Eco-Friendly Attitudes: What European Citizens Say and What They Do

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ABSTRACT: Environment, environmental protection and sustainability policies play a key role in social development and in the economic competitiveness of industrialized countries. Most European citizens are aware of the importance of environmental issues, both as a priority for the socio-economic system as a whole, and as a relevant factor in influencing quality of life. At the same time individual environmentally friendly behaviour is not widespread. In this framework, our question is: to what extent are positive attitudes strictly related to eco-friendly lifestyles? By applying a hierarchical logit model to recent Eurobarometer data (survey 68.2-2008), which provide information concerning the 27 European Union member countries, we focus on individual attitudes towards environmentally friendly behaviour with a threefold aim. Firstly, we will verify how this attitude changes in relation to socioeconomic characteristics. Secondly, we will investigate European citizens' opinions on whether environmental defence is a personal responsibility of each individual or an institutional and political task, thus highlighting discrepancies between what individuals say and what they do. Thirdly, we will point out if differences in individual attitudes towards environmental protection exist among European Union countries, and if so which the main social, economic and cultural factors involved are.

Key words: Environmental protection, Hierarchical logit models, European Union, Individual attitudes

INTRODUCTION

The protection and preservation of the environment is one of the major issues for countries worldwide and it is a responsibility and a duty for all first-world nations. Despite the growing attention of both central and local governments over the last few years, government policies and environmental measures cannot meet the challenge alone. Environmental problems may range in scale, from local to international issues and therefore their "solution" is strongly influenced by the co-operation of citizens and other operators of the economic system (Jones *et al.,* 2009).

Researches have been interested in the link between individual characteristics, pro-environmental attitudes and eco-friendly behaviour ever since the early 1970s (Bord and O'Connor, 1997). At that time, much attention was paid to individual characteristics, such as age, gender, marital status, education, individual or household income, as factors related to perceptions and attitudes towards environmental problems, although the findings have been somewhat ambiguous. Denying the general belief that younger individuals are more likely to be sensitive to environmental issues if they have grown up in a period in which environmental concerns have been a salient issue at some level, some researchers have found a non-significant rela-

tionship between the age of individuals and their green attitudes and behaviour (Kinnear *et al.,* 1974; McEvoy, 1972). Since the 1980s, several researchers have also focused on social and institutional factors as elements that can play an important role in translating environmental concern and attitude into concrete actions, by considering individual and demographic characteristics as control variables.

Starting from the 1990s, "the decade of environment", an increasing number of scientists has warned us of the dire consequences of human economic activities on the planet's ecological balance and on future existence (Cleveland *et al.,* 2005). Likewise, much research has been carried out concerning the development of environmental perception and consciousness, focusing on the explanation of both individual and cross-national differences of environmental concern, defined by Franzen and Meyer (2010) as the *"awareness or insight of individuals that the natural state of the environment is threatened through overuse and pollution by humans"*. For this reason the understanding of why individuals undertake pro-environmental behaviour is essential for policy makers and researchers seeking solutions to environmental problems that require behavioural changes (Witzke and Urfei, 2001; Clark *et al.,* 2003). Mainly due to lack

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of data, relatively few studies have had a global comparative approach – in which the national context where individuals live is also taken into consideration - in order to determine to what extent socio-economic factors can account for differences in the level of participation in pro-environmental behaviours among countries. Whenever contextual factors have been introduced, the majority of studies have focused on specific and limited environmental behaviour, goods or areas up to now.

Our study, which is based on recent Eurobarometer (EB) data (survey 68.2-2008) providing information for the 27 European Union (EU) member countries, has a three-fold aim. Firstly, we will verify how individual pro-environmental attitudes and behaviour are related to "endogenous" factors (represented by individual socio-economic characteristics). Secondly, we will compare the intentions of the inhabitants of these nations to the concrete actions in order to evaluate the divergences between what individuals say and what they really do, also in terms of the role they play in protecting and safeguarding the environment. Finally, the multilevel approach enables us to highlight the differences in the individual attitudes towards environmental protection among the EU countries in question, by considering the social, economic context in which individuals live thus considering the "exogenous" factors as well.

The paper is organized as follows. Following a short literature overview on the existing debate concerning the relationship between attitudes and pro-environmental behaviour, Section 2 provides a descriptive analysis of the EB data with the aim of offering a synthetic and overall representation of the EU citizens' awareness, perception and behaviour of the environment. In Section 3, we will specify the multilevel modelling framework and we will describe the outcome variables, the individual and the contextual covariates used in the models. Section 4 deals with the main results of the models both on individual and national level. Finally, we will make some concluding remarks concerning the further development and improvement of this approach.

Background
The literature at a glance

Initial studies to establish the determinants of pro-environmental behaviour have been focused on demographic and economic variables such as age, gender, income, marital status, social class and level of education. Despite a large amount of research, demographic criteria do not seem to be directly and strongly associated with conservative behaviour towards the environment.

In recent years, individuals' attitudes towards the environment have been considered as additional variables which are positively related to environmental friendly actions (Mitchell and Carson 1989; Bateman and Turner 1993; Hanley and Spash 1993). In the environmental literature, relationships between attitudes, concern and behaviour have been thoroughly analyzed bearing in mind different theoretical orientations. Some authors have explored the influence of materialist and post-materialist attitudes (Gelissen, 2007), free-riding behaviour and issues of collective actions (Mitchell and Carson, 1989).

In a predominant marketing-orientated approach *(Complete and exhaustive reviews can be found in Roberts (1996) and in Diamantopoulos et al. (2003).* Schlegelmilch, Greg and Diamantopoulos (1996) pointed out that eco-friendly attitudes represent the most consistent predictor of pro-environmental purchasing behaviour. Berger and Corbin (1992) investigated the role of perceived consumer effectiveness, defined as "*the evaluation of the self in the context of the issue*", in performing eco-friendly behaviour. They stated that the relationship between attitude and behaviour should be examined in terms of moderators, that is, rather than assuming that attitudes will always predict behaviour, researchers should consider variables that might systematically enhance or inhibit attitudes. In the case of environmental friendly consumer behaviour, they found that perceived consumer effectiveness may operate just in this way.

Other studies were focused on the analysis of the relationships between attitudes and a specific behaviour (Van Liere and Dunlap, 1981; Roberts and Bacon, 1997). For example, Simmons and Widmar (1990) found a significant relationship between apprehension for the environment and ecologically responsible behaviour towards recycling. Minton and Rose (1997) investigated relationships between a general attitude – the "environmental concern" – and the related social norms by analyzing three types of consumer behaviour - purchase based on an environmentally friendly attribute, the search for information concerning environmentally friendly products and recycling behaviour – and six environmental intentions. The authors found that while attitude is a good predictor of the intention to act in an eco-friendly way, the primary influence on performing the three actions investigated arises from the personal norms, like a sort of moral obligation.

Although these studies underlined a positive association between attitudes and environmental behaviour, the empirical evidence is somewhat contradictory and inconclusive. Other authors proved that there is a weak or insignificant relationship between attitude and behaviour. In this respect, Diekmann and

Preisendorfer (1998) analyzed the inconsistencies between citizens' environmental attitudes and their behaviour on the basis of an empirical study carried out in Switzerland and Germany. These empirical analyses led to the identification of three cognitive strategies (called "attention-shifting strategy", "low-cost strategy" and "subjective-rationality strategy") by which individual actors try to harmonize and to reconcile seemingly incongruent environmental attitudes and behaviours.

The individuals' willingness to pay for the environment – which means to pay more for environmental friendly products – has been studied as a measure of propensity to act. In this context, Laroche et al. (2001) found that individuals who are likely to pay more for eco-friendly products are female, married, and with at least one child living at home. Witzke and Urfei (2001) applied a two-step procedure for estimating an indicator of regional willingness to pay, which could be useful for planning an efficient environmental policy in Germany. Other studies have concentrated on the influence of political factors, such as the level of political interest (Torgler and Garcia-Valinas, 2007), the involvement of the State in the provision of environmental goods (Meyerhoff and Liebe, 2006) and the idea that the State should be responsible for paying for environmental issues (Jones *et al.,* 2008).

Finally, country-level variables have also been investigated. Guerin et al. (2001) dealt with a specific pro-environmental behaviour in order to analyse the existing differences concerning the sorting and separation of household waste related to both individual and socio-institutional factors in a cross-national perspective including 15 EU countries.

Jones et al. (2009) stress that differences in environmental action participation among countries could be related to different national policies and to citizens' perception of them. Franzen and Meyer (2010) – using data from Nations participating in the International Social Survey Programme in 1993 and 2000 – studied environmental attitudes from a twofold perspective. Firstly, they evaluated the development of environmental attitudes during the last decade, and secondly they tried to explain both the individual and national differences by applying multilevel models. In the analysis, they found that differences between countries could be efficiently linked to the prosperity hypothesis, meaning that richer countries, measured by the purchasing power-adjusted per capita GDP, are more concerned about the environment than poorer countries. The same authors also state that environmental problems are not only influences by the macro-context, but mainly by individuals' characteristics, such as their education, knowledge and their perception of the environment.

This account of previous studies enables us to highlight two important drawbacks of environmental research concerning the link between eco-sustainable behaviours and the related actions. Firstly, most of the existing studies were focused on individual or contextual variables. Secondly, whenever joint analysis was carried out, studies seldom followed a comparative approach, therefore they did not carefully consider the divergences among the countries.

Although it not clear to what extent contextual variables can influence pro-environmental behaviour, bearing in mind the "environment" in which citizens live enables policy makers to get a clear picture of the different levels of participation of citizens in the various pro-environmental actions.

Evidence from EU countries

The Eurobarometer sample survey which was carried out at the end of the year 2007 in the 27 EU countries involving nearly 27,000 respondents (about 1,000 individual for each member country), enabled us to analyze the citizens' opinions, attitudes and behaviour towards the environment.

As expected, almost all European citizens recognize the importance of environmental protection. On average, over 96% of EU citizens agree with the statement that protecting the environment is a *very* important or a *fairly* important task. Distinguishing among countries of residence, the most responsible citizens are the Swedish (99.6%) followed by the Greek (99.3%) and the Cypriots (99.2%); while Austrian, Irish and Romanian citizens give less importance to the environment, with values close to 90% (Fig. 1).

The citizen's perception about his/her role in protecting the environment represents a personal aspect, since an individual could be more or less involved in protecting the environment regardless of his/her concern about the situation. The percentage of individuals declaring they could have an active role in protecting the environment is about 10 points lower than the percentage related to the general level importance given to the environment. As regards to territorial differences, the most ecologically-aware individuals are the citizens of the Netherlands (over 96 per cent declared that they can play a key role in protecting the environment) Sweden (93.34%), Malta (93.69%), and Greece (92.91%). On the contrary, Lithuania (73.15%) and Latvia (71.47%) are countries whose citizens are less concerned (Fig. 2).

About three-quarters of the respondents of the survey are willing to pay more for eco-friendly products. Cyprus showed the highest percentage (95%), followed by Greece (89.1%) and Sweden (88.8%). The most reluctant individuals are those living in the
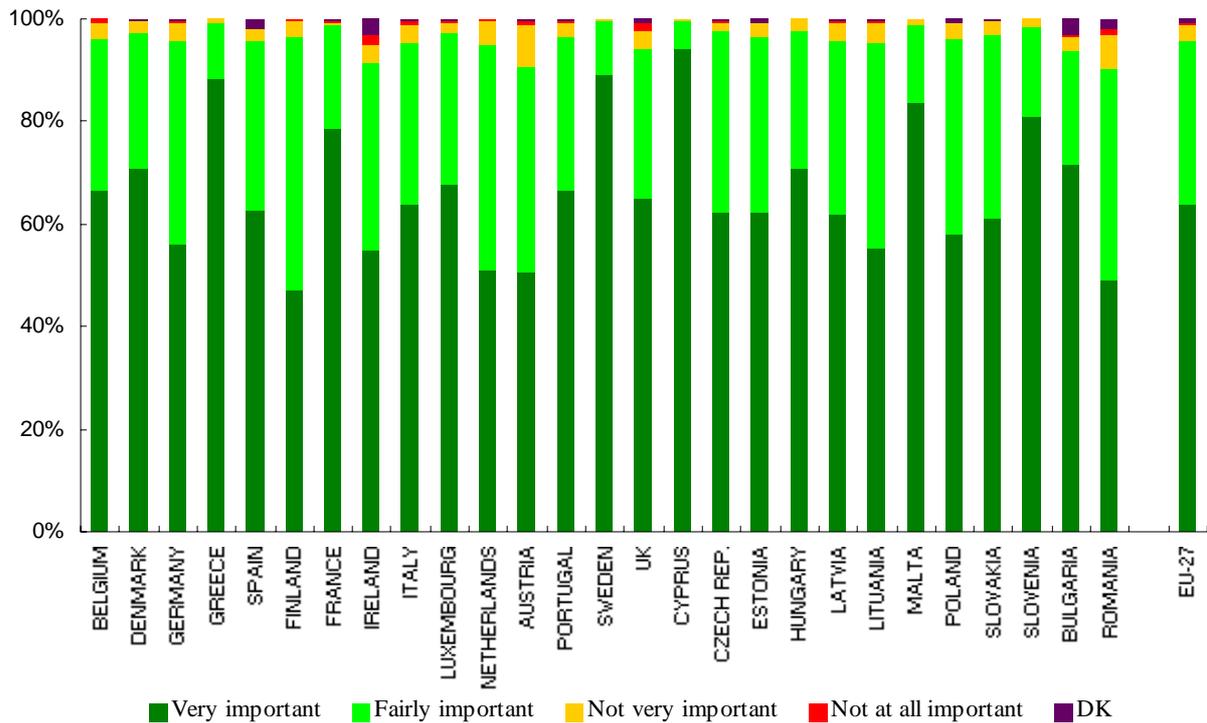
Source: Our elaboration on Eurobarometer data [EB 68.2 – 2008].

Fig. 1. Percentage distribution for each country of the EB question: "How important is protecting the environment to you personally?"
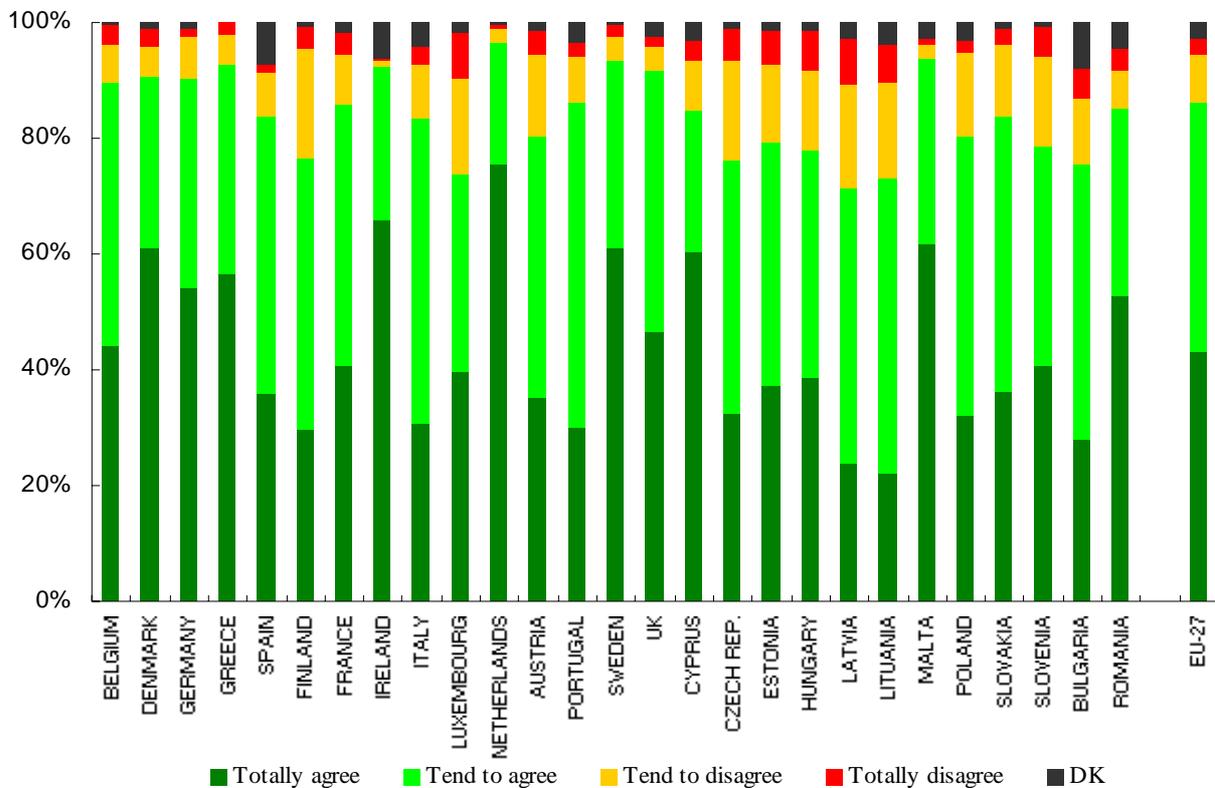
Source: Our elaboration on Eurobarometer data [EB 68.2 – 2008].

Fig. 2 . Level of agreement to the EB statement "As an individual, you can play a role in protecting the environment in your country", percentage by country

Source: Our elaboration on Eurobarometer data [EB 68.2 – 2008].

Fig. 3. Level of agreement to the EB statement: "You are ready to buy environmentally friendly products even if they cost a little bit more", percentage by country
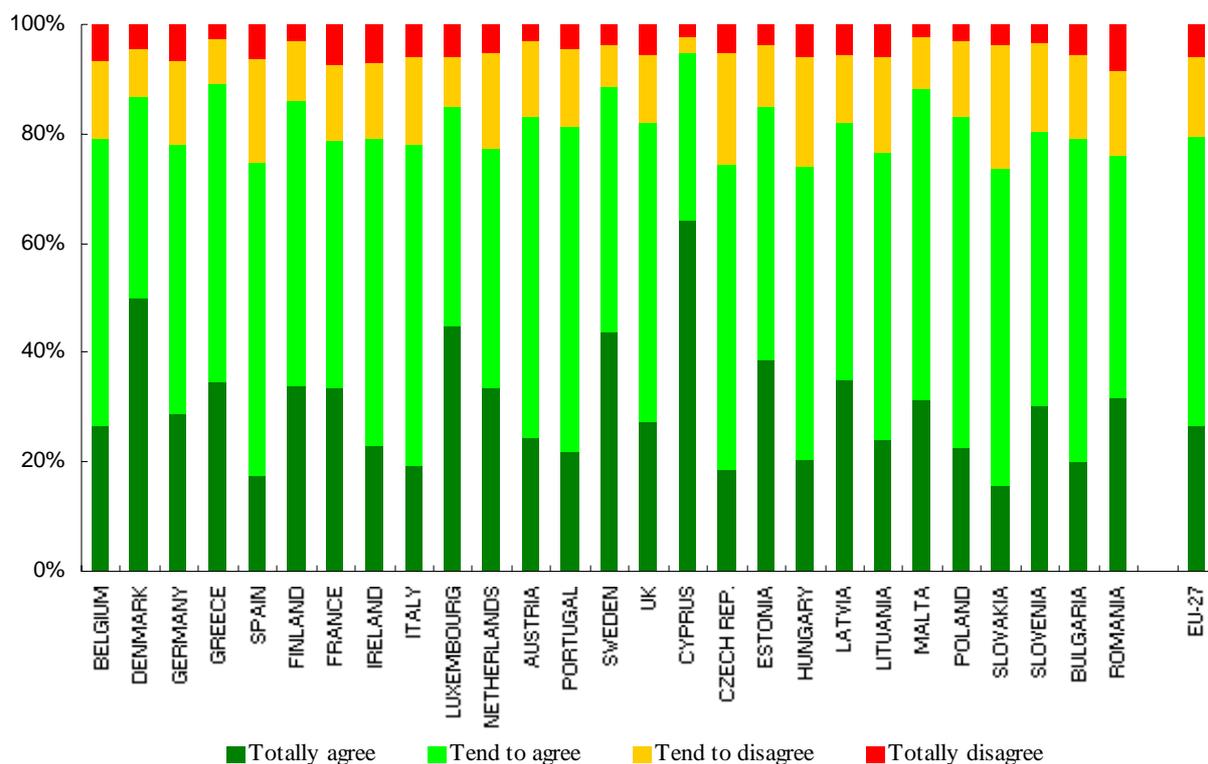
Slovakia (26.3% of the citizens do not agree to pay more for eco-friendly products), Hungary (26.0%) Czech Republic (25.5%) and Spain (25.3%).

Among the pro-environmental actions investigated in the survey (Table 1). sorting waste, reducing energy consumption and using public transport as much as possible instead of using one's own car have been voted as the three most important priorities for European citizens (with percentages equal to 55.1, 47.1% and 38.4%, respectively). The action of recycling waste has been recognized as the most important in 20 countries, with the highest percentage in Slovakia (75.2%) followed by the Czech Republic (71.9%). In fact, the Cypriots (64%), German (59%), Danes (54%), Dutch (52%) and Spaniards (49%) think that people in their countries should above all cut down on their home energy consumption. We calculated the Spearman's rank correlation in order to compare the ranking of the EU-27 as a whole and the rankings of each individual country, which enabled us to evaluate the existing differences. The lower the value of rank correlation, the lower the concordance between the overall ranking and a specific country's ranking will be. Latvia and Lithuania (with values of this indicator equal to 0.65 and 0.73, respectively) are the two countries with very different priorities in respect to the other countries. It

is worthwhile noting that the main differences in terms of priorities stated by the citizens in each country seem to reflect the time of entry in the EU thus leading to a distinction between old (EU with 15 member countries) and new member States. In the new member States, the citizens tend to prioritise eco-friendly purchases. On the contrary, respondents living in the old member States believe that it is more important to reduce energy consumption and to use public transport. Finally, apart from the ranking position, it is worth noting that only 2.7% of EU citizens think that paying more taxes could help to safeguard their environment; only Denmark and Estonia move away from this average (9.9% and 8.8%, respectively).

By examining previous literature on this subject, we can see that there is not necessarily a connection between individual opinions and actual pro-environmental actions. EU citizens believe that they can play an active role in protecting the environment even if there are differences among the countries but, to what extent are intentions transformed into real actions? Table 2 shows the individual answers referring to the actions the respondents have performed for environmental reasons during the month before the interview, while Figure 4 sums up differences among countries.

Table 1. Priorities indicated by EU citizens in their daily life to protect the environment, by country (max three answers)

Country	Sort waste for recycling	Reduce home energy consumption	Use public transport more	Reduce waste	Purchase eco-friendly products	Buy more local products	Replace car with a more energy efficient one	Consider environm. aspects for large expenditures	Pay a little more in taxes
Belgium	66.2	56.2	39.8	31.6	18.3	18.2	24.0	16.0	3.5
Denmark	42.9	54.0	49.1	20.2	25.9	12.4	36.6	23.8	9.9
Germany	46.4	59.0	36.5	35.8	30.0	28.7	17.4	19.5	0.7
Greece	49.3	52.8	57.3	21.7	32.3	28.6	14.5	13.1	2.8
Spain	48.0	48.7	42.0	24.1	14.2	9.1	13.9	14.7	2.2
Finland	56.2	45.1	44.3	27.3	24.6	21.8	20.2	23.8	3.5
France	69.3	50.8	44.0	32.3	14.1	18.7	19.6	14.2	1.6
Ireland	61.8	48.9	36.3	24.5	23.3	24.3	13.1	21.9	2.4
Italy	47.6	38.1	35.4	26.5	19.5	15.2	18.3	17.1	1.1
Luxembourg	64.7	48.7	52.9	31.9	17.1	22.0	15.4	10.1	4.4
The Netherlands	51.0	52.1	37.8	34.4	26.8	13.5	17.7	22.8	6.2
Austria	50.2	40.9	35.2	44.1	36.0	33.6	15.9	15.7	2.2
Portugal	60.2	45.4	35.5	32.2	18.8	12.9	15.3	11.1	1.7
Sweden	47.2	40.5	60.4	13.9	33.6	39.7	19.3	19.1	4.9
Great Britain	64.8	51.7	41.0	31.1	12.3	23.3	12.5	11.8	5.1
Cyprus	48.3	64.0	52.0	15.3	33.6	18.2	22.7	16.0	3.6
Czech Rep.	71.9	49.5	33.5	30.0	24.9	20.9	10.0	14.1	1.0
Estonia	58.9	34.2	36.9	19.5	28.6	38.9	14.7	5.9	8.8
Hungary	60.4	41.7	48.8	29.4	30.6	18.1	9.8	16.7	1.5
Latvia	58.1	22.8	30.5	25.0	35.1	34.5	9.8	9.9	3.6
Lituania	54.7	27.4	26.1	19.8	35.1	37.4	16.5	6.6	3.5
Malta	56.2	52.5	40.3	18.9	42.3	20.3	6.9	8.0	3.2
Poland	59.9	34.2	23.1	38.9	35.3	12.9	12.8	10.3	2.3
Slovakia	75.2	50.5	26.1	22.9	30.8	39.5	9.0	14.1	0.7
Slovenia	69.2	52.2	47.7	25.9	24.6	14.8	6.7	14.5	2.0
Bulgaria	46.4	31.6	33.9	17.4	28.5	21.5	14.8	8.9	5.2
Romania	43.7	34.0	35.4	22.1	28.9	21.3	10.3	10.4	6.8
EU-27	*55.1*	*47.2*	*38.4*	*30.1*	*23.0*	*20.3*	*15.9*	*15.2*	*2.7*

Source: Our elaboration on Eurobarometer data [EB 68.2 – 2008].

The top-three actions actually carried out by EU citizens concern waste recycling (59.0%), the reduction of energy and water consumption (respectively 46.8 and 37.2%). Waste recycling is the most widespread action in 18 EU countries, with percentages of the inhabitants who have recently recycled household waste reaching 80% for Luxembourg and France. This confirms that separating and recycling waste is already a well-established system all over Europe. The reduction of energy consumption is at the top of the list in Denmark (56.3%), Malta (54.7%), Bulgaria (36.0%) and Romania (36.1%), while water consumption reduction is the most performed action in Cyprus and Greece (67 and 38.6%). It is important to note that the motivations behind the reduction of energy and water consumption could be based on financial reasons due to rising energy costs, instead of real pro-environmental issues.

The comparison between the intentions expressed by declared priority (Table 1), and actions (Table 2), highlights that more Europeans expect their fellow citizens to use public transport and to purchase eco-friendly products more than they actually do themselves (38.4% vs. 28.4% for the former, and 23.0% vs. 16.8% for the latter).

These results confirm the general profile of EU citizens, who in general are highly worried about global environmental problems, but only mildly worried about issues that are directly linked to their own behaviour.

A multilevel approach to analyse eco-friendly behaviours
Model specification

As described above, the data have a group structure defined as individuals (level 1) living in European countries (level 2). Therefore we adopted a multilevel framework in order to capture the role of the two different levels of correlates on individual eco-friendly actions. The problem is to describe the relationships among the performance of a certain eco-friendly behaviour (the "outcome" variable), the demographic, socioeconomic characteristics of individuals, their attitudes and opinions, and their area of residence.

Moreover, from a statistical point of view, the presence of an explicit hierarchical structure – namely individuals nested in countries – entails a violation of the assumption of independence among observations within the same second level units (Agresti, 2002). By adding a country-specific random intercept to the predictor, random effect models introduce explicitly the hierarchical structure in the analysis, modelling the unobserved heterogeneity and producing valid standard error.
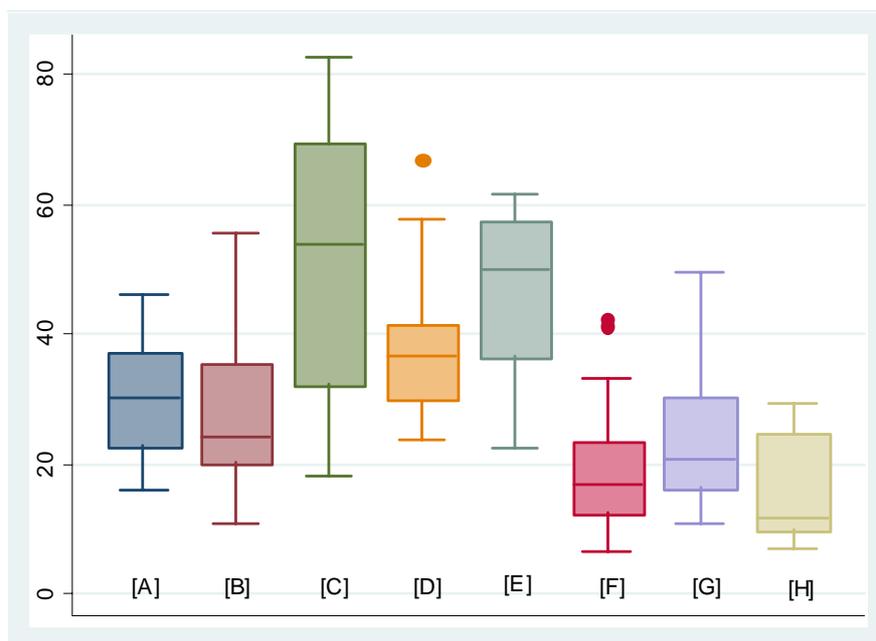
Fig. 4. Box-plots of the eco-friendly actions investigated

Reading: [A]: to choose alternative way of travelling; [B]: to reduce use of disposable items; [C]: to sort waste for recycling; [D]: to reduce water consumption; [E]: to reduce energy consumption; [F]: to buy more environmental friendly products; [G]: to buy more locally produced product; [H]: to reduce use of own car.
Source: Our elaboration on Eurobarometer data [EB 68.2 – 2008].

Table 2. Eco-friendly actions performed for environmental reasons by citizens, during the month before the interview, by country

country	Chose alternative way of travelling [A]	Reduce use of disposable items [B]	Sort waste for recycling [C]	Reduce water consumption [D]	Reduce energy consumption [E]	Buy more environmental friendly products [F]	Buy more locally produced products [G]	Reduce use of own car [H]
Belgium	30.8	47.6	77.8	40.3	58.4	20.2	16.4	25.8
Denmark	43.2	27.5	51.2	45.7	56.3	41.5	19.8	18.9
Germany	31.4	31.3	68.0	37.7	61.7	18.4	29.2	29.5
Greece	22.9	16.8	32.2	38.6	37.6	12.6	27.2	8.9
Spain	26.4	24.3	52.3	37.1	33.1	10.8	11.9	10.4
Finland	46.2	41.4	66.9	41.4	58.1	23.1	29.1	24.6
France	27.2	42.8	81.7	58.0	53.4	19.0	19.9	24.7
Ireland	26.0	46.4	69.5	30.0	44.3	15.6	19.4	8.5
Italy	16.4	24.6	46.6	27.4	36.6	10.8	16.6	8.9
Luxembourg	36.1	55.7	82.9	50.8	58.0	28.3	31.7	25.3
The Netherlands	46.3	32.1	68.7	36.4	59.1	17.7	11.4	26.2
Austria	33.1	35.4	70.8	27.8	52.0	33.1	42.9	19.3
Portugal	16.8	18.1	54.1	35.7	35.3	6.7	10.8	7.9
Sweden	45.5	25.3	69.4	29.9	59.1	42.5	32.1	24.5
Great Britain	30.2	43.5	73.7	35.4	50.0	23.2	30.1	18.2
Cyprus	15.9	10.7	19.7	67.1	57.2	14.0	19.3	13.5
Czech Rep.	33.3	22.4	65.7	36.6	50.5	17.1	25.8	13.4
Estonia	21.9	20.2	45.8	40.0	40.9	18.9	47.2	12.9
Hungary	40.3	23.4	49.0	28.8	41.1	13.8	18.1	11.3
Latvia	37.0	22.0	24.8	23.7	22.6	15.8	49.4	10.5
Lituania	25.5	13.8	29.7	28.7	25.0	8.3	29.8	9.9
Malta	25.5	27.1	28.8	54.1	54.7	24.5	32.0	11.0
Poland	28.2	20.3	43.9	32.0	36.5	12.6	11.7	10.9
Slovakia	40.5	22.2	64.2	48.5	44.4	16.7	25.5	11.8
Slovenia	33.0	21.1	63.6	40.3	52.0	18.2	14.9	11.1
Bulgaria	18.6	11.8	23.8	35.8	36.0	6.8	13.0	6.8
Romania	22.9	16.7	18.3	31.8	36.1	10.9	20.8	9.8
EU-27	*28.4*	*29.9*	*59.0*	*37.2*	*46.8*	*16.8*	*21.5*	*17.4*

Source: Our elaboration on Eurobarometer data [EB 68.2 – 2008].

Let us consider individual i with $i = 1, ..., I$, living in region j, with $j = 1, ..., J$. For each individual a set of H individual variables X_{ij} is collected, as well as a set of M contextual variables Z_{mj} for each country. Random effect models are composed of two parts: the lower-level part corresponds to a logistic regression model, where the dichotomous outcome (eco-friendly action performed/not performed) is regressed on a certain number of individual level covariates. Considering the logit transformation of the probability that a person i from region j answers to have performed a given action, the individual level model is:

$$\text{logit}\left\{ P\left(Y_{ij} = 1\right)\right\} = \beta_{0j} + \sum_{h=1}^{H} \beta_{1hj} X_{hij} \tag{1}$$

To account for the higher level of nesting, we assume the following higher level part of the model for the intercept parameter β_{0j}:

$$\beta_{0j} = \gamma + \sum_{m=1}^{M} \beta_{2m} Z_{mj} + u_j \tag{2}$$

where γ represents the mean intercept among second level units (namely countries), and β_{2m} the slope parameters for the contextual covariates. Combining the random intercept in equation [2] with the individual level model in equation [1], the logit transformation of the combined model becomes:

$$\text{logit}\left\{ P\left(Y_{ij} = 1\right)\right\} = \gamma + \sum_{h=1}^{H} \beta_{1hj} X_{hij} + + \sum_{m=1}^{M} \beta_{2m} Z_{mj} + u_j \tag{3}$$

The u_j, is the deviation of country j from the corresponding mean intercept γ, and therefore represents the residual country-specific random effect on the response variable, "net" of the explicative covariates introduced into the model. Therefore, the random intercept represents the combined effect of all omitted country-specific covariates that cause some homogeneity among individuals within the same country (Rabe-Hesketh and Skrondal, 2008).

The environmental behaviour of individuals is analysed referring to eight different types of action investigated in the EB survey, for each of them we estimated a multilevel logistic regression model. Respondents had to mark the action(s) they carried out during the month before the interview for environmental reasons. They were asked if they had:
• chosen an environmentally friendly way of travelling (by foot, bicycle, public transport);
• reduced the consumption of disposable items (for example plastic bags, certain kind of packaging, etc.);
• separated most of waste for recycling;
•cut down on water consumption (for example not leaving water running when washing the dishes or taking a shower, etc.);
• cut down on energy consumption (for example turning down air conditioning or heating, not leaving appliances on stand-by, buying energy saving light bulbs, buying energy efficient appliances, etc.);
• bought environmentally friendly products marked with an environmental label
• chosen locally produced products or groceries;
• used one's own car less.

We are aware that we are referring to various different types of behaviour, which belong to different aspects of life. Moreover, they may be influences by different rationales and motivations, not only eco-friendly attitudes but also by economical, or practical motivations . All of them require a certain level of sacrifice and commitment by individuals, in terms of money and time, even if some of these actions might not have a clear, immediate and concrete feed-back for individuals.

Individual and area level correlates

Firstly, we considered some demographic and socioeconomic characteristics of the respondents in order to determine the profile of socially responsible citizens. The demographic variables we considered are gender, age in classes (15-24, 25-34, 35-44, 45-54, 55-64 and 65 or more) and marital status (married, unmarried, separated or divorced, widower). We also used a variable indicating the presence of children in the household (no, one or more children) according the hypothesis that having at least one child may develop social responsibility and concern about the future, thus enhancing pro-environmental behaviour (Laroche *et al.,* 2001).

The socioeconomic status of individuals is assessed by taking into consideration the level of education (low, medium, high) and the occupational status (where individuals are distinguished in self-em-

ployed, managers, white collars, manual workers, house persons, unemployed, retired and students). Finally, we considered the milieu of residence by distinguishing among people living in village or rural area, in small or medium-sized towns and in large towns.

As already mentioned, knowledge, awareness and opinions regarding the environment are recognized as characteristics which are able to influence all phases of the decision process. For measuring the eco-friendly attitude of individuals, firstly we used the EB statement for which individuals had to indicate their level of approval "I am ready to buy environmentally friendly products even if they cost a little bit more" through a 4-level Likert scale. Clearly individuals who declare to "totally agree" or to "tend to agree" with this statement are *greener* than others, although we may distinguish a certain difference between the two positive responses "totally agree" and "tend to agree". Another variable focuses on the importance given to environmental issues (very important, important, not important). Moreover the level of knowledge and information about environmental issues is introduced as an explicative variable distinguishing among people who are very well or fairly well informed, and people who are fairly badly or very badly informed.

A dummy variable was introduced in order to establish whether a nation's progress should be evaluated by only considering monetary indicators or social, environmental and economic indicators as well, an element useful for identifying people who consider environmental issues as a priority. In the same way, we also considered the respondents opinions concerning the fact that policies aimed at protecting the environment can represent a motivation to innovate or hinder economic performance.

According to Wiener and Sukhdial (1990), one of the main reasons that prevents individuals from engaging in eco-friendly actions is their low level of perception concerning their own involvement in the protection of environment. For this purpose, we analyzed the answers of the respondents in reference to their role in protecting the environment (very important, important, not important).

As for the covariates at country-level which were introduced to consider the differences among the 27 EU countries, we selected the Gross Domestic Product (GDP, expressed in purchase power standard per inhabitant in 2007), the percentage of waste treated on the total waste (2006) and the total investment for the environment (distribution in tertiles, average per inhabitant in the period 2003-2007). The first covariate aims at accounting for the differences in the level of wealth and development of the EU countries, although

we are aware that the GDP is not completely able to describe and measure the wellness and the quality of life of a society. The other two contextual covariates are more strictly related to the environmental issues involving two very important components.

RESULTS & DISCUSSION
Who are the most eco-friendly people?
Table 3 shows the Odd Ratios (ORs) of coefficients β_{1hj} and β_{2m} estimated for the complete hierarchical full models for the eight environmental types of behaviour analyzed, where the 27 EU countries represent the units of nesting.

Similar to previous studies, we found that women are more likely to behave in an ecological way: the highest ORs are registered for the reduction of disposable items and the purchase of eco-friendly products (about 39% higher than men). This may be due to the fact that these actions are more related to female tasks in household activities. On the contrary, women are less likely to reduce the use of the car than men.

Our analysis unexpectedly identified the middle aged or elderly as being the *"greenest"* consumers while younger people are less likely to have eco-friendly attitudes. Young people (15-24 years old) are less likely to perform eco-friendly actions with the lowest risk for the purchase of environmental friendly products (OR equal to 0.70), compared to people aged 25-34. No significant differences were found concerning the way of travelling, not even for the other age groups. In general, an increase in age determines a moderate increase in the OR to perform an eco-friendly action, even if there is a different trend and magnitude according to the indicator considered.

Marital status is slightly associated only to some pro-environmental actions. Nevertheless, married people are the most ecologically aware compared to the others. This suggests that married couples are more inclined to think of how a devastated and polluted environment may negatively affect their partner, children and their future. However, in contrast to previous literature and our expectations, the presence of children aged 14 or more does not affect pro-environmental behaviour.

According to our expectations, the higher the level of education, the higher the probability to perform eco-friendly actions. A lower level of education decreases the ORs of about 10-20%, while a higher level increases the ORs, from 11 to 19%, depending on the action considered, compared to people with a medium level of education.

As for the occupational status, the people less likely to act in an eco-friendly manner are the unemployed,

for all types of behaviour except for the way of travelling. Students have an OR 54% higher to choose an environmental-friendly way of travelling and local products or groceries and a 70% higher OR to buy environmental friendly products. Managers generally register higher ORs, seeming to be the *"greenest"* category of workers; on the other hand, having a manual job tends to decrease the probability to perform eco-friendly actions.

Finally, we found an interesting relationship with the place of residence. Living in a large town, compared to living in a small or medium-sized town, is positively associated to the probability of choosing an eco-friendly way of travelling and of buying eco-friendly products, while it is negatively associated with the probability of cutting down on energy consumption and of choosing local products or groceries. People living in rural areas or villages have a 21% higher OR to do this action, while they are less likely to buy eco-friendly products, to recycle waste, to cut down on water consumption and to buy environmental friendly products. Moreover, people living in rural areas and villages are less likely to choose an eco-friendly way of travelling and to use their car less. This could be due to the limited availability of public transport and to the lower levels of smog, air pollution and other types of environmental deterioration to which they are exposed, which generate a lower degree of concern than people living in bigger towns.

What are eco-friendly people's opinions?

Let us now consider the covariates referring to the opinions and attitudes of individuals whose ORs are reported once again in Table 3.
Whenever the availability of data makes the comparison possible, the ORs confirm that positive attitudes towards the environment are the most relevant correlates of eco-friendly behaviour and actions. However, this relationship is not as evident as expected. People declaring that they give priority to an alternative eco-friendly way of travelling, the separation of waste for recycling and the choice of products or groceries have a three times higher probability of actually performing the corresponding action. The OR is equal to 2.5 for energy saving and 1.7 for the purchase of eco-friendly products.

To "totally agree" to spend a little more for eco-friendly products, with respect to just "agree", generally increases the risk of performing ecologically, even in a differentiated way. The OR is equal to 1.34 for the choice of an environmental friendly way of travelling, for the reduction of car use and for the consumption of disposable items; it amounts to 1.44 concerning the choice of local products, and to 1.92 for the purchase

of eco-friendly products. To disagree with the statement reduces the probability of performing the actions: ORs are about 20% lower for all the actions, and they are 60% lower for the purchase of environmental friendly products. In this case, it is possible that the question wording and the object of the questions affect this result, increasing their relation.
Our findings indicate that ecological concern is related to, but not highly correlated with, consumption behaviour. In fact, the level of importance attributed to the environmental issues does not show a large magnitude in the estimated coefficients even if it is related to the actions performed.

The association between the level of importance attributed to the environmental issues and the actions performed are all statistically significant but their magnitude reveals that people who give priority to environmental issues have a 37% higher OR to buy eco-friendly products, a 31% higher OR to cut down on water consumption. They also have a 23-28% higher OR to choose local products, an eco-friendly way of travelling, to separate waste for recycling and to cut down on energy consumption; finally they have a 9% higher OR to reduce their consumption of disposable items. These results underline that despite the extreme attention paid to environmental issues, the respondents will not necessarily perform eco-friendly actions. Therefore, we think that a certain degree of environmental concern is physiological in the attitudes of European citizens, but it does not necessarily entail a major effort in behaving in an ecological way.

The idea that progress should be based not only on economic indicators but also on social and environmental issues – meaning in our hypothesis that people are concerned about the environment in which they live – increases the probability of behaving in an eco-friendly way. The highest ORs are recorded for the purchase of local products and the separation of waste for recycling (1.45 and 1.35, respectively). The opinion that environmental-oriented policies represents an obstacle for the economy is not associated with the use of car, the choice of transport, and with the decision to purchase eco-friendly products, as these actions involve a more active role of individuals than the other actions investigated (see e.g. European Commission, 2008) which may be less related to national policies. On the contrary, a small degree of association is found for the other actions investigated.

Finally, the more the individuals think that they are playing an important role in protecting the environment, the higher the probability of behaving ecologically. The ORs for the different actions, range from 1.21 for the locally produced products to 1.30 for the reduction of energy consumption and waste recycling.

Table 3. Results of multilevel logistic regression models: OR to perform the eight behaviours investigated, individual and country-level covariates

		way of travelling		disposable items		waste recycling		water consumption		energy consumption		eco-friendly products		locally products		use of car	
		OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
individual socio-demographic variables																	
sex	man	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	women	1.08	0.01	1.39	0.00	1.19	0.00	1.33	0.00	1.18	0.00	1.40	0.00	1.35	0.00	0.76	0.00
age	15-24	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	25-34	1.03	0.68	0.77	0.00	0.85	0.02	0.84	0.01	0.78	0.00	0.70	0.00	0.76	0.00	0.98	0.87
	35-44	1.05	0.39	1.06	0.25	1.11	0.04	1.11	0.04	1.08	0.11	0.98	0.80	1.08	0.16	1.02	0.79
	45-54	1.00	0.95	0.98	0.78	1.20	0.00	1.33	0.00	1.25	0.00	0.96	0.53	1.16	0.01	1.16	0.03
	55-64	1.01	0.92	1.07	0.30	1.46	0.00	1.31	0.00	1.23	0.00	0.90	0.12	1.16	0.03	1.18	0.02
	>65	0.90	0.14	1.12	0.13	1.30	0.00	1.36	0.00	1.26	0.00	0.81	0.02	1.18	0.04	0.99	0.87
marital status	married	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	unmarried	1.12	0.02	0.97	0.53	0.83	0.00	0.89	0.01	0.88	0.00	0.88	0.02	0.86	0.00	0.76	0.00
	sep/div	1.07	0.23	1.04	0.51	0.92	0.10	1.01	0.80	1.07	0.16	0.86	0.02	0.86	0.01	0.87	0.04
	widow	1.04	0.50	1.00	0.97	0.99	0.81	0.97	0.52	0.90	0.03	0.83	0.01	0.82	0.00	0.63	0.00
children in household	no	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	one or more	0.93	0.09	0.98	0.67	1.01	0.83	1.05	0.24	1.06	0.11	0.97	0.53	1.05	0.25	1.01	0.77
education	low	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	medium	0.97	0.54	0.86	0.00	0.80	0.00	1.02	0.70	0.88	0.00	0.86	0.01	0.96	0.40	0.89	0.04
	high	1.12	0.01	1.09	0.04	1.19	0.00	1.03	0.46	1.08	0.04	1.19	0.00	1.17	0.00	1.11	0.02
occupational status	Self-employed	0.82	0.01	1.14	0.06	1.02	0.77	0.83	0.01	0.99	0.84	1.10	0.23	1.28	0.00	0.82	0.02
	Managers	1.12	0.08	1.15	0.03	1.14	0.05	1.03	0.64	1.17	0.01	1.07	0.33	1.09	0.19	1.04	0.62
	Other white collars	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	Manual workers	1.04	0.51	0.96	0.51	1.03	0.53	0.91	0.06	1.02	0.76	0.95	0.42	0.87	0.02	0.92	0.18
	House person	1.15	0.05	1.05	0.47	0.98	0.79	0.92	0.21	0.93	0.30	0.94	0.48	0.90	0.17	1.06	0.48
	Unemployed	1.35	0.00	1.03	0.74	0.82	0.01	0.86	0.05	0.97	0.74	0.83	0.06	0.77	0.01	0.92	0.39
	Retired	1.22	0.00	0.99	0.93	0.98	0.80	1.00	1.00	1.15	0.03	0.94	0.42	0.97	0.69	1.06	0.47
	Students	1.54	0.00	1.38	0.04	1.27	0.08	1.22	0.14	1.18	0.21	1.70	0.01	1.49	0.03	0.79	0.21
area	rurale area or village	0.84	0.00	0.98	0.55	0.95	0.12	0.93	0.03	1.02	0.57	0.92	0.04	1.21	0.00	0.88	0.00
	small or middle town	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	large town	1.13	0.00	0.97	0.41	0.88	0.00	0.95	0.13	0.87	0.00	1.08	0.08	0.89	0.01	1.00	0.97

(follows)

Table 3 (following)

		way of travelling		disposable items		waste recycling		water consumption		energy consumption		eco-friendly products		locally products		use of car	
		OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
individual opinion and attitude variables																	
intention to perform the action	NO	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	YES	2.79	0.00	---	---	2.83	0.00	---	---	2.54	0.00	1.74	0.00	2.91	0.00	---	---
eco-friend attitude	tot agree	1.34	0.00	1.30	0.00	1.17	0.00	1.06	0.05	1.06	0.10	1.92	0.00	1.44	0.00	1.28	0.00
	agree	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	disagree	0.78	0.00	0.75	0.00	0.87	0.00	1.02	0.67	0.91	0.03	0.43	0.00	0.73	0.00	0.80	0.00
	tot disagree	0.71	0.00	0.65	0.00	0.69	0.00	0.81	0.00	0.81	0.00	0.34	0.00	0.67	0.00	0.79	0.02
importance of environment	very important	1.23	0.00	1.09	0.01	1.28	0.00	1.31	0.00	1.27	0.00	1.37	0.00	1.19	0.00	1.24	0.00
	important	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	not important	0.59	0.00	0.66	0.00	0.82	0.02	0.90	0.24	0.85	0.05	0.91	0.52	0.67	0.00	0.78	0.07
information about envir.	well informed	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	badly informed	0.83	0.00	0.82	0.00	0.86	0.00	0.88	0.00	0.87	0.00	0.81	0.00	0.86	0.00	0.90	0.01
progress evaluation	money indicator	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	soc.-envir.-econ. indic.	1.15	0.00	1.10	0.03	1.35	0.00	1.19	0.00	1.29	0.00	1.26	0.00	1.45	0.00	1.28	0.00
	neither/dk	0.88	0.03	0.82	0.00	1.05	0.36	0.88	0.02	0.92	0.12	0.92	0.28	1.00	0.97	0.98	0.80
environment policies	motivation to innovate	1.05	0.24	1.08	0.05	1.22	0.00	1.12	0.00	1.14	0.00	1.02	0.68	1.18	0.00	1.02	0.75
	obstacle to econ. perf.	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	dk	1.01	0.91	0.89	0.02	1.08	0.12	1.01	0.90	1.00	0.94	0.83	0.01	0.99	0.87	0.86	0.02
role of individual	very important	1.26	0.00	1.26	0.00	1.30	0.00	1.29	0.00	1.30	0.00	1.25	0.00	1.21	0.00	1.25	0.00
	important	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	not important	0.86	0.00	0.76	0.00	0.82	0.00	0.82	0.00	0.77	0.00	0.77	0.00	0.92	0.13	0.84	0.01
contextual variables																	
investment for environment	1st tertile	1.09	0.72	0.90	0.68	0.88	0.68	1.26	0.29	1.02	0.87	0.95	0.83	1.25	0.47	1.32	0.15
	2nd tertile	ref.		ref.		ref.		ref.		ref.		ref.		ref.		ref.	
	3rd tertile	1.49	0.07	1.06	0.78	1.90	0.02	0.99	0.98	1.25	0.08	1.39	0.09	0.98	0.94	1.48	0.02
% of waste treated (2006)		1.01	0.18	1.00	0.77	1.01	0.04	1.00	0.82	1.00	0.38	1.00	0.59	0.99	0.25	1.01	0.03
GDP per inhabitant (2007)		1.00	0.78	1.04	0.00	1.04	0.00	1.01	0.14	1.02	0.00	1.02	0.01	1.01	0.27	1.03	0.00

Correlates at country level

In the lower part of Table 3 the ORs related to the covariates at national level explain the intra-national variability to a certain extent. The three selected covariates are not significant for all types of behaviour analyzed. In particular, an increase in the GDP of a country increases the risk for an inhabitant to slightly reduce the use of disposable items and of his/her own car, to cut down on energy consumption, to separate waste for recycling and to purchase eco-friendly products. These findings are consistent with previous results and our descriptive analysis showing a higher level of eco-friendly behaviour of the inhabitants of the more industrialized countries. Moreover, these behaviours and the choice of alternative ways of travelling are more likely to be performed in countries which have a higher level of environmental investments. The higher the percentage of waste treated on the total waste produced, the higher the risk of the individuals to sort waste for recycling and reduce the use of the car. Of course, if individuals are aware that their efforts in separating waste are accompanied by a pro-recycling commitment at national level they would perform these actions with more care.

The variability among EU countries

Further insights about the territorial variability can be obtained by focusing on the random part of the models and in particular on the country-level variance τ^2, on the estimated intra-class correlation coefficient (The intra-class correlation coefficient (ICC) represents the percentage of total unexplained variation in eco-friendly behaviours among European people due to the different country of residence. The ICC is computed following the standard practice: $\tau^2 / \left(\tau^2 + \pi^2 / 3 \right)$ (Snijders and Bosker, 1999) (ICC) (Table 4) and on the random effects u_j (The random effects u_j of the hierarchical models sum up all the factors at country level that have not been observed and explained by the variables introduced in the model. The predicted random effects for a second-level unit j has been computed as the mean of the posterior distribution of the random intercept, with the model estimates plugged in (Rabe-Hesket and Skrondal, 2008), the so-called Empirical Bayes (EB) residuals. Countries with high negative residuals reveal a risk to perform the action investigated smaller than expected given the model estimates. Vice versa, high positive residuals imply the presence of unobserved contextual factors that increase the risk to do the action involved, so identifying the countries in the higher part of the graph as the most "virtuous" in ecological performances) (Fig. 5a and 5b).

Let us firstly consider the eight models adjusted only for individual level covariates (left part of Table 4): the highest variability among the responses of individuals attributed to the country of residence is found for waste recycling (0.81), leading to a ICC equal to 19.84%. In second place, the choice of reducing the consumption of disposable items (0.38, and ICC equal to 10%) followed by the use of car and way of travelling, the purchase of eco-friendly and local products (ranging from 0.23 to 0.30). As expected, the level of performing water and energy saving actions is much more similar among EU countries (territorial variability

Table 4 . Eco-friendly behaviours: random part of the models

	two-level model with individual covariates				two-level model with individual and contextual covariates			
	2nd level variability		ICC (%)		2nd level variability		ICC (%)	
	τ^2	*(s.e.)*	ρ	*(s.e.)*	τ^2	*(s.e.)*	ρ	*(s.e.)*
[1] way of travelling	0.230	*0.060*	6.49	*0.017*	0.184	*0.047*	5.21	*0.014*
[2] disposable items	0.377	*0.105*	10.29	*0.026*	0.191	*0.048*	5.32	*0.014*
[3] waste recycling	0.814	*0.224*	19.84	*0.044*	0.284	*0.073*	7.83	*0.020*
[4] water consumption	0.151	*0.043*	4.40	*0.012*	0.153	*0.031*	3.97	*0.011*
[5] energy consumption	0.125	*0.036*	3.67	*0.010*	0.068	*0.015*	1.81	*0.005*
[6] eco-friendly products	0.253	*0.066*	7.09	*0.019*	0.176	*0.034*	4.03	*0.113*
[7] locally products	0.303	*0.085*	8.44	*0.022*	0.279	*0.780*	7.82	*0.020*
[8] use of car	0.235	*0.061*	6.60	*0.018*	0.132	*0.028*	2.97	*0.009*

5a. Multilevel logistic regression models adjusted for individual-level covariates
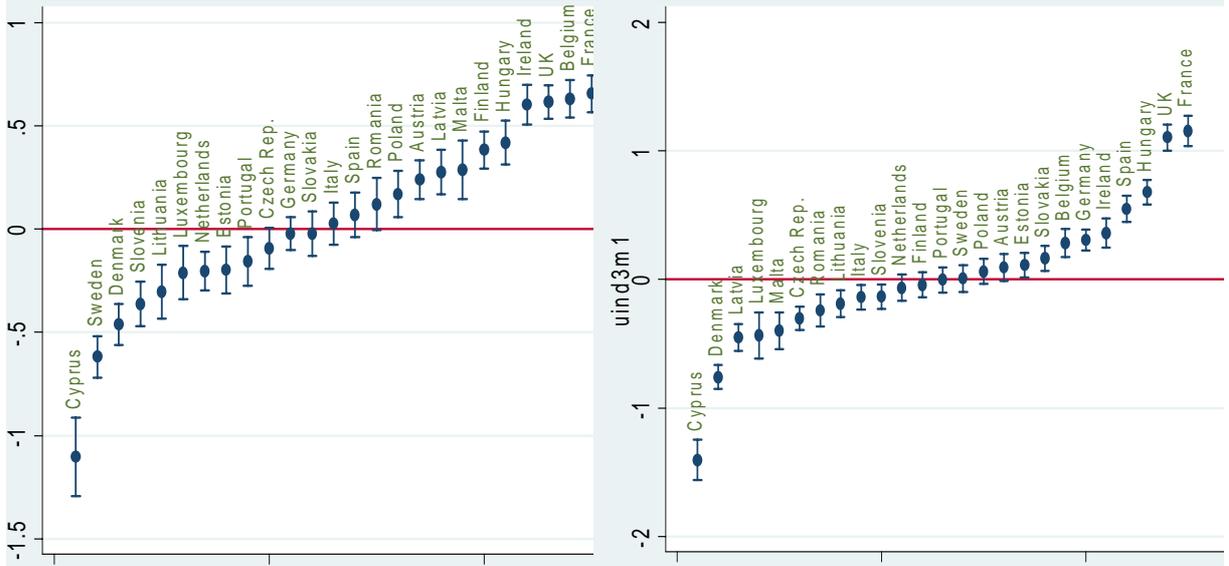
Reduce use of disposable items　　　　　　　　　　　　*Separate waste for recycling*
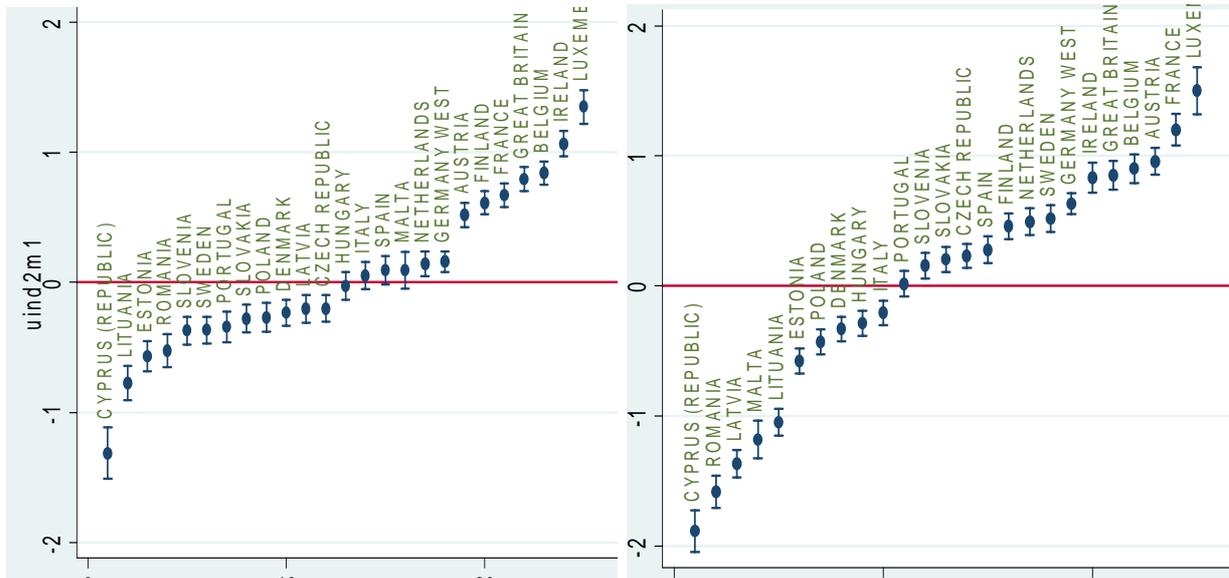
5b. Multilevel logistic regression models adjusted for both individual- and country-level covariates

Reduce use of disposable items　　　　　　　　　　　　*Separate waste for recycling*

Figs. 5a and 5b – Regional standardized Empirical Bayes residuals u_j with their approximated 95% confidence interval

Our elaboration on the results of the fitted logistic multilevel regression model with individual covariates. Reading: positive (negative) values reveal the presence of unobserved factors at regional level that increase (reduce) the probability to perform the eco-friendly attitude.

equal to 0.15 and 0.12 respectively, which correspond to 4.4% and 3.7% for the ICC). Concerning the two graphs reporting the countries' random effects u_j estimated for the models without contextual covariates (Fig. 5a) we are only going to focus on the *green* actions related to the reduction of disposable items

and waste recycling considering their importance in terms of territorial variability(The graphical representation of the Empirical Bayes residuals of the other eco-friendly behaviours can be obtained from the authors upon request.). We can see that in both cases, the same countries report a good environmental framework, which are the Northern and Continental Euro-

pean countries, namely Luxembourg, France, Austria, Belgium, Great Britain and Ireland, Finland, the Netherlands and Germany. On the contrary, we found that most of the new member EU countries (such as Romania, Latvia, Lithuania, Estonia, Slovenja and Ciprus) lie on the lower left-hand part of the graphs, thus proving to have a poor performance in the field of environmental concern and protection. Italy and Malta can also be found in this group for waste recycling while Portugal and Sweden for disposable items. Sweden proves to be active in separating waste for recycling, but it performs badly for the reduction in the use of disposable items. This clustering, which is not surprising, confirms the descriptive analysis (see § 2) and it is similar for all the actions investigated. Italy and Portugal are also in the lower part for the other actions, while some Eastern European countries are among the most virtuous in preferring other ways of travelling.

Concerning the two-level models adjusted for both individual and contextual covariates we can see that the introduction of some contextual explicative variables determines a further reduction in country-level variance τ^2 and in ICC, as expected (right part of Table 4), thus proving their effectiveness. This reduction is particularly relevant for the action referring to waste recycling (for which the ICC decreases by 12 points), for the use of car and of disposable items. Taking into consideration country-level explicative variables also affects the countries ranking in the graph of residuals (Fig. 5b). As for the reduction in the use of disposable items, Sweden, Denmark, Luxembourg and the Netherlands are in the lower part of the graph together with Cyprus and some eastern European countries, such as Slovenia, Lithuania and Estonia. On the contrary, Hungary, Poland and Latvia register a higher than expected risk of reduction in the use of disposable items considering the values of their covariates. However, France, Belgium, the United Kingdom and Ireland are the countries with the best performances. This group of countries, together with Spain, Germany, Hungary, Slovakia and Estonia, proves to perform well also in the case of separation of waste for recycling, while in this case Denmark and Luxembourg are in the group of poor-performing countries.

CONCLUSION

In recent years, environmental problems have become one of the major concerns of citizens. In European countries like in other industrialized countries worldwide, citizens have improved their pro-environmental attitudes and tend to be more aware of their role in protecting their environment.

The purpose of this exploratory study was to investigate the relationships among opinions and attitudes of individuals and their actual eco-friendly behaviour, bearing in mind socio-demographic covariates and the socio-economic context where individuals live. The results obtained enabled us to highlight some interesting aspects.

Firstly, we illustrated the main socio-demographic characteristics of the most environmentally aware individuals. Despite some differences among the indicators, there is a higher level of eco-friendly behaviour among women, adult and elderly couples, and people with a high socio-economic status. Surprisingly, young people do not seem to be strongly environmentally orientated. It is however worth pointing out that socio-demographic variables only account for a small portion of the variability in eco-compatible behaviour.

Secondly, we confirmed that positive attitudes and opinions towards the environment are strongly connected to eco-friendly behaviour and actions even if there is still a difference between what citizens say and what they really do according to the different actions studied. This means that *green* attitudes and eco-oriented opinions do not always imply the corresponding actions. Therefore the development of eco-awareness so often cited in surveys as well as the willingness of the individuals to take more care of their environment do not always coincide. With the aim of enhancing eco-friendly and eco-compatible behaviour, citizens should realize that environmental protection is not only a responsibility of institutions and companies but of each single individual.

Thirdly, we pointed out the existence of differences in individual attitudes towards environmental protection among European Union countries. We tried to explain these significant contextual effects by introducing some variables at national level. Overall, our results show that although some differences are detected according to the specific action considered, once these contextual variables are accounted for, we can see that some of the richest and most developed European countries are in fact the least environmentally inclined. On one hand, (Fig. A2), countries like Denmark, Sweden, Luxembourg and the Netherlands are less eco-friendly and pro-environmental than expected on the basis of the value of their environmental investments, percentage of waste treated and GDP in the fields of disposable items, and waste recycling and in the case of the Netherlands for eco-friendly and local products. On the other hand, Slovakia, Latvia and Hungary, together with Finland and the Netherlands make up the group with the best behaviour concerning the choice

of an alternative way of travelling as opposed to Cyprus, Portugal, Italy, Estonia and France. Once again, we found some eastern European countries (namely Latvia, Estonia and Lithuania) among the EU countries which are much more orientated towards local products and groceries, while the preference towards eco-friendly products is most evident in Austria, Sweden Malta and Denmark. Italy is under the zero-line in the graph for all the items, thus showing an unexpectedly low pro-environmental behaviour. These results suggest that even if a global and coordinated European policy strategy is required in order to protect the environment, each country's peculiarities must be taken acknowledged and taken into consideration.

Contextual variables partially explain these differences, although after their introduction a certain degree of intra-national variability still remains. This implies, on one hand, that a large amount of research is necessary in order to understand which the most relevant contextual covariates are. On the other hand, these differences may be due to social, cultural and historical factors which, although strongly influencing the environmental conscience and behaviour of individuals, are difficult to detect and measure.

To sum up, as far as we know previous literature has analyzed eco-friendly behaviour as a whole, while we showed that environmental actions are very different, in terms both of individual socio-demographic characteristics and of motivations which can enhance these actions. Thus, it seems that large parts of eco-friendly actions are not closely related in people's minds. For this reason, we believe that researchers and policy-makers should exercise caution when attempting to extend environmental initiatives from one type of ecological behaviour to another.

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