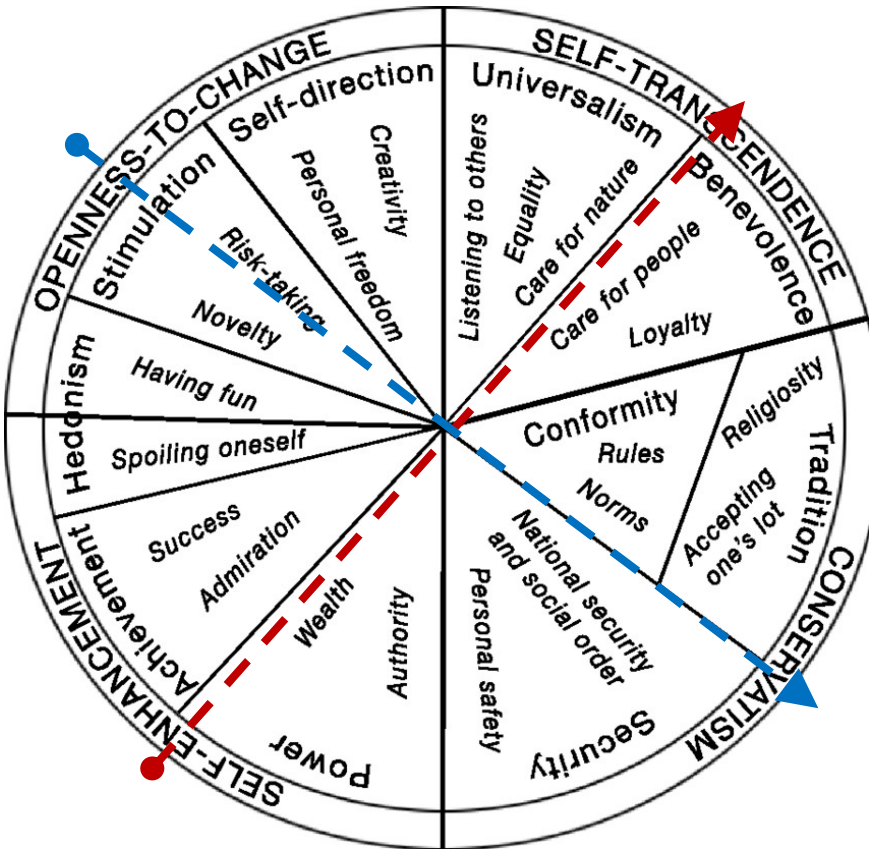

Fig. 5 Conceptual model of Basic Human Values

To stay in line with the model of analysis proposed by Poortinga et al. (2019), we have decided not to include in our own analysis the original 10 independent scales of basic human values but to transform them into two separate dimensions: Self-transcendence vs Self-enhancement (comprise of Universalism, Benevolence, Achievement [reversed], Power [reversed]) and Conservation vs Openness-to-change (comprise of Conformity, Security, Stimulation (reversed), Hedonism (reversed)). The two dimensions were standardised by calculating Z scores. The higher value corresponds with more self-transcendence and more conservation.

Demographic control variables

Apart from both covariates, the following socio-demographic control factors were also included in our analysis: Gender (Male; Female [ref. cat.]), Age (15-24; 25-34; 35-44; 45-54; 55-64; 65+ [ref. cat.]), The highest level of education (Lower secondary or less (ISCED I&II); Lower tier upper secondary (ISCED IIIb); Upper tier upper secondary (ISCED IIIa); Advanced vocational (ISCED IV); BA or MA level (ISCED V1&V2) [ref. cat.]).

Cross-national differences in the climate change perception items

Table 1. Cross-country differences in the CC perception

ISO code	**CC reality** not changing [%]	**CC cause** By natural process [%]	**CC concern** mean value: range -2 to 2	**PRO-ENV norms** mean value: range -5 to 5	**CC salience** mean value: range -2 to 2
AT	7.5%	8.2%	0.067	1.038	0.153
BE	3.6%	5.9%	0.167	0.956	0.174
CZ	11.1%	10.6%	-0.230	-1.575	-0.315
EE	8.7%	11.2%	-0.351	-0.670	-0.174
FI	6.0%	6.1%	0.053	1.530	0.170
FR	3.8%	6.3%	0.212	1.911	0.421
DE	4.5%	5.2%	0.362	1.617	0.445
GB	6.4%	9.0%	-0.037	0.994	0.253
HU	8.6%	7.3%	0.046	-0.714	-0.537
IS	2.3%	5.4%	0.133	1.248	0.429
IE	3.9%	8.9%	-0.165	0.804	-0.093
IT	5.3%	6.4%	0.208	0.282	-0.065
LT	11.3%	17.3%	-0.177	-0.187	-0.338
NL	3.8%	8.2%	0.008	0.816	-0.032
NO	7.1%	12.2%	0.001	1.217	0.188
PL	7.4%	10.4%	-0.248	0.548	-0.406
PT	3.0%	6.4%	0.480	0.732	0.457
RU	17.8%	16.2%	-0.254	-1.187	-0.434
SI	3.5%	7.1%	0.166	0.331	0.171
ES	4.2%	4.3%	0.419	0.979	0.374
SE	3.2%	7.6%	-0.143	1.444	0.233
CH	3.6%	5.6%	0.124	1.865	0.486

Five CC Items, i.e., CC reality, CC cause, CC concern, pro-environmental norms & CC salience, have been combined into one CC Index to compare public attitudes toward climate change in European countries.

Method of calculating CC Index

If we consider the Kaiser criterion of extracting components in EFA based on eigenvalues comparison, we can retain only one factor with eigenvalues greater than 1 in our analysis. This means that only one dimension of CC attitudes exists, and we can combine all five CC Items into one factor, called CC Index [the factor loadings of all CC Items are above the reference value 0.7]. The CC Index values have been normalised to the interval [0;1].

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3,808	76,153	76,153
2	,541	10,824	86,977
3	,396	7,928	94,905
4	,134	2,675	97,580
5	,121	2,420	100,000

Extraction Method: Principal Component Analysis.

Component Matrix [a]

	Component 1
CLIMATE CHANGE REALITY	-,903
CLIMATE CHANGE CAUSE	-,880
CLIMATE CHANGE CONCERN	,818
PRO-ENVIRONMENTAL PERSONAL NORMS	,853
CLIMATE CHANGE SALIENCE	,906

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

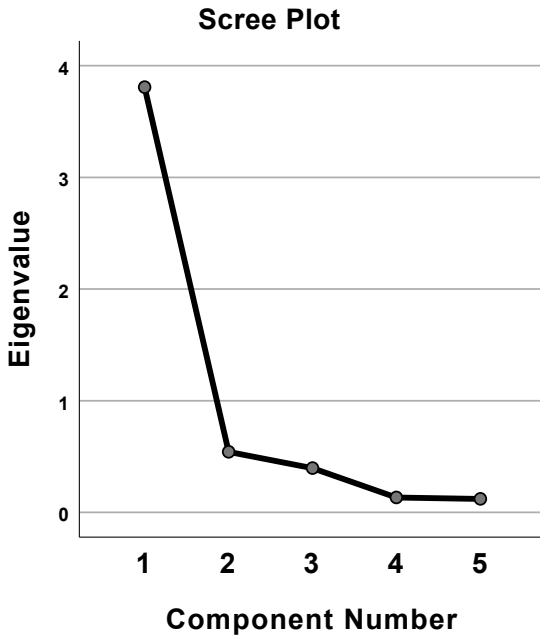

Fig. 6 CC index evaluation

Individual-level analysis: impact of Basic Human Values on CC perception

The following analysis describes the relationship of attitudes towards climate change (separately for all CC Items) and the significance attributed to two distinguished types of basic human values: Self-transcendence vs Self-enhancement and Conservation vs Openness-to-change. Tables present p-values in the test of between-subject effects. In contrast, Figures 7-11 present the relation of CC Items values by two dimensions of basic human values: Self-transcendence vs Self-enhancement and Conservation vs Openness-to-change. Note that:

[1] regression estimates are also presented for Gender and basic human values;

[2] For CC reality & CC cause, the model is based on the logistic regression, while for CC concern, pro-environmental norms & CC salience, the linear regression model has been implemented;

[3] n.s. means not significant;

[4] Population size weights combined with post-stratification weights have been applied.

Fig. 7 Evaluation of the impact of basic human values and demographic characteristics on CC reality (test of between-subject effects)

Factors & covariates	**CC reality**
Self-trans. *vs* Self-enh.	<0.001 (-0.386)
Conservation *vs* Openness-to-change	n.s.
Gender (Male=0)	<0.001 (-0.201)
Age	<0.001
ES-ISCED (level of education)	<0.001

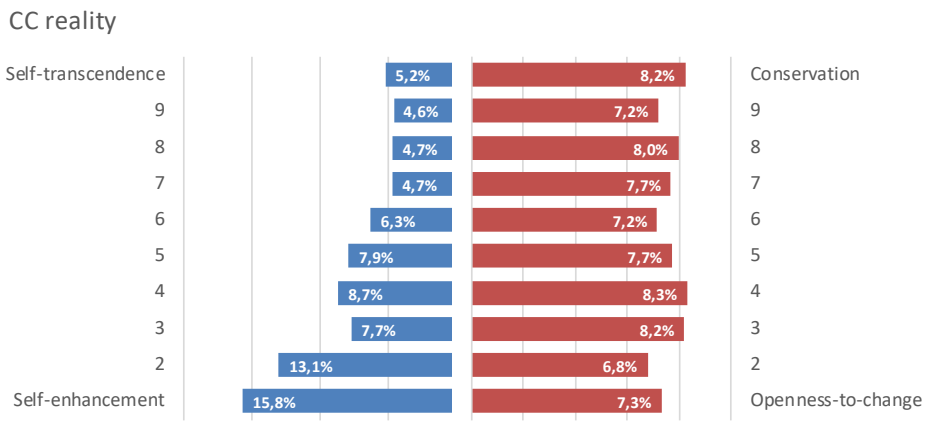

Fig. 8 Evaluation of the impact of basic human values and demographic characteristics on CC cause (test of between-subject effects)

Factors & covariates	**CC cause**
Self-trans. *vs* Self-enh.	<0.001 (-0.294)
Conservation *vs* Openness-to-change	n.s.
Gender (Male=0)	<0.001 (-0.179)
Age	<0.001
ES-ISCED (level of education)	<0.001

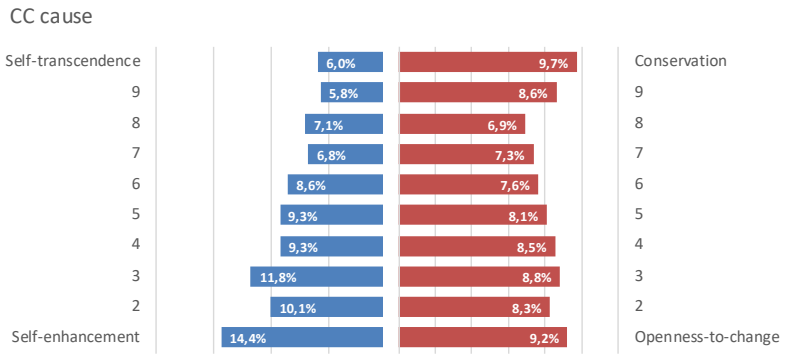

Fig. 9 Evaluation of the impact of basic human values and demographic characteristics on CC concern (test of between-subject effects)

Factors & covariates	**CC concern**
Self-trans. *vs* Self-enh.	<0.001 (-0.294)
Conservation *vs* Openness-to-change	n.s.
Gender (Male=0)	<0.001 (-0.179)
Age	<0.001
ES-ISCED	<0.001

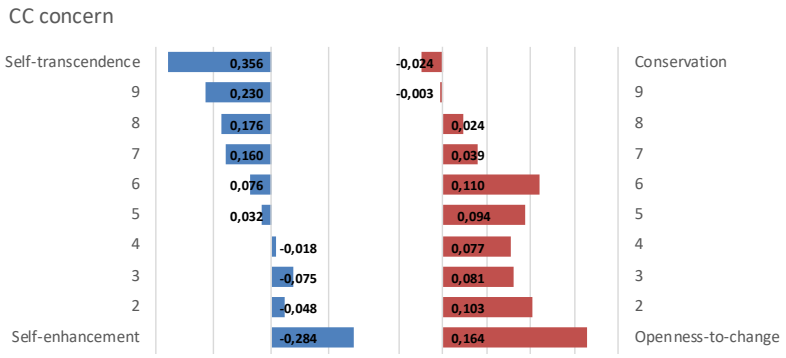

Fig. 10 Evaluation of the impact of basic human values and demographic characteristics on CC concern (test of between-subject effects)

Factors & covariates	**Pro-env norms**
Self-trans. *vs* Self-enh.	<0.001
Conservation *vs* Openness-to-change	<0.001 (-0.281)
Gender (Male=0)	n.s.
Age	<0.001
ES-ISCED	<0.001

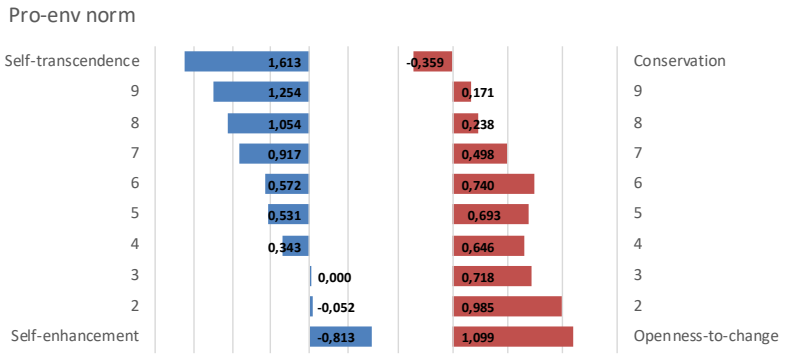

Fig. 11 Evaluation of the impact of basic human values and demographic characteristics on pro-environmental norms (test of between-subject effects)

Factors & covariates	**CC salience**
Self-trans. *vs* Self-enh.	<0.001
Conservation *vs* Openness-to-change	<0.001 (-0.120)
Gender (Male=0)	<0.001 (-0.066)
Age	<0.001
ES-ISCED	<0.001

Analyzing the relationship between psychological values and climate change (CC) attitudes reveals insightful patterns crucial for understanding public perceptions and behaviors related to environmental issues. These patterns are discussed in more detail below.

Self-Transcendence vs. Self-Enhancement

The first significant finding is the relationship between the values of self-transcendence versus self-enhancement and all five CC Items. Self-transcendence, which emphasizes the welfare of others and nature, shows a strong positive correlation with pro-environmental attitudes and behaviors.

Scepticism Toward CC Reality: The analysis reveals that individuals who prioritize self-transcendence are less likely to be sceptical about the reality of climate change. They tend

to accept the scientific consensus on climate change and recognize its impacts as genuine and significant.

Scepticism Toward CC Cause: Similarly, the results show that, these individuals who prioritize self-transcendence are less sceptical about the human causes of climate change. They are more likely to acknowledge the role of human activities, such as fossil fuel combustion and deforestation, in driving climate change.

CC Concern: The findings show, that people with high self-transcendence values exhibit greater concern about climate change. They worry more about its potential impacts on the environment, human health, and future generations.

Pro-Environmental Norms: Individuals who prioritize self-transcendence also hold stronger pro-environmental norms. They believe in and practice behaviors that support environmental sustainability, such as recycling, reducing energy consumption, and supporting green policies.

CC Salience: Climate change is a more prominent issue for those valuing self-transcendence. They are more likely to think about and discuss climate change regularly, indicating higher awareness and engagement.

Conversely, self-enhancement, which focuses on personal success and dominance over others, shows an inverse relationship with these CC Items: (i) Less Worry About CC (Individuals with self-enhancement values are less concerned about climate change. They prioritize their own immediate gains over long-term environmental consequences); (ii) Weaker Pro-Environmental Norms (These individuals typically have weaker pro-environmental norms, showing less commitment to behaviors that mitigate climate change); (iii) Reduced CC Salience (Climate change is less of a concern in their daily lives, resulting in lower awareness and engagement with the issue).

Conservation vs. Openness-to-Change

The analysis also explores the values of conservation versus openness-to-change, finding nuanced relationships with climate change attitudes:

CC Reality and CC Cause: There is no significant association between these values and scepticism toward the reality or causes of climate change. This suggests that whether individuals prefer stability (conservation) or embrace new experiences (openness-to-change) does not directly influence their acceptance of climate change science.

CC Concern, Pro-Environmental Norms, and CC Salience: However, for other CC Items, the values of conservation and openness-to-change show a significant linear relationship:

CC Concern: Those who value openness-to-change are more likely to be concerned about climate change. They are more receptive to new information and more willing to adapt their behaviors in response to environmental issues.

Pro-Environmental Norms: Individuals with a preference for openness-to-change also tend to adopt stronger pro-environmental norms. They are more likely to support and engage in practices that promote environmental sustainability.

CC Salience: Climate change is a more salient issue for those who favour openness to change. They think about and prioritize climate change more in their daily lives compared to those who prefer conservation.

These findings highlight the critical role of value orientations in shaping climate change attitudes and behaviours. Self-transcendence values drive greater acceptance of climate change realities, concern for its impacts, and engagement in pro-environmental behaviours. In contrast, self-enhancement values correlate with scepticism and a lack of concern for climate change. Meanwhile, openness-to-change is associated with higher concern, stronger pro-environmental norms, and greater salience of climate change issues, while conservation values do not significantly influence perceptions of climate change reality or its causes. Understanding these relationships can inform strategies to enhance public engagement with climate change mitigation and adaptation efforts.

3.1.3. European Values Study on the environment and climate change

Using cross-national opinion surveys, our research explores the tension between economic growth and environmental protection. Drawing on combined data from the European Values Study (EVS) and the World Values Survey (WVS) (2017-2022), we examine normative preferences in 74 countries. Our analysis considers the influence of Gross Domestic Product (GDP) per capita at the country level while evaluating how political orientation and household income affect the tendency to prioritize environmental protection over economic growth. Utilizing multi-level logistic regression, we investigate the effects of these individual-level variables, their interaction, and the moderating influence of the country-level GDP per capita.

Our findings confirm that individuals with left-wing political orientations and those from higher-income households are more likely to prioritize environmental protection over

economic growth. Additionally, we find that higher GDP per capita at the country level correlates with a greater collective preference for environmental protection. However, these effects are not consistent across countries with different levels of economic development. Specifically, the influence of political orientation and household income on environmental priorities is stronger in wealthier countries.

The rotating module "Attitudes to climate change" in round 8 of the European Social Survey has bolstered cross-national approaches, as noted by Fritz and Koch (2019) and Czarnek et al. (2021). The WVS and EVS datasets are crucial for comparative studies, with Roos (2018) highlighting their importance. Gugushvili (2021) study based on the EVS showed significant social divides in opinions on the growth versus environment dilemma. Our study expands the geographic scope using the joint EVS-WVS dataset but narrows the focus to individual-level effects of political orientation and household income, within the context of country-level GDP per capita differences.

We analyzed data from the 2017 editions of the EVS and WVS, which were administered from 2017 to early 2021, with some delays due to COVID-19 extending data collection into 2022. The surveys used face-to-face interviews and random probability samples of adults 17 years and older. The EVS and WVS covered 89 countries from six continents, with 10 countries included in both projects: 36 countries in the EVS dataset and 64 in the WVS dataset. The dependent variable in our study is based on respondents' choices between prioritizing environmental protection, even at the cost of slower economic growth and job loss, versus prioritizing economic growth and job creation, even if it harms the environment. Individual-level explanatory variables include political orientation, measured on a 10-point left-right scale, and household income, divided into deciles. We standardized these variables using z-scores before the regression analysis. Control variables included gender, age, and education level, measured using the International Standard Classification of Education (ISCED 2011). The country-level contextual variable is GDP per capita, sourced from the World Bank Open Data, and log-transformed for regression analysis due to its asymmetrical distribution. We employed two-level logistic regression models to account for the hierarchical data structure, with respondents nested within countries. We excluded 15 countries from the analysis due to missing data on household income or left-right orientation.

Our descriptive analysis of cross-national aggregates of the dependent variable reveals a general preference for environmental protection over economic growth in most countries. Sub-Saharan Africa is underrepresented, and the absence of data on political orientation limits

the representation of Asian countries. The preference for environmental protection varies significantly, with the lowest in Lithuania (35.1%) and the highest in Sweden (88.7%). This study provides a nuanced understanding of the interplay between economic development and environmental priorities, highlighting the importance of individual-level political and economic factors and their varying effects across different economic contexts.

Table 2. Descriptive statistics for countries in the analysis

Country	Sample size	GDP per capita in current USD	Preference for environmental protection
Libya	1,018	5,756.6993	50.0%
Morocco	1,115	3,035.4544	55.2%
Tunisia	892	3,687.7775	35.5%
Ethiopia	605	768.5230	41.7%
Kenya	1,102	1,633.4912	47.5%
Nigeria	1,123	1,968.5654	42.1%
Zimbabwe	1,110	1,235.1890	53.6%
Argentina	651	14,613.0418	48.8%
Bolivia	1,703	3,351.1243	75.5%
Brazil	885	9,928.6759	64.9%
Chile	659	14,998.8171	60.3%
Colombia	1,479	6,376.7067	70.3%
Ecuador	1,055	6,213.5031	57.5%
Guatemala	989	4,454.0481	68.9%
Mexico	1,515	9,287.8496	55.2%
Nicaragua	794	2,159.1567	62.0%
Peru	1,140	6,710.5076	59.7%
Puerto Rico	949	31,108.7606	72.5%
Uruguay	810	18,690.8938	72.5%
Venezuela	1,143	16,055.6453	39.5%
Canada	3,997	45,129.4293	60.3%
United States	2,231	60,109.6557	56.8%
Armenia	1,895	3,914.5279	42.0%
Azerbaijan	994	4,147.0897	54.9%
Cyprus	578	26,608.8751	53.9%
Georgia	1,499	4,357.0009	72.6%
Tajikistan	1,165	848.6724	44.7%
Turkey	2,044	10,589.6677	57.0%
Japan	551	38,891.0863	61.9%
South Korea	1,244	31,616.8434	57.5%
Mongolia	1,520	3,687.1000	61.3%
Indonesia	2,528	3,837.5780	76.6%
Malaysia	1,250	10,259.3048	63.4%
Philippines	1,192	3,123.2456	67.1%

Country	Sample size	GDP per capita in current USD	Preference for environmental protection
Singapore	1,590	61,176.4564	59.5%
Thailand	988	6,593.8184	59.2%
Bangladesh	1,130	1,563.7678	47.7%
Maldives	998	9,577.3469	44.3%
Bulgaria	921	8,366.2932	60.6%
Belarus	750	5,785.6707	47.3%
Czechia	2,114	20,636.2000	55.9%
Hungary	982	14,623.6966	67.8%
Poland	793	13,864.6818	45.2%
Romania	1,407	10,807.0092	43.5%
Russia	1,933	10,720.3327	48.5%
Slovakia	1,794	17,538.0486	59.5%
Ukraine	1,527	2,638.3261	55.7%
Austria	1,070	47,429.1585	63.5%
Switzerland	2,646	83,352.0887	77.3%
Germany	2,788	44,652.5892	71.2%
Denmark	2,759	57,610.0982	73.7%
Estonia	732	20,437.7654	72.5%
Finland	942	46,412.1365	73.4%
France	1,253	38,781.0495	62.4%
United Kingdom	3,153	40,857.7556	66.8%
Iceland	1,368	72,010.1490	75.1%
Lithuania	835	16,885.4074	32.3%
Latvia	789	15,695.1152	38.3%
Netherlands	2,917	48,675.2223	68.8%
Norway	1,012	75,496.7541	69.8%
Sweden	1,059	53,791.5087	88.4%
Andorra	739	38,964.9045	82.1%
Albania	933	4,531.0194	50.7%
Bosnia & Herzegovina	1,204	5,394.2689	39.1%
Spain	669	28,170.1679	69.0%
Greece	884	18,582.0893	57.7%
Croatia	1,019	13,629.2896	61.0%
Italy	1,140	32,406.7203	69.4%
Montenegro	368	7,784.0653	60.1%
North Macedonia	558	5,450.4929	59.7%
Serbia	1,482	6,292.5436	45.8%
Slovenia	689	23,514.0255	68.2%
Australia	1,578	53,934.2502	68.4%
New Zealand	611	42,992.8953	70.7%

Our research confirms that individual-level relationships between political orientation, household income, and preferences for environmental protection over economic growth align with existing literature, as do country-level effects of GDP per capita. By analysing a larger, more diverse set of countries, we reveal that GDP per capita moderates these relationships significantly, particularly in wealthier societies where political orientation and household income strongly influence environmental priorities. This moderation is less apparent in poorer countries, where these factors play a minor role. Our findings highlight the need to consider economic context in environmental policy debates, as affluent societies may experience greater political polarisation over growth-sacrificing agendas. In contrast, such issues are less polarised in less wealthy nations. This research underscores the importance of including diverse economic contexts in cross-national studies to avoid biases inherent in data predominantly from developed regions.

3.2. Exploration of differences and commonalities among CEE countries

3.2.1. Eurobarometer on the environment and climate change

In order to examine the propensity of respondents in EB member states to be concerned about environmental and climactic issues, it is necessary to consider the time factor. As noted above, the overall prominence of those issues in the EB surveys was relatively brief – sandwiched between the wane of the 2015 migration crisis and the rise of the full-scale war in Ukraine. In descriptive terms, it seems useful to divide those trajectories among the four major regions of Europe, even though they are not fully homogenous regarding environment and climate change attitudes. As demonstrated in Figure 5, the patterns of association between the country- and EU-level perception of environmental and climactic issues prove different over time for the different regions of the EU. Those contrasts constituted a starting point for an in-depth investigation of the EU divergence of opinion patterns.

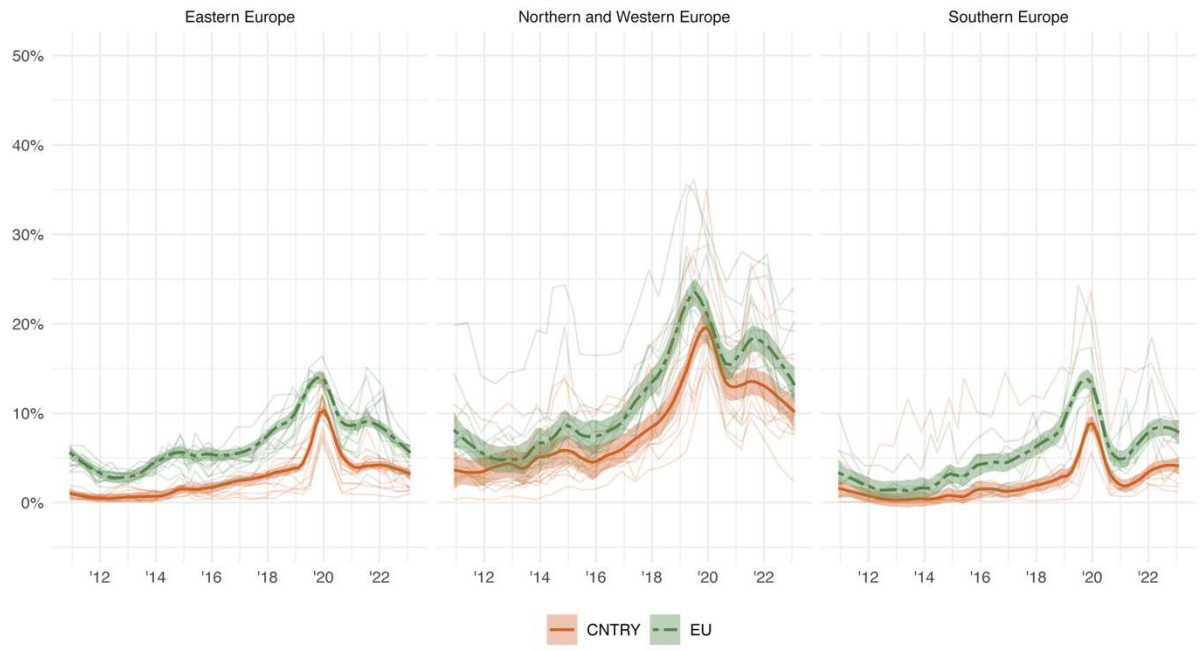

Fig. 12 EU vs CNTRY ISSUE: ENV or CC by Region

Apart from looking into a time-series analysis, our study also looked at differences in opinion on environmental and climactic issues within countries by using aggregates at NUTS1 levels. Even though the data theoretically provided NUTS2 codes for all respondents, this lower level proved unworkable due to coding inconsistencies across countries and low sample sizes per NUTS2 units. The regional subdivisions were especially useful in the analyses making use of emdat data on natural disasters, based on which we looked at the potential impact of disaster experiences on the patterns of opinion formation. This study examines how direct experiences of extreme weather events influence public opinion about climate change, using data from the Eurobarometer survey (spring 2021) across 27 EU member states and the Emdat database of natural disasters (2006-2020), focusing on heat waves and storms. By analysing the data through multi-level logistic regression, the aim was to determine if and how exposure to extreme weather events shifts public opinion on climate change, potentially creating opportunities for effective climate policy implementation.

As demonstrated in Figure 13, the importance of climate change is among the primary issues of concern regarding the European Union, which is primarily differentiated by the country level; however, substantial differences can be attested nevertheless when NUTS1 level regional units are taken into account. On the other hand, when macro-regional units are taken into account, the countries of Central and Eastern Europe stande out as those, where climate change concerns are not paramount in the eyes of the public.

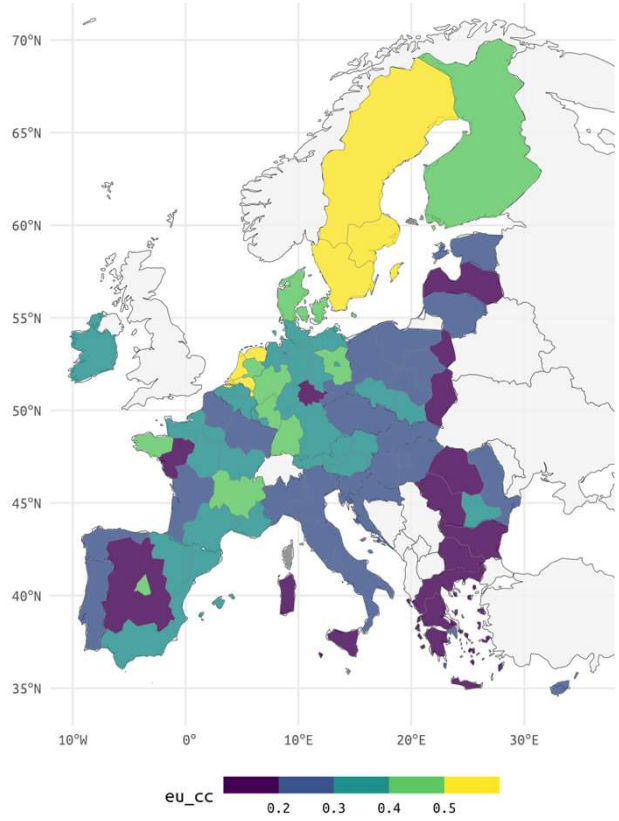

Fig 13. EU Climate change Nuts2

Focusing on the results of the four Visegrad Countries, as presented in Figures 14 and 15, the time series of EB surveys clearly demonstrates the secondary importance of climate change as a policy challenge for the country as well as for the whole European Union. The rise of environmental concerns was brief and swiftly superseded by other, apparently more pressing issues.

In Poland, for example, climate change attitudes are heavily influenced by the country's energy sector, which relies significantly on coal. This dependency shapes public and political discourse, often prioritizing economic stability and job security over environmental reforms. Despite periodic spikes in concern about climate change, driven by extreme weather events or EU policy pressure, the urgency tends to wane in the face of economic challenges and political priorities. Similarly, in Czechia, industrial legacy and economic considerations dominate the policy landscape. The Czech Republic's historical reliance on heavy industries and coal mining has made a transition to greener policies complex and contentious. Public attitudes towards climate change often reflect this ambivalence, where environmental policies are seen as potential threats to economic well-being. In Slovakia, the situation mirrors that of its Visegrad

neighbours. The country has made some strides in renewable energy and environmental protection, yet climate change does not consistently register as a top priority for the populace or the government. The public's fluctuating concern can be attributed to competing social and economic issues, such as unemployment and social welfare, which frequently take precedence in national debates. While showing some progress in environmental awareness, Hungary faces its own challenges. Political dynamics in Hungary have often downplayed climate change issues in favour of more immediate socio-economic concerns. The government's stance, coupled with nationalistic rhetoric, sometimes sidelines the urgency of climate change in favour of sovereignty and economic autonomy narratives.

Overall, the secondary importance of climate change in these Visegrad Countries reflects a complex interplay of historical, economic, and political factors. While environmental concerns do emerge, they are often transient and quickly overshadowed by issues perceived as more immediate or existential. This trend underscores the challenge of sustaining long-term climate policies in regions where economic and political stability are prioritized over environmental sustainability.

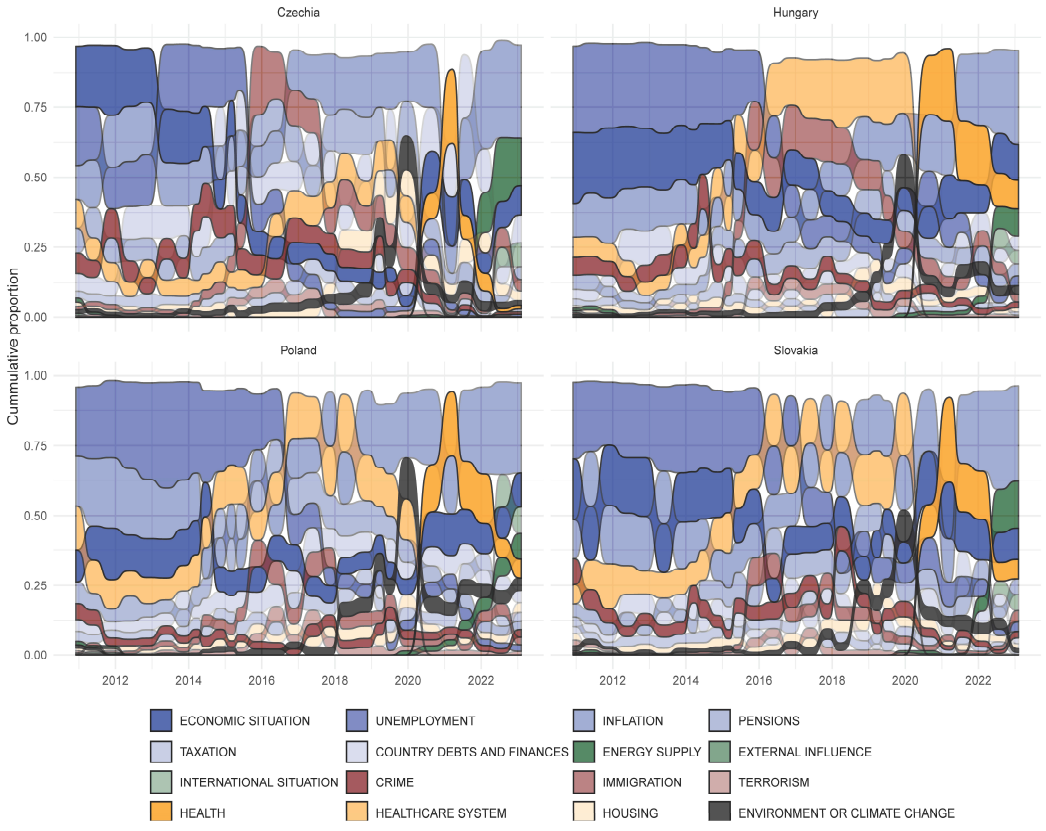

Fig 14. Climate change among other country-level concerns

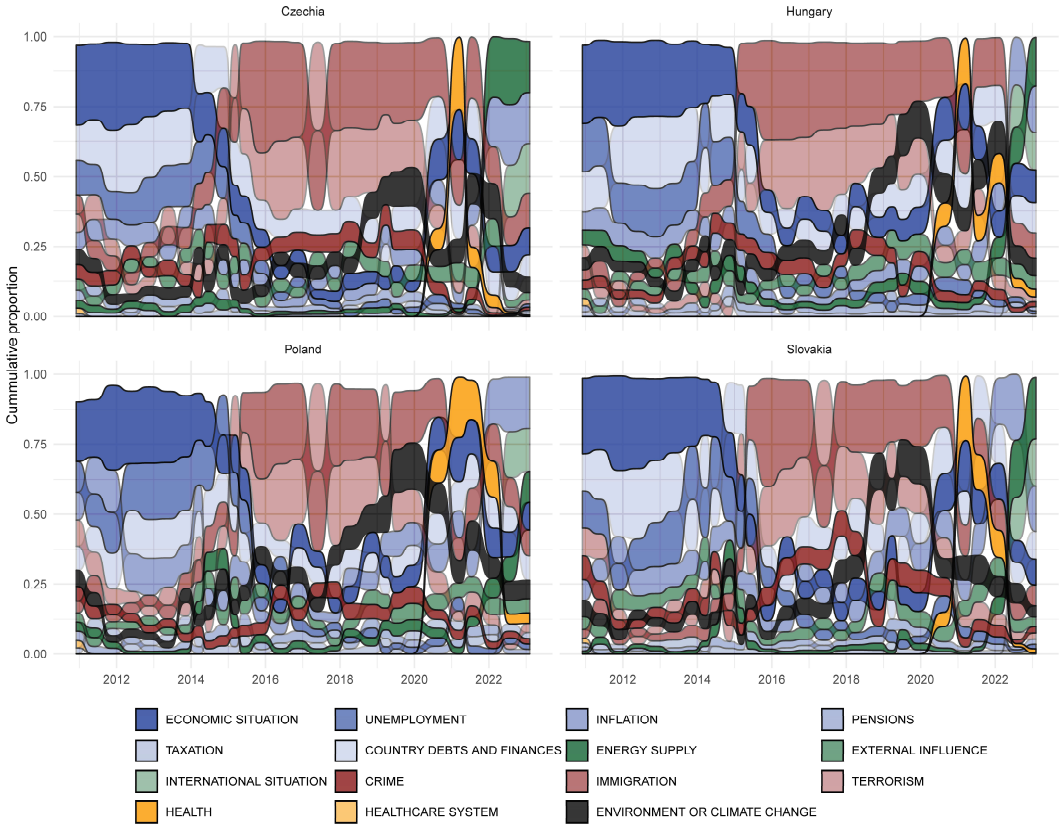

Fig 14. Climate change among other EU-level concerns

3.2.2. European Social Survey on the environment and climate change

Based on the European Social Survey round 8, we also constructed the Climate Change Index (CC Index) to assess the public's pro-environmental behaviours and understanding of climate change across different European countries. A higher CC Index value indicates a more significant commitment to environmental practices and a better grasp of climate change issues within a country. The main results of the CC Index analysis reveal significant regional disparities across Europe, underscoring the diverse approaches and attitudes toward climate change within the continent.

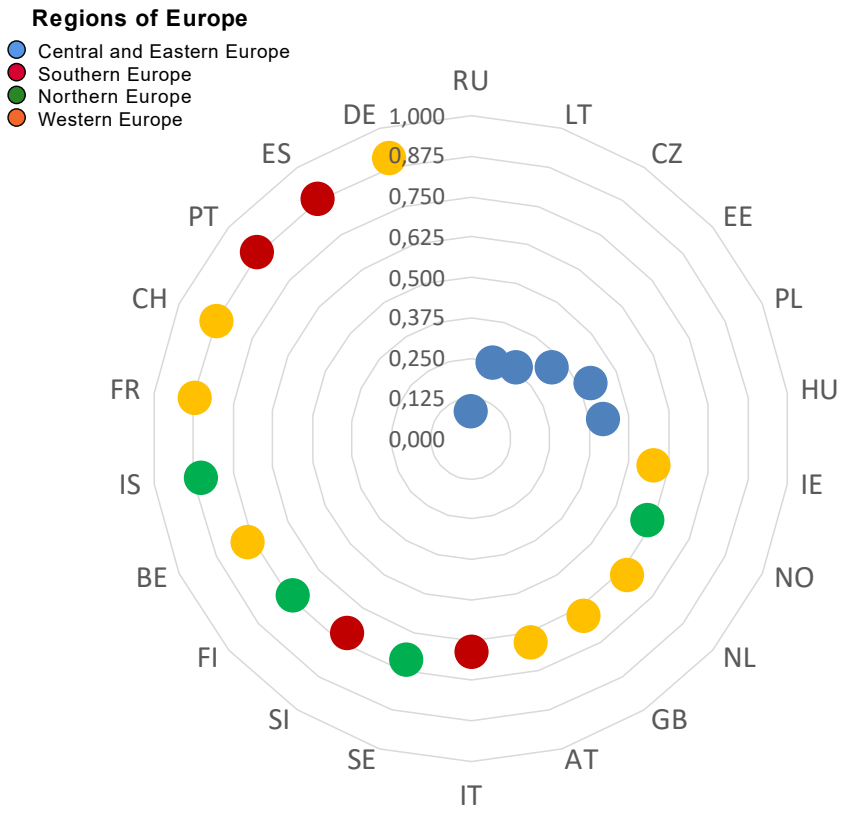

Fig. 15 Ranking of European countries based on the values of CC Index

The analysis indicates that Central and Eastern European countries, including Russia (RU), Lithuania (LT), the Czech Republic (CZ), Estonia (EE), Poland (PL), and Hungary (HU), occupy the lowest positions on the CC Index. This suggests a relatively weaker engagement with pro-environmental behaviours and a lesser degree of public understanding of climate change in these nations. Several factors might contribute to these findings.

Central and Eastern European countries often prioritise economic development and industrial growth, sometimes at the expense of environmental considerations. The focus on economic expansion can lead to less emphasis on sustainability and environmental education. The legacy of Soviet-era industrial policies in many of these countries has resulted in significant environmental challenges that continue to affect public attitudes. The historical reliance on heavy industry and fossil fuels has left a lasting imprint, making transitions to greener practices more challenging. Environmental policies and governance structures in these countries may not be as robust or effectively implemented compared to their Western European counterparts. This can result in less public awareness and engagement in climate-friendly behaviours. There may be lower levels of public awareness and education regarding climate change and environmental issues in these regions. This could stem from limited access to

information, fewer educational campaigns, and less emphasis on environmental issues in school curricula.

In stark contrast, countries from other regions of Europe exhibit a mix of CC Index values, with Western European nations such as Germany, Spain, Portugal, Switzerland, France, and Iceland ranking at the top. These countries demonstrate stronger pro-environmental behaviours and a higher degree of public understanding of climate change, which can be attributed to several key factors.

Many Western European countries have implemented comprehensive environmental policies and legislation encouraging sustainable practices and reducing carbon footprints. For instance, Germany's Energiewende policy focuses on transitioning to renewable energy sources, significantly influencing public behaviour and awareness. Western European countries generally have higher levels of education and greater access to information about climate change. Public campaigns, educational programs, and media coverage enhance awareness and understanding of environmental issues. Western Europe often has a stronger cultural emphasis on environmental protection and sustainability. Societal values and norms in these countries tend to prioritise ecological conservation and responsible consumption, fostering pro-environmental behaviours. These countries typically have more economic resources to invest in green technologies and sustainable infrastructure. This financial capability enables them to implement large-scale environmental initiatives and promote greener lifestyles among their populations.

The disparity in CC Index values between Central and Eastern Europe and their Western counterparts highlights the varying degrees of commitment to environmental sustainability and climate change awareness across the continent. Addressing these differences requires tailored approaches that consider each region's unique economic, historical, and cultural contexts. Enhancing environmental education, strengthening policies, and fostering a culture of sustainability are essential steps toward bridging this gap and promoting more uniform pro-environmental behaviours and understanding across Europe. By doing so, European countries can collectively contribute more effectively to global climate change mitigation efforts.

3.2.3. Comparing and contrasting the CEE countries

Based on data from the European Social Survey (ESS), we conducted an in-depth investigation focused on the Visegrad Group countries. The following tables (3, 4, 5, and 6) present the results of logistic regression models examining the predictors of climate change attitudes across three countries: the Czech Republic (CZ), Poland (PL), and Hungary (HU).

Slovakia was not included in the ESS geographical coverage. The outcome variables correspond to specific items on the ESS climate attitudes scale: climate change trend scepticism, scepticism about the anthropogenic origins of climate change, concerns over climate change, and the perception of climate change impacts. While the previous section analysed these items in aggregate as composite components of the climate change attitudes index, this section examines them individually as outcome variables in logistic regression models. This detailed analysis provides a clearer understanding of the distinct factors influencing climate change attitudes in each country.

Each of the respective outcome variables is regressed on several predictors, including self-transcendence (vs. self-enhancement), conservation (vs. openness-to-change), political orientation (right vs. left), gender (male vs. female), age, level of education, and household income (HH income). The estimates, standard errors, and significance levels for each predictor are provided for each country, offering a detailed view of how these variables influence climate change attitudes. Interpreting logistic regression results involves understanding the relationship between the predictors and the binary outcome variable. The coefficients (β) from the logistic regression indicate the direction and magnitude of the relationship between each predictor and the likelihood of the outcome occurring. Specifically, a positive coefficient suggests that the likelihood of the outcome increases as the predictor increases. In contrast, a negative coefficient indicates that the likelihood of the outcome decreases as the predictor increases. This interpretation is crucial for understanding which factors contribute to higher or lower climate change scepticism or concern. The significance of these coefficients, often tested using a p-value, indicates whether the relationship observed in the sample data is likely present in the population. A p-value less than a conventional threshold (e.g., 0.05) suggests that the relationship is statistically significant, providing confidence that the predictor influences the outcome variable. This statistical significance helps identify which factors are reliably associated with climate change attitudes.

Odds ratios, derived from the coefficients by exponentiating them, provide a more intuitive measure of the impact of predictors. An odds ratio greater than 1 suggests an increased likelihood of the outcome with higher predictor values, while an odds ratio less than 1 suggests a decreased likelihood. For example, if the odds ratio for education level is greater than 1, it indicates that higher education levels are associated with greater concern about climate change impacts. The model's overall fit can be assessed using the Akaike Information Criterion (AIC), log-likelihood, or pseudo-R^2. The AIC helps in model comparison, with lower values indicating

a better fit. The log-likelihood assesses the likelihood of the observed data given the model, with higher values suggesting a better fit. Pseudo-R^2 indicates the proportion of variance the predictors explain, analogous to R^2 in linear regression. These metrics collectively help evaluate the adequacy and explanatory power of the model, ensuring that the model fits the data well and provides meaningful insights into the factors influencing climate change attitudes.

By considering these various statistical measures and interpretations, researchers can comprehensively understand the dynamics behind climate change scepticism and concern in different countries. This analysis is essential for developing targeted strategies to address climate change attitudes effectively, tailoring interventions to each country's specific socio-political and economic contexts.

Climate change trend skepticism

Across all three countries, the intercepts are positive and significant, suggesting a baseline level of climate change trend scepticism independent of the variables included in the models (Table 3). This indicates that even without accounting for specific predictors, there is an inherent tendency toward scepticism about climate change trends in the populations studied. Self-transcendence values, which emphasise the well-being of others and the environment, consistently show a negative relationship with trend scepticism in the Czech Republic and Hungary. This implies that individuals prioritising self-transcendence are less likely to be sceptical of climate change trends in these countries. However, this relationship is not significant in Poland, suggesting that the influence of self-transcendence on climate scepticism may vary by national context.

Gender emerges as an important predictor of climate change trend scepticism exclusively in Poland, where males are more likely to exhibit scepticism compared to females. This gender difference highlights the potential influence of sociocultural factors in shaping climate change perceptions in Poland. Household income is another significant predictor, showing a negative relationship with trend scepticism in the Czech Republic and Hungary. Higher-income levels are associated with lower scepticism in these countries, which might reflect better access to information and resources that support climate change awareness. In contrast, income does not significantly predict trend scepticism in Poland, suggesting economic factors may play a different role or be less influential in shaping climate change attitudes. Other potential predictors, including political orientation, conservation values, age, and education, do not significantly affect the countries. This lack of significance suggests that these variables do

not strongly or consistently impact climate change trend scepticism within the studied populations.

Table 3. Climate change trend scepticism across CEE countries

	Model for CZ		***Model for PL***		***Model for HU***	
Predictors	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Intercept	0.090 ***	0.012	0.039 **	0.013	0.071 ***	0.016
Self-transcendence	-0.044 ***	0.010	0.015	0.010	-0.038 *	0.015
Conservation	-0.013	0.010	0.003	0.009	-0.022	0.017
Political orientation	-0.006	0.008	0.012	0.008	0.003	0.011
Gender: male	-0.005	0.016	0.060 ***	0.016	-0.012	0.021
Age	-0.001	0.001	0.000	0.000	0.000	0.001
Level of education	0.005	0.005	0.005	0.005	-0.006	0.008
HH income	-0.030 **	0.009	0.002	0.009	-0.035 **	0.012
Observations	1589		1079		764	
R^2 / R^2 *adjusted*	0.025 / 0.020		0.017 / 0.010		0.032 / 0.023	
AIC	979.467		112.953		313.773	
log-Likelihood	-480.733		-47.477		-147.886	

** p<0.05 ** p<0.01 *** p<0.001*

The models explain only a small proportion of the variance in trend scepticism, indicating that while the included predictors have some influence, other vital factors are likely at play. These could include cultural, social, and psychological factors not captured by the current models, highlighting the complexity of understanding climate change scepticism across different contexts.

Climate change attribution scepticism

Across all three countries, the intercepts are positive and significant, indicating a baseline level of attribution scepticism, which persists even when accounting for other variables (Table 4). This suggests an inherent tendency within the populations studied to be sceptical about attributing climate change to human activities. Self-transcendence values, which emphasise concern for others and the environment, show a negative relationship with attribution scepticism in the Czech Republic, meaning that individuals with self-transcendent values are less likely to doubt human causes of climate change. However, this relationship is not significant in Poland and Hungary, indicating that the impact of self-transcendence on attribution scepticism is context-dependent and may vary across different cultural or social settings.

Political orientation has varying effects across countries. In the Czech Republic and Poland, a right-wing political orientation significantly increases attribution scepticism, suggesting that individuals with conservative political views in these countries are more likely to doubt human contributions to climate change. In contrast, in Hungary, a right-wing political orientation significantly decreases attribution scepticism, indicating that conservative individuals in Hungary are less sceptical about human causes of climate change. This contrasting effect underscores the complexity of political influences on climate change perceptions, which may be shaped by national political climates and discourses. Gender does not emerge as a significant predictor of attribution scepticism in any of the countries, suggesting that there are no substantial differences between males and females in their levels of scepticism regarding human-caused climate change. Age has a small but significant effect on the Czech Republic and Poland. In the Czech Republic, age negatively predicts attribution scepticism, meaning older individuals are less likely to be sceptical. Conversely, age positively predicts attribution scepticism in Poland, indicating that older individuals are more likely to be sceptical about human contributions to climate change. These divergent effects highlight how age-related influences on climate change perceptions can vary by country. Household income negatively predicts attribution scepticism in the Czech Republic, suggesting that higher income levels are associated with lower scepticism about human-caused climate change. However, household income is not a significant predictor in Poland and Hungary, indicating that economic factors may impact climate change perceptions across these countries differently. Other potential predictors, including conservation values and education level, do not significantly affect the countries. This lack of significance suggests that these factors do not strongly influence attribution scepticism within the populations studied.

Table 4. Climate change attribution scepticism across CEE countries

	Model for CZ		***Model for PL***		***Model for HU***	
Predictors	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Intercept	0.076 ***	.012	0.089 ***	.015	0.049 ***	.015
Self-transcendence	-0.025 *	.010	-0.004	.012	-0.018	.014
Conservation	0.013	.010	-0.015	.011	0.011	.016
Political orientation	0.026 **	.008	0.021 *	.009	-0.028 **	.010
Gender: male	0.027	.016	0.030	.019	0.021	.020
Age	-0.001 *	.001	0.001 *	.001	0.000	.001
Level of education	-0.004	.006	-0.006	.005	-0.001	.007
HH income	-0.028 **	.010	0.005	.011	0.012	.011

Observations	1395	989	690
R2 / R2 adjusted	0.020 / 0.015	0.016 / 0.009	0.018 / 0.007
AIC	775.721	373.266	121.957
log-Likelihood	-378.860	-177.633	-51.978

** p<0.05 ** p<0.01 *** p<0.001*

The models explain only a small proportion of the variance in attribution scepticism, indicating that while the included predictors have some influence, other important factors are likely at play. These could include cultural, social, and psychological factors not captured by the current models, highlighting the complexity of understanding attribution scepticism across different contexts.

Concern about climate change

Across all three countries, the intercepts are positive and significant, indicating a high baseline concern about climate change, independent of the predictors included in the models (Table 5). This suggests a general high concern about climate change among the populations studied. In the Czech Republic, self-transcendence does not significantly predict climate change concerns, while in Poland, it has a positive and significant effect. This indicates that individuals with self-transcendent values in Poland are more likely to be concerned about climate change, but this effect is not observed in the Czech Republic or Hungary, highlighting the contextual variability in the influence of self-transcendence on climate concern.

Table 5. Concern about climate change

	Model for CZ		***Model for PL***		***Model for HU***	
Predictors	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Intercept	2.848 ***	.041	2.869 ***	.041	3.218 ***	.045
Self-transcendence	0.039	.034	0.136 ***	0.032	0.064	.044
Conservation	0.013	0.034	-0.047	0.030	-0.020	.048
Political orientation	-0.072 **	0.027	-0.073 **	0.025	-0.013	.031
Gender: male	-0.169 **	0.053	-0.014	0.052	-0.188 **	.061
Age	-0.005 *	0.002	-0.004 *	0.002	0.000	.002
Level of education	0.053 **	0.018	0.042 **	0.015	-0.001	.022
HH income	-0.011	0.032	0.056	0.029	-0.023	.034
Observations	1536		1062		759	
R^2 / R^2 *adjusted*	0.021 / 0.016		0.061 / 0.055		0.021 / 0.011	
AIC	4667.183		2589.228		1908.259	
log-Likelihood	-2324.592		-1285.614		-945.130	

* p<0.05 ** p<0.01 *** p<0.001

Political orientation shows a negative association with concern about climate change in the Czech Republic and Poland, indicating that individuals with right-wing political orientations are less likely to be concerned about climate change. However, this predictor is insignificant in Hungary, suggesting that political orientation's impact on climate concern may vary by country and local political contexts. Gender is a significant predictor of climate change concern in the Czech Republic and Hungary, with males being less concerned about climate change in these countries. This gender effect is not observed in Poland, indicating that gender influences on climate change concerns may differ across national contexts. Age has a small but significant negative effect on climate change concerns in the Czech Republic and Poland, suggesting that older individuals are slightly less concerned about climate change in these countries. This effect is not significant in Hungary, again indicating contextual differences. Higher education levels are associated with greater concern about climate change in the Czech Republic and Poland but not Hungary. This suggests that education may shape climate change concerns in some countries but not others. Household income does not significantly predict concern about climate change in any countries studied, indicating that economic factors may not play a major role in influencing levels of concern about climate change. The models explain only a small proportion of the variance in concern about climate change, suggesting that while the included predictors have some influence, other factors are likely important. These could include cultural, social, and psychological factors not captured by the current models, highlighting the complexity of understanding climate change concerns across different contexts.

Perceived impacts of climate change

Across all three countries, the intercepts are negative and significant, indicating a low baseline perception of the impacts of climate change. This suggests that, even without considering other variables, populations generally perceive low impacts from climate change. Self-transcendence significantly predicts lower perceived impacts in Poland, meaning that individuals with self-transcendent values in Poland are less likely to perceive significant impacts of climate change. This relationship is not significant in the Czech Republic or Hungary, highlighting the contextual variability of self-transcendence's influence on climate impact perception. Political orientation shows varying effects across the countries. In Poland, right-wing political orientation is positively associated with higher perceived impacts of climate change, indicating that individuals with conservative views in Poland are more likely to recognise significant impacts. However, political orientation does not significantly affect

perceived impacts in the Czech Republic or Hungary, suggesting that the influence of political views on climate perception can differ substantially across countries.

Table 6. Perceived impacts of climate change

	Model for CZ		***Model for PL***		***Model for HU***	
Predictors	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Intercept	-6.574 ***	.081	-6.672 ***	.107	-7.133 ***	.117
Self-transcendence	-0.127	.068	-0.209 *	.082	-0.133	.112
Conservation	-0.121	.066	-0.066	.077	-0.226	.126
Political orientation:	0.018	.053	0.206 **	0.065	-0.008	.079
Gender: male	0.068	.105	0.075	0.134	-0.027	.156
Age	0.004	.004	0.005	0.004	0.003	.005
Level of education	-0.101 **	.036	-0.048	0.038	-0.005	.058
HH income	-0.100	.063	-0.030	0.076	-0.105	.087
Observations	1493		1029		741	
R^2 / R^2 *adjusted*	0.016 / 0.011		0.025 / 0.018		0.011 / 0.002	
AIC	6506.742		4423.861		3252.659	
log-Likelihood	-3244.371		-2202.931		-1617.329	

** p<0.05 ** p<0.01 *** p<0.001*

Gender, age, and household income do not significantly predict the perceived impacts of climate change in any of the countries, indicating that these demographic factors do not play a substantial role in shaping perceptions of climate change impacts within the studied populations. Higher education levels are associated with lower perceived impacts of climate change in the Czech Republic, suggesting that more educated individuals perceive fewer impacts. This effect is not observed in Poland or Hungary, illustrating the contextual differences in how education influences climate change perceptions. The models explain only a small proportion of the variance in perceived impacts of climate change, indicating that while the included predictors have some influence, many other factors likely contribute to how people perceive the impacts of climate change. These could include cultural, social, and psychological factors not captured by the current models.

4. Summary

Since 2010, EB surveys have included questions about the most pressing issues for individuals, their countries, and the EU. This study focuses on the EU level, where environmental and climate change concerns are typically more pronounced compared to

personal or national levels. Data from 28 instances of standard main-issue questions reveal a variety of response patterns, highlighting the need for careful recoding to track economic versus non-economic issues accurately. The analysis shows that economic concerns dominated the early 2010s, influenced by the Great Recession and its prolonged effects on the Euro-zone. By 2014, these concerns began to wane, giving way to issues like immigration and terrorism, particularly during the 2015 migration crisis. Environmental and climate change issues gained prominence around 2018-2019 but were overshadowed by health concerns during the COVID-19 pandemic. The recent post-pandemic inflation and the war in Ukraine have brought economic issues back to the forefront. Variations in concerns about the environment and climate change also exhibit regional differences. Northern European countries consistently prioritize these issues, as shown in geographical distributions of aggregate concerns from recent EB data. This regional differentiation, along with the temporal variability, underscores the complex landscape of public opinion on environmental and climate issues within the EU. To understand these dynamics, the study also examines within-country differences at the NUTS1 regional level, linking these patterns to experiences of natural disasters. Despite challenges with coding inconsistencies and sample sizes, this approach provides insights into how local contexts influence broader opinion trends on environmental and climate change issues across Europe.

ESS8 features a special module on Climate Change, Energy Security, and Energy Preferences, developed by researchers including W. Poortinga and L. Whitmarsh. This study utilised five measures of climate change perception: trend scepticism, attribution scepticism, concern, pro-environmental norms, and salience. Additionally, Schwartz's Basic Human Values, assessed through a 21-item Portrait Values Questionnaire, are incorporated to explore their influence on climate change perceptions. The analysis aimed to provide a nuanced understanding of how various factors shape public attitudes toward climate change across Europe. Key findings include significant cross-national differences in climate change perceptions and attitudes. For instance, Central and Eastern European countries generally exhibit lower pro-environmental engagement and understanding compared to Western European countries. This disparity is attributed to factors such as economic priorities, legacy industrial policies, weaker environmental governance, and lower levels of public awareness and education.

The study also constructs a Climate Change Index (CC Index) by combining the five climate change measures. The CC Index reveals regional disparities, with Western European

countries ranking higher in pro-environmental behaviours and climate change understanding compared to their Central and Eastern European counterparts. At the individual level, the analysis explored the impact of basic human values on climate change perceptions: 1) Self-Transcendence vs. Self-Enhancement: Self-transcendence values (emphasizing the welfare of others and nature) are positively associated with acknowledging climate change reality and human causes, greater concern, stronger pro-environmental norms, and higher climate change salience. Conversely, self-enhancement values (focusing on personal success) showed an inverse relationship with these measures. 2) Conservation vs. Openness-to-Change: While these values did not significantly influence skepticism toward climate change reality or causes, they do affect other perceptions. Openness to change correlated with higher concern, stronger pro-environmental norms, and greater climate change salience, whereas conservation values showed no significant influence on these perceptions. Demographic control variables such as gender, age, and education level also impacted climate change attitudes, with younger, higher-educated individuals generally showing greater concern and pro-environmental norms. Overall, this comprehensive analysis underscored the importance of value orientations and demographic factors in shaping public perceptions and behaviors related to climate change across Europe. It highlighted the need for tailored strategies to enhance climate change engagement and education, particularly in regions lagging in pro-environmental attitudes.

Our research investigated the conflict between economic growth and environmental protection using combined data from the European Values Study (EVS) and the World Values Survey (WVS) from 2017-2022, across 74 countries. We analyzed the influence of Gross Domestic Product (GDP) per capita, political orientation, and household income on preferences for environmental protection over economic growth, using multi-level logistic regression. Our findings indicated that left-wing individuals and those from higher-income households prioritized environmental protection more, especially in wealthier countries with higher GDP per capita. This study underscored the varying impact of individual political and economic factors on environmental priorities across different economic contexts.

5. Annex

5.1. Data treatment and recoding scheme for EB surveys

Our analysis was based on the harmonised EB data sets, produced at a previous stage of the research process. The identification of main issues required some degree of pre-processing and recoding. The following table summarises the pre-processing applied to the

data and identifies the data sets in use. Eurobarometer surveys are conducted biannually on behalf of the Directorate General for Communication of the European Commission, typically in spring and autumn waves. The surveys are conducted by a private contractor, in the period we cover (2010-2023) it was performed by TNS Opinion (later merged into Kantar). Among the major European survey projects, the Eurobarometer remains among the least transparent when it comes to sampling and the quality indicators of the survey process, yet, it is commonly considered to be a reliable data provider. Our analysis makes use of Standard Eurobarometers, ranging from the fall of 2010:EB74.2 to early 2023 - EB99.4.

We start the time series with EB74.2 as prior waves assumed a different approach to asking questions about main issues facing the country and the EU, which could not be consistently harmonised into a common aggregate. In the following waves, EB questionnaires have not been entirely consistent in their wording and answer inventories, but the differences prove comparatively minor. EB98.2 is the last wave available at the time of writing. For two waves: spring of 2014 (EB81.2 and 81.4), 2015 (EB 83.1 and 83.3) and 2019 (EB 91.2 and 91.5), the Standard Eurobarometer was broken into two parts, otherwise there is always one measurement per wave.

Table 3. EB surveys covered by analysis

Survey wave	Source files	Fieldwork dates	Sample size
74.2	ZA5449_v2-2-0.sav	11.11.2010 - 01.12.2010	26,423
75.3	ZA5481_v2-0-1.sav	06.05.2011 - 26.05.2011	26,404
76.3	ZA5567_v2-0-1.sav	05.11.2011 - 20.11.2011	26,282
77.3	ZA5612_v2-0-0.sav	12.05.2012 - 27.05.2012	26,332
78.1	ZA5685_v2-0-0.sav	03.11.2012 - 18.11.2012	26,318
79.3	ZA5689_v2-0-0.sav	10.05.2013 - 26.05.2013	26,300
80.1	ZA5876_v2-0-0.sav	02.11.2013 - 17.11.2013	26,503
81.2	ZA5913_v2-0-0.sav	15.03.2014 - 24.03.2014	26,636
81.4	ZA5928_v3-0-0.sav	31.05.2014 - 14.06.2014	26,631
82.3	ZA5932_v3-0-0.sav	08.11.2014 - 17.11.2014	26,584
83.1	ZA5964_v2-0-0.sav	28.02.2015 - 09.03.2015	26,652
83.3	ZA5998_v2-0-0.sav	16.05.2015 - 27.05.2015	26,452
84.3	ZA6643_v4-0-0.sav	07.11.2015 - 17.11.2015	26,367
85.2	ZA6694_v2-0-0.sav	21.05.2016 - 31.05.2016	26,466
86.2	ZA6788_v2-0-0.sav	03.11.2016 - 16.11.2016	26,362
87.3	ZA6863_v2-0-0.sav	20.05.2017 - 30.05.2017	26,642
88.3	ZA6928_v2-0-0.sav	05.11.2017 - 19.11.2017	26,721
89.1	ZA6963_v2-0-0.sav	13.03.2018 - 28.03.2018	26,651
90.3	ZA7489_v1-0-0.sav	08.11.2018 - 22.11.2018	26,409
91.2	ZA7562_v1-0-0.sav	15.03.2019 - 29.03.2019	26,503
91.5	ZA7576_v1-0-0.sav	07.06.2019 - 01.07.2019	26,432

Survey wave	Source files	Fieldwork dates	Sample size
92.3	ZA7601_v1-0-0.sav	14.11.2019 - 13.12.2019	26,372
93.1	ZA7649_v2-0-0.sav	09.07.2020 - 26.08.2020	26,681
94.3	ZA7780_v2-0-0.sav	12.02.2021 - 18.03.2021	27,409
95.3	ZA7783_v1-0-0.sav	14.06.2021 - 15.07.2021	26,517
96.3	ZA7848_v1-0-0.sav	18.01.2022 - 14.02.2022	26,681
97.5	ZA7902_v1-0-0.sav	17.06.2022 - 24.07.2022	26,457
98.2	ZA7953_v1-0-0.sav	12.01.2023 - 06.02.2023	26,461
99.4	ZA7997_v1-0-0.sav	31.05.2023 - 25.06.2023	37,688

The geographical coverage of Standard EB was inconsistent over time. Crucially, the finalisation of the Brexit agreement resulted in the disappearance of the UK from the data. We also found that major inconsistencies occurred in the treatment of the EU candidate countries as well as those of the EFTA. While recent Eurobarometer surveys chose to provide broader coverage, the use of longitudinal data necessitated a restriction to the EU-27 countries, i.e., the EU member states after the departure of the UK. As a minor technical issue, since the EB persists in conducting separate surveys in the territories of the former West and East Germany, our analysis had to unify Germany together with its survey weights.

The following code snippet processes data frames from a specified directory, adding unique row identifiers, renaming certain columns, and conditionally modifying country codes and weights. The final output includes only the data for specified countries, filtering out unnecessary columns and retaining relevant information for further analysis.

```
data_directory[[i]]$data_frame %>%
rowid_to_column() %>%
mutate(rowid = paste(i, rowid, sep = "#")) %>%
ungroup() %>%
rename(weight_else = any_of(weight_else),
weight_de = any_of(weight_de),
        isocntry =  any_of(c("v7", "isocntry"))) %>%
 rowwise() %>%
 ungroup() %>%
 mutate(isocntry = ifelse(isocntry == "DE-W" | isocntry == "DE-E", "DE", isocntry),
        weight = ifelse(isocntry == "DE", weight_de, weight_else)) %>%
 select(-weight_de, - weight_else) %>%
 filter(isocntry %in% c("AT", "BE", "BG", "CY", "CZ", "DE", "DE", "DK", "EE", "ES", "FI", "FR",
"GR", "HR", "HU", "IE", "IT", "LT", "LU", "LV", "MT", "NL", "PL", "PT", "RO", "SE", "SI", "SK"))
```

Due to the inconsistency of EB instruments, which tend to introduce changes to the main issue questions over time, some re-coding was necessary. The following code, written in R, presents our approach. To produce a consistent data set, the recoding had to mitigate the two

persistent tendencies of the EB: wording changes and split ballots. Wording changes affect mostly the response options provided to the respondents, which evolve resulting from the changing circumstances but also involve small differences in response specification. Thus, for example, the introduction of “Health” in 2020 constitutes a reasonable reaction to the rise of the pandemic, as does the introduction of “International situation”, in response to the war in Ukraine. The small changes prove more pernicious and often arise without explicit reasons. Thus, for instance, we had to compute a common category: “Environment or Climate Change” based on the following main variants: 1) “The environment” and “Climate change” as two distinct categories, 2) “The environment/Climate change” as one category, 3) “The environment/Climate change/Energy”. The split ballot problem, commonly occurring in the EB, results from the choice to use two slightly different sets of response options, which are then randomly assigned to respondents. This approach may have some use for item testing, but given the very small variation in the variants used in the split ballots, we decided to recode them into one response scale.

The following code snippet transforms and cleans a data frame by selecting specific columns, reshaping the data, and standardizing issue names. It also aggregates values, resolves duplicates, and creates a wide-format data frame for further analysis.

```
df %>%
select(rowid, all_of(issue_vect)) %>%
zap_labels() %>%
pivot_longer(cols = all_of(issue_vect),
             names_to = "Variable",
             values_to = "Values") %>%
left_join(temp_tibble, by = "Variable") %>%
select(-Variable) %>%
mutate(Issue = str_remove(Issue, pattern = "[[:space:]]||1,2||\\(A\\)$|[[:space:]]||1,2||\\(B\\)$"),
Issue = case_when(
Issue == "RISING PRICES/INFLATION" ~ "INFLATION",
Issue == "RISING PRICES/INFLATION/COST OF LIVING" ~ "INFLATION",
Issue == "RISING PRICES/INFLA" ~ "INFLATION",
Issue == "RISING PRICES" ~ "INFLATION",
Issue == "ECONOMIC SIT" ~ "ECONOMIC SITUATION",
Issue == "THE ENVIRONMENT & CLIMATE CHANGE" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "THE ENVIRONMENT" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "CLIMATE CHANGE" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "ENVIRONMENT" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "THE ENVIRONMENT/CLIMATE CHANGE (QA5A.11+QA5A.12)" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "THE ENVIRONMENT/CLIMATE CHANGE/ENERGY SUPPLY (QA3B.13+QA3B.14)" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "THE ENVIRONMENT/CLIMATE/ENERGY" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "THE ENVIRONMENT/CLIMATE CHANGE" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "ENVIRONMENT CLIMATE ENERGY" ~ "ENVIRONMENT OR CLIMATE CHANGE",
```

```
Issue == "THE ENVIRONMENT" ~ "ENVIRONMENT OR CLIMATE CHANGE",
Issue == "DEFENCE/FOREIGN AFF" ~ "DEFENCE OR FOREIGN AFFAIRS",
Issue == "DFNC/FOREIGN AFF" ~ "DEFENCE OR FOREIGN AFFAIRS",
Issue == "DEFENCE/FOREIGN AFFAIRS" ~ "DEFENCE OR FOREIGN AFFAIRS",
Issue == "EDUCATIONAL SYS" ~ "EDUCATION SYSTEM",
Issue == "EDUCATIONAL SYSTEM" ~ "EDUCATION SYSTEM",
Issue == "ENERGY" ~ "ENERGY SUPPLY",
Issue == "HEALTHCARE SYS" ~ "HEALTHCARE SYSTEM",
Issue == "HEALTH CARE SYSTEM" ~ "HEALTHCARE SYSTEM",
Issue == "HEALTH & SOCIAL SECURITY" ~ "HEALTHCARE SYSTEM",
Issue == "HEALTH & SOC SECURITY" ~ "HEALTHCARE SYSTEM",
Issue == "CNTRY EXT INFLUENCE" ~ "EXTERNAL INFLUENCE",
Issue == "CNTRYS EXTERNAL INFLUENCE" ~ "EXTERNAL INFLUENCE",
Issue == "INFLUENCE IN WORLD" ~ "EXTERNAL INFLUENCE",
Issue == "INFLUENCE IN THE WORLD" ~ "EXTERNAL INFLUENCE",
Issue == "EU INFLUENCE IN THE WORLD" ~ "EXTERNAL INFLUENCE",
Issue == "CNTRY INFLUENCE" ~ "EXTERNAL INFLUENCE",
Issue == "NONE (SPONT)" ~ "NONE",
Issue == "DK (SPONT)" ~ "DK",
Issue == "OTHER (SPONT)" ~ "OTHER",
Issue == "OTHERS" ~ "OTHER",
Issue == "DEFENCE OR FOREIGN AFFAIRS" ~ "OTHER",
Issue == "STAE OF MEMBER FINANCES" ~ "COUNTRY DEBTS AND FINANCES",
Issue == "GOVERNMENT DEBT" ~ "COUNTRY DEBTS AND FINANCES",
Issue == "GOVERNMENT DEBT" ~ "COUNTRY DEBTS AND FINANCES",
Issue == "MEMBER FINANCES" ~ "COUNTRY DEBTS AND FINANCES",
Issue == "HEALTHCARE SYSTEM OR SOCIAL SECURITY" ~ "HEALTHCARE SYSTEM",
   TRUE ~ Issue),
issue_kind = paste(Issue, Kind, sep = "#")) %>%
select(-Issue, -Kind) %>%
group_by_at(vars(-Values)) %>%
summarise(Values = sum(Values, na.rm = TRUE)) %>%
ungroup() %>%
mutate(Values = case_when(
     Values > 1 ~ 1,
     TRUE ~ Values)) %>%
pivot_wider(names_from = issue_kind, values_from = Values, values_fill = 0)
```

In our analysis, we used Eurostat data for both geospatial and metadata. We used the data as predictors in multi-level analyses as well as the basis for calculating analytical weights incorporating population sizes. The following code snippet retrieves geospatial data for NUTS regions and demographic data from Eurostat, filters and processes this data to include only relevant countries and age groups, and calculates population summaries by year and country. It then merges this demographic data with survey data to calculate normalized weights, ensuring accurate representation in the final dataset by filtering and adjusting specific variables.

```
nuts_2021_geospatial <- eurostat::get_eurostat_geospatial(nuts_level = 1, year = "2021")  %>%
  filter(!CNTR_CODE %in% c("TR", "UK", "AL", "CH", "IS", "RS", "LI", "ME", "MK", "NO"))

population <- eurostat::get_eurostat("demo_pjan") %>%
  filter(sex == "T") %>%
  filter(geo %in% nuts_2021_geospatial$CNTR_CODE) %>%
  filter(str_detect(age, "Y[[:digit:]]+")) %>%
```

```
  mutate(age = as.integer(str_remove(age, "Y"))) %>%
  filter(age >= 15) %>%
  mutate(year = year(TIME_PERIOD)) %>%
  filter(year >= 2010) %>%
  group_by(geo, year) %>%
  summarise(pop = sum(values)) %>%
  mutate(geo = countrycode::countrycode(geo, origin = "eurostat", destination = "country.name"))

survey_sizes <- data_tibble %>%
  group_by(survey, isocntry, date) %>%
  count() %>%
  ungroup() %>%
  mutate(year = as.integer(year(date))) %>%
  select(-date)

pop_weights <- left_join(survey_sizes, population, by = c("isocntry" = "geo", "year")) %>%
  group_by(survey) %>%
  mutate(basic_cntry_weight = pop/n) %>%
  mutate(normalised_weight = basic_cntry_weight/sum(basic_cntry_weight)) %>%
  ungroup() %>%
  select(-n, -basic_cntry_weight, - year, -pop)

data_tibble <- data_tibble %>%
  mutate(lrscl = ifelse(lrscl %in% c(97, 98), NA_integer_, lrscl),
         gender = ifelse(gender == 3, NA_integer_, gender)) %>%
  left_join(pop_weights, by = c("survey", "isocntry")) %>%
filter(!weight == 0) %>% #filtering out occasional cases of weight==0 in datasets for germany (datset 27)
  mutate(anweight = 100 * weight * normalised_weight,
       total_population_weight = round(100*anweight, digits = 0))
```

Apart from using country-level aggregates, our analysis also explored aggregates at within-country NUTS1 units. While EB provides location data for respondents at NUTS2 for most countries, the effective sampling per unit for larger countries proves too low to allow for meaningful aggregation. Therefore, a uniform recoding into NUTS1 was performed, at the same time the codes were updated and harmonised across the EB data sets, which tend to use NUTS_2011 with minor alterations. All codes were translated into NUTS_2016, to make them compatible with other data, especially those of em_dat. The code for recoding NUTS units is as follows; it processes a data frame to select relevant columns, renames and standardizes NUTS codes for Poland and France, and further extracts and modifies NUTS1 codes for various countries. The cleaned data is then joined with other data frames, ensuring consistent regional coding across the dataset

```
df %>%
select(rowid, isocntry, all_of(nuts_vect)) %>%
rename(nuts = any_of(nuts_vect)) %>%
mutate(nuts = ifelse(isocntry != "PL", nuts,
                     case_when(
   nuts %in% c("PL21", "PL22") ~ "PL2",
   nuts %in% c("PL41", "PL42", "PL43") ~ "PL4",
   nuts %in% c("PL51", "PL52") ~ "PL5",
```

```
  nuts %in% c("PL61", "PL62", "PL63") ~ "PL6",
  nuts %in% c("PL11", "PL33") ~ "PL7",
  nuts %in% c("PL31", "PL32", "PL34") ~ "PL8",
  nuts == "PL12" ~ "PL9",
                    TRUE ~ nuts
                    )),
nuts = ifelse(isocntry != "FR", nuts,
                    case_when(
nuts == "FR10" ~ "FR1",
nuts == "FR21" ~ "FRF",
nuts == "FR22" ~ "FRE",
nuts == "FR23" ~ "FRD",
nuts == "FR24" ~ "FRB",
nuts == "FR25" ~ "FRD",
nuts == "FR26" ~ "FRC",
nuts == "FR30" ~ "FRE",
nuts == "FR41" ~ "FRF",
nuts == "FR42" ~ "FRF",
nuts == "FR43" ~ "FRC",
nuts == "FR51" ~ "FRG",
nuts == "FR52" ~ "FRH",
nuts == "FR53" ~ "FRI",
nuts == "FR61" ~ "FRI",
nuts == "FR62" ~ "FRJ",
nuts == "FR63" ~ "FRI",
nuts == "FR71" ~ "FRK",
nuts == "FR72" ~ "FRK",
nuts == "FR81" ~ "FRJ",
nuts == "FR82" ~ "FRL",
TRUE ~ as.character(nuts))),
    NTS1 = str_remove_all(nuts, pattern = "(?<=^.||3||).*"),
    NTS1 = ifelse(nchar(NTS1) < 3, paste0(NTS1, "0"), NTS1),
    NTS1 = ifelse(isocntry != "GR", NTS1,
                  case_when(
                    NTS1 %in% c("EL1", "GR1") ~ "EL5",
                    NTS1 %in% c("EL2", "GR2") ~ "EL6",
                    NTS1 %in% c("EL3", "GR3") ~ "EL3",
                    NTS1 %in% c("EL4", "GR4") ~ "EL4"))) %>%
 select(-isocntry, -nuts)
|| else ||
df3 <- df %>%
 select(rowid, isocntry, all_of(nuts_vect)) %>%
 mutate(across(starts_with("region_"), ~as.character(as_factor(.)))) %>%
 pivot_longer(cols = starts_with("region_"), names_to = "region", values_to = "nuts_code") %>%
filter(!is.na(nuts_code)) %>%
select(-region) %>%
  mutate(nuts_code = str_remove(nuts_code, pattern = " - .*")) %>%
  mutate(nuts_code = ifelse(isocntry != "PL", nuts_code,
                    case_when(
 nuts_code %in% c("PL21", "PL22") ~ "PL2",
 nuts_code %in% c("PL41", "PL42", "PL43") ~ "PL4",
 nuts_code %in% c("PL51", "PL52") ~ "PL5",
 nuts_code %in% c("PL61", "PL62", "PL63") ~ "PL6",
 nuts_code %in% c("PL11", "PL33") ~ "PL7",
 nuts_code %in% c("PL31", "PL32", "PL34") ~ "PL8",
 nuts_code == "PL12" ~ "PL9",
                    TRUE ~ nuts_code)),
         nuts_code = ifelse(isocntry != "FR", nuts_code,
                    case_when(
nuts_code == "FR10" ~ "FR1",
```

```
  nuts_code == "FR21" ~ "FRF",
  nuts_code == "FR22" ~ "FRE",
  nuts_code == "FR23" ~ "FRD",
  nuts_code == "FR24" ~ "FRB",
  nuts_code == "FR25" ~ "FRD",
  nuts_code == "FR26" ~ "FRC",
  nuts_code == "FR30" ~ "FRE",
  nuts_code == "FR41" ~ "FRF",
  nuts_code == "FR42" ~ "FRF",
  nuts_code == "FR43" ~ "FRC",
  nuts_code == "FR51" ~ "FRG",
  nuts_code == "FR52" ~ "FRH",
  nuts_code == "FR53" ~ "FRI",
  nuts_code == "FR61" ~ "FRI",
  nuts_code == "FR62" ~ "FRJ",
  nuts_code == "FR63" ~ "FRI",
  nuts_code == "FR71" ~ "FRK",
  nuts_code == "FR72" ~ "FRK",
  nuts_code == "FR81" ~ "FRJ",
  nuts_code == "FR82" ~ "FRL",
  TRUE ~ nuts_code))
  ) %>%
  mutate(NTS1 = str_remove_all(nuts_code, pattern = "(?<=^.||3||).*")) %>%
  select(-isocntry, -nuts_code)
||

left_join(df1, df2, by = "rowid") %>%
 left_join(df3, by = "rowid") %>%
  mutate(NTS1 = ifelse(isocntry == "SI", "SI0", NTS1),
        NTS1 = ifelse(isocntry == "CZ", "CZ0", NTS1),
        NTS1 = ifelse(isocntry == "DK", "DK0", NTS1),
        NTS1 = ifelse(isocntry == "EE", "EE0", NTS1),
        NTS1 = ifelse(isocntry == "FI", "FI0", NTS1),
        NTS1 = ifelse(isocntry == "IE", "IE0", NTS1),
        NTS1 = ifelse(isocntry == "LT", "LT0", NTS1),
        NTS1 = ifelse(isocntry == "SK", "SK0", NTS1),
        NTS1 = ifelse(isocntry == "CY", "CY0", NTS1),
        NTS1 = ifelse(isocntry == "LU", "LU0", NTS1),
        NTS1 = ifelse(isocntry == "MT", "MT0", NTS1))||)
```

5.2. Data treatment and recoding scheme for ESS survey

The analysis is conducted based on the 8th round of the European Social Survey (ESS8) results. Below, we present replication files for data analysis. The table below presents the list of countries participating in the 8th round of the ESS. This table includes as well information on (1) the size of the population in each country, (2) sample size and (3) response rate, (4) geographical coverage of particular regions of Europe by the ESS, i.e., Central and Eastern Europe (Czechia, Estonia, Hungary, Lithuania, Poland and Russian Federation), Southern Europe (Italy, Portugal, Spain and Slovenia), Northern Europe (Finland, Iceland, Norway and Sweden) and Western Europe (Austria, Belgium, France, Germany, Ireland, Netherlands, Switzerland and United Kingdom).

Table 4. European countries participating in the ESS8 (2016/17)

Country	Region	Population size [1] million	Sample size N	Response rate [2] %
Austria	W	8.70	2,010	52.5
Belgium	W	11.31	1,766	56.8
Czechia	CEE	10.55	2,269	68.5
Estonia	CEE	1.32	2,019	68.4
Finland	N	5.49	1,925	57.7
France	W	66.73	2,070	52,4
Germany	W	82.18	2,852	30.6
Hungary	CEE	9.83	1,614	42.7
Iceland	N	0.33	880	45.8
Ireland	W	4.73	2,757	64.5
Italy	S	60.66	2,626	49.7
Lithuania	CEE	2.89	2,122	64.0
Netherlands	W	16.78	1,681	53.0
Norway	N	5.21	1,545	52.3
Poland	CEE	37.97	1,694	69.6
Portugal	S	10.34	1,270	45.0
Russian Federation	CEE	143.67 [3]	2,430	63.4
Slovenia	S	2.06	1,307	55.9
Spain	S	46.44	1,958	67.7
Sweden	N	9.85	1,551	43.0
Switzerland	W	8.33	1,525	52.2
United Kingdom	W	65.38	1,959	42.8

Notes: Region: CEE: Central and Eastern Europe, N: Northern Europe, S: Southern Europe, W: Western Europe; [1] Source: Eurostat data for 2016 (population on 1st of January); [2] 2nd version of response rate accordingly to AAPOR (2016) standard definitions; [3] Data available for 2014.

ESS strongly emphasises the standardisation of the sampling process, fieldwork procedures, and questionnaire design in such a way that it would enable cross-country comparisons of results despite utilising different types of samples or fieldwork procedures. For example, each ESS National Coordination team is supported by a member of the ESS Sampling Expert Panel in choosing a sample design suitable for implementation in each country. The ESS Sampling Expert Panel must finally approve the sampling process before fieldwork starts to ensure that it is comparable to those utilised in other countries. Moreover, the questionnaire is developed in English and tested, piloted, and translated by national teams to obtain reliable and comparative cross-country measurements.

SPSS syntaxes for recoding CC indexes

```
FILTER OFF.
USE ALL.
SELECT IF (cntry ~= "IL").
EXECUTE.

*COMPLEX CONCEPT NAME: CLIMATE CHANGE BELIEFS
*The concept of Climate Change Beliefs refers to propositional cognitions about the
```

nature of climate change, covering people's views on the reality and cause(s) of climate change.
*The climate change belief concept is specifically aimed at capturing people's mental representation of the climate change phenomenon that they accept as true and their evaluative beliefs about the impacts.
*The concept is not intended to capture affective responses to the phenomenon, for example whether people are concerned, excited or indifferent about climate change.

*Expected relationship with other complex and simple concepts
*Climate change beliefs are expected to be influenced by socio-political and human values, as well as by political engagement.
*Climate change beliefs are further expected to be linked to climate change concern, personal norms, and energy preferences.
*In particular climate sceptical beliefs (i.e. beliefs that the world's climate is not changing; climate change is not caused by human activity; and climate change does not have serious impacts) are linked to a lack of concern about climate change.
*Such beliefs are also expected to lower preferences for low-carbon energy supply sources and energy demand reduction measures.

*** Syntax for creating (CC beliefs 1) SUB CONCEPT NAME: CLIMATE CHANGE REALITY: Trend scepticism ***

*Climate Change Reality refers to beliefs about the reality of climate change, that is, whether people think the world's climate is changing or not, irrespective of the possible perceived causes.

*QUESTION: You may have heard the idea that the world's climate is changing due to increases in temperature over the past 100 years.
*What is your personal opinion on this? Do you think the world's climate is changing? Choose your answer from this card.
*Answer options:
Definitely changing 1
Probably changing 2
Probably not changing 3
Definitely not changing 4
(Refusal) 7
(Don't know) 8

```
RECODE clmchng
(1 = 0)
(2 = 0)
(3 = 1)
(4 = 1)
(MISSING=SYSMIS)
INTO clmchng_recoded.
EXECUTE.
VARIABLE LABELS clmchng_recoded "CLIMATE CHANGE REALITY: Trend scepticism".
VALUE LABELS clmchng_recoded
1 "Probably not changing + Definitely not changing"
0 "Probably changing + Definitely changing".
EXECUTE.
```

*** Syntax for creating (CC beliefs 2) SUB CONCEPT NAME: CLIMATE CHANGE CAUSE: Attribution scepticism***

*Climate Change Cause refers to beliefs about the causes of climate change, that is, whether people think climate change is caused by human activity, natural processes, or a combination of the two.

*QUESTION: Do you think that climate change is caused by natural processes, human activity, or both?
*Answer options:
Entirely by natural processes 1
Mainly by natural processes 2

About equally by natural processes and human activity 3
Mainly by human activity 4
Entirely by human activity 5
(I don’t think climate change is happening) 55
(Refusal) 77
(Don’t know) 88

RECODE ccnthum
(1 = 1)
(2 = 1)
(3 = 0)
(4 = 0)
(5 = 0)
(MISSING=SYSMIS)
INTO ccnthum_recoded.
EXECUTE.
VARIABLE LABELS ccnthum_recoded "CLIMATE CHANGE CAUSE: Attribution scepticism".
VALUE LABELS ccnthum_recoded
1 "Entirely / Mainly by natural processes"
0 "Entirely / Mainly by human activity + About equally".
EXECUTE.

*** Syntax for creating (CC concenr) SIMPLE CONCEPT NAME: CLIMATE CONCERN***

*Climate Concern is defined as an affective evaluation of the seriousness of the impacts of climate change,
reflected in personal feelings of worry about the issue.
*The climate concern concept should reflect a personal relevance, preoccupation and/or feelings of worry regarding the issue of climate change,
rather than the thought that it is a pressing issue that needs to be addressed.

*Expected relationship with other complex and simple concepts
*Climate concern is expected to be linked to human values, socio-political values, and political engagement, as well as climate change beliefs.
*It is expected that climate change concern is largely unrelated to energy security concern, as they stem from different worldviews.
*A positive relationship is expected between climate concern and preferences for low-carbon energy supply sources and the willingness
to engage in energy demand reduction. These relationships are expected to be mediated by personal norms and moderated by efficacy
beliefs, as well as by social and institutional trust.

*QUESTION: How worried are you about climate change?
*Answer option:
Not at all worried 1
Not very worried 2
Somewhat worried 3
Very worried 4
Extremely worried 5
(Not applicable) 6
(Refusal) 7
(Don’t know) 8

RECODE wrclmch
(1 = -2)
(2 = -1)
(3 = 0)
(4 = 1)
(5 = 2)
(MISSING=SYSMIS)

```
INTO wrclmch_recoded.
EXECUTE.
VARIABLE LABELS wrclmch_recoded "CLIMATE CHANGE CONCERN: worried about climate change".
VALUE LABELS wrclmch_recoded
-2 "Not at all worried"
-1 "Not very worried"
0 "Somewhat worried"
1 "Very worried"
2 "Extremely worried".
EXECUTE.

*** Syntax for creating SIMPLE CONCEPT NAME: PRO-ENVIRONMENTAL PERSONAL NORMS ***

*The Pro-Environmental Personal Norms concept reflects feelings of moral obligation or responsibility to perform or refrain from specific actions
to contribute to the solution of a perceived collective problem.
*In this module we specifically focus on personal norms regarding climate change mitigation,
in order to slow or prevent climate change, and not adaptation, as the latter will not address the problem itself.

*Expected relationship with other complex and simple concepts
*Positive relationships are expected between pro-environmental personal norms, climate change beliefs, and climate concern.
*Personal norms are also expected to be related to human values, socio-political values, and political engagement.
*Personal norms are further expected to be positively associated with preferences for low-carbon energy supply
sources and the willingness to engage in energy demand reduction measures.
*Personal norms are expected to mediate associations between climate concern on the one hand and preferences
for low-carbon energy supply sources and the willingness to engage in energy demand reduction measures on the other.

*QUESTION: To what extent do you feel a personal responsibility to try to reduce climate change?
*Answer option:
Not at all 0 1 2 3 4 5 6 7 8 9 10 A great deal
66 "Not applicable"
77 "(Refusal)"
88 "(Don't know)"
99 "No answer".

RECODE ccrdprs
(0 = -5)
(1 = -4)
(2 = -3)
(3 = -2)
(4 = -1)
(5 = 0)
(6 = 1)
(7 = 2)
(8 = 3)
(9 = 4)
(10 = 5)
(MISSING=SYSMIS)
INTO ccrdprs_recoded.
EXECUTE.
VARIABLE LABELS ccrdprs_recoded "PRO-ENVIRONMENTAL PERSONAL NORMS: Feel a personal responsibility to try to reduce climate change".
```

```
VALUE LABELS ccrdprs_recoded
-5 "Not at all"
5 "A great deal".
EXECUTE.
```

*** Syntax for creating SIMPLE CONCEPT NAME: CLIMATE CHANGE SALIENCE***

*Climate Change Salience refers to the importance of climate change to an individual, reflected in how much a person has thought about the issue.

*Expected relationship with other complex and simple concepts
*Climate change salience is expected to moderate the relationships between climate change beliefs, climate change concern and energy preferences. The more thinking a person has done on climate change, the stronger the relationships between the concepts.

*QUESTION: How much have you thought about climate change before today?
*Answer option:
Not at all 1
Very little 2
Some 3
A lot 4
A great deal 5
(Not applicable) 6
(Refusal) 7
(Don't know) 8

```
RECODE clmthgt2
(1 = -2)
(2 = -1)
(3 = 0)
(4 = 1)
(5 = 2)
(MISSING=SYSMIS)
INTO clmthgt2_recoded.
EXECUTE.
VARIABLE LABELS clmthgt2_recoded "CLIMATE CHANGE SALIENCE: how much a person has thought about climate change".
VALUE LABELS clmthgt2_recoded
-2 "Not at al"
-1 "Very little"
0 "Some"
1 "A lot"
2 "A great deal".
EXECUTE.

COMPUTE total_weight=pweight*pspwght.
EXECUTE.
```

SPSS syntaxes for recoding covariates and control variables

***Syntax for creating the 10 Shwartz Basic Human Values ***

```
FILTER OFF.
USE ALL.
SELECT IF (cntry ~= "IL").
EXECUTE.
```

```
COMPUTE mrat = (7-MEAN(ipcrtiv,imprich,ipeqopt,ipshabt,impsafe,impdiff,ipfrule,ipudrst,ipmodst,ipgdtim,impfree,iphlppl,ipsuces,ipstrgv,ipadvnt,ipbhprp,iprspot,iplylfr,impenv,imptrad,impfun)).
COMPUTE SEcenter = (7-MEAN(impsafe, ipstrgv)) - mrat.
COMPUTE COcenter = (7-MEAN(ipfrule, ipbhprp)) - mrat.
COMPUTE TRcenter = (7-MEAN(ipmodst, imptrad)) - mrat.
COMPUTE BEcenter = (7-MEAN(iphlppl, iplylfr)) - mrat.
COMPUTE UNcenter = (7-MEAN(ipeqopt, ipudrst, impenv)) - mrat .
COMPUTE SDcenter = (7-MEAN(ipcrtiv, impfree)) - mrat.
COMPUTE STcenter = (7-MEAN(impdiff, ipadvnt)) - mrat.
COMPUTE HEcenter = (7-MEAN(ipgdtim, impfun)) - mrat.
COMPUTE ACcenter = (7-MEAN(ipshabt, ipsuces)) - mrat.
COMPUTE POcenter = (7-MEAN(imprich, iprspot)) - mrat.
EXECUTE .

variable labels SEcenter "Basic Human Values: Security".
variable labels COcenter "Basic Human Values: Conformity".
variable labels TRcenter "Basic Human Values: Tradition".
variable labels BEcenter "Basic Human Values: Benevolence".
variable labels UNcenter "Basic Human Values: Universalism".
variable labels SDcenter "Basic Human Values: Self-Direction".
variable labels STcenter "Basic Human Values: Stimulation".
variable labels HEcenter "Basic Human Values: Hedonism".
variable labels ACcenter "Basic Human Values: Achievement".
variable labels POcenter "Basic Human Values: Power".

DELETE VARIABLES mrat.

*** Syntax for creating independent variables based on Basic Human Values***

*** (1) Self-transcendence vs. Self-enhancement
Note: Universalism, Benevolence, Achievement (reversed) and Power (reversed) values were subsequently
combined into an internally consistent Self-transcendence vs. Self-enhancement dimension. Higher positive values correspond to more self-transcendence.

COMPUTE ACcenter_reversed = -ACcenter.
COMPUTE POcentre_reversed = -POcenter.
EXECUTE.
COMPUTE bhv_scale1 = MEAN(UNcenter, BEcenter, ACcenter_reversed, POcentre_reversed).
weight by pspwght.
DESCRIPTIVES VARIABLES=bhv_scale1
  /SAVE
  /STATISTICS=MEAN STDDEV MIN MAX.
COMPUTE bhv_scale1 = Zbhv_scale1.
VARIABLE LABELS bhv_scale1 "Self-transcendence vs. Self-enhancement".
EXECUTE.

RELIABILITY
  /VARIABLES=UNcenter BEcenter ACcenter_reversed POcentre_reversed
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL..

SORT CASES  BY cntry.
SPLIT FILE LAYERED BY cntry.
RELIABILITY
  /VARIABLES=UNcenter BEcenter ACcenter_reversed POcentre_reversed
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

```
SPLIT FILE OFF.

DELETE VARIABLES ACcenter_reversed POcentre_reversed Zbhv_scale1.

*** (2) Conservation vs. Openness-to-change
Note: Conformity, Security, Stimulation (reversed) and Hedonism (reversed) values were subsequently
combined  into an internally consistent Conservation vs. Openness-to-change. Higher positive values
correspond to more Conservation.

COMPUTE STcenter_reversed = -STcenter.
COMPUTE HEcentre_reversed = -HEcenter.
EXECUTE.
COMPUTE bhv_scale2 = MEAN(COcenter, SEcenter, STcenter_reversed, HEcentre_reversed).
weight by pspwght.

 DESCRIPTIVES VARIABLES=bhv_scale2
 /SAVE
 /STATISTICS=MEAN STDDEV MIN MAX.
COMPUTE bhv_scale2 = Zbhv_scale2.
VARIABLE LABELS bhv_scale2 "Conservation vs. Openness-to-change".
EXECUTE.

RELIABILITY
 /VARIABLES=COcenter SEcenter STcenter_reversed HEcentre_reversed
 /SCALE('ALL VARIABLES') ALL
 /MODEL=ALPHA
 /SUMMARY=TOTAL.

SORT CASES  BY cntry.
SPLIT FILE LAYERED BY cntry.
RELIABILITY
 /VARIABLES=COcenter SEcenter STcenter_reversed HEcentre_reversed
 /SCALE('ALL VARIABLES') ALL
 /MODEL=ALPHA.
SPLIT FILE OFF.

DELETE VARIABLES STcenter_reversed HEcentre_reversed Zbhv_scale2.

WEIGHT OFF.

**Delate all 10 Basih Human Values variables

DELETE VARIABLES SEcenter COcenter TRcenter BEcenter UNcenter SDcenter STcenter HEcenter
ACcenter POcenter.

*** Basic Human Values in deciles

RECODE bhv_scale1
(lowest thru -1.2878 = 1)
(-1.2877 thru -0.9341 = 2)
(-0.9340 thru -0.6512 = 3)
(-0.6511 thru -0.3683 = 4)
(-0.3682 thru -0.0854 = 5)
(-0.0853 thru 0.1975 = 6)
(0.1976 thru 0.5512 = 7)
(0.5513 thru 0.9048 = 8)
(0.9049 thru 1.3999 = 9)
(1.4000 thru highest = 10)
(MISSING=SYSMIS) (ELSE=SYSMIS)
INTO bhv_scale1_dec.
```

```
EXECUTE.

RECODE bhv_scale2
(lowest thru -1.1017 = 1)
(-1.1076 thru -0.7310 = 2)
(-0.7309 thru -0.3603 = 3)
(-0.3602 thru -0.1749 = 4)
(-0.1748 thru 0.0104 = 5)
(0.0105 thru 0.1958 = 6)
(0.1959 thru 0.5665 = 7)
(0.5666 thru 0.9372 = 8)
(0.9373 thru 1.4933 = 9)
(1.4934 thru highest = 10)
INTO bhv_scale2_dec.
EXECUTE.

variable labels bhv_scale1_dec "Self-transcendence vs. Self-enhancement".
Value labels bhv_scale1_dec
1 "Self-enhancement"
10 "Self-transcendence".

variable labels bhv_scale2_dec "Conservation vs. Openness-to-change".
Value labels bhv_scale2_dec
1 "Openness-to-change"
10 "Conservation".

EXECUTE.

*** Syntax for creating Political orientation***

weight by pspwght.


DESCRIPTIVES VARIABLES=lrscale
  /SAVE
  /STATISTICS=MEAN STDDEV MIN MAX.
COMPUTE lrscale_z_score = Zlrscale.
VARIABLE LABELS lrscale_z_score "Placement on left right scale: z scores / right (vs. left)".
EXECUTE.

DELETE VARIABLES Zlrscale.

WEIGHT OFF.

*** Syntax for creating Political orientation - Centring around countries mean***

weight by pspwght.

AGGREGATE
  /OUTFILE=* MODE=ADDVARIABLES
  /BREAK=cntry
  /lrscale_mean=MEAN(lrscale)
  /lrscale_sd=SD(lrscale).
EXECUTE.

COMPUTE lrscale_centred_z_score=(lrscale-lrscale_mean)/lrscale_sd.
EXECUTE.

VARIABLE LABELS lrscale_centred_z_score "Placement on left right scale - centred: z scores / right (vs. left)".
```

```
EXECUTE.

WEIGHT OFF.

*** Koniec procedury for creating Political orientation***

*** Syntax for creating gender_recoded***

RECODE gndr
(1=1)
(2=0)
(9=9)
INTO gndr_recode.
EXECUTE.
MISSING VALUES gndr_recode (9).
VARIABLE LABELS gndr_recode "Gender".
VALUE LABELS gndr_recode
1 "Male"
0 "Female"
9 "No answer".
EXECUTE.

*** Syntax for creating agea_recoded***

RECODE agea (MISSING=SYSMIS) (Lowest thru 24=1) (25 thru 34=2) (35 thru 44=3) (45 thru 54=4)
(55
   thru 64=5) (65 thru 74=6) (75 thru Highest=7) INTO agea_recoded.
VARIABLE LABELS  agea_recoded 'Age of respondent'.
VALUE LABELS agea_recoded
1 "15-24"
2 "25-34"
3 "35-44"
4 "45-54"
5 "55-64"
6 "65-74"
7 "75+".
EXECUTE.

*** Syntax for creating ISCED_recoded***

RECODE eisced (3=3) (4=4) (5=5) (MISSING=SYSMIS) (1 thru 2=2) (6 thru 7=6) (ELSE=SYSMIS)
INTO
   eisced_recoded.
variable labels eisced_recoded "Highest level of education, ES - ISCED".
value labels eisced_recoded
2 "ES-ISCED I+II, lower or less than lower secondary"
3 "ES-ISCED IIIb, lower tier upper secondary"
4 "ES-ISCED IIIa, upper tier upper secondary"
5 "ES-ISCED IV, advanced vocational, sub-degree"
6 "ES-ISCED V1+V2, lower tertiary education, BA level or higher tertiary education, >= MA level".
EXECUTE.

*** Syntax for creating Regions of Europe***

RECODE cntry ('CZ'=1) ('EE'=1) ('HU'=1) ('LT'=1) ('PL'=1) ('RU'=1) ('SI'=2) ('IT'=2) ('PT'=2)
   ('ES'=2) ('FI'=3) ('IS'=3) ('NO'=3) ('SE'=3) ('AT'=4) ('BE'=4) ('FR'=4) ('DE'=4) ('IE'=4) ('NL'=4)
   ('CH'=4) ('GB'=4) ("IL"=5) (MISSING=SYSMIS) INTO European_regions.
VARIABLE LABELS  European_regions 'Regions of Europe'.
VALUE LABELS European_regions
1 "Central and Eastern Europe"
```

```
2 "Southern Europe "
3 "Northern Europe"
4 "Western Europe"
5 "Israel".
EXECUTE.
```

SPSS syntaxes for conducting CFA (computing CC Index)

```
DATASET DECLARE D0.01883395993334347.
PROXIMITIES clmchng_recoded ccnthum_recoded wrclmch_recoded ccrdprs_recoded clmthgt2_recoded
  /MATRIX OUT(D0.01883395993334347)
  /VIEW=CASE
  /MEASURE=SEUCLID
  /ID=cntry
  /STANDARDIZE=VARIABLE Z
  /PRINT NONE.
CLUSTER
  /MATRIX IN(D0.01883395993334347)
  /METHOD BAVERAGE
  /ID=cntry
  /PLOT DENDROGRAM
  /PRINT NONE.
Dataset Close D0.01883395993334347.
EXECUTE.

*Factor analysis

FACTOR
  /VARIABLES clmchng_recoded ccnthum_recoded wrclmch_recoded ccrdprs_recoded clmthgt2_recoded
  /MISSING LISTWISE
  /ANALYSIS clmchng_recoded ccnthum_recoded wrclmch_recoded ccrdprs_recoded clmthgt2_recoded
  /PRINT INITIAL EXTRACTION ROTATION
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
EXECUTE.

*Corelation of country-level Climate Change Variables and Climate Change Index
*Climate Change Index - średnia z unitaryzowanych krajowych wartości wskaźników CC. Im wyższa wartość indeksu, tym wyzsza świadomość zmian klimatu w danym kraju.

CORRELATIONS
  /VARIABLES=clmchng_recoded ccnthum_recoded wrclmch_recoded ccrdprs_recoded clmthgt2_recoded CC_index
  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE.
EXECUTE.

GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=European_regions clmchng_recoded ccnthum_recoded
    wrclmch_recoded ccrdprs_recoded clmthgt2_recoded CC_index MISSING=LISTWISE REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
```

```
  /FITLINE TOTAL=YES SUBGROUP=NO.
 BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  DATA: clmchng_recoded=col(source(s), name("clmchng_recoded"))
  DATA: ccnthum_recoded=col(source(s), name("ccnthum_recoded"))
  DATA: wrclmch_recoded=col(source(s), name("wrclmch_recoded"))
  DATA: ccrdprs_recoded=col(source(s), name("ccrdprs_recoded"))
  DATA: clmthgt2_recoded=col(source(s), name("clmthgt2_recoded"))
  DATA: CC_index=col(source(s), name("CC_index"))
  GUIDE: axis(dim(1.1), ticks(null()))
  GUIDE: axis(dim(2.1), ticks(null()))
  GUIDE: axis(dim(1), gap(0px))
  GUIDE: axis(dim(2), gap(0px))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), include("1.00", "2.00", "3.00", "4.00"))
  TRANS: clmchng_recoded_label = eval("CC reality")
  TRANS: ccnthum_recoded_label = eval("CC cause")
  TRANS: wrclmch_recoded_label = eval("CC concern")
  TRANS: ccrdprs_recoded_label = eval("pro-env norm")
  TRANS: clmthgt2_recoded_label = eval("CC sailence")
  TRANS: CC_index_label = eval("CC index")
  ELEMENT: point(position((clmchng_recoded/clmchng_recoded_label+
    ccnthum_recoded/ccnthum_recoded_label+wrclmch_recoded/wrclmch_recoded_label+
    ccrdprs_recoded/ccrdprs_recoded_label+clmthgt2_recoded/clmthgt2_recoded_label+
    CC_index/CC_index_label)*(clmchng_recoded/clmchng_recoded_label+
    ccnthum_recoded/ccnthum_recoded_label+wrclmch_recoded/wrclmch_recoded_label+
    ccrdprs_recoded/ccrdprs_recoded_label+clmthgt2_recoded/clmthgt2_recoded_label+
    CC_index/CC_index_label)),color.interior(European_regions))
 END GPL.
 EXECUTE.


 GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=clmchng_recoded European_regions
MISSING=LISTWISE
   REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO SUBGROUP=NO.
 BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: clmchng_recoded=col(source(s), name("clmchng_recoded"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  COORD: rect(dim(1), transpose())
  GUIDE: axis(dim(1), label("CLIMATE CHANGE REALITY: Trend scepticism"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), reverse(), include("4.00", "3.00", "2.00",
    "1.00"), sort.values("4.00", "3.00", "2.00", "1.00"))
  ELEMENT: point.dodge.asymmetric(position(bin.dot(clmchng_recoded)),
    color.interior(European_regions))
 END GPL.


 GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=ccnthum_recoded European_regions
MISSING=LISTWISE
   REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO SUBGROUP=NO.
 BEGIN GPL
```

```
  SOURCE: s=userSource(id("graphdataset"))
  DATA: ccnthum_recoded=col(source(s), name("ccnthum_recoded"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  COORD: rect(dim(1), transpose())
  GUIDE: axis(dim(1), label("CLIMATE CHANGE CAUSE: Attribution scepticism"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), reverse(), include("4.00", "3.00", "2.00",
    "1.00"), sort.values("4.00", "3.00", "2.00", "1.00"))
  ELEMENT: point.dodge.asymmetric(position(bin.dot(ccnthum_recoded)),
    color.interior(European_regions))
END GPL.



GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=wrclmch_recoded European_regions
MISSING=LISTWISE
    REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO SUBGROUP=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: wrclmch_recoded=col(source(s), name("wrclmch_recoded"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  COORD: rect(dim(1), transpose())
  GUIDE: axis(dim(1), label("CLIMATE CHANGE CONCERN: worried about climate change"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), reverse(), include("4.00", "3.00", "2.00",
    "1.00"), sort.values("4.00", "3.00", "2.00", "1.00"))
  ELEMENT: point.dodge.asymmetric(position(bin.dot(wrclmch_recoded)),
    color.interior(European_regions))
END GPL.

GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=ccrdprs_recoded European_regions
MISSING=LISTWISE
    REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO SUBGROUP=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: ccrdprs_recoded=col(source(s), name("ccrdprs_recoded"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  COORD: rect(dim(1), transpose())
  GUIDE: axis(dim(1), label("PRO-ENVIRONMENTAL PERSONAL NORMS: Feel a personal
responsibility to ",
    "try to reduce climate change"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), reverse(), include("4.00", "3.00", "2.00",
    "1.00"), sort.values("4.00", "3.00", "2.00", "1.00"))
  ELEMENT: point.dodge.asymmetric(position(bin.dot(ccrdprs_recoded)),
    color.interior(European_regions))
END GPL.

GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=clmthgt2_recoded European_regions
MISSING=LISTWISE
    REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO SUBGROUP=NO.
```

```
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: clmthgt2_recoded=col(source(s), name("clmthgt2_recoded"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  COORD: rect(dim(1), transpose())
  GUIDE: axis(dim(1), label("CLIMATE CHANGE SALIENCE: how much a person has thought about
",
    "climate change"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), reverse(), include("4.00", "3.00", "2.00",
    "1.00"), sort.values("4.00", "3.00", "2.00", "1.00"))
  ELEMENT: point.dodge.asymmetric(position(bin.dot(clmthgt2_recoded)),
    color.interior(European_regions))
END GPL.

GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=CC_index European_regions
MISSING=LISTWISE
    REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FRAME OUTER=NO INNER=NO
  /GRIDLINES XAXIS=YES YAXIS=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: CC_index=col(source(s), name("CC_index"))
  DATA: European_regions=col(source(s), name("European_regions"), unit.category())
  COORD: rect(dim(1), transpose())
  GUIDE: axis(dim(1), label("CLIMATE CHANGE INDEX"))
  GUIDE: legend(aesthetic(aesthetic.color.interior), label("Regions of Europe"))
  SCALE: cat(aesthetic(aesthetic.color.interior), reverse(), include("4.00", "3.00", "2.00",
    "1.00"), sort.values("4.00", "3.00", "2.00", "1.00"))
  ELEMENT: point.dodge.asymmetric(position(bin.dot(CC_index)), color.interior(European_regions))
END GPL.
EXECUTE.
```

SPSS syntaxes for individual-level regressions

```
FILTER OFF.
USE ALL.
SELECT IF (cntry ~= "IL").
EXECUTE.

Weight by pspwght .
Execute.

*** Interactions of European regions with the Shwart'z human values for the climate change perception
variables

*How to interpretate the interactions: The interaction effects indicate the extent to which the individual-
level effects in Central and Eastern, Southern and Northern
European countries differ from the ones found in Western European
countries. The interaction effects need to be compared to the regression
coefficients of the different factors, which reflect their
association with the respective climate perception dimensions in Western
European countries. That is, where the overall regression coefficient
is positive, a negative interaction term generally indicates a
weaker effect and a positive interaction term a stronger effect for that
factor in the region of interest. Reversely, where the overall regression
coefficient is negative, a negative interaction term generally indicates a
stronger effect and a positive interaction term a weaker effect. Where
```

the overall regression coefficient is close to zero, a negative interaction term may indicate a negative effect and a positive interaction term a positive effect for that factor in the region of interest.

```
* Logistic regression: CLIMATE CHANGE REALITY: Trend scepticism

LOGISTIC REGRESSION VARIABLES clmchng_recoded
  /METHOD=ENTER bhv_scale1 bhv_scale2 European_regions European_regions*bhv_scale1
    European_regions*bhv_scale2
  /CONTRAST (European_regions)=Indicator
  /PRINT=GOODFIT SUMMARY CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

* Logistic regression: CLIMATE CHANGE CAUSE: Attribution scepticism

LOGISTIC REGRESSION VARIABLES ccnthum_recoded
  /METHOD=ENTER bhv_scale1 bhv_scale2 European_regions European_regions*bhv_scale1
    European_regions*bhv_scale2
  /CONTRAST (European_regions)=Indicator
  /PRINT=GOODFIT SUMMARY CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

* Analysis of COVARIANCE: CLIMATE CHANGE CONCERN: worried about climate change

UNIANOVA wrclmch_recoded BY European_regions WITH bhv_scale1 bhv_scale2
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT PARAMETER
  /CRITERIA=ALPHA(.05)
  /DESIGN=European_regions bhv_scale1 bhv_scale2 European_regions*bhv_scale1
    European_regions*bhv_scale2.

* Analysis of COVARIANCE: PRO-ENVIRONMENTAL PERSONAL NORMS: Feel a personal responsibility to try to reduce climate change

UNIANOVA ccrdprs_recoded BY European_regions WITH bhv_scale1 bhv_scale2
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT PARAMETER
  /CRITERIA=ALPHA(.05)
  /DESIGN=European_regions bhv_scale1 bhv_scale2 European_regions*bhv_scale1
    European_regions*bhv_scale2.

* Analysis of COVARIANCE: CLIMATE CHANGE SALIENCE: how much a person has thought about climate change

UNIANOVA clmthgt2_recoded BY European_regions WITH bhv_scale1 bhv_scale2
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT PARAMETER
  /CRITERIA=ALPHA(.05)
  /DESIGN=European_regions bhv_scale1 bhv_scale2 European_regions*bhv_scale1
    European_regions*bhv_scale2.

*** Models without interactions

LOGISTIC REGRESSION VARIABLES clmchng_recoded
  /METHOD=ENTER bhv_scale1 bhv_scale2 gndr_recode agea_recoded eisced_recoded
  /CONTRAST (gndr_recode)=Indicator
  /CONTRAST (agea_recoded)=Indicator
```

```
  /CONTRAST (eisced_recoded)=Indicator
  /PRINT=SUMMARY
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

LOGISTIC REGRESSION VARIABLES ccnthum_recoded
  /METHOD=ENTER bhv_scale1 bhv_scale2 gndr_recode agea_recoded eisced_recoded
  /CONTRAST (gndr_recode)=Indicator
  /CONTRAST (agea_recoded)=Indicator
  /CONTRAST (eisced_recoded)=Indicator
  /PRINT=SUMMARY
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

UNIANOVA wrclmch_recoded BY  gndr_recode agea_recoded eisced_recoded WITH bhv_scale1
bhv_scale2
  /RANDOM=gndr_recode agea_recoded eisced_recoded
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT PARAMETER
  /CRITERIA=ALPHA(.05)
  /DESIGN=bhv_scale1 bhv_scale2 gndr_recode agea_recoded eisced_recoded.

UNIANOVA ccrdprs_recoded BY  gndr_recode agea_recoded eisced_recoded WITH bhv_scale1
bhv_scale2
  /RANDOM=gndr_recode agea_recoded eisced_recoded
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT PARAMETER
  /CRITERIA=ALPHA(.05)
  /DESIGN=bhv_scale1 bhv_scale2 gndr_recode agea_recoded eisced_recoded.

UNIANOVA clmthgt2_recoded BY  gndr_recode agea_recoded eisced_recoded WITH bhv_scale1
bhv_scale2
  /RANDOM=gndr_recode agea_recoded eisced_recoded
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT PARAMETER
  /CRITERIA=ALPHA(.05)
  /DESIGN=bhv_scale1 bhv_scale2 gndr_recode agea_recoded eisced_recoded.
```

5.3. Data treatment for EVS/WVS surveys

The dependent variable in our analysis is derived from respondents' choices between prioritizing environmental protection, even if it slows economic growth and causes job losses, versus prioritizing economic growth, even at the expense of environmental harm. In the World Values Survey (WVS), respondents could also select an "other option," though it was only recorded when explicitly volunteered, and interviewers could mark item-nonresponse options such as "no answer" or "do not know." In the European Values Study (EVS) datasets, these responses were consistently treated as "missing." Our primary individual-level explanatory variables are political orientation, measured on a 10-point left-right scale, and household income, categorized into ten income groups. Both variables were standardized using z-scores

before inclusion in multi-level regression analysis. Additionally, we controlled for gender, age, and education level, with education categorized according to the International Standard Classification of Education (ISCED 2011).

To assess cross-country variability in prioritizing environmental protection over economic growth, we used country-level GDP per capita data from the World Bank Open Data, transformed using a log10 scale due to its asymmetry. We employed two-level logistic regression models to account for the hierarchical structure of the data, with respondents nested within countries. This analysis excluded 15 countries due to missing data on household income or political orientation, reducing the sample to 74 of the original 89 countries. Notably, countries such as Portugal, China, and several others were excluded, as well as special administrative regions like Hong Kong and Macau. Weighting factors provided in the EVS and WVS data were applied, and cases with missing values in any variable were listwise deleted, resulting in the exclusion of 36,122 out of 131,971 cases.

The logistic regression model used a logit link function to estimate the probability of respondents prioritizing environmental protection over economic growth. The logit coefficient represents the log of the odds of this prioritization occurring. Our analysis highlights the hierarchical nature of the data and the significant role of both individual-level variables, such as political orientation and household income, and country-level variables, such as GDP per capita. This comprehensive approach ensures a robust understanding of the factors influencing environmental prioritization across different countries.

The dataset underlying our analysis is created by merging three sources:

1) EVS 2017 data,
2) WVS 2017 data,
3) World Bank data on GDP per capita in USD (2007).

The code snippet provides the code used for merging and preprocessing the data.

```
WVS2017_data <- read_sav("WVS_Cross-National_Wave_7_spss_v5_0.sav"
EVS2017_data <- read_sav("ZA7500_v5-0-0.sav")
WVS2017_data_for_merging <- WVS2017_data %>%
select(B_COUNTRY_ALPHA, Q111, Q240, Q260, Q262, Q275, Q288,
W_WEIGHT) %>%
mutate(B_COUNTRY_ALPHA = ifelse(B_COUNTRY_ALPHA == "MOR",
      "MAR", B_COUNTRY_ALPHA),
cntry = countrycode::countrycode(B_COUNTRY_ALPHA,
origin = "iso3c", destination = "iso2c"), env_econ = case_when(
Q111 ==  1 ~ 1,
Q111 == 2 ~ 0,
```

```
        Q111 == 3 ~ NA_real_,
        is.na(Q111) ~  NA_real_),
        left_right = Q240,
        hh_income = Q288,
        anweight = W_WEIGHT,
        gender = ifelse(Q260 == 1, "Male", ifelse(Q260 == 2,
      "Female", NA_character_)),
        age = ifelse(Q262 <= 17,
      NA_integer_, ifelse(Q262 >= 82, 82, ifelse(is.na(Q262),
        NA_integer_, Q262))),
        ISCED = case_when(
        Q275 == 0 ~ "ISCED [0-1]",
        Q275 == 1 ~ "ISCED [0-1]",
        Q275 == 2 ~ "ISCED [2]",
        Q275 == 3 ~ "ISCED [3]",
        Q275 == 4 ~ "ISCED [4-8]",
        Q275 == 5 ~ "ISCED [4-8]",
        Q275 == 6 ~ "ISCED [4-8]",
        Q275 == 7 ~ "ISCED [4-8]",
        Q275 == 8 ~ "ISCED [4-8]",
        Q275 == 9 ~ NA_character_,
        is.na(Q275) ~ NA_character_)) %>%
        remove_labels(user_na_to_na = TRUE) %>%
         select(cntry, env_econ, left_right, hh_income, gender, age, ISCED, anweight)

EVS2017_data_for_merging <- EVS2017_data %>%
        select(c_abrv, v102, v204, v225, age, v243_ISCED_1, v261, gweight) %>%
        mutate(cntry = c_abrv,
        env_econ = case_when(
        v204 == 1 ~ 1,
        v204 == 2 ~ 0, is.na(v204) ~ NA_real_),
         left_right = v102,
        hh_income = v261,
        anweight = gweight,
        gender = ifelse(v225 == 1, "Male", ifelse(v225 == 2, "Female", NA_character_)),
        age = age,
        ISCED = case_when(
        v243_ISCED_1 ==  0 ~ "ISCED [0-1]",
        v243_ISCED_1 ==  1 ~ "ISCED [0-1]",
        v243_ISCED_1 ==  2 ~ "ISCED [2]",
        v243_ISCED_1 ==  3 ~ "ISCED [3]",
        v243_ISCED_1 ==  4 ~ "ISCED [4-8]",
         v243_ISCED_1 == 5 ~ "ISCED [4-8]",
        v243_ISCED_1 == 6 ~ "ISCED [4-8]",
        v243_ISCED_1 == 7 ~ "ISCED [4-8]",
        v243_ISCED_1 == 8 ~ "ISCED [4-8]",
        v243_ISCED_1 == 66 ~ NA_character_,
        is.na(v243_ISCED_1) ~ NA_character_)) %>%
        remove_labels(user_na_to_na = TRUE) %>%
        select(cntry, env_econ, left_right, hh_income, gender, age,
    ISCED, anweight)

        EVS_WVS_2017_joined <- rbind(WVS2017_data_for_merging, EVS2017_data_for_merging) %>%
        mutate(Country = countrycode::countrycode(cntry, origin = "iso2c",
    destination = "country.name"),
        Continent = countrycode::countrycode(cntry,
    origin = "iso2c", destination = "continent")) %>%
         filter(Country != "Hong Kong SAR China" & Country != "Macao SAR China" &
 Country != "Taiwan") %>%
```

```
        mutate(Region = countrycode::countrycode(cntry, origin = "iso2c",
    destination = "un.regionsub.name"),
        WB_code = countrycode::countrycode(cntry, origin = "iso2c", destination = "wb")) %>%
        mutate(Region = ifelse(Continent == "Oceania", "Australasia", Region),
        Region = ifelse(Region %in% c("Northern Europe",
    "Western Europe"), "Northern and Western Europe", Region),
        Region = ifelse(Region %in% c("Central Asia", "Western Asia"), "Central and Western Asia", Region))
%>%
            drop_na(env_econ, left_right, hh_income, gender, age, ISCED, anweight)

GDP_per_capita_2017 <- read.csv("GDP_per_capita2017.csv", header = T, sep = ";") %>%
  filter(!is.na(GDP_per_capita_2017)) %>%
  mutate(GDP_per_capita_2017 = as.double(GDP_per_capita_2017, digits = 2)) %>%
  as_tibble()
EVS_WVS_WB_2017_joined <- left_join(EVS_WVS_2017_joined, GDP_per_capita_2017,
  by = "WB_code")
EVS_WVS_WB_2017_joined_srvr<- as_survey(EVS_WVS_WB_2017_joined, weights = anweight)
```

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