

# Pro-environmental behaviour in Europe

A comparison across individuals, countries and time

2026

## HIGHLIGHTS

- ▶ This policy brief examines the determinants of five pro-environmental behaviours (whether individuals reduce and separate waste, use fewer disposable items, buy more efficient appliances, use alternatives to car travel and install solar panels) across individuals, countries and time.
- ▶ Examining pro-environmental behaviours from 2013-2023, Europeans have on average increased their efforts living more environmentally friendly until 2019. Since then, engagement has slightly dropped.
- ▶ There are considerable differences in pro-environmental behaviours between different generations; the youngest generation has increased their pro-environmental behaviours most during the last decade.
- ▶ Pro-environmental behaviours vary considerably between European countries; higher environmental concern and lower income inequalities are positively related to increased pro-environmental behaviour, while the importance of GDP has decreased over time.
- ▶ Nevertheless, country differences can never explain more than 10 % of the variation of individuals' pro-environmental behaviours in Europe, indicating that individual characteristics are most important.
- ▶ Holding constant country characteristics, individuals' socio-economic backgrounds and beliefs, the following three factors are most strongly associated with pro-environmental behaviour: not struggling with bills, feeling personally responsible and believing that climate change is a serious problem.

## Introduction

Addressing climate change is an urgent global priority as rising temperatures and carbon emissions threaten ecosystems, livelihoods and economic and political stability [1]. Record-breaking greenhouse gas emissions in 2022 [2], the hottest year on record in 2024 since 1850 [3], and global sea ice reaching an all-time minimum in 2025 [4] all un-

derscore the urgency of this issue. Greater public engagement is crucial since household behaviours account for one of the largest shares of CO<sub>2</sub> emissions [5]. In the EU, behavioural changes by households could lower overall emissions by 6-16% and cut costs of meeting climate goals by 14-30% [6]. Another study focussing on specific sectors suggests that adopting low-carbon behaviours could significantly cut emissions by 41% in global food systems, 62% in land transport, and 78% in buildings [6].

However, understanding the determinants of pro-environmental behaviours is very complex. Different strands of existing literature, often based on single countries, have investigated the importance of potential drivers of pro-environmental behaviours in isolation, including individuals' socio-economic background [8], environmental concern [9], political and pro-social attitudes [10], attitudes to feeling responsible [2], and country-specific infrastructure [11].

The contribution of this policy brief is threefold:

- First, this brief focuses on cross-national analyses and national differences, enlarging the evidence beyond mainly country-focused literature.
- Second, this brief provides descriptive information on pro-environmental behaviours in Europe across time (2013-2023).
- Third, the brief investigates the association of pro-environmental behaviours with a number of potential drivers, including country-level factors, individual socio-economic background and attitudes.

It also examines which of these factors might be most important for fostering pro-environmental behaviours in the future.

To do so, the brief exploits six waves of the Special Eurobarometer on 'Climate Change' covering five pro-environmental behaviours: whether individuals reduce and separate waste, use fewer disposable items, buy more efficient appliances, use alternatives to car travel and install solar panels.

## Trends of pro-environmental behaviours in Europe over time

Figure 1 shows the share of respondents who reply that they engage in pro-environmental behaviours. Recycling is the most common environmental action practiced by 70% of Europeans in 2023.

In the same year, 53% aim to consume fewer disposable items, 37% consider energy efficiency when buying appliances and 29% use alternatives to their own car. While these pro-environmental behaviours can be applied by all Europeans, only property owners have the choice to instal solar panels.

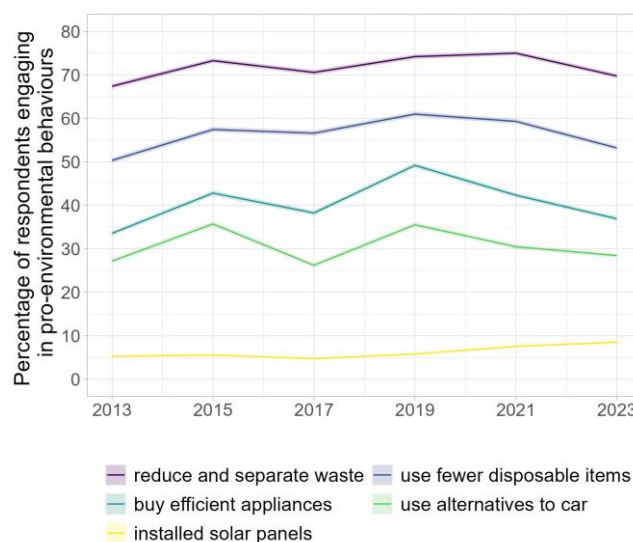
In 2023, this was consequently the lowest share with 9% of Europeans.

Even though the data shows a dip in engagement in 2017, pro-environmental behaviours for all five actions increased between 2013 until 2019, the last survey before the pandemic and the following widespread economic decline.

Since then, efforts to protect the environment started decreasing slightly, with the exception of installing solar panels.

But in 2023, engagement in all environmental behaviours is still significantly higher (at the 5% level) than in 2013.

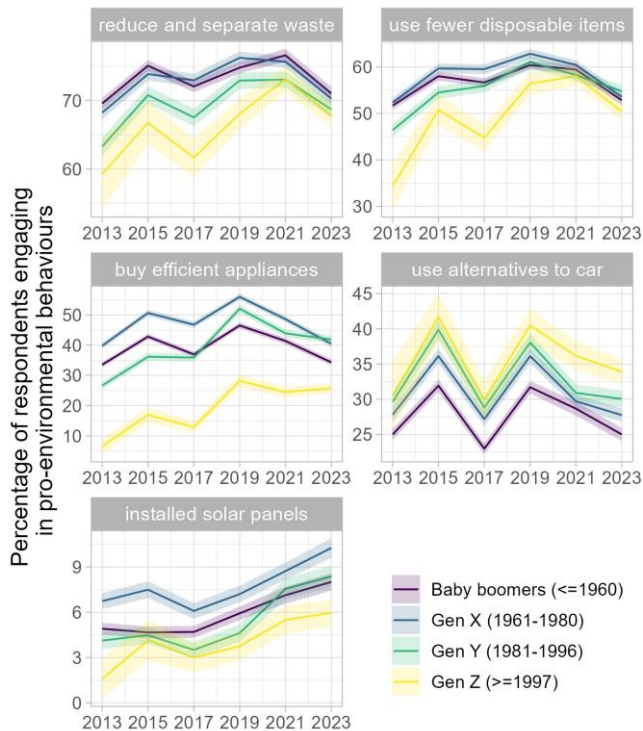
Figure 1 – Pro-environmental behaviour, 2013 to 2023



Source: Eurobarometer data from 2013, 2015, 2017, 2019, 2021 and 2023. Note: see the quick guide for more information on behaviours. Data are weighted taking population size of European countries into account. Confidence intervals are displayed (but for Figure 1 very small given the large sample size).

Climate change implies likely intergenerational conflicts, as younger generations are more affected by its impacts. This might also shape different environmental behaviours by generation as examined in Figure 2.

**Figure 2 – Pro-environmental behaviours by generation, 2013 to 2023**



Source: Eurobarometer data from 2013, 2015, 2017, 2019, 2021 and 2023. Note: see information provided for Figure 1. Baby boomers were born between 1946 and 1960, Generation X was born between 1961 and 1980, Generation Y during 1981 and 1996 and Generation Z since 1997.

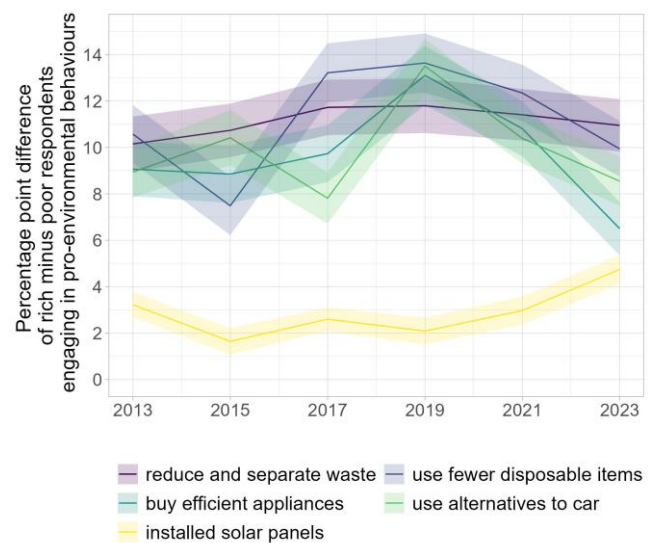
Pro-environmental behaviours differ considerably between generations and people of different age (due to data limitations, we cannot disentangle age, cohort and generation effects). Younger individuals are more likely to use alternatives to driving a car which might partly be explained by economic constraints [12]. Older adults might face physically determined lower mobility making it more difficult to use alternatives to cars.

In contrast, the two oldest generations (individuals born between 1946 and 1980) show highest levels of engagement for waste separation, use of fewer disposable items and installation of solar panels.

Focusing on changes over time, differences in pro-environmental behaviours between generations decline between 2013 and 2023, which is mostly driven by the youngest Generation Z born since 1996 increasing their environmental efforts faster than all other generations. For example, while the share of Generation Z who recycle and use fewer disposable items is much lower than that of older generations in 2013, Generation Z has caught up and is almost on par in 2023. However, the youngest generation has caught up more slowly with the older

generations regarding the behaviours ‘purchasing energy-efficient appliances’ and ‘installing solar panels’ over time. This may be because these activities demand substantial financial resources to which Generation Z has comparatively limited access. Consequently, it is also important to investigate the association of financial means with pro-environmental behaviour. Figure 3 shows the percentage point difference in pro-environmental behaviours between people who face difficulty paying bills (about 35% of our sample on average across years) and those who do not.

**Figure 3 – Differences in pro-environmental behaviours by difficulty paying bills, 2013 to 2023**



Source: Eurobarometer data from 2013, 2015, 2017, 2019, 2021 and 2023. Note: see information provided for Figure 1. The graph shows the percentage point difference for pro-environmental behaviours between those replying that they face difficulties in paying household bills compared to those saying they never face any difficulties. The share of respondents reporting difficulties paying bills is 40.7% in 2013, 36.7% in 2015, 35.5% in 2017, 33.4% in 2019, 31.1% in 2021 and 34.1% in 2023.

Not surprisingly, people struggling with finances are significantly less likely to engage in pro-environmental behaviours than their counterparts. This could be driven by several reasons including pro-environmental behaviours being more expensive and worry about one’s finances crowding out worry about climate change. Note that higher levels of using an alternative to a car among richer people is surprising.

The surveys do not collect data on car ownership, so lower response levels among poorer people for this item could be caused by lower car ownership in the first place [12]. Those struggling with resources are on average about 10 percentage points less likely to behave pro-environmentally for all behaviours,

except installing solar panels which far fewer people do overall. While the income divide fluctuates over time, only two behaviours show a statistically significant trend (5% level) between 2013 and 2023:

on the one hand, lower-income groups caught up with higher-income groups on buying more energy efficient appliances, on the other hand, the income gap for installing solar panels widened.

## Regional and country differences in pro-environmental behaviours in Europe

Some of the poor-rich-divide in pro-environmental behaviours might be due to cultural, logistical and economic differences. Figure 4 provides the share of Europeans behaving pro-environmentally by region. Pro-environmental behaviours are most prevalent in countries in Western, Central and Northern Europe, covering 49% of EU inhabitants in 2023, followed by Southern Europe (30% of inhabitants) and then Eastern Europe (21% of inhabitants).

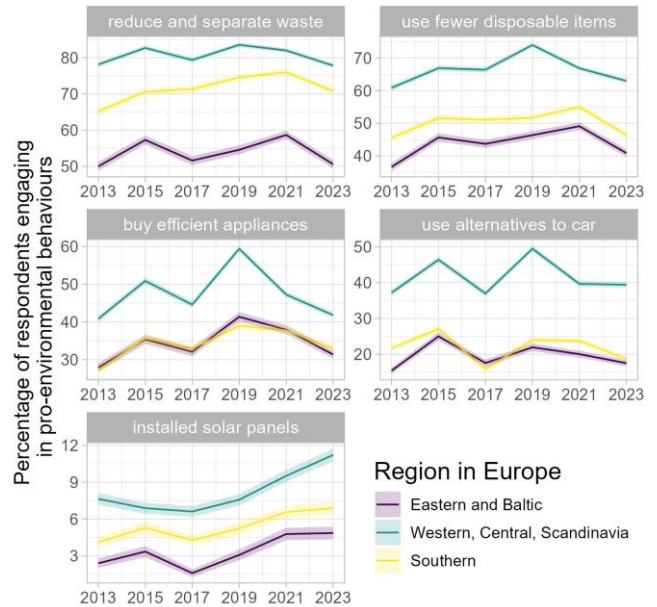
Interestingly, regional differences in behaviours are relatively stable over time for all measures, in contrast to the results by generation discussed before where we saw significant convergence.

What stands out, however, is that the level of engagement in Southern Europe differs much depending on the type of behaviour. Engagement in Southern Europe is similarly low to engagement in Eastern Europe for buying efficient appliances and using alternatives to car travel. But when it comes to recycling and solar panel installation, engagement in Southern Europe is higher and closer to Northern and Western Europe. Sunnier climates in the South are a likely factor for higher levels of solar panel installation, and higher recycling rates could be due to a longer history of waste reduction policies there compared to Eastern Europe.

Focusing on averages across regions might hide important differences between countries within regions. Table 1 lists the shares of pro-environmental behaviours by country for 2023. In addition, it displays the average z-score (last column) which shows how different the level of pro-environmental behaviours in one country is compared to the average from all countries based

on all five behaviours together (giving each behaviour equal weight).

Figure 4 – Pro-environmental behaviours by region, 2013 to 2023



Source: Eurobarometer data from 2013, 2015, 2017, 2019, 2021 and 2023. Note: see information provided for Figure 1. Regions are defined as follows: Western, Central and Scandinavia comprises Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands and Sweden. Southern Europe covers Cyprus, Greece, Italy, Malta, Portugal and Spain. Eastern Europe comprises Bulgaria, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

A z-score of 0 indicates that the country performs at the mean of all countries, a value of 1 indicates that the country is one standard deviation above, and a value of -1 one standard deviation below the overall 27-country average. Green country cells indicate a performance in the upper third within a pro-environmental behaviour, white cells indicate that the country performs in the middle (closest to the average), and yellow cells show the lowest levels of engagement compared to the average for the specific pro-environmental behaviour.

It becomes immediately clear that the regional averages discussed before hide a large variation in pro-environmental behaviours across countries and measures. Differences in recycling behaviours are particularly prevalent: in some Northern European countries, more than 8 out of 10 people reduce and separate their waste while it is just a third in some Eastern European countries. High variation, even though to a lesser extent, can be found for the other four behaviours as well.

Comparatively high levels of solar panel installations in the Netherlands, Malta, Belgium and Luxembourg

in 2023 might be due to policies offering various subsidies and tax breaks. Nevertheless, some countries like Italy, which also feature solar panel subsidies, did not reach equally high numbers. More cross-national research is therefore needed to better understand differences in pro-environmental behaviours between countries and causes for these differences.

Table 1 – Share of pro-environmental behaviours by country and average z-score, 2023

	less sort waste	disposable items	efficient appliance	alternative to car	solar panels	Average z score
Netherlands	78.0	71.1	54.1	55.6	43.0	1.74
Malta	91.2	77.5	66.7	41.6	21.0	1.59
Sweden	90.8	81.2	52.3	62.9	9.1	1.39
Luxembourg	81.8	65.7	48.3	47.0	12.8	0.78
Slovenia	81.4	65.2	51.0	37.0	11.5	0.65
Belgium	73.3	59.0	43.1	41.5	19.4	0.52
Finland	78.7	69.1	42.0	45.5	6.0	0.49
Denmark	78.2	63.3	45.6	43.5	7.3	0.46
Germany	75.2	64.8	41.4	42.8	9.5	0.40
Greece	74.4	64.2	40.1	27.6	16.6	0.28
Cyprus	67.1	54.4	46.2	17.3	24.5	0.18
Austria	66.4	56.5	38.4	33.2	13.5	0.03
France	82.2	57.4	38.4	27.3	4.8	-0.03
Slovakia	70.7	57.2	40.0	31.2	5.6	-0.07
Estonia	67.4	60.5	39.8	32.3	3.8	-0.09
Czechia	68.6	48.9	45.6	23.6	8.0	-0.17
Spain	72.2	49.0	34.0	23.2	5.6	-0.43
Lithuania	73.5	48.5	36.6	21.8	2.7	-0.45
Latvia	57.2	48.0	41.2	26.5	3.3	-0.50
Ireland	65.3	51.9	27.9	29.0	5.5	-0.52
Hungary	57.5	54.7	36.9	18.7	4.3	-0.57
Portugal	70.3	49.0	31.4	16.0	5.2	-0.63
Italy	69.0	40.4	30.8	14.0	6.1	-0.80
Poland	48.5	36.4	23.5	11.8	4.7	-1.36
Bulgaria	26.0	32.1	38.6	17.3	2.8	-1.37
Romania	35.8	30.9	26.7	16.3	4.0	-1.50

Source: Eurobarometer data from 2013, 2015, 2017, 2019, 2021 and 2023. Note The table provides the shares in percent of the population in a given country of individuals self-reporting the respective pro-environmental behaviour in 2023. The average z-score summarises the five behaviours giving each equal weight. A z-score of 0 indicates that the country performs at the mean of all countries, a value of 1 indicates that the country is one standard deviation above and a value of -1 one standard deviation below the overall 27 country average. A green background relates to countries in top third of European countries regarding prevalence of environmental behaviours, white to countries in middle and yellow to countries in lowest third. Source: Eurobarometer data from 2023.

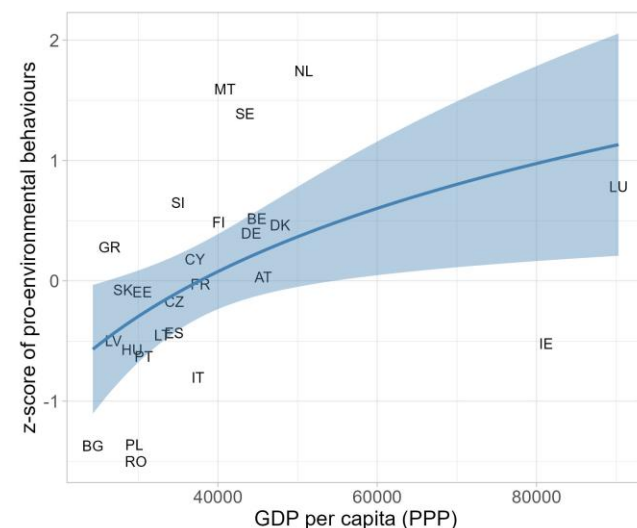
Some countries show high levels of engagement for some pro-environmental behaviours but low engagement for others and hence show different colouring for different policies (like for example Cyprus, Austria, France and Czechia). This reveals that environmental stewardship is not a binary trait but rather a spectrum of actions where countries may excel in certain areas while needing improvement in others.

## Country-level factors for explaining differences in Europe

The most obvious explanation for countries' performance on pro-environmental behaviours might be GDP. Figure 5 plots the z-score for 2023 from Table 1, that summarises the intensity of all five pro-environmental behaviours in the country, against the country's GDP per capita.

The correlation is very high with 0.61 indicating a strong link between GDP and pro-environmental behaviours across countries. However, this correlation is even higher for previous years (up to 0.88 in 2015), indicating that in more recent years factors other than GDP have become more important for influencing behaviours.

Figure 5 – Association GDP and pro-environmental behaviours by country, 2023



Source: Eurobarometer data from 2013, 2015, 2017, 2019, 2021 and 2023. Note: see information provided for Figure 1. Correlating the GDP on the logarithmic scale with the z-score of pro-environmental behaviours results in a correlation coefficient of 0.61 for 2023. In previous years, the correlation was higher with up to 0.88 in 2015

In a next step, we examine whether GDP is still important for explaining pro-environmental behaviours at the country level if other important factors are kept constant: income inequality within a country (measured with the Gini), the share of countries' energy from renewable resources, tonnes of per capita GHG emissions, average concern about climate change in a country, and changes over time.

Results (not presented) show that GDP is only a significant factor for 'reducing and separating waste' and 'using fewer disposable items' when these additional factors are kept constant. Other factors

that are important for explaining countries' position for all five behaviours are the Gini coefficient (the higher income inequality the lower is a country's position) and the share of a country's population being concerned about climate change (the higher the concern the better the country's position).

This indicates that not GDP per se, but especially inequalities as well as low climate change concern within countries are underlying factors influencing the country results presented in Table 1.

## Individual and country-level factors of importance for explaining differences in Europe

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Up to now, the focus of this brief was on country-level factors for explaining differences in average pro-environmental behaviours within countries across Europe.

However, the Eurobarometer data provides individual-level information thereby allowing us to investigate the association of both individual and country factors with individuals' pro-environmental behaviours (see the 'quick guide' below for more information on the multi-level model used).

We find that less than 10% of the variation in individuals' pro-environmental behaviours can be explained by the country they are residing in. Consequently, individuals' socio-economic status, beliefs and attitudes seem to be more important than country factors like policies or cultural settings. Keeping individuals' characteristics constant, a country's GDP is only significantly related to buying fewer dispensable items and more efficient household appliances. The higher a country's GHG per capita is, the lower are pro-environmental behaviours with the exception of separation of waste keeping individual background characteristics constant.

Holding country characteristics and levels constant, we find that every pro-environmental behaviour is positively associated with being female, not struggling with paying bills, being a white-collar worker (in contrast to a blue-collar worker), having left-wing political leanings and feeling personally responsible for tackling climate change.

The youngest generation Z and the baby boomer generation display the most environmentally-friendly

behaviour. Generation Z is only less environmentally friendly than the baby boomers for buying environmentally-friendly appliances. Parents tend to sort more waste, buy more energy efficient household appliances and install more solar panels than individuals without children in the household, but both groups do not differ in terms of using alternatives to cars and buying fewer disposable items.

The highest association with low levels of pro-environmental behaviours can be found among the poor (those who struggle with paying their bills most of the time), those not feeling responsible for reducing emissions and those not considering climate change as a serious problem. Being in one of these groups can decrease pro-environmental behaviours by up to 10 percentage points.

## Limitations

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The measures of pro-environmental behaviours are based on self-reported data, which might be affected by measurement error due to social desirability bias, especially since most of the interviews are conducted face-to-face. Furthermore, respondents can only say whether or not they are engaging in the different behaviours, but this obscures different levels of engagement. For instance, someone who very occasionally uses the bus instead of a car is recorded in the same way as someone who does so frequently.

Future research would benefit from collecting more objective data on pro-environmental behaviour. First, it would be beneficial to use diaries for measuring pro-environmental behaviours, similar to the field of expenditure research where diaries are a standard data collection tool. In addition, much more could be learnt if administrative data on, for example, energy consumption and waste collection could be merged with survey data.

In addition, research results showed that there are considerable country differences in pro-environmental behaviour. There is a lack of research on the causes of these differences, especially on the role that different policies play.

## Policy implications

Results show that levels of pro-environmental behaviours are lowest for the two behaviours that would reduce emissions most: using an alternative to a car and installing solar panels. More policy efforts are therefore needed to support people in adopting these behaviours.

While the difference in engagement between individuals who do and do not struggle with finances has reduced over time for most of the behaviours, the gap has widened for the installation of solar panels. People on lower incomes are particularly disadvantaged in this area due to lower home ownership and high upfront installation cost. Obligations

for landlords to install panels and solar panel subsidies for people on low incomes could reduce this inequality.

The analysis also finds that while higher levels of pro-environmental behaviours remain correlated with GDP, the role of GDP in explaining engagement has weakened over time. In addition, lower country-level income inequality is linked to higher levels of engagement, indicating that inequality-reducing policies can support pro-environmental behaviour. Higher levels of concern as well as feeling responsible about climate change are also important factors, suggesting that education remains an important tool to encourage pro-environmental behaviour.

### Quick Guide

This policy brief uses data from the Special Eurobarometer on 'Climate Change', merging the survey rounds of 2013, 2015, 2017, 2019, 2021 and 2023 (the previous rounds of 2008, 2009 and 2011 were not considered due to changes in the question wordings). The target population of the survey covers Europeans aged 15 years or over living in the respective European Union Member States. The sample is drawn using a two-stage sample design, sampling randomly first regional units proportional to regional size applying stratification, and second drawing addresses. For some countries, non-probabilistic sample panel data are used to increase unit response. The survey is mostly implemented using face-to-face interviews. Response rates differ widely across countries. Different response rates across country and time and the choice of non-probabilistic sample panels for some countries are likely to have an impact on how far the sample results can be generalised to the population of European citizens or countries.

In terms of environmental behaviour, respondents are asked 'Which of the following actions, if any, apply to you?'. We focus on five pro-environmental behaviours: 'you try to reduce your waste and you regularly separate it for recycling', 'you try to cut down on your consumption of disposable items whenever possible, e.g. plastic bags from the supermarket, excessive packaging', 'when buying a new household appliance e.g. washing machine, fridge or tv, lower energy consumption is an important factor in your choice', 'you regularly use environmentally-friendly alternatives to your private car such as walking, cycling, taking public transport or car sharing' and 'you have installed solar panels in your home'.

Figures 1 to 3 report the EU averages with EU-27 weights applied thereby taking countries' population size into account. Figure 4 reports regional averages taking countries' population size within regions into account. The section on country-level factors is based on country-level regressions with the share of people engaging in the respective pro-environmental behaviour as dependent variable and the following explanatory variables: GDP, Gini coefficient, the share of countries' energy from renewable resources, tonnes of per capita GHG emissions, average concern about climate change in a country, and year binary variables. The section on individual and country level factors employs a multilevel logistic regression at the individual level, with a binary variable on whether the individual does or does not engage in the pro-environmental behaviour, country-level explanatory factors as discussed above, and keeps the following individual level characteristics as explanatory variables constant: gender, generation, household status (married, unmarried, divorced or separated, widowed, other), children in the household, area (rural, town, city), struggling with finances (most of the time, from time to time, almost never or never), white or blue collar worker, employment status (employed, unemployed, not in the labour force or in full time education), political orientation (left, right or not mentioned), feeling responsible and perceiving climate change as a serious problem. Results discussed are holding all country and individual characteristics constant.

Regression results can be obtained from the authors.

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## Disclaimer

The opinions expressed are those of the authors only and should not be considered as representative of the European Commission.

## Acknowledgments

We would like to thank Francesco Berlingieri, Chiara Gastaldi and an anonymous reviewer for their very helpful comments.

## Suggested citation

Baarck J., Büchs M., Schnepf S.V. Pro-environmental behaviour in Europe. A comparison across individuals, countries and time. Fairness policy brief 1/2026. European Commission, Ispra, 2026, JRC145488

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