

This article is published ahead of print. It has undergone peer review and has been accepted for a forthcoming issue. This version is citable, although the final version may include non-substantive formal revisions.

El artículo se publica como ahead of print. Ha superado la revisión por pares y ha sido aceptado para un número futuro. Esta versión es citable, aunque la versión final podrá incorporar ajustes formales no sustantivos.

Sustainable tourism in the EU: a willingness index based on behavioural intentions

Conceição Castro¹; Teresa Dieguez²

¹ CEOS.PP, ISCAP, Politechnic Institute of Porto, Matosinhos, Portugal. mariacastro@iscap.ipp.pt. ORCID: 0000-0002-1550-5867.

Corresponding author

² Polytechnic Institute of Cávado and Ave, Barcelos, Portugal. teresadieguez@gmail.com. ORCID: 0000-0002-4886-1446

Cite: Castro, C. & Dieguez, T. (2017). Sustainable tourism in the EU: a willingness index based on behavioural intentions. *PASOS. Revista de Turismo y Patrimonio Cultural*, 25(1), 202725003. <https://doi.org/10.25145/j.pasos.2027.25.003>

Recibido: 22/11/2025 · Reenviado: 03/06/2026 · Aceptado: 18/06/2026 · Sometido a evaluación por pares anónimos

Abstract: This study examines the willingness of European Union (EU) citizens to adopt sustainable tourism behaviours, using data from Flash Eurobarometer 499. A Willingness for Sustainable Tourism Behaviour (WSTB) Index was developed from nine behavioural intentions through an exploratory factor analysis, providing a synthetic and comparable measure of individual readiness for sustainable travel. Descriptive statistics and chi-square tests were employed to assess variation across gender, age, occupation, community type, nationality, and travel frequency. Women, younger people, employees, and frequent travellers are more likely to adopt sustainable behaviours. EU member states were ranked according to the WSTB Index: Romania, Sweden, and Slovakia appear at the top, whilst Bulgaria, Malta, and Portugal record the lowest scores. The findings reveal considerable disparities amongst EU member states, indicating that specific policies aligned with each country's socio-demographic and cultural characteristics are required to encourage behaviour change and foster more harmonised sustainable tourism practices across Europe.

Keywords: Sustainable tourism; Behavioural intentions; Willingness index; Sociodemographic factors; European Union.

Turismo sostenible en la UE: un índice de disposición basado en las intenciones de comportamiento

Resumen: Este estudio examina la disposición de los ciudadanos de la Unión Europea (UE) a adoptar comportamientos turísticos sostenibles, utilizando datos del Flash Eurobarómetro 499. Se desarrolló un índice de disposición al comportamiento turístico sostenible (WSTB) a partir de nueve intenciones de comportamiento mediante un análisis factorial exploratorio, el cual ofrece una medida sintética y comparable de la predisposición individual hacia el viaje sostenible. Se emplearon estadísticas descriptivas y pruebas de chi-cuadrado para evaluar la variación entre género, edad, ocupación, tipo de comunidad, nacionalidad y frecuencia de viaje. Las mujeres, los jóvenes, los empleados y los viajeros frecuentes mostraron mayor tendencia a adoptar comportamientos sostenibles. Los Estados miembros de la UE fueron clasificados en función del índice WSTB: Rumanía, Suecia y Eslovaquia ocupan los primeros puestos, mientras que Bulgaria, Malta y Portugal obtienen las puntuaciones más bajas. Los resultados revelan disparidades considerables entre los Estados miembros, lo que exige políticas específicas alineadas con las características sociodemográficas y culturales de cada país para fomentar el cambio de comportamiento y unas prácticas de turismo sostenible más armonizadas entre los europeos.

Palabras Clave: Turismo sostenible; Intenciones de comportamiento; Índice de disposición; Factores sociodemográficos; Unión Europea.

1. INTRODUCTION

Tourism is an important sector that contributes significantly to economic growth and development (World Tourism Organization, 2024). However, its rapid massification and democratisation have also generated substantial environmental pressures and caused meaningful social impacts on host communities (Pirvu et al., 2024). These realities raised huge challenges, demanding not only structural and policy reforms but especially a new mindset in what concerns tourist behaviours, where individual willingness to adopt sustainable practices is the kernel of the transition process (Degirmenci et al., 2025; Kosmas & Vatikioti, 2024).

This study aims to understand how European citizens are ready to adjust their travel behaviour in accordance to what is expected of the Sustainable Development Goals. Operating with data from the Flash Eurobarometer 499, which surveyed over 25,000 individuals across the 27 European Union Member States, the research evaluates behavioural intentions that bring into line with sustainable tourism principles.

Building on earlier research that used Eurobarometer data mainly to classify countries or assess behavioural responses to sustainability information (Bassi & Martín, 2024; Gomes & Lopes, 2023; Pinho & Leal, 2024), this study takes a step further by developing a Willingness for Sustainable Tourism Behaviour (WSTB) Index. The development of a Willingness for Sustainable Tourism Behaviour (WSTB) Index advances previous literature by consolidating dispersed data on attitudes towards sustainable tourism practices into a synthetic and comparable metric. Its novelty consists of transforming survey evidence into an operational indicator that enables benchmarking, monitoring and policy targeting, thus providing more actionable insights. Furthermore, the investigation explores how willingness is influenced by sociodemographic dimensions such as age, gender, occupation, nationality, community type, and travel frequency.

2. LITERATURE REVIEW

Sustainable tourism refers to “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (World Tourism Organization, 2005: 12). Sustainable tourism development demands conserving ecological processes, natural heritage and biodiversity, honouring the host communities' sociocultural authenticity, and ensuring long-term economic operations (World Tourism Organization, 2005).

The sustainability of the tourism sector could be enhanced if travellers adopted more sustainable behaviours (Demeter et al., 2023). Developing and experimentally evaluating interventions that encourage such behaviours could help achieve this goal. Sustainable tourists have an important role in driving sustainable tourism (Sato et al., 2024). They travel responsibly, pursuing the preservation of destinations for future generations, making choices to reduce their environmental footprint, supporting local economies, respecting local cultures, and contributing positively to the destinations (Dinan & Sargeant, 2000; Holmes et al., 2019; Ying et al., 2025). Dolnicar (2004) found that sustainable tourists not only care about nature but also contribute more economically, are more satisfied, and act as promoters of the destinations they visit. Based on previous definitions that suggest that sustainable tourists recognise that are guests in another environment, culture, society and economy and show respect for this distinctive aspect of travelling, Dinan and Sargeant (2000) constructed a definition around three main dimensions: adhere to a code of conduct, be mindful of the impact on environment and support the local economy by engaging with the host community. Sustainable tourists are those who “(1) agree with and be willing to work with, a code of conduct that recommends how they as visitors should behave while on holiday in a particular locale/region; (2) appreciate that their activities have impacts on the physical environment and tailor their actions accordingly - at its most simple level this might involve the visitor in recognising the need to adopt responsible behaviours in respect of their litter and making use of recycling schemes where available; (3) demonstrate an understanding of the economic implications of tourism in their host economy and therefore be prepared to purchase local products, including both foodstuffs and crafts.” (Dinan & Sargeant, 2000: 7). The World Committee on Tourism Ethics (2020) also states that responsible tourists should honour the host and common heritage, protect the planet, support the local economy, travel safely, be informed travellers, use digital platforms wisely, and set a good example for other travellers.

A sustainable tourist should contribute to boosting the regional economy and enhancing local prosperity (John, 2020; Pai et al., 2025; Toni et al., 2018). For López-Sánchez and Pulido-Fernández (2017), pro-sustainable tourists are more likely to be willing to pay for sustainability. Nevertheless, attitude-behaviour inconsistencies are a fundamental problem in tourism, since pro-environmental attitudes do not always translate into sustainable travel behaviours (Juvan & Dolnicar, 2014; Passafaro et al., 2015). It is recognised in the literature that attitudes towards sustainable behaviours depend on the characteristics of the tourists (Rodríguez et al., 2020), such as gender, age, education, occupation, income, and nationality (Dolnicar, 2004; Rodríguez et al., 2020). Some authors have observed that younger tourists tend to show greater environmental awareness, often opting for eco-friendly accommodations or low-impact activities (Holmes et al., 2019; Sato et al., 2024). However, Pinho and Gomes (2023) consider that while Generation Z shows some interest in the Sustainable Development Goals (SDGs) and prefers sustainable destinations, they are less committed to maintaining those destinations or engaging in environmentally responsible behaviours.

during their visit. Dolnicar (2010), Juvan and Dolnicar (2017) and Rodríguez et al. (2020) refer that older tourists have higher pro-environmental attitudes. Sustainable tourist behaviour is more common among older travellers, who tend to take shorter trips, engage in low-impact activities, and are more likely to practice environmentally friendly measures such as carbon offsetting. Also, people with higher incomes tend to engage in more sustainable behaviour, potentially due to their education levels (Juvan & Dolnicar, 2017), although the empirical literature presents mixed findings.

Gender also plays a role, as studies suggest that women are often more likely to engage in sustainability-conscious behaviours while travelling (Rodríguez et al., 2020). In a systematic review of the literature, Puciato et al. (2023) found that younger, better-educated, and wealthier tourists are more likely to be willing to pay more for sustainable services. In a similar vein, López-Sánchez and Pulido-Fernández (2017) looked at the willingness to pay more for sustainable destinations and found different tourist segments.

Some other studies analysed the willingness of tourists to change their habits based on data from the Flash Eurobarometer 499, but from a different perspective. Gomes and Lopes (2023) analysed how the available information on the sustainability of destinations influences the willingness to adopt more sustainable behaviours using Partial Least Squares estimation. Pinho and Leal (2024) applied machine learning (Random Forest) to Eurobarometer data to identify patterns in how Europeans consider sustainability—environmental, social, and economic—when choosing travel destinations. Bassi and Martin (2024), in turn, clustered the 27 EU member states based on the sustainable tourism practices of their citizens, focusing on cross-country differences in tourists' commitment to sustainability.

3. METHODOLOGY

Data were collected from Flash Eurobarometer 499 – “Attitudes of Europeans towards tourism” available on GESIS – Leibniz Institute for the Social Sciences (European Commission, 2022), to the answer of the question (Q5): “Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?” (1 = Yes, 0 = Not mentioned) (European Commission, 2022: 24) which comprises 11 items. Nine of these items cover a range of behavioural shifts (e.g., reducing waste, supporting local communities, using eco-friendly transport). These items serve as the foundation for both the descriptive and inferential analyses. The items “I am not prepared to change my habits” and “Don’t know/not applicable” were excluded because they do not reflect proactive, sustainable behaviours. The dataset from this Eurobarometer is weighted to “known population proportions” (European Commission, 2022: 1), and there was no missing data.

First, descriptive statistics were computed to profile the sample and quantify the prevalence of each sustainable behaviour. Second, a series of Chi-square tests of independence were conducted to examine whether willingness to engage in each behaviour was significantly associated with key sociodemographic variables: gender, age, occupation, nationality, type of community (urban/rural), and frequency of travel, by comparing observed and expected frequencies. To ensure statistical validity, Chi-square tests were performed only when expected cell frequencies exceeded the recommended threshold of 5. To analyse which groups are significantly different, *post hoc* analysis was performed using standardised residuals and pairwise comparisons with Bonferroni correction, which adjusts the significance level to reduce the risk of false positives.

To develop a measure of sustainable behaviour intention, the nine selected items were submitted to Exploratory Factor Analysis (EFA) using Principal Component Analysis with Varimax rotation. The data were processed and analysed using version 29 of the Statistical Package for the Social Sciences (SPSS) software.

4. RESULTS AND ANALYSIS

4.1. Descriptive analysis

The sample's gender distribution is relatively balanced, with 51% of the respondents being female (Table 1). The average age is 48.87, and 66% of the respondents are 40 years of age or older. Participants are dispersed geographically among towns (34.5%), big cities (37.3%), and rural areas (27.7%). Before COVID-19, more than half (51.5%) of people travelled for leisure or business multiple times annually. The majority of nationalities of the respondents represent 4% each, with Luxembourg (1%), Malta (2%), and Austria (3%) having slightly lower representation.

Table 1. Descriptive statistics

		Frequency
Gender	Male	48.5%
	Female	51.0%
	In another way / Prefer not to say	0.5%
Age	15 - 24 years	9.0%
	25 - 39 years	24.9%
	40 - 54 years	30.5%
	55 years and older	35.5%
Age when stopped full-time education	Up to 15 years	4.7%
	16-19	29.2%
	20 years and older	57.6%
	Still in full-time education	6.5%
	Never been in full-time education	0.6%
	Don't know	1.1%
	Refusal	0.3%
Type of community	Rural area or village	27.7%
	Small or middle sized town	34.5%
	Large town	37.4%
	DK	0.5%
Frequency of travel for leisure and business (before the COVID-19 pandemic)	Several times a year	51.5%
	Once or twice a year	33.3%
	Once every few years	7.8%
	Never	7.2%
	Don't know	0.2%

Source: Own elaboration based on data from Flash Eurobarometer 499

The willingness of participants to adopt sustainable travel practices varied (Table 2). Respondents were more prepared to change their habits towards consuming more locally produced goods (54.0%), reducing waste (48.3%), and avoiding the busiest travel times (45.1%). However, more costly practices, such as spending more to protect the environment (34.3%) or benefit the local communities (31.4%), received less support. The percentage of respondents who are prepared to make efforts to reduce water use (32.0%) and offset carbon emissions (32.3%) is also lower. These results suggest that although most people are willing to implement affordable and practical sustainable practices, fewer tourists are prepared to change their habits in activities that call for a more demanding or financial commitment.

Table 2. Willingness to adopt sustainable travel and tourism practices

Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?	Mean	Frequency (%)
Pay more to protect the natural environment	0.34	34.3%
Pay more to the benefit of the local community	0.31	31.4%
Take holidays outside of the high tourist season	0.45	45.1%
Travel to less visited destinations	0.40	39.6%
Contribute to carbon-offsetting activities	0.32	32.3%
Consume locally sourced products on holiday	0.54	54.0%
Choose transport options based on ecological impact	0.33	33.2%
Reduce waste while on holiday	0.48	48.3%
Reduce water usage on holiday	0.32	32.0%
I am not prepared to change my habits	0.14	13.7%
Don't know/ not applicable	0.02	1.5%

Source: Own elaboration based on data from Flash Eurobarometer 499

4.2. Sociodemographic differences in willingness to change travel behaviour

To explore behavioural variation across population groups, Chi-square tests were performed for each sustainable behaviour and demographic variable. Significant associations were found for most sociodemographic factors (Table 3).

Gender. Women showed significantly higher willingness than men across nearly all sustainable behaviours—especially environmental protection, waste reduction, and green transport—except in paying more to support local communities. Overall, the analysis of the results for the last question reveals that women were significantly less likely to refuse to change their habits (Standardised Residuals (RS) = -7.5). In contrast, men and respondents with unidentified gender showed the opposite pattern, with greater resistance (RS = +7.3 and +3.6, respectively). These findings suggest that strategies to promote sustainable tourism may need to be adapted with sensitivity to gender differences.

Age. The Chi-square test indicates a statistically significant association between age groups and willingness to change travel behaviour ($p < 0.001$). The analysis of standardised residuals across the 9 items concerning willingness to change travel behaviour revealed several significant differences between age groups and specific behavioural intentions. The respondents between 25-39 years of age are the group that showed the strongest inclination to change their travelling habits towards more sustainable patterns, except reducing water consumption. The group aged 40-54 has a similar pattern to the previous age group regarding willingness to travel to less visited places, consume local products, and reduce rubbish. They are, however, more likely to reduce their water consumption on holiday. Of all the age groups, the youngest are the most willing to use more environmentally friendly transport, but not to consume local products. In the remaining items, the magnitude of the difference is not significant. The 55+ age group is less likely to change their habits in all items, but the magnitude of the difference in taking holidays in the lower seasonal periods is not significant.

Romao and Bi (2021) and Gross and Grimm (2018) also highlight that young tourists have a high propensity to use public transportation. Zamparini and Vergori (2021) found that younger tourists have a higher preference for more environmentally friendly modes of transport.

Occupation. A significant association is also observed between the willingness to pursue a more sustainable tourism behaviour and the respondent's occupation (all the p-values of the Qui-Suare test are <0.001), suggesting that occupation plays a meaningful role in shaping sustainable attitudes. The most environmentally conscious group was the employees. They are more likely to indicate a willingness to avoid peak tourism times (SR=4.5), to choose regional products (SR=4.4), to minimize holiday trash (SR=3.9) and the use of water (SR=3.3), to spend more to aid communities (SR=3.2), to offset carbon via actions (SR=2.9), to pay more to environmental preservation (SR=2.7) and to eco-friendly transport (SR=2.1). Manual workers, in contrast, showed a negative residual for willingness to choose underexplored areas (SR=-2.8), to buy local holiday goods (SR=-2.1), and to pay more to protect the environment (SR=-2.0), indicating lower-than-expected support for this behaviour. On the other items, the magnitude of the differences is not significant. This could be a result of certain limitations, like less money to spend, less environmental education, or fewer chances to participate in discussions about sustainability. Respondents without professional activity did not significantly deviate from expected frequencies in either direction on the willingness to pay more to protect the environment, to travel off-season, and to reduce waste and water. On the other items, their willingness to change their behaviour towards more sustainability is lower than expected. The group labeled as Refusal (those who did not disclose their occupation) showed the most pronounced disengagement.

Nationality. According to the respondents' nationalities, the analysis shows notable differences in their willingness to adopt more environmentally friendly travel practices. Interestingly, across all surveyed items, participants from Romania and Sweden consistently show the highest levels of propensity to change their travel habits. These two national groups show a notable willingness to modify their behaviour to lessen the negative effects of travel. The willingness to change is relatively lower among Romanian respondents when it comes to water reduction measures, indicating a possible area for focused awareness or intervention. Bulgarian respondents show the lowest, or among the lowest, willingness to change their travel habits across almost all survey items. This pattern indicates a generally low likelihood among this national group to adopt

more environmentally friendly travel practices. However, three specific behaviours stand out as exceptions: reducing waste while traveling, buying locally sourced goods on vacation, and participating in carbon-offsetting activities. Even in these cases, the frequency of positive responses is still above what would be expected from the overall distribution. This suggests a departure from the broader reluctance pattern. These findings indicate that Bulgarian tourists are only somewhat engaged with sustainability.

Community Type. Regarding the type of community where respondents live, although there is a tendency for those living in large cities to be more inclined to change their behaviour and take holidays outside the high season and use more environmentally friendly transport (more responses in large cities than expected), the magnitude of this difference is not strong enough to have 95% confidence that it did not occur by chance. Similarly, the results suggest that those living in small or medium-sized towns are less likely to travel to less popular destinations, but the analysis of the residuals shows that the magnitude of these differences is not statistically significant. Although the results of the Qui-square test reveal differences in the change of behaviour concerning the reduction of waste and consumption of water, these differences are not statistically different by the analysis of the residuals. About the consumption of local products, those who live in large cities are more inclined to change their habits than those who live in rural areas or villages, and these differences are statistically significant.

Travel Frequency. Tourists who travel several times a year are the most willing to change their habits towards more sustainable tourism in all aspects. This might be the result of frequent travellers' increased awareness of the need for sustainable practices due to their increased experience and knowledge of the effects of tourism. Their willingness to adopt greener behaviours and sense of responsibility may also grow as a result of frequent travel to several locations.

Table 3. Association between socio-demographic factors and sustainable tourism behaviours (p-values)

Behavioural Intention	Gender	Age	Occupation	Nationality	Type of community	Frequency of travel
Pay more to protect the natural environment	<0.001	<0.001	<0.001	<0.001	-	<0.001
Pay more to the benefit of the local community	-	<0.001	<0.001	<0.001	-	<0.001
Take holidays outside of the high tourist season	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Travel to less visited destinations	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Contribute to carbon-offsetting activities	<0.001	<0.001	<0.001	<0.001	-	<0.001
Consume locally sourced products on holiday	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Choose transport options based on ecological impact	<0.001	<0.001	<0.001	<0.001	0.004	<0.001
Reduce waste while on holiday	<0.001	<0.001	<0.001	<0.001	0.013	<0.001
Reduce water usage on holiday	<0.001	0.003	<0.001	<0.001	0.025	<0.001
I am not prepared to change my habits	<0.001	<0.001	<0.001	<0.001	-	<0.001

Source: Own elaboration

Note: “-” indicates no statistically significant association ($p \geq 0.05$).

4.3. The Index of willingness to change travel behaviour

To synthesise the behavioural data into a meaningful metric, an Exploratory Factor Analysis was conducted based on the nine behavioural intention items identified in the Flash Eurobarometer 499 survey. Cronbach's alpha coefficient evaluated the internal consistency or reliability, which was 0.979 for the 9 items, suggesting the variables' measurement quality. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is equal to 0.870, greater than the acceptable threshold of 0.7 (Kaiser, 1974), and the Bartlett's sphericity test was statistically significant (397.281, $p\text{-value} < 0.01$), denoting that the variables are highly correlated and so the Factor Analysis can be developed. Also, the Measurement of Sample Adequacy is above 0.8, exceeding the 0.5 threshold, confirming that all variables were appropriate for inclusion in the factor analysis (Marôco, 2014). The analysis was conducted using Principal Component Analysis with Varimax rotation. The result led to one factor, with an Eigenvalue greater than one, explaining 86.85% of the total variance, above the threshold of 60% (Hair et al., 2018) (Table 4). All items loaded positively on the factor, with high communalities ranging from a minimum of 0.799 to a maximum of 0.943 (Hair et al., 2018). Based on these results, the factor was rescaled to a 0–100 range, using a min-max approach, resulting in the Willingness for Sustainable Tourism Behaviour (WSTB) Index. This index quantifies the degree to which individuals across the EU express readiness to adopt more sustainable tourism behaviours.

Table 4. Communalities of items and total variance explained from factor analysis

Item	Communalities
Pay more to protect the natural environment	0.855
Pay more to the benefit of the local community	0.858
Take holidays outside of the high tourist season	0.860
Travel to less visited destinations	0.943
Contribute to carbon-offsetting activities (e.g. plant trees)	0.927
Consume locally sourced products on holiday	0.841
Choose transport options based on ecological impact	0.845
Reduce waste while on holiday	0.889
Reduce water usage on holiday	0.799
Eigenvalues	7.816
Variance explained by each factor	86.848%
Total Variance explained	86.848%

Source: Own elaboration

The computed WSTB Index allows for direct comparison of sustainable tourism willingness across EU Member States. Countries were grouped into five levels of readiness - Very High, High, Moderate, Low, and Very Low - based on their index scores (Table 5, Figure 1). These levels provide insights into cultural and geographic differences in the intentions of people to travel sustainably.

Countries like Romania, Sweden, and Slovakia are ranked in the Very High category (80-100). This ranking reflects a strong individual commitment to sustainability in tourism. Romania is in the leading position, which may be the result of recent policy focus, efficient environmental interaction strategies, or generational change. Sweden, with a score of 98.6, bring into line with its reputable environmental leadership, while Slovakia (scoring 83.3) performance advocates rising sustainable consciousness in Central and Eastern Europe. Zientara et al. (2024) found that tourists from countries with higher Environmental Performance Index scores tend to give greater priority to environmental issues and behave in a more environmentally friendly manner, revealing an alignment between national environmental policies and individual values.

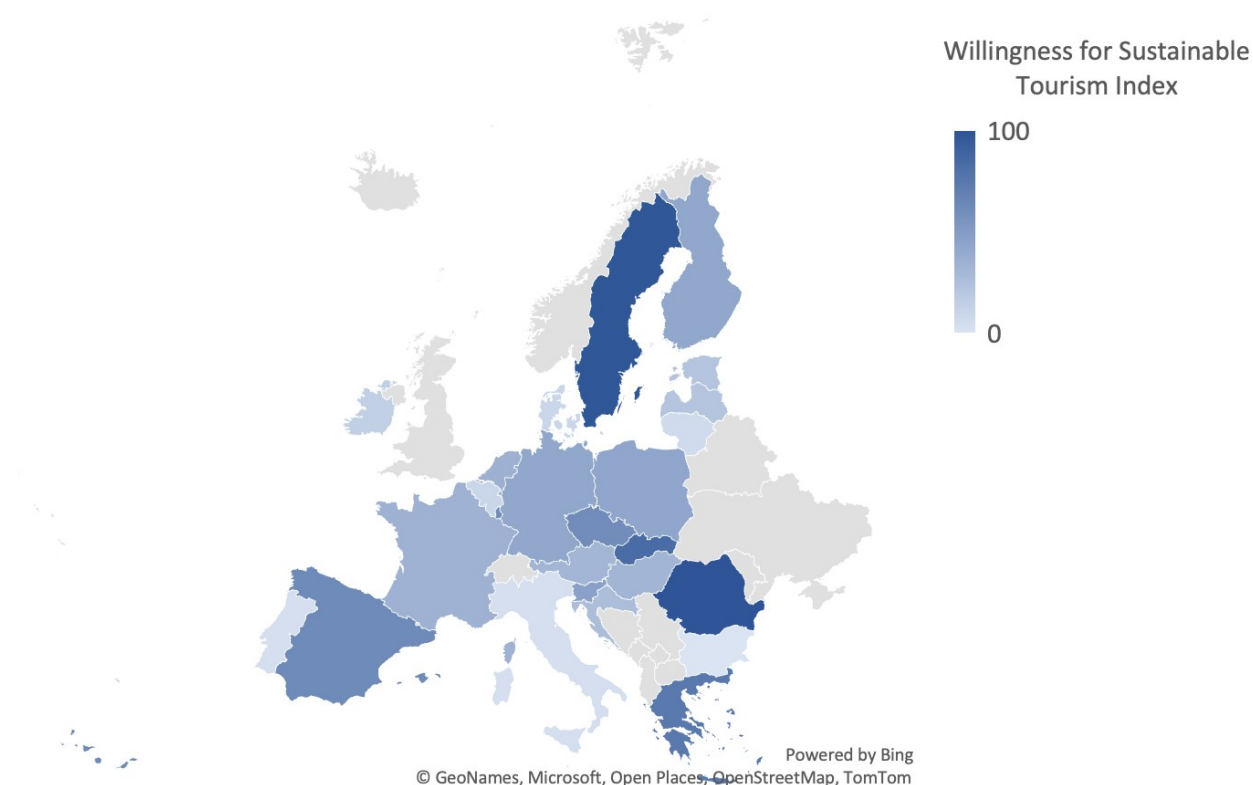
The High category (scores between 60 and 79.9) includes Greece, Spain, the Czech Republic, and Luxembourg. These countries demonstrate a generally favourable disposition toward behavioural change, though perhaps with greater variation across actions. Countries like Greece and Spain, i.e., countries from Southern Europe, are usually associated with mass tourism and emerge as countries where there is an important change in the collective mindset and values of travellers regarding more responsible travel (Campos et al., 2022; Skagias et al., 2021).

Slovenia, Poland, Germany, Finland, Netherlands, France, Hungary, and Austria are ranked in the Moderate range (30 - 59.9). This group proposes rising consciousness and openness to sustainability, although with limitations such as behavioural disinterest or even dependence on institutional systems. Notably, some environmentally progressive nations like Germany and the Netherlands appeared here, potentially reflecting a plateau in perceived personal responsibility (Jiang & Gossage, 2025; Uittenbroek et al., 2022).

Table 5. Willingness for Sustainable Tourism Behaviour Index (WSTB)

	Country	WSTB		Country	WSTB
Very High	Romania	100	Low	Croatia	26.4
	Sweden	98.6		Estonia	21.9
	Slovakia	83.3		Latvia	21.7
High	Greece	74		Ireland	14.4
	Spain	61.9		Rep. Cyprus	13.4
	Czech Rep.	61	Very Low	Denmark	9.3
Moderate	Luxembourg	60.9		Belgium	9.3
	Slovenia	46.6		Lithuania	5.9
	Poland	43		Italy	3.8
	Germany	42.4		Portugal	3.3
	Finland	42.2		Malta	2.6
	Netherlands	35.3		Bulgaria	0
	France	34.2			
	Hungary	32.2			
	Austria	31.7			

Source: Own elaboration

Figure 1. Map of Europe with the Willingness for Sustainable Tourism Index

Countries in the Low tier (10–29.9), including Croatia, Estonia, Latvia, Ireland, and Cyprus, displayed limited willingness to change. This may stem from competing cultural norms, lack of perceived impact, or infrastructural constraints (Ahas, 2025; Ciascai et al., 2022; McLoughlin et al., 2023).

Lastly, the Very Low category (<10) features Denmark, Belgium, Lithuania, Italy, Portugal, Malta, and Bulgaria. These results reveal a critical mismatch between environmental rhetoric and actual behavioural intention (Sukumaran & Majhi, 2024). In particular, Portugal, Malta, and Bulgaria signal the need for targeted policy interventions to foster behavioural change (Oliu-Barton & Lopez, 2024).

All this evidence suggests that there is a Europe with different positionings, diverse perceived environmental and sustainable responsibilities, and distinctive policies. Some of these distinctions may be the reflex of cultural values and national policies, but the most important to retain is that it is time to intervene. Nonetheless, such intervention should be pertinent and in line with the specific characteristics of the nations where it will be implemented. Central and Eastern Europe present the greatest heterogeneity, with Romania taking the lead, while Bulgaria stands out for its disconnection from regional dynamics. In Northern and Western Europe, there are modest values which may indicate either a saturation point where further sustainable action feels constrained, or more critical self-assessment by respondents, mainly in countries traditionally viewed as environmentally progressive (e.g., Denmark, Belgium, and the Netherlands). In Southern Europe, on the contrary, it is a time of transition with an asymmetric advancement of the various countries. The WSTB Index, therefore turns out to be a strong and scalable indicator of the behavioural readiness which should be considered to operationalise targeted sustainability policies in the tourism industry.

5. DISCUSSION

This research reveals important discrepancy across Europe in what concerns countries and demographic profiles when related into willingness of European citizens to adopt sustainable tourism practices. The Index of Willingness to Adopt Sustainable Tourism Behaviours (WSTB), conceived as part of this study, demonstrates to be as appropriate analytical tool for gauging behavioural predisposition towards adopting sustainable practices. It is also a robust comparative benchmark that can be mobilised both in the formulation of public policies and in academic research. The results show that Romania, Sweden, and Slovakia stand out as leading countries, with appreciably high scores, suggesting a strong cultural and/or institutional convergence with the principles of sustainability. On the other hand, countries such as Portugal, Italy, Malta and Bulgaria register substantially lower levels of availability, thus revealing significant regional divides and pointing to structural constraints, particularly of an economic nature, as well as incipient public involvement. Bassi and Martín (2024) also found, with a different methodology, similar clusters of high and low commitment.

The findings also highlight significant differences by sociodemographic characteristics. In line with previous studies (Holmes et al., 2019; Rodríguez et al., 2020; Sato et al., 2024), women, young adults, those who have professional activities, and regular travellers are more disposed to adopting sustainable behaviours. This points to the role of socialisation, education, and policy feedback effects, and such people would contribute to environmental education.

However, a major challenge to progress sustainable tourism in Europe is to narrow gap between the awareness of sustainable tourism and actions: tourists easily accept sustainable behaviours with low effort, and resist those that require a change in lifestyle or an added cost. This information advocates for public policies adapted to each scenario, public policies promoting more sustainable tourism through an ensemble

of incentives and investment in sustainable infrastructure, raising awareness, and supporting initiatives in which tourism benefits the local population and develops sustainable tourism destinations. These findings support the need for public policies adapted to each context, a mix of private incentives and robust and well-designed support packages.

The WSTB Index enables cross-country comparisons of willingness, informs target policies, and contributes to the literature by connecting willingness to deeper structural factors such as cultural orientation and institutional capacity. Its simplicity makes it a practical tool for both researchers and decision-makers, while recognising that intentions may not translate into behaviours.

6. CONCLUSION

The paper investigates the propensity of EU citizens for sustainable tourism behaviours by introducing the WSTB (Willingness for Sustainable Tourism Behaviour) index. This new measure would thus allow to adequately assess and comparison of intention to adopt such a sustainable behaviour in a travel setting, while adjusting for country specificities. The results indicate that there are considerable differences between member states: while countries like Romania and Sweden have a high commitment to sustainability, other countries, such as Portugal, Italy, Malta and Bulgaria show lower predisposition for change. Variables, like sex, age, occupation and the frequency of visits, is evidenced to have a significant influence on this willingness, indicating that policies of promotion of sustainable tourism should be planned considering the different socio-demographic profiles. Despite a generalised willingness to adopt measures that are either low cost or low effort, however, the intention to act does not translate into effective initiatives, particularly where their implementation demands greater personal investment. In this context, the WSTB can be regarded as a useful instrument for defining public policies since it encourages the establishment of priorities and the removal of obstacles to the adoption of sustainable practices.

Limitations of this study include its cross-sectional analysis and reliance in self-reported data instead of observed behavior, which does not allow generalisations about cause or effect and no conclusions can be drawn about evolutionary behavior over time. The study is based on self-reported data, not observational data, which may lead to the influence of social desirability bias or overestimation of pro-environmental attitudes. In addition, the index uses only a subset of Eurobarometer items, limiting the measures of behavioral dimensions that can be estimated. The lack of standard tests for measurement invariance across countries also suggests that cultural or language differences may contribute to variability in willingness interpretation. Other research could broaden the scope of use of the WSTB Index by longitudinal study to follow how willingness will change after policy interventions, socioeconomic conditions or environmental events.

Future studies could test the WSTB longitudinally to record changes over time, validate it against experimental or revealed-preference data, and examine how is related to individual motivations and the institutional framework within which a broader shift toward more responsible forms of tourism across Europe is - or is not occurring.

As practical implications, the proposed WSTB index offers policy makers insight into countries and demographic segments of the population where the willingness is high and low and could be used to guide resource allocation or specific strategies. For those countries with lower willingness, integrated policy

packages combining public policies of incentive, sustainable transportation, community participation and public campaigns encouraging consumers to see the personal and wider societal benefits of sustainable tourism might be needed. Destinations and tourism managers may also use the index to develop communication strategies around low effort sustainable behaviours as entry points, but gradually to increasingly demanding behaviours. Through the connection of behavioural insights to policy design, the WSTB Index informs the creation of cost-effective and context-appropriate policy responses that underpin the broader transformation of the EU to sustainable tourism.

REFERENCES

- Ahas, R., Raun, J., & Silm, S. (2024). Estonia. En J. Jafari & H. Xiao (Eds.), *Encyclopedia of tourism* (pp. 348-349). https://doi.org/10.1007/978-3-030-74923-1_554
- Bassi, F., & Martín, J. A. (2024). Drivers of sustainable tourism in Europe: How to design efficient business strategies. *Quality & Quantity*, 1–26. <https://doi.org/10.1007/s11135-023-01819-0>
- Campos, C., Laso, J., Cristóbal, J., Albertí, J., Bala, A., Fullana, M., Fullana-i-Palmer, P., Margallo, M., & Aldaco, R. (2022). Towards more sustainable tourism under a carbon footprint approach: The camino lebaniego case study. *Journal of Cleaner Production*, 369, 133222. <https://doi.org/10.1016/j.jclepro.2022.133222>
- Ciascai, O. R., Dezs, S., & Rus, K. A. (2022). Cycling tourism: A literature review to assess implications, multiple impacts, vulnerabilities, and future perspectives. *Sustainability*, 14(15), 8983. <https://doi.org/10.3390/su14158983>
- Degirmenci, T., Okoth, E., & Erdem, A. (2025). Political governance and tourism development: The roles of globalisation, stability, economic growth, and taxation in top destinations. *Tourism Recreation Research*, 1-13. <https://doi.org/10.1080/02508281.2025.2465963>
- Demeter, C., Fechner, D., & Dolnicar, S. (2023). Progress in field experimentation for environmentally sustainable tourism – A knowledge map and research agenda. *Tourism Management*, 94, 104633. <https://doi.org/10.1016/j.tourman.2022.104633>
- Dinan, P., & Sargeant, A. (2000). Social marketing and sustainable tourism: Is there a match? *International Journal of Tourism Research*, 2(1), 1-14. [https://doi.org/10.1002/\(SICI\)1522-1970\(200001/02\)2:1<1::AID-JTR178>3.0.CO;2-5](https://doi.org/10.1002/(SICI)1522-1970(200001/02)2:1<1::AID-JTR178>3.0.CO;2-5)
- Dolnicar, S. (2004). Insights into sustainable tourists in Austria: A data-based a priori segmentation approach. *Journal of Sustainable Tourism*, 12(3), 209-218. <https://doi.org/10.1080/09669580408667234>
- Dolnicar, S. (2010). Identifying tourists with smaller environmental footprints. *Journal of Sustainable Tourism*, 18(6), 717-734. <https://doi.org/10.1080/09669581003668516>
- European Commission. (2022). *Flash Eurobarometer 499: Attitudes of Europeans towards tourism, Autumn 2021* (ZA7807; Version 1.0.0) [Data set]. GESIS – Leibniz Institute for the Social Sciences. <https://doi.org/10.4232/1.13878>
- Gomes, S., & Lopes, J. M. (2023). Insights for pro-sustainable tourist behavior: The role of sustainable destination information and pro-sustainable tourist habits. *Sustainability*, 15(11), 8856. <https://doi.org/10.3390/su15118856>
- Gross, S., & Grimm, B. (2018). Sustainable mode of transport choices at the destination—public transport at German destinations. *Tourism Review*, 73(3), 401-420. <https://doi.org/10.1108/TR-11-2017-0177>
- Hair, J. F. J., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate Data Analysis* (8th ed.). Cengage Learning EMEA.
- Holmes, M. R., Dodds, R., & Frochot, I. (2019). At home or abroad, does our behavior change? Examining how everyday behavior influences sustainable travel behavior and tourist clusters. *Journal of Travel Research*, 60(1), 102-116. <https://doi.org/10.1177/0047287519894070>
- Jiang, X., & Gossage, M. G. (2025). A moderated mediation model for explaining residents' environmental and cultural responsible behavior. *Frontiers in Psychology*, 16, 1489481. <https://doi.org/10.3389/fpsyg.2025.1489481>
- John, E. (2020). Do tourists behave in a sustainable manner at destinations? Empirical evidence from Munnar. *Materials Today: Proceedings*, 33, 4866-4875. <https://doi.org/10.1016/j.matpr.2020.08.399>
- Juvan, E., & Dolnicar, S. (2017). Drivers of pro-environmental tourist behaviours are not universal. *Journal of Cleaner Production*, 166, 879–890. <https://doi.org/10.1016/j.jclepro.2017.08.087>
- PASOS. Revista de Turismo y Patrimonio Cultural. ISSN 1695-7121 <https://doi.org/10.25145/j.pasos.2027.25.003>

- Juvan, E., & Dolnicar, S. (2014). The attitude behavior gap in sustainable tourism. *Annals of Tourism Research*, 48, 76–95. <https://doi.org/10.1016/j.annals.2014.05.012>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31–36. <https://doi.org/10.1007/BF02291575>
- Kosmas, P., & Vatikioti, A. (2024). Beyond neoliberal tourism: A critical review. En A. Trono, V. Castronuovo, & P. Kosmas (Eds.), *Managing Natural and Cultural Heritage for a Durable Tourism* (pp. 85–97). Springer. https://doi.org/10.1007/978-3-031-52041-9_7
- López-Sánchez, Y., & Pulido-Fernández, J. I. (2017). Factors influencing the willingness to pay for sustainable tourism: A case of mass tourism destinations. *International Journal of Sustainable Development & World Ecology*, 24(3), 262–275. <https://doi.org/10.1080/13504509.2016.1203372>
- Marôco, J. (2014). *Análise estatística com o SPSS Statistics* (7th ed.). Report Number.
- McLoughlin, E., Maguire, K., & Hanrahan, J. (2023). Barriers to evidence-based sustainable planning for tourism: Perspectives from Ireland's local authorities. *Sustainability*, 15(23), 16274. <https://doi.org/10.3390/su152316274>
- Oliu-Barton, M., & Lopez, J. M. (2024). *How much does Europe pay for clean air?* (Bruegel Working Paper 15). Bruegel. <https://www.bruegel.org/system/files/2024-06/WP%2015%202024.pdf>
- Pai, C. H., Zhang, Y., Wang, Y. L., Wang, Y., & Shang, Y. (2025). From conservation to prosperity: A quantitative study on the positive correlation between sustainable tourism practices and economic growth. *Current Issues in Tourism*, 28(10), 1677–1700. <https://doi.org/10.1080/13683500.2024.2362379>
- Passafaro, P., Cini, C., Diaco, V., Schirru, O., Boison, A., Gasparri, V., & Giannantoni, S. (2015). Understanding preferences for nature-based and sustainable tourism: The role of personal values and general and specific environmental attitudes. *Current Research in Psychology*, 6(1), 1–14. <https://doi.org/10.3844/crpsp.2015.1.14>
- Pinho, M., & Gomes, S. (2023). Generation Z as a critical question mark for sustainable tourism—An exploratory study in Portugal. *Journal of Tourism Futures*, 10(3), 486–503. <https://doi.org/10.1108/JTF-07-2022-0171>
- Pinho, M., & Leal, F. (2024). AI-enhanced strategies to ensure new sustainable destination tourism trends among the 27 European Union Member States. *Sustainability*, 16(22), 9844. <https://doi.org/10.3390/su16229844>
- Pirvu, R., Stoicescu Ignătescu, D. M., Gruescu Ciobanu, R. M., & Bratu, R. Ş. (2024). Sustainable tourism in Romania: integrating economic, social and environmental dimensions. *Proceedings of the International Conference on Business Excellence*, 18(1), 2784–2795. <https://doi.org/10.2478/picbe-2024-0232>
- Puciato, D., Szromek, A. R., & Bugdol, M. (2023). Willingness to pay for sustainable hotel services as an aspect of proenvironmental behavior of hotel guests. *Economics and Sociology*, 16(1), 106–122. <https://doi.org/10.14254/2071-789X.2023/16-1/8>
- Rodríguez, C., Jacob, M., & Florido, C. (2020). Socioeconomic profile of tourists with a greater circular attitude and behaviour in hotels of a sun and beach destination. *International Journal of Environmental Research and Public Health*, 17(24), 9392. <https://doi.org/10.3390/ijerph17249392>
- Romao, J., & Bi, Y. (2021). Determinants of collective transport mode choice and its impacts on trip satisfaction in urban tourism. *Journal of Transport Geography*, 94, 103094. <https://doi.org/10.1016/j.jtrangeo.2021.103094>
- Sato, M., Onbuddha, R., Ma, B., & Ogata, S. (2024). Do young sustainable tourists build better relationships with destinations? *European Journal of Sustainable Development*, 13(2), 375–389. <https://doi.org/10.14207/ejsd.2024.v13n2p375>
- Skagias, K., Vasiliadis, L., Belias, D., & Christos, P. (2021). From mass tourism and mass culture to sustainable tourism in the post-covid19 Era: The case of Mykonos. En V. Katsoni & C. van Zyl (Eds.), *Culture and Tourism in a Smart, Globalized, and Sustainable World: Proceedings of the 7th International Conference of IACuDiT* (pp. 347–358). Springer. https://doi.org/10.1007/978-3-030-72469-6_23
- Sukumaran, L., & Majhi, R. (2024). Not all who proclaim to be green are really green: Analysis of intention behavior gap through a systematic review of literature. *Management Review Quarterly*, 75, 1535–1574. <https://doi.org/10.1007/s11301-024-00415-2>
- Toni, M., Renzi, M. F., & Mattia, G. (2018). Understanding the link between collaborative economy and sustainable behaviour: An empirical investigation. *Journal of Cleaner Production*, 172, 4467–4477. <https://doi.org/10.1016/j.jclepro.2017.11.110>
- Uittenbroek, C. J., Mees, H. L., Hegger, D. L., & Driessen, P. P. (2022). Everybody should contribute, but not too much: Perceptions of local governments on citizen responsabilisation in climate change adaptation in the Netherlands. *Environmental Policy and Governance*, 32(3), 192–202. <https://doi.org/10.1002/eet.1983>
- PASOS. Revista de Turismo y Patrimonio Cultural. ISSN 1695-7121 <https://doi.org/10.25145/j.pasos.2027.25.003>

- World Committee on Tourism Ethics. (2020). *Tips for a responsible traveller*. UNWTO – World Tourism Organization. <https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-07/Tips-for-Responsible-Traveller-WCTE-EN.pdf>
- World Tourism Organization. (2005). *Making tourism more sustainable: A guide for policy makers*. World Tourism Organization.
- World Tourism Organization. (2024). *International Tourism Highlights*. UN Tourism. <https://doi.org/10.18111/9789284425808>
- Ying, W., Bostani, A., Murtaza, S. H., & Ali, A. (2025). Harnessing environmental triggers to shape sports tourists' sustainable behavior: Evidence from Gilgit-Baltistan. *Sustainability*, 17(10), 4291. <https://doi.org/10.3390/su17104291>
- Zamparini, L., & Vergori, A. S. (2021). Sustainable mobility at tourist destinations: The relevance of habits and the role of policies. *Journal of Transport Geography*, 93, 103088. <https://doi.org/10.1016/j.jtrangeo.2021.103088>
- Zientara, P., Jażdżewska-Gutta, M., Bąk, M., & Zamojska, A. (2024). What drives tourists' sustainable mobility at city destinations? Insights from ten European capital cities. *Journal of Destination Marketing & Management*, 33, 100931. <https://doi.org/10.1016/j.jdmm.2024.100931>