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UNDERSTANDING THE ATTITUDES TOWARDS CLIMATE CHANGE IN THE CONTEXT OF TRUST IN SELECTED COUNTRIES OF CENTRAL AND EASTERN EUROPE

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Abstract

Although there is a growing trend in scientific and political discussions about how people feel about climate change in the context of trust, adequate research in this area is lacking in Central Eastern Europe (CEE). This article aims to determine whether trust is an important factor for the perception of climate change by the inhabitants of selected CEE countries. European Social Survey (ESS) Round 10 data were used, and a multivariable binary logistic regression method was applied. This paper considers three different dimensions of climate change, concern, personal norms, and attribution, as well as a composite indicator reflecting climate attitudes (skeptic or proponent). Four different models are presented that differ only in terms of their dependent variables, while the independent variable (trust) and the control variables (socio-demographic variables) are the same in all the cases. The results show that both personal and institutional trust are very low in the selected countries. Institutional trust was significant in all four models, while personal trust was significant in the environmental norm and skepticism models. Greater trust in institutions decreases the odds of being worried about climate change and increases the odds of having feelings of personal responsibility for climate change reduction. An increased level of personal or institutional trust increases one's chances of being in the climate proponent group. Of the socio-demographic variables examined only political left-right scale did not affect attitudes significantly.

Key words: trust, climate change, climate scepticism, social capital, inhabitants, Central and Eastern Europe

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1. INTRODUCTION

Trust, as an element of social capital, has been widely studied in various fields and contexts; however, its importance for the perception of climate change has not largely developed, especially concerning individual countries. Trust is a multidimensional concept that depends on whose trust is being discussed and investigated. The most general insights that show the background of trust as a concept are its relation to values, norms, or attitudes (Claridge, 2004; Bodor et al., 2020; UNDP, 2021). Previous studies (Markowitz & Shariff, 2012; Hornsey et al., 2016; Weber, 2016; Marshall et al., 2019) have shown that the forms and methods of analyzing trust depend greatly on the goals of researchers. Trust is assumed to be an important social construct (Cologna & Siegrist, 2020) that is applicable to various topics but is especially relevant when analyzing public attitudes toward issues of concern to society (e.g., climate change). A growing trend in scientific publications is the discussion of various levels of trust (Capstick et al., 2015; Taddicken et al., 2018; Marquart-Pyatt, 2012; Pietras, 2022).

The literature (Markowitz & Shariff, 2012; Capstick & Pidgeon, 2014; Fairbrother et al., 2019; Yaacob et al., 2022) highlights that the focus on trust and its importance for the perception of climate change includes such approaches as the demographic profile of society, climate-friendly behaviors, individual preferences for care of nature, concern with institutions, environmental protection actions by various agents, or environmental policy. This might suggest that trust in the perception of climate change is important because of the understanding of climate change by different stakeholders, the actions taken, and the political decisions implemented. On the other hand, there is a position toward climate change skepticism (Engels et al., 2013; Adam et al., 2020; Johansson et al., 2022), which claims that trust is not the main factor in believing and thinking about environmental issues and brings confusion to the research field.

The problem of climate change is an important issue in science and politics and a subject of lively public debate. Accordingly, it is important to know the attitudes of inhabitants toward climate change and the determinants, including trust, affecting it (Poortinga et al., 2019; Gregersen et al., 2020; Fage-Butler et al., 2022). The COVID-19 pandemic was the most serious economic and social shock that societies have experienced in recent years. Trust in institutions has declined during the pandemic in most European member states (Eurofound, 2021; Genschel et al., 2021). The subject of climate change is strongly represented in public life and in the media, particularly social media, which are increasingly common sources of information for the public (Stefkovics & Zenovitz, 2023). It has been shown that social media is one of the main factors influencing the decline in trust, which among people using social media as their preferred source of news was much lower than among people preferring traditional media (Ahrendt et al., 2022). Prior research into trust and climate change attitudes has mainly focused on Western Europe or the United States, and even when Eastern Europe was included (Poortinga et al. 2019; Gregersen et al., 2020), it was treated as a homogeneous group. Thus we aim to address this research gap by focusing on Central and Eastern European (CEE) countries (Poland, Lithuania, Latvia, Slovakia, the Czech Republic, and Hungary). The countries selected for this study follow a

similar path of economic transformation and integration with the EU. In this study, we examine how trust, which has always been relatively low in the analyzed countries (Beckmann et al., 2013; Boda & Medve-Bálint, 2014; Szkudlarek & Biglieri, 2016) and has been declining in recent years, translates into public attitudes toward climate change using Round 10 European Social Survey data.

The research aim is to determine whether trust is an important factor for the perception of climate change by inhabitants of selected CEE countries. The research tasks are as follows: (1) to define trust as a dimension of social capital and indicate its importance for the perception of climate change; (2) to characterize the attitudes of the inhabitants of the selected CEE countries toward climate change, taking into account three dimensions of climate change: concern, personal norms, and attributes; and an overarching variable of climate skepticism; and (3) to look at the trust types (personal or institutional trust) and their relation to climate attitudes.

This study adds significant contributions to the expanding corpus of cross-country climate change research, particularly within Eastern European countries, by highlighting and expanding on our knowledge of the relationship between trust and climate change attitudes. We find that trust, especially institutional trust, significantly affects climate change attitudes in the selected CEE countries, while at the same time both types of trust are very low in the countries examined. Of the socio-demographic variables examined only political left-right scale did not affect attitudes significantly.

Theoretical considerations and attitudes toward climate change in the context of trust are disclosed following these steps: first, the theoretical section is divided into revealing patterns of trust as an element of social capital, trust in various matters and issues, trust considering different levels, and identifying factors determining trust; second, the research methodology is presented; third, the research results are revealed; and finally, conclusions are provided.

2. LITERATURE REVIEW

2.1. The classical approach to trust as an element of social capital

Social capital has many notions, perceptions, and functions and is also analyzed in various fields. It should be emphasized that there is no consensus among the authors as to the universal definition of the concept of social capital (Claridge, 2004; Szkudlarek & Biglieri, 2016; Roth, 2022). The dilemmas relate to its components and to the question of whether social capital should be considered a resource owned by the individual or the entire community.

Among the classical theoretical approaches one should first mention Bourdieu, who defined social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu, 1986; Bourdieu & Wacquant, 1992). From his perspective, social capital is a private good. A slightly different approach to social capital was presented by Coleman (1988), who defined social capital by its function. He pointed out that social capital is not a single entity but a variety of different entities having two characteristics in common: they all consist of some aspect of social structures, and they

facilitate certain actions of actors (persons or corporate actors) within the structure. Coleman's approach is a shift from the individual approach to social capital presented by Putnam to social capital considered for groups, organizations, institutions, or societies (Szkudlarek & Biglieri, 2016; Roth, 2022).Trust is important since it improves the effectiveness of human activities and facilitates the creation of a community. Another classic approach given by Putnam (1995) reveals that when people cooperate, they exhibit mutual trust, which increases along with the benefits achieved. In turn, a deficit in trust destroys social capital (Weaver, 2018). Cooperation occurs both in communities such as family and friends and in outward-oriented groups, allowing different types of social capital to be distinguished. Putnam emphasized the trust dimension, writing that norms and networks are prerequisites for trust. Thus, trust can be seen as a result of the other components of social capital (Roth, 2022). Fukuyama (1995, 1997) defining social capital referred to the norms creating social capital as both simple relations between two friends, and pointed out their complexity when they concern formulated doctrines, such as Christianity or Confucianism (Puskarova, 2022). Fukuyama's approach was based on Putnam's definition, which focuses mainly on behavioral variables and attitudes, e.g., trust, norms, and values (Adam & Roncevic, 2003). It can be concluded that Fukuyama practically identified social capital with trust. As the concept of trust is diverse, different authors explore concepts such as relations of trust, mutual trust, trust as belonging, vertical trust, the radius of trust, trust phenomena, and social preferences (Fukuyama, 2000; Algan, 2018).

Summarizing definitions of social capital functioning in the classical literature, the main dimensions of social capital can be identified and are commonly referred to as trust, rules and norms governing social action, types of social interaction, network resources, and other network characteristics (Claridge, 2004; Puskarova, 2022). Trust as a dimension of social capital is detailed by Narayan & Cassidy (2001) and supplemented by the authors of the article (Figure 1). In general, the level of trust can be related to other people, institutions, or systems, e.g., legal or political, which in practice is measured by means of surveys (Wojciechowska, 2021).

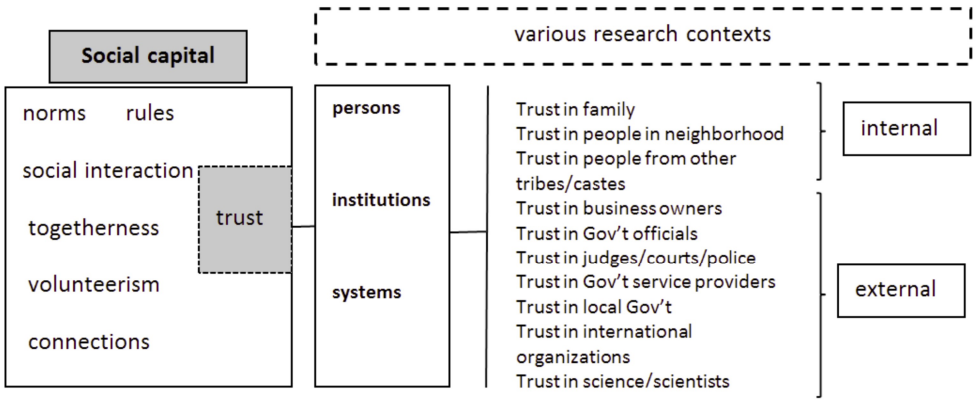

Figure 1. Trust as an element of social capital (supplemented by the authors following Narayan & Cassidy, 2001)

Some authors view trust as a source of social capital (Putnam et al., 1993), others view it as a form of social capital (Coleman, 1988), and others view it as a collective resource resulting from social capital understood as a relational resource (Lin, 1999). Trust can be seen as an input or output indicator or even as a direct measure of social capital (Knack & Keefer, 1997). Paxton (1999), conceptualizing social capital, noted that trust in individuals and institutions is one of the components in measuring social capital. As observed from studies dealing with social capital definitions, trust appears to be one of the most important elements in joining individuals, organizations, and networks; expressing ways of action and attitudes; and creating conditions for common cooperation and mutual belief.

2.2. Trust conceptions at different levels

In the literature (Siisiäinen, 2000; Fukuyama, 2000; ESS, 2011), trust is perceived as a value, norm, or attitude toward others (individuals, institutions, etc.). If there is trust – it will connect people and promote joint activities; if there is not – connections and relationships will be formal, matter of fact, and questionable. If individuals do not foresee how their interactions will develop, there will be no trust. Trust is a phenomenon that constitutes the essence of social bonds and it is often used as a common explanatory feature of the success of collective actions (Six et al. 2015). Moreover, it is a resource for action and potential choices and changes (Bagnasco, 2006).

A more positive approach is to suggest that in a society where trust exists, trust strengthens existing bonds, is an element of intimate and/or close relationships and encourages the development of new bonds. Even if not the same, public trust works similarly.

Sztompka (2007) defined "public trust" in institutions or organizations as a necessary structural framework within which actions and interactions take place. Public trust is not limited to simple activities of institutions or organizations; it includes much wider elements such as decision making, voting, public opinions, and attitudes; policymaking; provision of services; environmental actions; and democratic life (ESS, 2011; Szkudlarek & Biglieri, 2016). Trust in public institutions, which can be considered a specific form of vertical trust, is often perceived as official trust, although it is not always acceptable to individuals. As Bodor et al. (2020) explored, the effect of trust is not so obvious with respect to policy support. Algan (2018) stated that trust is only one component of social capital and is indispensable for social and economic relations, especially in the public sphere. According to the OECD (2017), trust can be perceived as a person's belief or support that another person or institution will act in accordance with her or his expectations of positive behavior. Thus, institutional trust becomes a key element of a resilient society. When people have a certain level of trust in institutions, they are more likely to comply with laws and regulations. Moreover, public trust will be perceived as positive when there is a sufficient level of collective understanding and action (Bodor et al., 2020). This leads to the understanding that trust in creating social capital improves the efficiency of human actions and facilitates the process of building communities (Fukuyama, 2000). Moreover, Sztompka

(2007) perceived trust as the most precious type of social capital, as it is related to positive changes and actions. Social norms that promote cooperation can come in different forms. One such form is generalized reciprocity, which is often considered a fundamental component of social capital. According to Torche and Valenzuela (2011), reciprocity is the social dynamic where people give, receive, and give something back in return. In addition, noncompliant individuals encounter ostracism, which leads to conforming behavior out of fear of disapproval from neighbors rather than from the general sense that people should help one another (Abbott & Freeth, 2008).

The above considerations lead to the conclusion that the trust concept can be analyzed and evaluated at different levels starting at the micro level (trust in individuals) and ending at the macro level and as different types of trust based on individual research topics (Table 1).

2.3. Trust and climate change

The literature on trust and attitudes toward climate change is growing (ESS, 2018; Bodor et al., 2020). Cologna and Siegrist (2020) noted that trust is an important social construct that enables changes in different types of climate-friendly behaviors. Fage-Butler et al. (2022) noted that the investigation of public trust in climate change mitigation in institutions is a critical concern because once trust is lost; it is difficult to acquire it again. Research (Fairbrother et al., 2019; Cologna & Siegrist, 2020; Kulin & Sevä, 2021) has shown that people's environmental policy attitudes or public trust in climate change decisions are affected by their trust in various government institutions and actors and by whether they live in countries with high levels of trust.

Yaacob et al. (2022) emphasized that the effects of climate change are borderless and that climate change cannot be just a problem of a particular society or the subject of debate by institutions making decisions related to climate change. Community perceptions of the responsibility to address the issue of climate change vary among countries, as do their general political and institutional approaches and actions to mitigate climate change. Moreover, perceptions of trust in climate change decisions are also affected by individual characteristics of the local communities where people live, such as economic development or urban–rural divisions.

Edelman's trust barometer report (2022) showed that climate change worries remain high due to the demographic profile of society, where individual thinking, action, and solutions depend on the subjective

Table 1. Levels and types of trust (made by the authors)

Levels	Authors	Types	Authors
• Individual (micro) • Community (interpersonal trust) • Institutional/organizational (institutional trust) • National (e.g., government) (macro) • International organizations	Zmerli & Newton 2008; Six et al., 2015;McCright et al., 2016; OECD, 2017; Algan, 2018; Poortinga et al., 2019; Bodor et al., 2020; Yaacob et al., 2022.	• Personal • Social • Occupation-related • Group • Public • Technological • Consumption-related • System-related (e.g., education, science, religious)	Ostrom & Ahn, 2003; Sztompka, 2007; Schwartz et al., 2010; Brewer & Ley, 2013; Szkudlarek & Biglieri, 2016; Bordalo et al., 2016; Cologna & Siegrist, 2020; Kulin & Sevä, 2021.

characteristics of society members. In relation to institutional positions concerning climate change, the report reveals the need for leadership by such institutions as national, regional, or local governments. Accordingly, politics, not science, is seen as the driving force behind climate policy and related public assessments.

Kulin and Sevä (2021) analyzed how trust in government institutions moderates the relationship between climate change concern and climate policy attitudes cross-nationally. They noted that individuals' tendency to favor climate policies depends on their trust in both partial government institutions that enact policies (e.g., parliament, politicians) and impartial institutions that enforce these policies (e.g., legal system, the police). They also proved that people who worry about climate change are substantially more likely to support climate policies.

Cologna and Siegrist (2020) revealed that trust in scientists and environmental groups is strongly correlated with climate-friendly behavior, while trust in institutions is moderately correlated with climate-friendly behavior. Likewise, they found that trust in institutions seems to be important for behaviors related to the public domain, such as support for climate-related policies and taxes, and less important for private behaviors, such as individuals' reductions in their carbon footprint. Their research also suggested that the trust-behavior relationship should be more thoroughly explored, considering the specifics of the different countries.

2.4. Climate change skepticism

The literature reveals that there is a scientific consensus that climate change is occurring (Brewer & Ley, 2013; Capstick et al., 2015; Adam et al., 2020); however, efforts to address or adapt to climate change are being undermined by climate change denial or skepticism. There is no accepted definition of climate skepticism or denial, and we would be remiss to put all groups under one umbrella. The best way to think of it is as a climate skepticism-denial continuum. A climate skeptic is usually defined as someone who explicitly disputes at least one of the following: the reality of climate change, the role of humans, the science behind it, the severity of its consequences, or the possibility of adaptation through human action (Rahmstorf, 2004; Poortinga et al., 2011; Adam et al., 2020). According to some researchers skeptics are those who are not worried about climate change, or people whose knowledge is poor or biased (Bordalo et al. 2016; Johansson et al. 2022). A climate skeptic is also someone who endorses the science but downplays its political or economic ramifications or is unwilling to make any personal sacrifices or take individual steps to mitigate climate change (Malpass et al., 2007). Skepticism can also appear when people think that climate change affects people in other places, times, or people, but not them directly (Gifford et al. 2009; Capstick &Pidgeon 2014).

Studies have shown that climate change perception is influenced by individual-level (internal) and societal (external) factors and conditions, such as beliefs about cultural groups (Markowitz & Shariff, 2012; Capstick, 2012; Capstick & Pidgeon 2014; Hornsey et al., 2016).

Climate mitigation is a collective efficacy issue. Collective efficacy is best described by Bandura, who stated that it is "a group's shared belief in its conjoint capabilities to organize and execute the courses of action

required to produce given levels of attainments" (Bandura, 1977). Collective action is strongly dependent on trust at both the personal and institutional levels. According to Tobler et al. (2012), skepticism is a construct that includes uncertainties regarding the veracity of information sources and media exaggeration, as well as general "distrust". There is a concerted effort by industrial, political, and ideological interests to erode public trust in climate science. Studies by Hoppner and Whitmarsh (2011) and Haussler et al. (2016) showed that belief in climate change is strongly related to political actions—what statements are made, what actions are taken, and how they are communicated to society; thus, climate change perceptions are more than individual attitudes. Different forms of skepticism have also been linked to distrust in various authoritative institutions, such as science or government (Rutjens et al., 2018). Baiardi and Morana (2021) reported that environmental concerns are associated not only with per capita incomes (social welfare) but also with social trust and the political position of the government. Adam et al. (2020) found that skeptics manage to exploit specific events, pushing their agenda and positions even into traditional media. Therefore, their role in society can be very confusing, as they primarily affect sensitive or at-risk groups.

2.5. Trust and climate change in CEE countries

The literature reveals that the relationship between trust and climate change is not widely developed in CEE countries, which underlines the need to analyze this topic. The causes and impacts of climate change were already explored in ESS Round 8 (ESS, 2018). Poland, Lithuania, the Czech Republic, and Hungary were included in this analysis. In Round 8 some Eastern European countries were slightly less likely to think that climate change is at least partly caused by human activity, and some (Lithuania, Estonia, and Poland) had less than 20 % of their populations expressing worry about climate change. Later, Poortinga et al. (2019) and Gregersen et al. (2020) emphasized that public perceptions of climate change and trust in a European context differentiate and allow monitoring of possible cross-national differences. They proved that the associations between political orientation and worry about climate change are stronger in Western Europe than in post-communist countries.

Bodor et al. (2020) analyzed the effect of trust on the various dimensions of climate change attitudes. They noted that in Northern Europe, the ratio of those with a high level of trust was especially large in the population, while in CEE and Southern Europe, this ratio was decidedly low. However, in most European countries, much of the population believes that climate change is an existing process that is fundamentally determined by human contributions and is a negative phenomenon that raises serious concerns.

People’s attitudes and beliefs about climate change were also surveyed by the EIB Climate Survey (2022) (Table 2). Even from this survey, it is obvious that attitudes in CEE countries are not homogeneous, and whereas in some cases, Eastern European countries scored close to the EU average, others were considerably above or below.

Table 2. People's attitudes and beliefs about climate change (%), EIB Climate Survey (2022)

Question	EU	Poland	Lithuania	Latvia	Slovakia	Czech Rep.	Hungary
Do you feel that climate change has an impact on your everyday life?	77	82	67	65	80	67	87
Do you think that in 2050, climate change will still be a serious issue?	66	56	66	55	71	62	62
To what extent, if at all, do you think your own behavior can make a difference in tackling climate change?	75	79	39	56	68	68	74

3. MATERIALS AND METHODS

3.1. Data

The ESS Round 10 data used in the analysis come from surveys carried out between 2020 and 2022. Fieldwork was conducted over a longer period than usual due to the effects of COVID-19. The integrated file edition 3.1 of the ESS data was used for this study[1]. After data cleaning, 11190 participants were included from the selected countries. The sampling data are based on a strict random probability method in all participating countries, and the data are representative of all residents of private households who are 15 years of age or older, regardless of their nationality, citizenship, or language (ESS 2020a). To minimize sampling error and potential non-response bias in the data, the released ESS data also include sophisticated post-stratification weights in addition to their strict sampling technique (ESS 2020b).

3.1.1. Dependent variables

This paper considers three different dimensions of climate change: concern, personal norms, and attribution, and a composite indicator reflecting climate attitude (skeptic or proponent) based on the previous three questions. The dependent variables are formulated as follows:

Variable of Climate Change Concern (Worry)

The ESS climate change module defines climate change concern as a subjective assessment of the gravity of climate change as expressed by one's attitude toward the problem. Although one might argue that concern and worry are two distinct emotions, the climate concern measure in this case reflects personal feelings of more general worry about the severity of climate change in accordance with the conceptual framing of the ESS module (Poortinga et al., 2016).

Variable of Personal Responsibility (Responsibility)

The ESS climate change module defines the concept of pro-environmental personal norms as a sense of moral obligation or a sense of responsibility to perform or refrain from performing certain behaviors that could help solve a perceived common problem, in this case, climate change. Although having moral commitment and values does not necessarily imply taking action, they are closely related to it (Poortinga et al., 2016).

Variable about the origin or cause of climate change (Human)

This round of ESS addresses only attribution skepticism. Options range from "Entirely by natural processes" to "Entirely by human activity". In addition, the option "I do not think climate change is happening"

[1]For a detailed description of all questions utilized, please see Supplementary Material

was also available for responders who disagreed with the reality of the phenomenon. Rahmstorf (2004) characterized attribution skeptics as those who acknowledge that the climate may be changing but do not believe that human activity is to blame.

Climate skepticism

A composite indicator was also created by combining the three variables. Items were added together to receive an attitude score ranging from 0 to 20 (the Responsibility question could receive a maximum of 10 points, while Worry and Human could receive a maximum of 5 points each). The respondents who replied "there is no climate change" received a score of 0. For the binary logistic regression models, a median split was used to differentiate between climate skeptic and climate proponent attitudes for all four variables (DeCoster et al., 2011). We used a median split of 12 to dichotomize the climate change attitudes scale.

3.1.2. Independent variables

Item of interest: Trust

The "trust scale" measuring tool developed by Uslaner (2002) consists of three questions referring to three distinct aspects of trust: fairness, helpfulness, and dependability. All three items are included in the ESS survey on a Likert scale ranging from 0 to 10. In addition, eight institutional trust-related questions are also available in the ESS. To develop our trust scales, we used the results of a principal component analysis (PCA), with Varimax rotation and Kaiser normalization on the 11 items. The PCA results suggested a three-factor solution with 71.47% of the total variance explained. Unfortunately, the "trust in scientists" question could not be used because this question was not answered by Estonia and the Czech Republic, and "Police" did not load clearly. Since, generally, each factor should have at least three variables with high loadings and a variable should ideally only load cleanly onto one factor, only two trust scales were constructed: personal trust (three items with Cronbach's alpha of .801, eigenvalue of 2.150, and KMO of .711) and institutional trust representing in-country institutions (four items with Cronbach's alpha of .901, eigenvalue of 3.108, and KMO of .793). Since there was not much variance in the loadings, for easier interpretation, a factor-based score was calculated by simply averaging the items.

Socio-demographic indicators

Numerous studies have focused on attitudes toward climate change over the last two decades (Wolf et al., 2011; Capstick et al., 2015). These studies highlight that some socio-demographic factors, such as gender, age, and education, employment status and income all have an impact on how people view climate change. Older generations, men, and people with less education are more likely to have a climate skeptic mindset (Pearson et al., 2017; Beiser-McGrath & Huber, 2018; Poortinga et al., 2019). Some research has suggested that income is positively correlated with willingness to pay but not with environmental threat perception (Marquart-Pyatt, 2012). Similarly, Smith and Mayer (2018) found that income positively influences willingness to pay but not the propensity for personal action to fight climate change. The literature about employment status and having young children is mixed. In some studies, unemployment and retirement were found to have a positive effect on environmental behaviors (Binder & Blankenberg, 2017); however, other scholars have found that

employment status was not significant (McCright et al., 2016). Several studies have suggested that having children increases one's climate concern (Thomas et al., 2018; Ekholm, 2020), while others have shown that views of climate change as the most pressing environmental issue are more likely to be held by those without children (Norton & Leaman, 2004).

Another important factor that determines concerns about climate change at the individual level is political ideology (McCright et al., 2016; Beiser-McGrath & Huber, 2018; Ehret et al., 2018; Smith & Hempel 2022). Studies have shown that increasing levels of political and religious conservatism both lead to growing distrust of climate science among skeptics (Brewer and Ley, 2013; Cacciatore et al., 2016). Additionally, rules that are too prescriptive and aversive or that come from unpopular authority figures may encourage counter-compliance, which includes breaking the rules. Rules that direct citizens to engage in undesirable or effortful activities may lead to such counterproductive behavior (Pietras, 2022). People who value tradition and conformity are typically right-of-center ideologically. However, rule-following is frequently correlated with being able to identify with leadership because people usually support those who share their ideology (Schwartz et al., 2010). In this round of ESS, value scales were not included for all countries (Poland and Latvia were missing data). As a proxy for value scale questions relating to respect for authority, the question "*Obedience and respect for authority most important virtues children should learn*" was used.

To account for effects that are particular to a certain nation, country dummies were created and utilized as control variables in the study, with the Czech Republic serving as a reference group.

3.2. Method

Separate multivariable binary logistic regression models were run for each dependent variable in our analysis: climate change skepticism, climate change concern, pro-environmental personal norms, and climate attributes. All the independent variables were included in the model. The estimations were conducted using SPSS. Individual anweight in ESS was applied in all models to correctly account for the effects of nonrandom missing data on the sampling procedure. Finally, none of the four models showed multicollinearity between the predictors in the models, as no VIF values above three were present.

Four different models are presented that differ only in terms of their dependent variables, while the independent variable (trust) and the control variables (socio-demographic variables) are the same in all the cases.

3.3. Limitations of the study

Due to a rather broad approach to trust and climate change connections, the authors of the article relied on their own defined aim; therefore, not all possible approaches were analyzed in this article. Limitations are also related to the availability of ESS data concerning some selected CEE countries since not all provided the necessary data (trust in scientists, value scale). Data relating to trust were obtained only from ESS Round 10 (no previous rounds were included); therefore, no longitudinal comparisons were made. Additionally, the data are representative of different time periods from 2020 to 2022 (due to COVID-19).

4. RESEARCH RESULTS

4.1. Climate Attitude

The overall scores for the three climate questions can be seen in Table 3.

For the feeling of personal responsibility, the overall score for the selected countries was 5.49, with the highest score for Poland (6.51) and the lowest score for the Czech Republic (4.35). Climate worry had a mean score of 3.15, where Hungarians were the most worried and Slovaks the least worried. For the anthropogenic nature of climate change, the respondents were rather undecided, with an average score of 3.38 (corresponding to the middle answer: "About equally by natural processes and human activity"). Surprisingly, very few respondents flat-out denied the existence of climate change. Climate change deniers were the most numerous in the Czech Republic (54), and the fewest in Hungary (only 4 respondents out of 1725).

4.2. Trust

The average trust score by country is given in Table 4.

The overall personal trust score for the CEE countries selected was 4.78, whereas the institutional trust score was considerably lower at 3.86. The highest personal trust was observed in Estonia (5.67), and the lowest was observed in Poland (3.53). This ranking is basically unchanged since ESS round 8 (Bodor et al., 2020). Similarly, for institutional trust, Estonia has the highest score (4.80), and Poland has the lowest (2.49). The evaluations of personal trust and climate change attitudes at the country level are shown in Figure 2.

Based on previous research findings (Smith & Mayer, 2018; Bodor et al., 2020), our expectation was that low levels of personal trust would result in low levels of environmental norm, but Poland, which has the lowest level of personal trust of the CEE countries examined, actually has the highest

Table 3. Climate attitude questions by country, Mean (SD)

Country	Responsibility (0-10)	Human (1-5)	Worry (1-5)	There is no climate change (N)
CZ	4.35 (2.86)	3.34 (0.85)	3.15 (1.12)	54
EE	5.53 (2.87)	3.31 (0.77)	2.99 (0.91)	5
HU	5.78 (2.32)	3.44 (0.76)	3.38 (0.78)	4
LT	6.06 (2.64)	3.30 (0.89)	3.19 (0.97)	37
LV	5.16 (2.90)	3.40 (0.90)	3.17 (0.83)	18
PL	6.51 (2.65)	3.39 (0.81)	3.21 (0.85)	35
SK	5.01 (2.50)	3.46 (0.83)	2.85 (0.94)	50
Overall	**5.49 (2.78)**	**3.38 (0.83)**	**3.15 (0.95)**	**203**

Table 4. Trust Scores by country, Mean (SD)

Country	Personal Trust	Institutional Trust
CZ	5.33 (2.23)	4.47 (2.33)
EE	5.67 (1.68)	4.80 (2.00)
HU	4.85 (1.98)	4.59 (2.23)
LT	5.17 (2.06)	3.87 (2.09)
LV	4.64 (2.12)	3.05 (2.08)
PL	3.53 (2.19)	2.49 (1.92)
SK	4.25 (2.20)	3.40 (2.41)
Overall	**4.78 (2.20)**	**3.86 (2.31)**

sense of responsibility, whereas people in the Czech Republic, which has the second highest level of trust, feel the least personal responsibility in regard to climate change mitigation. Estonians, being the most trusting, are positioned in the middle of the responsibility scale (Figure 2a). For climate attributes, the countries with the highest level of personal trust (Estonia, Lithuania, and the Czech Republic) are the least likely to accept that climate change is primarily caused by humans (Figure 2c).

Table 5 presents the results of the binary logistic regressions.

Concern about Climate Change

Compared to those of the Czech Republic, all the other countries' residents are less likely to be worried about climate change, except for Hungary. Hungarians are 1.378 times more likely to be worried about climate change than Czechs. The odds that females fall into the worried category are 1.638 times greater than those of males. Compared to respondents with a master's degree or higher, people with no higher education have a 20-30% greater chance of falling into the less worried category. Political scale had no effect; however, being interested in politics increases one's odds of falling into the more worried category. Both religiosity and believing in respect to authority increase the odds of being worried about climate change. Regarding the trust variables, having more trust in a country's institutions decreases one's odds of being worried about climate change. Individual trust, however, had no effect.

Pro-environmental personal norms

Slovaks and Czechs have similarly low attitudes toward climate mitigation responsibilities. With increasing education levels, there are increasing odds that a person feels more personally responsible (from OR .593 to OR .785). Both trust variables are significant. As previous studies have noted (Portinga, 2016), both individual- and societal-level trust are important in climate mitigation behavior, as people are weary of committing time, energy, and financial resources if they feel they are not reciprocated and if the rest of society is not participating.

Attribution skepticism

Hungarians, Latvians, and Slovaks are approximately 1.6 times more likely to believe that climate change is mostly caused by human activity compared to the Czechs. Estonians, however, have a 23% decrease in the odds of accepting anthropogenic reasons for climate change (OR .769). Having children, living in urban surroundings, and believing in respect for authority all increase

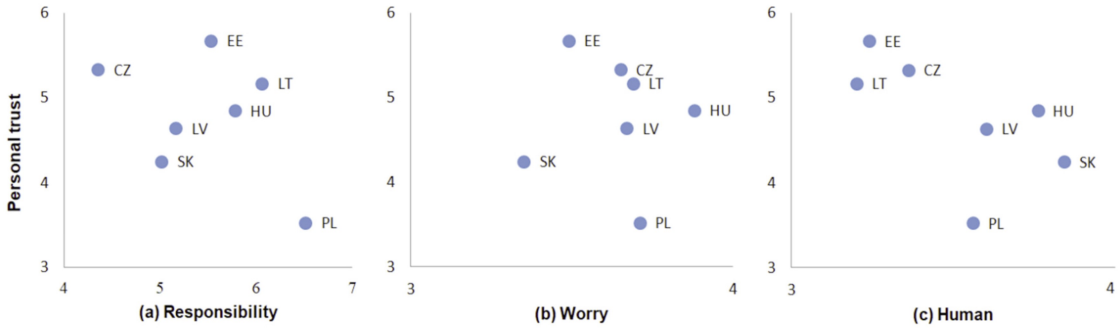

Figure 2. Association between Personal Trust and Climate Change Attitudes (Mean Scores)

Table 5. Results of the binary logistic regressions

	Worry		Human		Responsibility		Climate Skeptic	
	OR	Sig.	OR	Sig.	OR	Sig.	OR	Sig.
ctry		0.000		0.000		0.000		0.000
EE	0.492	0.000	0.769	0.026	1.814	0.000	1.555	0.000
HU	1.378	0.004	1.563	0.000	2.792	0.000	2.808	0.000
LT	0.739	0.022	0.988	0.927	2.139	0.000	1.902	0.000
LV	0.718	0.034	1.693	0.000	1.651	0.001	1.477	0.010
PL	0.739	0.039	1.088	0.554	3.509	0.000	2.801	0.000
SK	0.331	0.000	1.552	0.008	1.250	0.193	1.051	0.768
female	1.638	0.000	1.037	0.588	1.531	0.000	1.599	0.000
age	1.001	0.868	0.992	0.013	0.995	0.100	0.994	0.048
urban2	1.060	0.419	1.256	0.001	1.026	0.720	1.099	0.188
Edu level		0.040		0.036		0.000		0.000
ES-ISCED I	0.635	0.145	0.881	0.665	0.583	0.060	0.603	0.078
ES-ISCED II	0.721	0.016	0.720	0.013	0.593	0.000	0.575	0.000
ES-ISCED IIIb	0.755	0.030	0.722	0.009	0.606	0.000	0.556	0.000
ES-ISCED IIIa	0.792	0.042	0.728	0.004	0.785	0.034	0.744	0.011
ES-ISCED IV	0.937	0.617	0.807	0.091	0.794	0.073	0.830	0.157
ES-ISCED V1	1.054	0.697	0.965	0.788	1.140	0.344	0.988	0.932
income		0.278		0.214		0.146		0.006
coping	0.879	0.186	0.987	0.889	0.902	0.285	0.882	0.203
difficult	0.797	0.058	0.860	0.193	0.830	0.109	0.736	0.009
very difficult	0.786	0.196	0.762	0.134	0.671	0.030	0.582	0.003
lrscale	0.982	0.208	0.975	0.064	1.006	0.679	1.003	0.829
polint2 (not interested)	0.702	0.000	1.065	0.383	0.699	0.000	0.767	0.000
relig	1.046	0.000	0.992	0.486	1.060	0.000	1.069	0.000
obey2 (not agree)	1.279	0.004	1.404	0.000	1.289	0.003	1.313	0.002
activ7		0.215		0.104		0.099		0.410
study	1.224	0.273	1.290	0.144	1.156	0.415	1.041	0.824
uempl	0.751	0.132	1.512	0.014	0.931	0.681	0.872	0.430
dsbld	0.850	0.459	0.750	0.194	0.709	0.101	0.883	0.545
retire	0.986	0.904	1.031	0.787	0.774	0.022	0.882	0.261
hswrk	0.984	0.922	0.996	0.977	0.731	0.053	0.708	0.033
other	0.455	0.049	1.250	0.504	1.033	0.926	1.007	0.984
child21 yes	1.167	0.091	1.336	0.001	1.272	0.007	1.207	0.025
hhmb	0.961	0.187	0.924	0.008	0.969	0.277	0.972	0.330
trstpers	0.999	0.939	1.007	0.705	1.071	0.000	1.066	0.000
trstint4	0.949	0.003	0.967	0.048	1.084	0.000	1.041	0.020
Constant	0.899	0.697	1.238	0.421	0.400	0.001	0.653	0.100
Goodness-of-fit tests								
Omnibus test (df 32)	*p< 0.000*		*p< 0.000*		*p< 0.000*		*p< 0.000*	
Nagelkerke R^2	*0.082*		*0.058*		*0.142*		*0.129*	
Hosmer and Lemeshow	*0.686*		*0.326*		*0.076*		*0.229*	

the odds of accepting the fact that climate change is caused mainly by human activity. Being unemployed also falls into this category, which corresponds with the findings of Binder and Blankenberg (2017). As expected, education plays a positive role in the acceptance of climate science, as there is a significant difference between respondents who finish upper tertiary education and those who are below the upper secondary education level. However, the effect does not seem to be linear. Age and

living conditions (household size) similarly had negative effects. This is the only dependent variable where religion and political interest do not play a role. Increased institutional trust also decreases the odds of accepting anthropogenic explanations. This may be because people believe that combating climate change is primarily the duty of the authorities and specific institutions. Moreover, effective enforcement of the existing laws, which is the responsibility of the authorities, is definitely more important for climate protection than human activities, which should comply with established legal rules.

Climate skepticism

An increased level of personal or institutional trust will increase one's chances of being in the climate proponent group. Poles and Hungarians are almost three times more likely to be part of the climate proponent group than Czechs. Older people and males are more likely to be climate skeptics. The odds that females fall into the climate proponent category are 1.599 times greater than those of males. People in the lower income brackets are more likely to fall into the skeptic category than people who are living comfortably or at least coping on their current income. In fact, those struggling the most financially have an almost 50% decrease in the odds of being climate proponents (OR .582). Compared to more educated respondents (reference category higher tertiary), people at lower EISCED levels have a greater chance of being climate skeptic. Being interested in politics increases one's odds of falling into the skeptical category, whereas religiousness, respect for authority and having children decreases it.

5. CONCLUSIONS AND POLICY IMPLICATIONS

This paper explores how trust (personal and institutional) affects climate change attitudes in selected Eastern European countries. Theoretical and empirical findings enabled us to formulate several insights and conclusions concerning the tasks given in the Introduction section.

Trust, as a dimension of social capital, is valued in various social sciences within different contexts, levels, and types. Classical theoretical approaches to trust are changing depending on the issue being analyzed. Trust's importance for the perception of climate change is a special theme, as in recent years, due to the proliferation of social media and the additional effects of COVID-19, an erosion of trust can be seen both on a personal and institutional level.

Our analysis of theory and existing surveys about trust in climate change showed that CEE countries are usually characterized by lower levels of trust, greater skepticism, and less reliable support for policy measures, while perception and worry about climate change is stronger in Western Europe. Our findings indicate that outright climate change denial is not widespread in the CEE countries examined. All of the CEE countries surveyed had a sense of personal responsibility for climate change, but the responses varied across countries (Mean 5.49, SD 2.78). At the same time, answers to climate attributes (anthropogenic nature) are rather undecided and homogeneous, and climate worry is relatively low (although there are also variations among countries). Both trust scores are quite low, especially for trust in Institutions (Personal trust 4.78; Institutional Trust 3.86), which confirms

previous findings. This is especially relevant since institutional trust was significant in all four models and personal trust was significant in the environmental norm and skepticism models. A greater level of personal or institutional trust increases one's chances of being in the climate proponent group.

Most of the socio-demographic variable results confirm previous findings. The only variable not significant for any of the models is political scale. This is quite an important point as several studies have emphasized that political scale was one of the most important variables influencing the debate around climate change (Smith & Hempel 2022). However, previous studies have shown that in Eastern Europe, political orientation works differently than in Western Europe or the United States (Chaisty & Whitefield, 2015; Rohrschneider & Miles, 2015; Gregersen et al., 2020; Fisher et al., 2022). On the other hand, being interested in politics was significant in all models except climate attribute skepticism. This suggests that perhaps a different construct for the left-right scale should be utilized in future studies.

One of the key strengths of this paper is that it reinforces the idea that efforts to mitigate climate change should not be uniform across all geographic areas or across all socioeconomic classes. As Stefkovics & Zenovitz (2023) have also found in their study, European society as a whole is not homogeneous, and certain frames may be significant in some cultures but not in others.

One significant implication of our research is that, in order to persuade climate skeptics, it might be necessary to move beyond arguing about scientific facts and instead look for ways to influence more fundamental aspects of individual traits. Additionally, for these efforts to be successful, first, public trust in our institutions needs to be repaired. Since policy responses to climate change can be viewed as a type of complex collective action problem, public concern about climate change is unlikely to translate into action if trust is low. It is also crucial to note that Eastern Europeans do not respond to incentives in the same way as people in Western Europe do (in fact, there are sizable segments of society that are hostile to Western ideas), and even within CEE countries, attitudes may differ significantly.

Based on the findings of this study, future research could involve other aspects of the topic, such as a longitudinal analysis of these countries, particularly identifying how attitudes and trust have changed over time including other important factors, such the effect of media (especially social media), changes in socio-political background and cultural characteristics.

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РАЗУМЕВАЊЕ СТАВОВА ПРЕМА КЛИМАТСКИМ ПРОМЕНАМА У КОНТЕКСТУ ПОВЕРЕЊА У ИЗАБРАНИМ ЗЕМЉАМА ЦЕНТРАЛНЕ И ИСТОЧНЕ ЕВРОПЕ

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Извод

Иако у научним и политичким дискусијама расте тренд разматрања ставова људи према климатским променама у контексту поверења, адекватних истраживања у овој области у Централној и Источној Европи (ЦИЕ) недостаје. Овај чланак има за циљ да утврди да ли је поверење важан фактор за перцепцију климатских промена код становника изабраних земаља ЦИЕ. Користећи податке из десетог круга Европске социјалне анкете (ESS), примењен је метод мултиваријабилне бинарне логистичке регресије. У раду се разматрају три различите димензије климатских промена: брига, личне норме и атрибуција, као и саставни индикатор који одражава ставове о клими (скептик или заговорник). Представљена су четири различита модела која се разликују само по зависним променљивама, док су независна променљива (поверење) и контролне променљиве (социо-демографске променљиве) исте у свим случајевима. Резултати показују да је и лично и институционално поверење веома ниско у изабраним земљама. Институционално поверење било је значајно у сва четири модела, док је лично поверење било значајно у моделима еколошке норме и скептицизма. Веће поверење у институције смањује вероватноћу да ће појединци бити забринути због климатских промена и повећава вероватноћу да ће осећати личну одговорност за њихово ублажавање. Повећан ниво личног или институционалног поверења повећава шансе за припадност групи заговорника климатских промена. Од испитиваних социо-демографских променљивих, само политичка скала лево-десно није значајно утицала на ставове.

Кључне речи: поверење, климатске промене, климатски скептицизам, друштвени капитал, становници, централна и источна Европа.

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