FEELING RESPONSIBLE, FEELING BETTER? THE CLIMATE-HAPPINESS LINK ACROSS EUROPEAN UNION

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Abstract. Climate change is one of the most pressing environmental issues, and often cause citizzens' anxiety. One such pressing concern is how citizens' sense of personal responsibility for climate change affects their overall life satisfaction. The current study examines this relationship using data from Round 11 (2023) of the European Social Survey (ESS). We examine the extent to which feeling personally responsible for mitigating climate change is associated with life satisfaction, controlling for a number of socio-demographic and attitudinal controls. These include age, gender, political orientation, country of residence, migrant status, whether one believes that climate change exists, how concerned one is about protecting the environment, how close one feels to Europe and one's country of origin, and trust in the European Parliament. The results suggest that individuals who identify more strongly with the task of tackling climate change, report more trust in European institutions, and reside in northern European Member States enjoy greater life satisfaction. Conversely, individuals - mainly from some Eastern and Southern European countries - who either express low identification with Europe or are apathetic about identifying with it are less satisfied.

1. Introduction

Climate change and environmental degradation represent some of the most serious challenges facing the planet today. The effects of climate change are becoming a reality for an increasing share of the population, so there is a parallel in the increase of people experiencing environmental discomfort, commonly known as "eco-anxiety" or "climate anxiety" (Ojala *et al.*, 2021). Passmore *et al.*, (2023) define the latter as "persistent feelings of concern, anxiety, dread or doom regarding environmental degradation and the impacts and implications of climate change on our planet as a whole". Therefore, the prevalence of such feelings and the multiple ecological challenges facing the population pose a threat to one's level of life satisfaction (LS). The scientific literature describes LS as a general assessment of one's attitude and feelings about one's life at a given time and is an important indicator of one's well-being (Diener, 1984). Most of the investigations conducted have focused more on the influence of climate change on LS. Rising temperatures

for those living in areas with a harsh climate lead to an improvement in LS, reducing it in warm climates (Maddison and Rehdanz, 2011). On the other hand, an australian study showed that heat-related stress has no effect on either LS or happiness (Zander *et al.*, 2019). Drought and the threat of drought have been shown to have a negative impact on LS, especially among the poorer segments of the population (Berlemann and Eurich, 2022). In addition, extreme weather events, such as floods and hurricanes, have been shown to impair the LS of people in affected areas beyond the immediate impact on well-being, with prolonged effects over time (Calvo *et al.*, 2015; Fernandez *et al.*, 2019; Sekulova and Van den Bergh, 2016). Growing levels of anxiety about climate change are now evident worldwide, with women, young people and indigenous communities being most affected (Burke *et al.*, 2018; Coffey *et al.*, 2021; Petheram *et al.*, 2010). In response to eco-anxiety, defence mechanisms are activated, prompting subjects to action, resulting in a sense of personal responsibility (Innocenti *et al.*, 2023). The latter can have an adaptive effect, prompting concrete actions to mitigate and diminish the effects of climate change through personal behaviour and political support (Bouman *et al.*, 2020). Overall, feeling responsible on a personal level can reflect care for oneself, the community and society at large, accompanied by a drive to build a better world (Lio *et al.*, 2023). Pro-environmental behaviour changes consumption patterns by directing individuals towards relatively low-impact alternatives (e.g. buying an electric car instead of petrol) or towards reducing overall consumption (C. Chen *et al.*, 2024; W. Chen and Xia, 2020). However, there is more research focus on climate anxiety and the resulting sense of individual responsibility, but a gap remains in that there is no study or empirical evidence in the current academic literature linking LS to a sense of responsibility in climate change mitigation. The main objective of this study is to fill the gap regarding the aforementioned relationship by answering several research questions that, in turn, aim to explore the underlying dynamics of this relationship. First, it investigates whether there are actual differences in levels of LS and sense of personal responsibility for climate among the EU member states included in the study. On the other hand, the extent to which feeling personally responsible for climate change mitigation is associated with the level of LS is investigated, controlling for a number of socio-demographic and attitudinal variables. The article is structured as follows: section 2 shows the dataset used; the methodology for the analysis is outlined in section 3; section 4 reports the results obtained, while the last section presents a focus on the discussions and conclusions, also highlighting the limitations of the study.

2. Data

The data for this study are extracted from Round 11 (2023) of the European Social Survey (ESS) in order to analyse the level of LS and sense of responsibility on the implementation of measures to reduce climate change. The ESS is, without a doubt, a valuable source of scales measuring the environmental attitudes of European citizens. At the same time, it provides solid information on levels of LS, demonstrating the importance and robustness of the data collected in order to carry out comparative analyses on a continental scale and study connections (Ferreira *et al.*, 2013; Kácha *et al.*, 2022).

The research focuses on 11 EU member countries, providing a robust framework for examining the interaction between LS and European citizens' sense of responsibility towards climate change, taking into account various socio-economic and attitudinal factors. The choice to include only EU member states may be motivated by the fact that they share a common environmental policy, thus facilitating the interpretation of our study results. Furthermore, a cautious methodological approach was chosen in order to ensure a balance between representativeness of the sample and empirical practicality.

The countries included in the analysis are Austria, Germany, Spain, Finland, France, Greece, Hungary, Italy, Poland, Portugal and Sweden. The socio-economic variables taken into account include gender, age, political orientation, income, migrant status, attachment to the country, perceptions on the causes of climate change, care for the environment, confidence in walking in the dark and trust in the European Parliament. The descriptive statistics of the sample are given in Table 1 and show the number of respondents and the percentage of each category included in the study, revealing significant heterogeneity. There are over 21,000 respondents distributed among the 11 European countries. Italy, Greece, Germany and Austria account for almost half of the sample. In terms of age, the most representative group is made up of those aged over 65 (26.9%), while the least representative are those aged under 25 (10.6%). In terms of gender, there is a slight predominance of women (53.8%). Concerning the economic situation, a large majority of the respondents (48.6%) state that they manage to meet their daily expenses, only 3.5% are in great difficulty. Regarding personal responsibility in the fight against climate change, the sample is characterised by citizens who feel highly (35.8%) or moderately (34.5%) responsible, against only 5% who feel they have no responsibility at all. Moreover, 40% of respondents attach great importance to caring for the environment. More than 90% are indigenous, and at the same time, almost half of the sample surveyed are strongly attached to their country.

Table 1 – *Descriptive statistics.*

Country	n	%	CC Cause	n	%
Austria	2354	10.8%	Entirely by natural processes	364	1.7%
Germany	2420	11.1%	Mainly by natural processes	1360	6.3%
Spain	1844	8.5%	About equally by natural processes and human activity	8952	41.2%
Finland	1563	7.2%	Mainly by human activity	8893	40.9%
France	1771	8.1%	Entirely by human activity	2013	9.3%
Greece	2757	12.7%	I don't think climate change is happening	155	0.7%
Hungary	2118	9.7%	CC Responsability	n	%
Italy	2865	13.2%	No responsibility	1086	5.0%
Poland	1442	6.6%	Low responsibility	2026	9.3%
Portugal	1373	6.3%	Moderate responsibility	7501	34.5%
Sweden	1230	5.7%	High responsibility	7781	35.8%
EP Trust	n	%	Full responsibility	3343	15.4%
No trust	2939	13.5%	Gender	n	%
Low trust	3925	18.1%	Male	10034	46.2%
Moderate trust	9860	45.4%	Female	11703	53.8%
High trust	4183	19.2%	Age	n	%
Full trust	830	3.8%	under 25	2303	10.6%
Political orientation	n	%	26-35	2708	12.5%
Left	1115	5.1%	36-45	3311	15.2%
Centre Left	3297	15.2%	46-55	3685	17.0%
Centre	12392	57.0%	56-65	3888	17.9%
Centre Right	3649	16.8%	over 65	5842	26.9%
Right	1284	5.9%	Income	n	%
Safe Dark	n	%	Living comfortably on present income	6581	30.3%
Very safe	6366	29.3%	Coping on present income	10565	48.6%
Safe	10999	50.6%	Difficult on present income	3829	17.6%
Unsafe	3606	16.6%	Very difficult on present income	762	3.5%
Very unsafe	766	3.5%	Born	n	%
Attachment country	n	%	Born in country	19913	91.6%
No attachment	243	1.1%	Foreign Born	1816	8.4%
Low attachment	572	2.6%	Environment Care	n	%
Moderate attachment	3029	13.9%	Very much like me	6703	30.8%
High attachment	7068	32.5%	Like me	8694	40.0%
Strong attachment	10825	49.8%	Somewhat like me	4181	19.2%
			A little like me	1677	7.7%
			Not like me	388	1.8%
			Not like me at all	94	0.4%

EP, European Parliament; CC, climate change.
Source:own elaboration.

3. Methodology

An ordered logit regression model is a statistical technique used to analyse ordinal data, where the dependent variable (Y) has more than two ordered categories. In the present study, the dependent variable was life satisfaction (LS) on an 11-point rating scale (0–10). The ordered logit model predicts the probability of an individual belonging to a higher LS category based on a set of explanatory variables (Alemi et al., 2019). The model can be expressed algebraically as follows:

$$P(Y \leq j \mid X) = \frac{exp(\tau_j - X\beta)}{1 + exp(\tau_j - X\beta)}, \quad j = 1, \ldots, J-1$$

where $P(Y \leq j \mid X)$ is the cumulative probability of measuring life satisfaction at or below category j for the given explanatory variable X, and where the cut-points (or thresholds) to be estimated are represented by τ_j and the regression coefficients on the independent variables are represented by β. The logit distribution is chosen because it has a simple functional form and is easily interpretable in terms of odds ratios.

The independent explanatory variables are sense of personal obligation to combat climate change, gender, age, political views, income, migrant status and sense of belonging to one's nation. Other variables include perceived explanations for climate change, concern for the environment, perceived safety when walking alone at night and trust in the European Parliament.

As with many studies using ordered logit models, dummy coding was employed to introduce categorical variables into the model, with one category serving as the reference point (West et al., 1996). The reference categories were chosen to be middle or neutral points to enable comparison between groups (e.g. female gender, centre political orientation and moderate institutional trust).

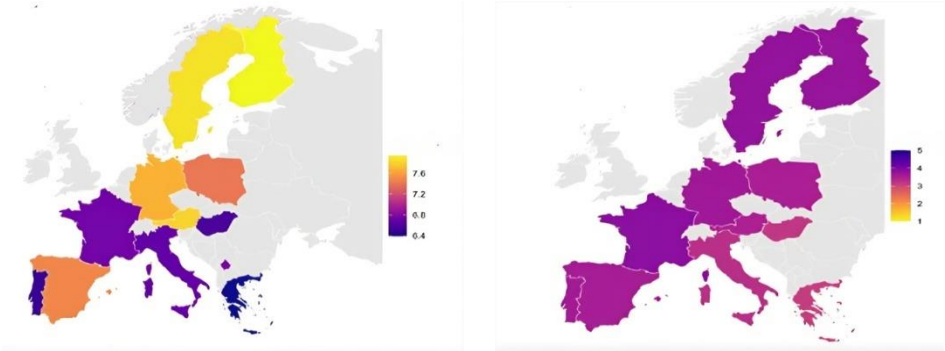
This specification enables us to make maximum use of the life satisfaction scale range without losing information introduced by dichotomising the dependent variable. Lastly, the ordered logit model provides a richer explanation of how climate responsibility and related socio-economic and attitudinal factors cause shifts in the probability distribution between life satisfaction levels.

4. Results

This section presents the results obtained from the analysis. First of all, choroplethic maps are shown, which are a survey tool that allows us to graphically represent the spatial distribution of the variables under study according to the

responses obtained from the last ESS survey. This type of map makes it possible to identify trends, patterns and perceptions that vary according to geographical area. Figure 1(a) shows the values of the average perception of LS on a colour scale, highlighting significant geographical differences. First of all, it outlines a relevant aspect: Northern European countries are characterised by a higher perception in terms of LS, with an average of more than 7.6. Central European nations, such as Germany and Austria, together with Poland and Spain, are in an intermediate position regarding the perception of LS. In these nations, the average values observed vary between 7 and 7.6. However, France presents itself as an exception: although it is seen as one of the largest economies in Western Europe, it is characterised by a lower level of perceived satisfaction, showing similar values typical of southern countries. In addition, Figure 1(a) shows that citizens in southern European countries, such as Italy, Portugal and Greece, tend to report significantly lower levels of satisfaction than the European average. Figure 1(b) illustrates, on the other hand, the average perceived level of personal responsibility in mitigating climate change. The results indicate a rather uniform and generally high sense of responsibility among the countries analysed, with the average being between 4.5 and 3.5 in most cases. In the Nordic countries, such as Sweden and Finland, citizens seem to have a higher level of personal responsibility. The same trend is recorded in France. Also in the central-western and southern European countries, such as Germany, Austria, Poland, Spain and Portugal, inhabitants tend to be more inclined to perceive that sense of responsibility for the climate. Significantly lower than average values are observed, however, in Italy, Greece and Hungary in Italy, Greece and Hungary.

Figure 1 - *Cross-country variation in perceptions within the European Union.*



(a) Perceived LS

(b) Perceived personal responsibility for climate change mitigation.

Source: own elaboration.

Furthermore, the study investigates the possible relationship between the different levels of life satisfaction (LS) and the sense of personal responsibility towards climate change, controlling for socio-demographic and attitudinal factors. Table 2 shows the results of the estimation of an ordered logit regression model, focusing on statistically significant independent variables.

Table 2 – *Ordered Logit Regression Model Results.*

Variable	Item	Estimate	Std. Error	z-value	p-value
Country	ES	-0.32	0.06	-5.67	0.00
	FR	-1.05	0.06	-18.06	0.00
	GR	-0.93	0.05	-17.86	0.00
	HU	-1.06	0.06	-19.16	0.00
	IT	-0.95	0.05	-19.04	0.00
	PL	-0.44	0.06	-7.07	0.00
	PT	-1.04	0.06	-16.89	0.00
	SE	-0.22	0.06	-3.45	0.00
EU Trust	No trust	-0.18	0.04	-4.60	0.00
	Low Trust	-0.18	0.03	-5.14	0.00
	High Trust	0.18	0.03	5.50	0.00
	Full trust	0.64	0.07	9.42	0.00
Political orientation	centre left	-0.25	0.04	-7.20	0.00
	centre right	0.18	0.03	5.44	0.00
	right	0.68	0.06	12.09	0.00
Safe Dark	very safe	0.34	0.03	11.63	0.00
	unsafe	-0.21	0.04	-6.01	0.00
	very unsafe	-0.44	0.07	-6.26	0.00
Attachment country	Low attachment	-0.34	0.08	-4.15	0.00
	High attachment	0.36	0.04	9.27	0.00
	Strong attachment	0.78	0.04	20.08	0.00
CC Cause	clim. ch. 1	-0.50	0.10	-4.85	0.00
	clim. ch. 4	-0.08	0.03	-3.07	0.00
	clim. ch. 5	-0.16	0.05	-3.59	0.00
	NO clim. ch.	-0.43	0.15	-2.91	0.00
CC Responsability	No responsibility	0.28	0.06	4.38	0.00
	High responsibility	0.21	0.03	6.99	0.00
	Full responsibility	0.39	0.04	9.31	0.00
Gender	male	-0.11	0.03	-4.23	0.00
Age	46-55	-0.14	0.04	-3.40	0.00
	56-65	-0.22	0.04	-5.19	0.00
	over 65	-0.26	0.04	-6.68	0.00
Income	income 1	0.66	0.03	21.89	0.00
	income 3	-0.71	0.04	-20.14	0.00
	income 4	-1.27	0.07	-18.07	0.00
Environment Care	Very much like me	0.26	0.04	7.11	0.00
	Like me	0.17	0.03	5.03	0.00

Source: own elaboration.

Feeling strongly responsible for mitigating climate change is a significant predictor of the perception of having a fulfilling life. Another equally relevant predictor is trust in European institutions, particularly the European Parliament: high levels of trust are positively associated with the likelihood of perceiving one's life as highly satisfying. Conversely, citizens who report low levels of trust show an inverse relationship with life satisfaction.

A further key factor is the degree of attachment to one's country of origin: those who have strong ties to it report higher levels of satisfaction. A similar trend can be observed among those who adhere to centre-right and especially conservative political positions: in fact, they tend to report higher levels of satisfaction than those who identify with progressive positions. Compared to men and older individuals, women and young people report a more satisfying perception of life.

The coefficients relating to the perception of the causes of climate change emerge as relevant, being negative and significant. The belief that climate change is attributable to natural factors or human activities, or denying it altogether, tends to reduce the level of life satisfaction. Finally, with regard to the relationship between life satisfaction and the importance attributed to caring for the environment, the analysis highlights a positive association: people who say they pay close attention to the environment are more likely to perceive a highly satisfactory standard of living.

5. Discussions and conclusion

The analysis of the choroplethic maps indicates that respondents show a rather high average level of personal responsibility for climate change, but with variations of considerable interest. The Nordic countries, together with France, show more pronounced levels of responsibility, while the southern and eastern European nations appear to lag behind on this front. Already (García-López and Allué, 2012)in their study, point out that Finland and Sweden are the countries with a greater “positive responsivity” to climate change, indicating a public and proactive perception compared to southern Europe, where there is a negative responsivity, which can be reflected in a more passive attitude of citizens. Focusing on Italy, the “Lancet Countdown” report argues that the national response has been partial, the involvement of citizens in combating climate change remains fragmented and unsystematic. Low institutional trust, low climate literacy and a cultural model less oriented to the collective good contribute to this (Alfano *et al.*, 2023). On the other hand, among Spanish citizens, the sense of responsibility for climate change mitigation is remarkable. Despite institutional inertia and regulatory inadequacy, citizenship's responsibility for a paradigm shift is growing, and in the wake of international examples such as Urgenda in the Netherlands, Spain also sees the

growing role of civil society in taking legal action against the state for climate failures and invoking the rights of future generations (Mateo, 2019). Also in France, the high sense of personal responsibility spills over into actions against the federal government and a well-known case is represented by "Grande Synthe", the city that petitioned the high court to take further action against climate change (Torre-Schaub, 2023).

The result of the ordered logit regression model's estimation of the relationship between LS and sense of personal responsibility in climate mitigation is aligned with previous studies: Martin *et al.,* (2024) suggest that a sense of responsibility may play a protective role, while according to Arslan and Wong, (2022) personal responsibility contributes to providing a sense of meaning and purpose in the face of uncertainty that may affect the LS. Baldwin *et al.,* 2023) believe that the link between LS and responsibility could be influenced by the belief that actions can make a difference (self-efficacy). Furthermore, our results showed that high levels of trust in the LS are positively associated with the likelihood of perceiving one's life as highly satisfying. Clench-Aas and Holte, (2021) found that trust in institutions provides a sense of stability, order and predictability, especially in times of crisis or adverse conditions trust acts as a buffer, according to the buffer hypothesis, cushioning the negative impact on life perception, as well as the resulting satisfaction. On the other hand, Deák *et al.,* (2024) argue that those with high institutional trust are more likely to be climate proponents, contributing to civic mobilisation and engagement in climate change mitigation.

This study contributes to the scarce existing literature on mapping personal climate responsibility and analysing this relationship. First, a large and representative sample of the countries included in the analysis is used in order to provide a solid empirical basis for generalising the results. Furthermore, the estimation of a regression model allows the association between LS and responsibility to be captured. The results of this study can be used to improve, and in some cases, readjust educational campaigns and programmes in order to contribute to a sense of personal accountability especially in those countries where there is less perception. This implies that climate communication campaigns should emphasise the effectiveness of individual actions rather than simply focusing on the urgency of the problem: in fact, a greater sense of responsibility, translated into concrete behaviour, tends to lead to a general increase in LS. However, some limitations are present in this study. Firstly, this analysis refers to a single year, namely 2023; therefore, future research should extend the investigation to multiple rounds of the ESS, allowing for longitudinal studies, generating more robust conclusions in causal terms and assessing the stability of results over time. At the methodological level, more sophisticated methodologies could be used to improve the robustness of the results regarding perceptions on the sense of responsibility,

such as Fuzzy logic, which allows composite indices to be created by combining various socio-demographic and attitudinal factors in order to better understand the "grey and nuanced areas" between responsibility and LS. In addition, future research could explore the non-linearity of the relationship between LS and responsibility by differentiating various forms of climate engagement, such as activism, sustainable consumption and everyday behaviour. Finally, it would be useful to investigate the role of supranational institutions, such as the EU, in shaping the sense of responsibility in climate dynamics.

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