



Drivers of sustainable tourism in Europe: how to design efficient business strategies

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Abstract

This article studies the willingness of the citizens of the 27 EU countries to change their travel and tourism habits to assume a more sustainable behavior. The study wants to contribute to the recent literature on the topic of interconnections between tourism and sustainability. The data comes from the Flash Eurobarometer survey 499, involving more than 25,000 European citizens. The survey took place in October 2021 and wanted to analyze travel behavior and the impact of the Covid-19 pandemic on it, booking channels and information sources for travel preparation, reasons for selecting destinations, options and information on sustainable tourism. The hierarchical structure of the data—citizens within countries—is assumed applying a multilevel approach of analysis that considers heterogeneity between and within countries. The estimation of the multilevel latent class model allowed to identify seven groups of European citizens similar by their willingness to adopt tourism-related sustainability practices, and the association of these latent groups with the 27 European countries. Using sociodemographic variables, it was also possible to profile these groups as well as to describe the typical citizen belonging to each cluster. Moreover, drivers of sustainable tourism are identified, both at country and citizen level. The results of the analyses give many useful information for strategic management in the tourism sector.

Keywords Sustainability · Tourism · Multilevel latent class model · Cluster analysis · European Union

1 Introduction

The objective of this work is the analysis of sustainable tourism by the citizens of the 27 countries of the European Union; specifically, we focus on the opinions about sustainable traveling and the willingness of European citizens to change their touristic habits, in the

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near future, towards a more sustainable behavior. The data refers to the Flash Eurobarometer 499 survey, that collected, among other topics, information on the actions that European citizens are willing to take during their vacations to preserve natural resources and the environment.

Our paper wants to give a contribute to the recent debate arisen in the reference literature on the interconnections between tourism and sustainability with a special attention to Europe. The relationship between environmental quality and tourism development has recently become of great interest both for managers and academics (McKercher 1993). Sustainable tourism development has costs and benefits that can be carefully balanced. Reliable information is needed in order to device efficient and profitable strategies. This paper contributes to the knowledge of European tourists and their attention to sustainable practices while travelling and on holiday.

The survey was conducted on a representative sample of European citizens, over the age of 15, in each of the 27 Member States (MSs) of the European Union (EU) in October 2021, after the spread of the Covid-19 pandemic (European Union 2021). Being interested in sustainable tourism (ST) behavior, we selected the nine binary variables asking whether EU citizens were willing to take specific actions related to travel and vacations and a tenth binary variable asking for general preparedness to change behavior in this field. A large majority of European citizens (82%) are willing to change at least some of their habits, however, there is a lot of heterogeneity both within and between European countries. We carried out the analyses using a multilevel approach, specifically, we estimated multilevel latent class models (Vermunt 2003) and multilevel logit regression models (Snijders and Bosker 2012).

Estimation of the multilevel latent class model allowed us to identify groups of similar European citizens by their willingness to adopt sustainability practices related to tourism and the association of these latent groups with the 27 EU Member States; it was also possible to profile these groups and to describe the typical citizen belonging to each cluster. Estimation of multilevel logit regression model identified drivers of sustainable tourism both at country and citizen level.

The paper is organized as follows: Sect. 2 extensively reviews the reference literature, Sect. 3 introduces multilevel modeling, Sect. 4 reports the results of statistical analyses, Sect. 5 concludes.

2 Sustainability and tourism: review of the reference literature

2.1 Sustainable tourism: definition

Sustainable tourism has been a topic of discussion in tourism circles since the early 1990s. Interest in sustainable tourism was driven by two key factors: the influence of the Brundtland Commission report (1987) and the subsequent Summit of Rio in 1992 (Stavi 2022) on sustainable development. Although ideas about sustainable development had been discussed for some time before, the Brundtland report and its commitment were decisive for the study of sustainable tourism.

The World Commission on Environment and Development (WCED) produced the 1987 Brundtland Report, also called “Our Common Future” dealing with sustainable development’s definition and accomplishment. It included four basic principles for the concept of sustainability: the idea of holistic planning of strategies; the importance of

preserving essential ecological processes; the need to protect both human heritage and biodiversity and, as a fourth principle, a development based on the idea that productivity can be maintained in the long term for future generations. The definition makes it clear that sustainable tourism is a multifaceted concept and, depending on the perspective, different aspects and areas of focus will be relevant. In the years following the Brundtland Commission Report, multiple alternative definitions and modifications of the concept of sustainability were developed (Roberts et al. 2022); and several hundred definitions now exist (Johnston et al. 2007). Subsequently, as Purvis et al. (2019) noted, other declinations of the construct emerged as social, environmental, and economic sustainability. These declinations can be well applied also to sustainable tourism as in accordance with the United Nations World Tourism Organization (UNWTO) in its assembly of May 1998. Therefore, sustainable tourism should:

1. make an optimal use of environmental resources, conserving them and preserving biodiversity;
2. recognize and maintain the specific social, cultural, and traditional traits of host communities, fostering mutual knowledge, understanding, and tolerance;
3. favor economic benefits for all actors involved, such as generate employment and income, opportunities and social services for host communities, and contribute to the alleviation of poverty.

Another important publication that defines what sustainability means in tourism is the guide for policy makers published on this topic by the United Nations Environment Program (UNEP) of the World Tourism Organization (WTO) in 2005 (UNWTO 2005). The WTO has been promoting indicators to measure sustainable tourism (ST) since the 1990s, the volume published in 2004, for example, proposes indicators and measurement techniques for over 40 sustainability issues (WTO 2004).

Continuous work in the field has resulted in the identification of a fourth pillar: institutional sustainability and fine-tuning of the three original pillars (Burford et al. 2013).

Sustainable tourism is a very broad topic. In this work, we will focus on the willingness of future tourists to change their habits towards a more sustainable behavior when travelling and on holiday. This specific aspect has not been well developed yet in the literature, however, it requires attention since it is in line with many of the sustainable development goals (SDGs) of the United Nations 2030 Agenda, as indicated by UNWTO. In particular, tourism can give a contribution to goals 8 (decent work and economic growth, 8.9 specifically quotes “promote beneficial sustainable tourism”), 12 (responsible consumption and production), and 14 (life below water) (UNWTO 2017). The contribution of our paper is an increased knowledge of sustainable tourism and its drivers in Europe. We believe that our analyses will support strategic management and, at the same time, foster the above SDGs, these two objectives are strictly interconnected. For example, by giving access to decent work opportunities in the tourism sector, companies will benefit from increased skills and professional development (SDG 8). A tourism sector that adopts sustainable consumption and production practices can be more attractive for large segments of tourists (SDG 12). Finally, tourism development must have a part in order to help conserve and preserve fragile marine ecosystems and serve as a vehicle to promote a blue economy (SDG 14).

2.2 Sustainable tourism: recent literature

In relation to the existing recent literature on the topic of sustainable tourism, we highlight a work by Lu and Nepal (2009), who analyzed the number of papers on ST focusing on the Journal of Sustainable Tourism (JOST), which is a publication exclusively dedicated to research on this topic. The authors stated that tourism is recognized as a resource-intensive industry, that, therefore, needs to be accountable in terms of sustainability both locally and globally. Furthermore, they discussed future directions for sustainable tourism research and identified five thematic areas: impact of tourism; sustainability assessment; developing; behavior and attitude of visitors; and planning. They concluded that sustainable tourism research has generally mirrored trends in tourism research in general.

ST is an important topic in the largest debate on environmentally integrated tourism development, but existing research showed that sustainability is a complex concept and that it requires a more critical and comprehensive analysis (Butler et al. 2003).

The need to better understand an issue as sustainability in tourism, that is characterized by a significant dose of complexity and intertwining, has been understood thanks to important publications focusing on various aspects: quality of life, equity and environment (Butler 1999; Collins 1999; Farrell and Twining-Ward 2005; Hunter 1997; Wall 1997). ST needs to be conceptualized in a more comprehensive way to meaningfully and critically assess its interconnectedness with natural, social, and economic elements, across multiple scales and time periods (Farrell and Twining-Ward 2005; McKercher 1999). ST can also be well interpreted as an “adaptive paradigm” (Hunter 1997) or “adaptive management” (Farrell and Twining-Ward 2005); this terminology addresses the issues of unpredictability of events, uncertainties about the outcome of events, and complexities of scale and times.

Some authors define ST in broader terms, transferring the principles of sustainable development to the context of tourism needs (Hardy and Beeton 2001). The content of the debate on ST has been expanded to include not only environmental issues but also economic, social and cultural issues, political power and social equality. Some critical contributions argue that the feasibility of sustainability remains a key issue in ST, as it is unrealistic to balance competing interests, and therefore trade-off decisions will certainly prioritize certain interests (Hunter 1997).

We already indicated that Lu and Nepal (2009) concluded that sustainable tourism research has generally mirrored trends in tourism research in general. However, Buckley (2012) concluded that the four most popular thematic areas in ST are ecotourism, responsible tourism, community tourism and conservation tourism. Table 1 shows the classification of papers made by Lu and Nepal (2009), after reviewing the existing publications on ST in the 15 years between 1993 and 2007.

A longitudinal analysis on research on ST published in the four leading journals in the field: *Annals of Tourism Research* (ATR), *Journal of Sustainable Tourism* (JOST), *Journal of Travel Research* (JTR), and *Tourism Management* (TM)—over the 25-year period since the publication of the Brundtland Report (1987–2012) aimed at identifying trends and patterns in research and studies on the topic, as well as filling a key gap in the rigorous, systematic and objective examination on how research on sustainable tourism has changed over time (Ruhanena et al. 2015). In their analysis of the published results, these authors indicated that there has been an evolution in the theoretical and methodological approaches, as well as in the subjects and topics identified as subfields

Table 1 Research methods applied in papers. *Source:* Lu and Nepal (2009)

Methodology	Type of research			
	Qualitative and quantitative	Quantitative	Qualitative	Theoretical or review
Theoretical analysis; review	0	0	0	54
Case study	7	61	0	2
Survey	0		98	0
Survey and interview; survey and secondary data analysis; survey, interview and focus group; survey and focus group	10	0	15	0
Interview; interview, focus group and grounded theory; interview, documents and case study	0	66	0	0
Secondary data analysis; data modeling	4	10	12	0
Ethnography	0	2	0	0
Total (341)	21	139	125	56

of research on sustainable tourism. Reflecting the maturation of this research setting, there has been a clear move away from conceptual and definitional revisions towards empirically driven theory testing and construction. Regarding the research approach, some topics such as ecotourism and environmental aspects remain, while new areas of focus, such as climate change, emerged later.

Following the meta-analysis of Lu and Nepal (2009) on papers in the JOST, we see that there has been a significant increase in the number of articles published on aspects of the multiple relationships between climate change, global warming, and sustainable tourism (Bramwell et al. 2017); being the oldest publications those on climate change and tourism (see, for an example, Wall and Badke 1994). However, only in 2006, the first two special issues related to climate change were published, with 17 other articles also appearing during that year. Between 2007 and 2016, 68 more articles were published. Climate change is a much more controversial topic than others in the sustainable tourism debate and sometimes it requires special technical knowledge (Bramwell et al. 2017). However, it is closely related to debates on the environmental impacts of tourism, social and behavioral change, and the governance of the tourism industry, and it is seen as a key issue for the future of sustainable tourism (Scott 2011; Scott et al. 2010; Scott et al. 2016a, b; Weaver 2011).

In Table 2, we report the results of the meta-analysis of the literature on tourism and sustainability for articles published in English between 2019 and 2021 by Roberts et al. (2022). They included in the research 38 of the 100 ranked journals in the category of hotel and tourism. More than half of these journals scored higher than 40 in the 100 journals ranked by SCImago category Tourism, Leisure and Hotel Management in 2022. An additional non-tourism-specific journal, Sustainability, was included in the analysis due to the relevant number of papers on this topic recently published. Subsequently, the same authors carried out an analysis to identify the research approach. Four main categories were used to classify the research method applied in the 881 articles, with the following results: (i) qualitative methods (case studies, interviews, and observations, 323 articles), (ii) quantitative methods (368), (iii) both quantitative and qualitative methods (141) and (iv) reviews (49).

Roberts et al. (2022) classified the articles also by topic, concluding that only a very small percentage of them (3.8%) was strictly associated with sustainability. They

Table 2 Journal and number of articles breakdown. *Source:* Roberts et al. (2022)

Journal	Total published: 2019–2021	Articles using “sustainability” keyword	Articles using all keywords	Articles used in this study
International Journal of Culture, Tourism and Hospitality Research	92	19	18	4
Tourism Analysis	151	9	9	3
Tourism Review International	59	7	7	2
Tourist Studies	94	21	21	4
Journal of Tourism Futures	137	34	27	4
International Journal of Tourism Cities	106	16	16	2
Journal of Sport and Tourism	28	10	6	0
European Journal of Tourism Research	153	5	4	1
Worldwide Hospitality and Tourism Themes	217	77	54	14
Journal of China Tourism Research	54	10	7	0
International Journal of Religious Tourism and Pilgrimage	135	4	4	1
Tourism in Marine Environments	59	8	8	2
Journal of Travel and Tourism Marketing	196	54	11	5
Journal of Sustainable Tourism	552	307	307	288
Scandinavian Journal of Hospitality and Tourism	102	27	25	8
Tourism Planning and Development	180	38	38	13
Journal of Ecotourism	109	29	17	4
Tourism Recreation Research	277	38	36	7
Journal of Travel Research	295	249	46	19
Journal of Environmental Management and Tourism	282	81	36	9
Annals of Tourism Research	243	148	11	7
Current Issues in Tourism	661	31	25	16
Journal of Hospitality and Tourism Research	162	17	15	6
International Journal of Tourism Research	224	20	8	8

Table 2 (continued)

Journal	Total published: 2019–2021	Articles using “sustainability” keyword	Articles using all keywords	Articles used in this study
Tourism Review	177	91	91	9
Tourism and Hospitality Research	98	7	7	6
Journal of Vacation Marketing	85	21	21	6
Tourism Economics	191	18	18	11
Journal of Hospitality and Tourism Management	333	43	31	14
Asia Pacific Journal of Tourism Research	263	9	7	1
International Journal of Hospitality and Tourism Administration	67	0	0	0
Tourism Management Perspectives	368	50	44	8
Tourism Geographies	113	23	22	5
Tourism and Hospitality Management	83	19	14	3
Advances in Hospitality and Tourism Research	52	1	1	1
Journal of Policy Research in Tourism, Leisure and Events	71	2	2	1
International Journal of Tourism Policy	52	3	3	3
Tourism Management	497	60	50	12
Sustainability	29,504	7640	425	374
Total	36,522	9246	1492	881

emphasized the space for further studies on ST, especially needed after the Covid-19 pandemic, which effects on tourism still have to be thoroughly detected.

In relation to the attitudes of tourists towards future sustainable behavior, the contribution that we present in this work has not yet been treated in previous studies, as far as we know. Some works on tourists' attitudes after the Covid-19 pandemic have been published, but they refer to specific countries such as China (Songshan et al. 2021), Malaysia (Abhari et al. 2022), Colombia (Mestanza-Ramón and Jiménez-Caballero 2021), or even smaller areas. The present work analyses the attitudes of European tourists after Covid-19 with a sample of citizens from all 27 EU countries.

With regards to the most recent literature, there are some interesting papers that dealt with the attitudes of tourists towards the environment. For example, Ritchie et al. (2022) collected data on a sample of 468 national and international tourists in Cairns, Australia, to verify their support to institutions for special environmental interventions, as that performed in the Great Barrier Reef. They found that personal norms had the greatest direct influence on support for these interventions, followed by attitudes; awareness of the consequences had a great positive impact on personal norms and a less positive impact on attitudes; a negative relationship was instead found between information and attitudes, and no difference was found between national and international tourists. Casado-Díaz et al. (2022) examined gender differences in water conservation behavior on a sample of hosts, founding significant differences in behavior, with women giving more attention to this topic than men. The work of Nugroho and Numata (2022) focused on community-based tourism in national parks in developing countries. Using a sample of 934 interviews for 12 villages adjacent to Gunung Ciremai National Park in Indonesia, they examined the relationships between the following latent variables in support for tourism development: community participation, community linkage, perceived benefits, and costs. The results confirmed the interrelationships between the determinant variables that explain the support of residents for tourism development based on extended social exchange theory, although with different mechanisms, effects and values. Ashraf Fauzi et al. (2022), through a study with data that was collected mainly through a cross-sectional survey among Malaysian tourists, confirmed the negligible relationship between green confidence, personal standards and intention to visit an area, as well as tourists' willingness to pay an ecological tax to stay in an establishment adhering to sustainability practices. In particular, this study showed that eco-trust and personal norms exert an increasingly significant influence on tourists' intention to stay in eco-hotels; on the other hand, the perceived values of eco-hotels play a key role in establishing a connection between tourist' personal beliefs and their intention to visit an eco-lodge. Despite the literature showing the importance of ecological trust and personal norms, this study's finding is in contrast, perhaps because it comes from the perspective of an emerging economy as suggested by Nekomahmud and Fakete Farkas (2020). Finally, Antolini and Truglia (2023) studied farmhouse, food and tourism (FFST), an increasingly popular form of ecotourism, in two Italian regions, demonstrating that FFST areas can become a very promising model for sustainable tourism development.

After this analysis of the recent literature, we can affirm that our work gives an original contribution to the reference literature, since it analyzes the will of future tourists to change their habits towards sustainable tourism, based on the data collected in the Eurobarometer survey 499.

Table 3 Percentages of YES responses to the ten binary questions. *Source:* Our elaboration on data from Flash Eurobarometer 499

	% of YES responses (%)
Consume locally sourced products on holiday	55.3
Reduce waste while on holiday	48.4
Take holidays outside the high tourist season	42.4
Travel to less visited destinations	40.0
Choose transport options based on ecological impact	35.5
Pay more to protect the natural environment	35.0
Reduce water usage on holiday	34.8
Contribute to carbon-offsetting activities	33.7
Pay more to the benefit of the local community	32.6
I am not prepared to change my habits	14.7

3 The database

The data analyzed in this work were collected with the Flash Eurobarometer 499 survey on the attitudes of European citizens towards tourism. Eurobarometer is the instrument of the institutions of the European Union to monitor public opinion and other relevant issues regarding European citizens and companies. The data is open-access and can be downloaded from the portal along with the questionnaires and other metadata.

Flash Eurobarometer 499, specifically, took place in October 2021 with the scope of analyzing travel behavior and the impact of the Covid-19 pandemic on it, booking channels and information sources for travel preparation, reasons for selecting destinations, as well as options and information on sustainable tourism. The total is of 25,714 European citizens over 15 years of age, distributed in the 27 Member States (MSs) of the European Union (EU). As in all other Eurobarometer surveys, information was collected on the sociodemographic characteristics of the respondents (European Union 2021).

The focus of our paper is on sustainable tourism in the European Union, therefore, we consider the nine binary variables related to the willingness of the citizens to change their travel and tourism habits to be more sustainable. Specifically, nine options were proposed, in which it was asked if they were willing to change behavior in order to adhere to a specific sustainability practice. We used also the answers to a tenth question quoting “I am not ready to change my habits” and, again, requiring a yes or no answer. Table 3 reports the percentages of affirmative answers for each option. The data is weighted according to the population over 15 years of age in each EU MS. As it can be seen in the table, for example, 48.4% of European citizens are willing to reduce waste during their vacations, 35.5% will choose transport based on low ecological impact, 35% are willing to pay more to protect the natural environment, 34.8% say they will reduce water use, and 33.7% are willing to contribute to activities that offset carbon emissions, such as planting trees.

As a general evidence, we see that only a relatively small percentage of European citizens are not ready to change their travelling habits (14.7%). The European countries where citizens are most willing to perform actions that preserve the natural environment while on holiday are Malta (99%), Ireland and Luxembourg (95%), Austria, Portugal and Romania (94%). On the other hand, the countries where citizens are least prepared to assume sustainable tourism behavior are Cyprus (72%), Denmark (75%), Lithuania (76%) and

Table 4 Descriptive statistics of the respondents. *Source:* Our elaboration on data from Flash Eurobarometer 499

	Percentage (%)
<i>Age</i>	
15–24 years	12.4
25–39 years	21.8
40–54 years	25.7
55+ years	40.1
<i>Gender</i>	
Female	51.2
Male	48.0
<i># of family members</i>	
1	25.6
2	42.8
3	15.2
4+	14.5
<i>Occupation</i>	
Self-employed	11.0
Employee	36.4
Manual worker	5.1
Without occupation	46.3
<i>Travelling before Covid-19</i>	
Several times a year	43.2
Once or twice a year	36.9
Once every few years	9.0
Never	10.7

Bulgaria (77%). Table 4 lists a synthetic description of the principal sociodemographic characteristics of the sample.

In Table 5, we consider the nine sustainable actions proposed in the Flash Eurobarometer survey, ranked by the percentage of yes responses, from the highest to lowest. For each action, we list the countries and the corresponding percentage of positive answers, reporting only those higher than 50%.

It should be noted that there are 11 countries that do not exceed 50% of positive responses in any of the nine variables: Belgium, Denmark, Ireland, Italy, Holland, Austria, Portugal, Bulgaria, Republic of Cyprus, Lithuania and Malta. The only two countries that exceed 50% of positive responses, in all the nine variables, are Sweden and Slovakia, while Romania does so in eight. This is a very interesting results since in other studies it emerged that many countries located in Eastern Europe are not very much involved in sustainability practices; for example, Bassi and Dias (2019) outlined this result for CE practices in European small and medium enterprises. The same paper also showed a similar evidence for Mediterranean countries. The very positive attitude of Spanish and Greek citizens towards sustainable tourism might be explained by the relevance of this economic activity sector for their countries. Looking at which is the action that received the highest number of positive responses in each country gives further insights as in Table 6.

In the large majority of the European countries, the sustainable touristic action that received the highest percentage of positive responses is the commitment to consume locally sourced

Table 5 Percentages of YES responses to the nine binary questions in each country with a proportion of positive responses higher than 50%. *Source:* Our elaboration on data from Flash Eurobarometer 499

Action	Country	% of YES responses	
Consume locally sourced products on holiday	Romania	86.2	
	Sweden	80.7	
	Greece	77.0	
	Spain	70.0	
	Luxemburg	69.2	
	Czech Republic	67.4	
	Finland	63.3	
	Slovenia	62.5	
	Poland	61.2	
	Hungary	57.5	
	Germany	55.0	
	France	52.4	
	Estonia	51.8	
	Latvia	50.4	
Reduce waste while on holiday	Romania	86.4	
	Sweden	74.1	
	Slovakia	74.1	
	Greece	69.5	
	Spain	67.6	
	Czech Republic	64.6	
	Hungary	56.9	
	Poland	52.3	
	Croatia	53.2	
	Slovenia	52.1	
	Finland	50.2	
	Luxemburg	50.0	
	Take holidays outside the high tourist season	Romania	72.5
		Greece	65.4
Slovakia		66.6	
Sweden		65.0	
Finland		54.8	
Slovenia		54.2	
Czech Republic		53.8	
Spain		52.7	
Travel to less visited destinations	Romania	65.0	
	Sweden	64.7	
	Greece	61.9	
	Slovakia	56.8	
	Spain	52.2	
Choose transport options based on ecological impact	Sweden	65.4	
	Romania	64.8	
	Slovakia	50.5	
	Greece	50.1	

Table 5 (continued)

Action	Country	% of YES responses
Pay more to protect the natural environment	Romania	72.6
	Sweden	69.8
	Luxemburg	57.7
	Slovakia	56.3
	Greece	51.7
Reduce water usage on holiday	Sweden	62.6
	Slovakia	57.5
	Spain	51.4
	Greece	51.2
	Czech Republic	45.6
Contribute to carbon-offsetting activities	Romania	79.5
	Sweden	68.8
	Slovakia	53.2
	Spain	52.1
	Greece	49.4
	Czech Republic	48.2
Pay more to the benefit of the local community	Luxemburg	46.2
	Sweden	65.7
	Romania	60.3
	Luxemburg	57.7
	Slovakia	52.5

products while on holiday. However, there are interesting exceptions; for example, in Belgium, Bulgaria, Croatia, Romania and Slovakia, the most chosen activity is reducing waste while on holiday, although with very different percentages across these countries. Irish and Dutch citizens are prepared to take holidays outside the high tourist season, and in Malta, people are willing to pay more for the benefit of the environment, this action shows a great commitment to natural resources.

The descriptive analyses on our database show that there exists non-negligible heterogeneity in the willingness to behave in a more sustainable way while on holiday, both within and between European countries. It is very plausible that either citizens' specific socio-demographic characteristics and factors at country level may affect this behavior. In order to disentangle this problem, we performed further analyses on our data. The appropriate way to examine this dataset is considering its hierarchical nature, since information is collected from samples of citizens living in the 27 EU MSs. European citizens are level-1 units, nested into countries, which act as level-2 units in the database. For this reason, we chose to proceed with a multilevel approach of statistical analysis.

Table 6 Action with the highest score of YES responses by country. *Source:* Our elaboration on data from Flash Eurobarometer 499

Country	Action	% of YES responses
Austria	Consume locally sourced products on holiday	48.1
Belgium	Reduce waste while on holiday	41.0
Bulgaria	Reduce waste while on holiday	35.2
Cyprus	Consume locally sourced products on holiday	42.6
Czech Republic	Consume locally sourced products on holiday	67.4
Germany	Consume locally sourced products on holiday	55.0
Denmark	Choose transport options based on ecological impact	38.0
Estonia	Consume locally sourced products on holiday	51.8
Spain	Consume locally sourced products on holiday	70.7
Finland	Consume locally sourced products on holiday	63.2
France	Consume locally sourced products on holiday	52.4
Greece	Consume locally sourced products on holiday	77.0
Croatia	Reduce waste while on holiday	52.3
Hungary	Consume locally sourced products on holiday	57.5
Ireland	Take holidays outside the high tourist season	37.5
Italy	Consume locally sourced products on holiday	42.3
Lithuania	Consume locally sourced products on holiday	32.8
Luxembourg	Consume locally sourced products on holiday	39.2
Latvia	Consume locally sourced products on holiday	50.4
Malta	Pay more to protect the natural environment	33.0
The Netherlands	Take holidays outside the high tourist season	45.3
Poland	Consume locally sourced products on holiday	61.2
Portugal	Consume locally sourced products on holiday	32.2
Romania	Reduce waste while on holiday	86.4
Sweden	Consume locally sourced products on holiday	80.7
Slovenia	Consume locally sourced products on holiday	62.5
Slovakia	Reduce waste while on holiday	74.1

4 Data analysis

4.1 The multilevel approach

Our data has a nested structure: information on sustainable tourism is collected on European citizens living in the 27 Member States (MSs). It is very plausible that people living in the same country share attitudes, ideas, even behaviors due to many common factors as traditions, history, the social and economic situation of the country. These common milieu challenges the assumption of independent observations within a country; if traditional methods of statistical analysis, based on this assumption, are applied, there is a high risk of having biased estimates due to the well-known ecological fallacy (Piantadosi et al. 1988).

In order to take our hierarchical data structure into account, we resorted to multilevel latent class (LC) modeling, that allowed us to identify homogeneous groups of citizens, similar for the attitude and behavior towards ST, and groups of countries, similar in their

composition of types of citizens. Multilevel LC class (MLLC) models perform clustering at both levels of the data, taking into account between and within groups heterogeneity (Vermunt 2003).

Latent class (LC) analysis assumes that one or more latent variables exist and that these variables can be measured through their relationship with observed variables, named also as indicators. LC analysis takes into account the categorical (nominal or ordinal) nature of these variables.

LC analysis can be seen as a model-based method for clustering; it is an interesting alternative to k-means clustering since it is very flexible; it was originally designed for categorical variables but it can also treat continuous ones, it deals very easily with mixed-scale observed variables. Model specification and assumptions on parameters can be tested with rigorous statistical tests (Magidson and Vermunt 2002). In the following, we specify a LC model for two-level data.

Let:

Y_{ijk} , $i = 1, \dots, I, j = 1, \dots, J, k = 1, \dots, K$, be the response of level-1 unit i within group or level-2 unit j on indicator k ;

$s_k = 1, \dots, S_k$, a particular level of indicator k ;

Z_{ij} , a latent variable with L classes, $l = 1, \dots, L$;

\underline{Y}_{ij} , vector containing the responses of unit i in group j ;

\underline{s} , a response pattern,

Equation (1) specifies a simple LC model, i.e., a LC model that does not consider the hierarchical nature of the data:

$$P(\underline{Y}_{ij} = \underline{s}) = \sum_{l=1}^L P(Z_{ij} = l)P(\underline{Y}_{ij} = \underline{s} | Z_{ij} = l) = \sum_{l=1}^L P(Z_{ij} = l) \prod_{k=1}^K P(Y_{ijk} = s_k | Z_{ij} = l) \quad (1)$$

$P(Y_{ijk} = s_k | Z_{ij} = l)$ is the probability of observing response pattern s_k given that unit i in group j belongs to latent class l . Indicators Y_{ijk} are assumed to be independent conditional on LC membership (Magidson and Vermunt 2002).

Equation (2) extends the simple LC model to the case of two-way data (Vermunt 2003). Model parameters are not the same for the entire sample, instead are allowed to vary across groups, or level-2 units:

$$P(\underline{Y}_{ij} = \underline{s}) = \sum_{h=1}^H \left[P(W_j = h) \prod_{i=1}^{n_j} \left[\sum_{l=1}^L P(X_{ij} = l | W_j = h) \prod_{k=1}^K P(Y_{ijk} = s_k | Z_{ij} = l) \right] \right] \quad (2)$$

W_j is a latent variable at the group level, assuming value h , with $h = 1, \dots, H$; n_j is the size of group j .

Equation (2) is obtained with the additional assumption that responses of the n_j members of each group are independent conditional on group class membership. The categories of the latent variable for level-1 units are called clusters, while the categories of the latent variable for level-2 units are called classes. In the model, covariates at both levels can be included.

4.2 Results of the analysis

In order to elaborate on the results of the descriptive analysis of our data, presented in the previous section, we estimated a multilevel latent class model (Vermunt 2003) with as

indicators the 10 dichotomous variables of the Flash Eurobarometer 499 survey questionnaire. The best fitting model, according to the BIC index, resulted that with 7 clusters of citizens and 6 classes of EU countries. Clusters' dimension and profiles are reported in Table 7. The clusters are ordered by a decreasing level of commitment to ST, as also the colors, from green to red in Fig. 1, represent. In cluster 1, for example, we find those European citizens (12.51%) who are willing to adopt all nine sustainability practices proposed in the survey with very high probabilities. Cluster 7, on the opposite side, gathers those respondents (12.71%) who are not at all prepared to change their habits. Figures in italics in Tables 7, 8 and 9 indicate values that are higher than the corresponding one in the whole sample; these figures characterize each cluster.

The following Tables 8 and 9 describe the citizens that make up each cluster through the distribution of some sociodemographic variables. All the chosen variables are distributed significantly differently in the seven groups. We may see, for example, that respondents classified in cluster 7—not prepared to change their habits—are the oldest ones, with the largest family size and the largest percentage of male head of household. In this same cluster, half of the respondents are without a work (the majority of them are retired) and around 70% used to travel at least once a year before the Covid-19 pandemic, but there is also a non-negligible percentage (17%) of respondents who never travel. In general, attitude towards the environment depends on the socio-demographic characteristics that were considered, as well as on the country, as it appears in the subsequent analyses.

Table 10 shows the relationship between clusters and classes. The countries composing each class are similar in the composition of groups of tourists. Class 1 is associated with cluster 2. In class 2 there is a mixture of clusters 1, 4 and 5. In class 3, more than half of the citizens belong to cluster 6 and another 35% to cluster 3. The composition of class 4 is heterogeneous, with the greatest percentage of citizens belonging to cluster 6. The composition of class 5 is also heterogeneous, with the greatest percentage of citizens belonging to cluster 5. Class 6 of countries is associated with clusters 5 and 6, the segments of citizens not very much involved with sustainability. These conditional probabilities, however, show that there remains a quote of heterogeneity within groups of European countries, even after controlling for heterogeneity between them. The composition of classes of countries by clusters of citizens is reported also in Fig. 1.

It is important to know how classes are composed; this information is reported in Table 11 and in the map in Fig. 2.

The countries with the highest percentage of “green” tourists, most committed to change their habits while traveling and on holidays, are Romania and Sweden (class 1). The countries with the lowest percentage of “green” tourists, those that are not prepared to change, are Belgium, Bulgaria, Ireland, Italy, Lithuania, Malta, and Portugal (Class 6), as depicted in Figs. 1 and 2. Citizens of Malta are quite peculiar, almost all of them say that they are willing to change habits to become more sustainable, but they answer positively to the specific proposed actions only in very low percentages. Some of these results are unexpected with reference to evidences presented in previously published papers. For example, Romania, Slovakia and Check Republic belong to the classes of countries with the highest percentage of citizens committed to be sustainable when traveling or taking holidays. The work by Bassi and Dias (2020), for example, showed that in Eastern European countries, small and medium enterprises do not implement circular economy practices and, in general, do not even intend to introduce them in the near future. Bassi (2023) reported similar evidences for these countries with reference to attention to the environment and consumption behaviour: consumers show a very mild attitude towards sustainability practices and natural resources conservation. On the

Table 7 Clusters' dimension and profile

<i>Clusters' dimension</i>	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
<i>Actions</i>	0.1251	0.1258	0.1266	0.0761	0.1921	0.2273	0.1271
Pay more to protect the natural environment	0.8736	0.9520	0.5439	0.3070	0.0462	0.2070	0.0000
Pay more to the benefit of the local community	0.8865	0.8177	0.6668	0.1219	0.0389	0.1989	0.0000
Take holidays outside the high tourist season	0.7963	0.8464	0.6184	0.7166	0.3734	0.2098	0.0000
Travel to less visited destinations	0.8852	0.8094	0.6308	0.6421	0.2665	0.1619	0.0000
Contribute to carbon-offsetting activities	0.7767	0.9632	0.3672	0.7546	0.1177	0.1379	0.0000
Consume locally sourced products on holiday	0.9748	0.9721	0.8342	0.9202	0.5180	0.3167	0.0000
Choose transport options based on ecological impact	0.7482	0.8258	0.3750	0.5531	0.1841	0.2246	0.0000
Reduce waste while on holiday	0.9894	0.9765	0.6677	0.9894	0.3869	0.1800	0.0000
Reduce water usage on holiday	0.9611	0.5850	0.3854	0.6793	0.2042	0.1380	0.0000
I am not prepared to change my habits	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9971

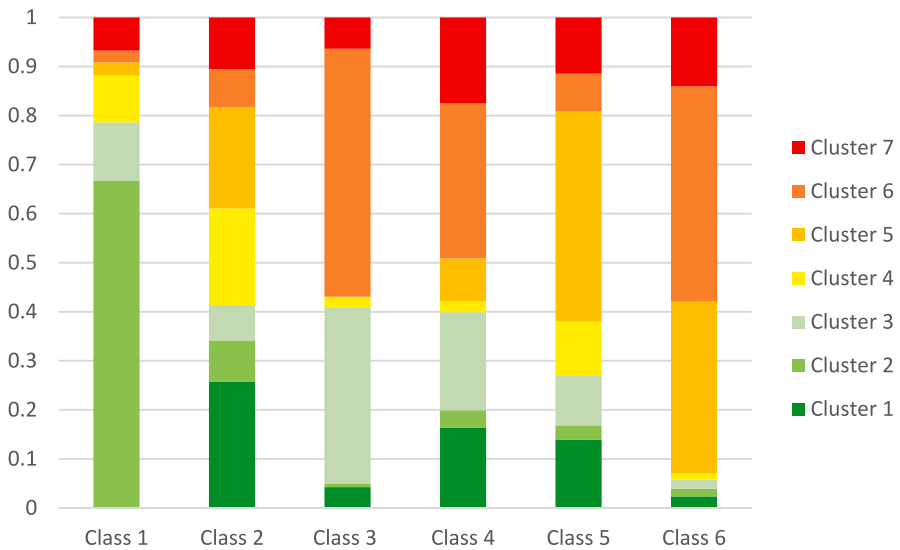


Fig. 1 Classes' composition by clusters of citizens

Table 8 Clusters' profiles: age, number of family components, percentage of male respondents

	Mean age	Mean # components	Males %
Cluster 1	47.50	3.69	45.8
Cluster 2	46.31	2.67	45.5
Cluster 3	47.21	4.47	48.3
Cluster 4	49.47	4.06	44.4
Cluster 5	47.17	2.98	45.6
Cluster 6	48.94	5.04	49.3
Cluster 7	53.23	4.48	53.8
Sample	48.68	4.06	48.0

Table 9 Clusters' profiles: working condition, frequency of travelling before Covid-19 pandemic

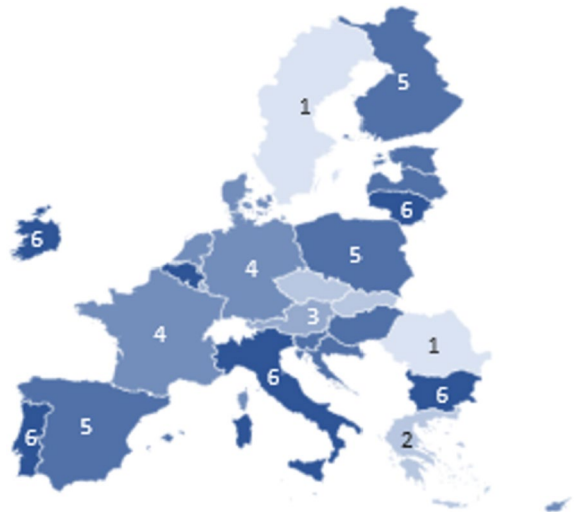
	Self-employed	Employee	Manual worker	Without occupation	Several times a year	Once or twice a year	Once every few years	Never
Cluster 1	10.3	43.3	2.3	42.3	47.3	36.8	8.9	6.7
Cluster 2	9.5	36.1	7.1	47.3	45.3	34.8	10.4	9.4
Cluster 3	10.6	40.5	5.6	42.2	51.5	36.7	7.7	7.9
Cluster 4	9.1	35.0	4.4	51.0	46.0	38.1	8.8	7.0
Cluster 5	12.1	36.9	5.2	46.4	48.2	34.1	9.5	8.0
Cluster 6	11.4	34.5	5.1	47.5	35.6	48.0	9.4	13.7
Cluster 7	11.7	29.1	6.7	50.3	37.5	36.7	8.5	17.2
Sample	11.0	36.4	5.1	46.3	43.2	36.9	9.0	10.7

Table 10 Distribution of clusters by classes

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Cluster 1	0.0008	0.2579	0.0424	0.1630	0.1394	0.0235
Cluster 2	0.6659	0.0836	0.0077	0.0361	0.0290	0.0154
Cluster 3	0.1193	0.0724	0.3578	0.1999	0.1009	0.0189
Cluster 4	0.0954	0.1969	0.0217	0.0219	0.1108	0.0127
Cluster 5	0.0270	0.2069	0.0012	0.0878	0.4289	0.3503
Cluster 6	0.0242	0.0770	0.5056	0.3160	0.0763	0.4388
Cluster 7	0.0674	0.1053	0.0637	0.1754	0.1148	0.1404

Table 11 Classes of EU countries

Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
RO—Romania	CZ—Check Republic	AT—Austria	DE—Germany	CY—Cyprus	BE—Belgium
SE—Sweden	ES—Spain	LU—Luxemburg	DK—Denmark	EE—Estonia	BG—Bulgaria
	GR—Greece		FR—France	FI—Finland	IE—Ireland
	SK—Slovakia		NL—Netherlands	HR—Croatia	IT—Italy
				HU—Hungary	LT—Lithuania
				LV—Latvia	PT—Portugal
				PL—Poland	MT—Malta
				SI—Slovenia	

Fig. 2 Classes' of EU countries

other side, some countries where the touristic sector has an important impact on GDP and employment, such as Greece, Portugal and Italy, are classified in groups where citizens are not willing to adhere to sustainable actions when traveling.

In order to better investigate these results, we looked for some information at country level, following the evidences in the literature saying that economic, social, traditional, behavioural factors specific for each EU MS might have a non-negligible effect on attitude and behaviour regarding the environment. Many studies, in fact, confirm that the country where living influences the citizens' propensity to implement eco-sustainable initiatives. To explain this between-countries heterogeneity, we studied the impact of country-level factors.

The relationship between environmental degradation and economic indexes such as income per capita has been addressed in the literature by many studies, as for instance, Copeland and Taylor (2004), and Grunewald and Martínez-Zarzoso (2009). The impact of social factors on environmental degradation has as well been treated in the literature (e.g., Banar and Özkan 2008; Gómez et al. 2009). These studies showed that the social characteristics of communities influence their attitudes towards environmental issues. Therefore, we selected two economic and two social country-level indicators: the Gross Domestic Product (GDP) per capita in 2021 by Eurostat;¹ the rate of GDP generated by the touristic sector before the Covid-19 pandemic by UNWTO,² the recycling rate of municipal waste in 2021 by Eurostat,³ and the percentage of citizens stating that environmental protection is a very important topic, as collected in December 2019 by the Standard Eurobarometer 501 survey. Table 12 lists the values for these variables. In the last row there is the correlation coefficient between each indicator and the variable determining the latent class to which the countries have been assigned by the multilevel latent class model as in Table 11. Those coefficients are not statistically significant, however their sign is informative and let us to hypothesize that country-level indicators, together with individual socio-demographic characteristics, might be drivers of the single sustainable actions investigated with our data.

We estimated 10 multilevel logistic regression models for the corresponding binary variables describing the actions as reported in Table 3 and with covariates both at individual level (level 1, age, gender, family dimension, occupation, frequency of traveling before the pandemic) and at country level (level 2, GDP per capita, rate of GDP generated by the touristic sector, recycling rate of municipal waste, attitude towards the environment). Results are listed in Table 13 (only significant estimated coefficients are reported). In multilevel regression, unobserved heterogeneity is modeled through the inclusion of random effects (Snijders and Bosker 2012). In our analysis, we introduced a random intercept in the logistic model, which represents the heterogeneity not observed in the global response. The variance of the random effect is significantly different from zero for all models, this means that the introduction of the random intercept is useful for modeling the data. Another general result is that the inclusion of the second-level variables leads to a decrease in the intra-class correlation coefficient (ICC), confirming that the country-level variables could help explaining the variability among European countries.

Age has a statistically significant effect on all actions except taking holidays outside the high touristic season, implying that youngest citizens are in general most willing to behave in a more sustainable way when traveling. This result is also confirmed by the fact that in the last logistic regression model where the binary dependent variable has value 1

¹ Data from: <https://ec.europa.eu/eurostat/data/database> (accessed on 28 February 2023).

² Data from: <https://www.unwto.org/tourism-data/unwto-tourism-dashboard> (accessed on 28 February 2023).

³ Data from: <https://ec.europa.eu/eurostat/web/circular-economy/indicators> (accessed on 28 February 2023).

Table 12 Country-level variables and correlation coefficients with assigned latent class

Country	GDP 2021 × 1000 euro	% of GDP from touristic sector	% recycling	Environment protection
Austria	45,370	5.6	42	58.2
Belgium	43,330	1.9	46	54.7
Bulgaria	10,330		59	34.6
Cyprus	26,680		76	16.6
Czech Republic	22,270	2.9	48	51.5
Germany	46,020	4.0	46	66.7
Denmark	57,520	2.5	56	51.5
Estonia	23,640	5.4	36	30.8
Spain	27,910	6.6	62	38.0
Finland	45,390	2.7	45	43.5
France	36,660	7.3	63	41.0
Greece	17,010	7.7	70	21.0
Croatia	14,720	11.4	45	30.2
Hungary	15,840	6.4	47	35.9
Ireland	84,940		50	37.4
Italy	30,140	5.7	43	51.4
Lithuania	20,000	4.8	40	49.7
Luxemburg	114,370	1.2	62	48.9
Latvia	17,890	4.5	36	41.0
Malta	28,890	6.1	70	9.1
The Netherlands	53,260	4.4	50	56.9
Poland	15,060	1.2	42	34.1
Portugal	20,850	8.1	49	28.9
Romania	12,620	3.0	46	11.5
Sweden	51,560	7.0	81	46.6
Slovenia	24,770	5.4	65	59.2
Slovakia	18,110	2.8	47	38.5
Correlation coefficient	-0.0748	0.0932	-0.2580	0.0324

to indicate non-preparedness to change habits, age has a positive significant effect. Being a woman increases the probability to adhere to almost all actions except paying more to the benefit of the local community, contributing to carbon-offsetting activities, and consuming locally sourced products. Being a man has a significant negative effect on contributing to carbon-offsetting activities and reducing water usage while on holiday; the effect is positive on not being prepared to change habits. The dimension of the family has a significant and negative effect on three actions, this means that larger families are less willing to consume locally sourced products while on holiday, and to reduce waste and water usage. Being self-employed, employee or without and occupation (mostly retired) increases the willingness to change habits with comparison with being a manual worker, indicating a positive effect of individual socio-economic condition. Travelling frequency before the Covid-19 pandemic has a general positive effect on the willingness to take actions. Specifically, travelling several times a year increases the probability to adopt all actions, except contributing to carbon-offsetting activities and paying more for the benefit of the local community.

Table 13 Multilevel logistic regression model results, only statistically significant estimated coefficients

	Pay more to protect the natural environment	Pay more to the benefit of the local community	Take holidays outside the high tourist season	Travel to less visited destinations	Contribute to carbon-offsetting activities
<i>Level 1 covariates</i>					
Age	-0.0036	-0.0005		-0.0066	-0.0057
Gender					
Female	0.1370		0.0281	0.1472	
Male					-0.1838
# of family members					
Occupation					
Self-employed	0.1663	0.1737	0.1333	0.1119	
Employee	0.1875	0.1616	0.1565	0.1605	0.1105
Manual worker					
Without occupation	0.1571		0.1754	0.0625	
Travelling before Covid-19					
Several times a year	0.3506	0.2700	0.3263	0.1631	
Once or twice a year	0.2152		0.1803		
Once every few years	0.1843		0.1740		
Never					
<i>Level 2 covariates</i>					
GDP 2021	-0.0022		-0.0058	-0.0038	0.0090
% GDP touristic sector	-0.0849		-0.0569	-0.0196	0.0507
% recycling	0.0140	0.0041	-0.0245	-0.0109	0.0157
Environment protection	-0.0064	0.0128	0.0190	0.0041	0.0145
	Consume locally sourced products on holiday	Choose transport options based on ecological impact	Reduce waste while on holiday	Reduce water usage while on holiday	I am not prepared to change my habits
<i>Level 1 covariates</i>					

Table 13 (continued)

	Consume locally sourced products on holiday	Choose transport options based on ecological impact	Reduce waste while on holiday	Reduce water usage while on holiday	I am not prepared to change my habits
Age	-0.0013	-0.0033	-0.0059	-0.0026	0.0102
Gender					
Female	0.2358		0.2217	0.1694	
Male			-0.1470	-0.5095	
# of family members	-0.0029		-0.0035	-0.0043	
Occupation					
Self-employed	0.2091				
Employee	0.2028		0.2037	0.1759	-0.1383
Manual worker					
Without occupation		0.1554	0.1585		
Travelling before Covid-19					
Several times a year	0.5168		0.2161	0.2536	
Once or twice a year	0.3239		0.1572	0.1734	
Once every few years					
Never		-0.1597	-0.1713		0.2936
<i>Level 2 covariates</i>					
GDP 2021	-0.0063	-0.0033		-0.0034	-0.0079
% GDP touristic sector	0.0931	-0.0207	0.0243	-0.0376	
% recycling	0.0126	0.0046	0.0028	0.0062	0.0364
Environment protection	0.0047	0.0082	0.0058	0.0038	0.0045

Paying more for the benefit of the natural environment, taking holidays outside the tourist season, consuming locally sourced products and reducing waste and water usage while on holidays, are considered also by less frequent travellers. Citizens who never travelled are, instead, not prepared to change their habits.

For what concerns the effects of the level 2-covariates, as a general consideration, we may say that economic indicators do not seem to affect behaviour, on the contrary they show mostly negative signs. The two social indicators have, in general, positive effects confirming the hypothesis that attitude towards the environment is an important driver of sustainable behaviour (Bassi 2023).

5 Discussion and conclusions

Citizens' propensity to change habits regarding tourism in order to preserve the environment depends on their sociodemographic characteristics, such as gender, age, occupation, household size, and frequency of travel before the Covid-19 pandemic, as well as on the European country where living. Respondents who do not usually travel are quite obviously less interested in the topic of sustainable tourism. Female and younger respondents are more willing to change to adopt a more sustainable behavior. Younger people, however, do not like these practices since they increase prices. Furthermore, we observed that only a relatively small percentage of European citizens is not prepared to change their habits (14.7%).

The European countries where citizens are most willing to change their habits are Malta (99%), Ireland and Luxembourg (95%), Austria, Portugal and Romania (94%); on the other hand, the countries where citizens are least prepared to assume sustainable touristic behavior are Cyprus (72%), Denmark (75%), Lithuania (76%) and Bulgaria (77%). We highlighted that 48.4% of European citizens are willing to reduce waste during their vacations, 35.5% will choose transport based on low ecological impact, 35% are willing to pay more to protect the natural environment, 34.8% say they will reduce water use and 33.7% are willing to contribute to activities that offset carbon emissions, such as planting trees. However, there is evidence of heterogeneity between countries. For example, citizens of Belgium, Bulgaria, Croatia and Slovakia chose, as the preferred sustainability action while on holiday, the reduction of waste; citizens of Ireland and the Netherland chose taking holidays outside the high tourist season and those of Malta, to pay more for the benefit of the environment.

The multilevel latent class approach established that the model that best fits the data, in terms of the BIC index, is the one with 7 groups of citizens (clusters) and 6 classes of European countries. The profile of each of the seven clusters is described. The 6 classes identify groups of European countries that are similar in terms of composition of clusters of citizens. The results of the multilevel latent class model summarize the evidences collected on European citizens on their preparedness to change habits while travelling or on holiday in order to assume a more sustainable behavior. The multilevel approach analyses this big quantity of data considering heterogeneity both within and between countries, allowing to identify citizens with similar attitudes and countries with similar citizens. Our model included also covariates at individual level that profile the clusters. Some interesting results emerge as for example the fact that the two European countries mostly associated with the clusters of citizens that are more involved with ST are Romania and Sweden.

While for Sweden this very good result could be somehow expected, this evidence for Romania contradicts.

As a further improvement of these analyses, we considered covariates at country level in order to estimate the drivers of sustainable attitude in the tourist sector both at individual and at country level. Country-level factors as well need further investigation and reasoning. It appears important to collect information of eventual elements that may favor or, on the contrary, limit the intention to perform the specific actions. An example of this is Italy where the majority of people are somehow forced to take their holidays in August—almost all activities close in this month— therefore, taking holidays outside the high season reveals as very difficult. A further line of research is linked to the availability of data on behavior while travelling and on holidays to compare it with the intentions that are monitored in this present survey. Some results defined as surprising might be due to the fact that questions refer to the intention of a more sustainable behavior and not to effective practice.

Summarizing, age, gender, occupation, number of components of the family and especially travelling frequency have an impact on the single sustainable actions proposed in the survey. County-level indicators better explain willingness to take these actions considering between country variability; the estimated effects showed an important impact of social factors such as attitude towards the environment and attention to saving of natural resources.

In general, European citizens appear quite involved with ST, this implies that investments to increase sustainability of touristic destinations and structures will potentially attract new tourists and even increase their satisfaction, having an effect also in monetary terms. It appears very important for operators in this sector to reach a deeper knowledge of their actual and potential clients also with regard to their attitude and importance assigned to environmental protection. At the same time, it is very important that touristic destinations become able to communicate their advancements in sustainability and circular economy practices.

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Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

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