

## Generational Shifts in Sustainable Consumption: A Longitudinal Study of Generations X and Y in Slovakia

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**Abstract:** This study explores the evolution of sustainable consumption attitudes and behaviours over the past decade among Generations X and Y in Slovakia, focusing on waste management and packaging considerations. Utilising data collected over 11 years through four waves of qualitative and quantitative research, the study examines changes in consumer behaviour and attitudes towards sustainability. The findings reveal significant shifts in pre-purchase and post-purchase behaviours, highlighting increased awareness and action towards sustainable packaging and waste separation. Generation X displayed slightly higher levels of consideration for packaging sustainability, while women consistently showed greater concern for the environmental impact of product packaging compared to men. The study also identifies generational and gender differences in sustainability practices, providing insights into the factors influencing sustainable consumption. The results underscore the importance of targeted social marketing efforts to promote sustainable behaviours across different demographic groups. The study's implications suggest opportunities for businesses to align their products with consumer preferences for sustainability and highlight the need for ongoing monitoring and adaptation of sustainability interventions.

**Keywords:** Sustainable Consumption, Consumer Behaviour, Generation X, Y, Household Waste Management, Pre-purchase Considerations

**JEL Classification codes:** M31, Q56

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### INTRODUCTION

The sustainable consumption was first defined in 1994 on Symposium in Oslo (Norway) as “the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations.” (Roy, 2021) The emergence of sustainable consumption as a global imperative in the latter half of the 20th century meant a necessary change in the marketing approach. The change of consumer attitudes and behaviour from consumptive to sustainable became one of the top goals of worldwide social marketing efforts. Consumers were not supposed to be motivated to buy and consume more, but utilizing social marketing encouraged to decide wisely in their purchases and choose such behaviour that will bring a better quality of life for them as well as for the following generations.

The change in consumer behaviour towards sustainability in past decades is visible. According to a recent Deloitte study (The Sustainable Consumer 2023) consumers are becoming more environmentally conscious and are adopting sustainable lifestyles by choosing goods that are more durable, reusable, or repairable. Research done by Gleba (Gleba, 2018) found that consumers are generating less waste and recent results from McKinsey and Company (Consumers Care about Sustainability—and Back It up with Their Wallets, 2023) show the trend of growing sales with environmentally and socially responsible products as well as consumers willing to pay more for sustainable products.

What is important to understand is that most of the academic studies that analyse sustainability in attitudes and behaviour use samples of students or young people, making it a limitation for the generalization of the results (Kirby & Zwickle, 2021). Yet on the other hand, several studies (Casalegno et al., 2022; Mammadli, 2023; Onel & Mukherjee, 2014; Prayag et al., 2022) imply age as a defining feature predicting the intensity of pro-sustainable attitudes and eco-sensitive behaviour. Therefore, this study offers a perspective of longitudinal study where it searches for sustainability behaviour features and their change in time not only among young people, but monitors two prominent generations – X and Y. It follows Generation Y changing life phase from early adulthood to middle-aged adults and Generation X moving closer to senior age, meanwhile monitoring the change of sustainability features in their consumer behaviour as well as discovering differences between generations in their attitude towards sustainable behaviour.

In this paper first the theoretical background is established by explaining the generational cohort theory. Later relevant and recently published studies covering the topics of sustainability attitudes and behaviour are introduced. Next, the ideas of various authors indicating the influence of age, generational cohorts and gender are explained. The process of gathering of the data in four waves as well as sample constitution and research model is explained in the methodology section, where the formulation of research questions and hypotheses is to be found as well. Finally, we discuss the results and highlight the conclusions of our study as well as frame limitations and formulate the future research intentions.

## **1 LITERATURE REVIEW**

### **1.1 The Generational cohort theory**

The theory behind the research focused on generations is based on the Generational cohort theory proposed by Neil Howe and William Strauss in their book "Generations: The History of America's Future, 1584 to 2069" that was published in 1991 and later elaborated in following publications (Howe & Strauss, 2009, Strauss & Howe, 1991). The theory combines two approaches to studying social phenomena: the generational theory and cohort analyses. While the first focuses on understanding specifics of an age group, the analyses groups formed based on important shared features (Okros, 2020) Authors of the generational cohort theory introduced the idea that individuals sharing similar historical contexts and cultural experiences develop distinct values, attitudes, and behaviours (McCrindle, 2018) Therefore it is understandable that each generation can be characterized by unique circumstances, such as economic conditions, parental influences, technological advances, and major events, leading to variations in personality traits, preferences, and behavioural tendencies (Howe & Strauss, 2009; McCrindle, 2018; Okros, 2020)

According to Strauss and Howe's generational cohort theory (Howe & Strauss, 2009), as a generation transitions from youth to young adulthood, they will strive to address a challenge faced by the previous generation of young adults. In midlife, they will work to rectify this issue

and eventually assume the role of guiding elders as members of the previous generation pass on. This theory has led many to use it as a framework for predicting the defining traits of future generations.

Although Howe and Strauss' concept of generation cohorts (Strauss & Howe, 1991, Howe & Strauss, 2009), has been widely used as an explanatory factor in numerous research studies across diverse fields such as psychology, sociology, education, political science, marketing, management, and medicine (Zwanka & Buff, 2021), the specific boundaries between these generations have not been universally agreed upon. Different authors have varied in their delineation of birth years and the duration of each generation. While the original theory proposed that a generation cohort would last approximately 20 years, the specific periods are not consistently defined, as the names of the cohorts vary, making it more difficult to understand and compare research results. According to Howe and Strauss (2009), the four generations of the Millennial century are Baby Boomers, Generation X, the Millennial Generation, and the Homeland Generation. The accompanying Table 1 illustrates that each of these generations has been part of a formative era and therefore exhibits a "generalized life approach."

**Tab. 1 Generational cohorts of Millennial century according to Howe & Straus**

<b>Name of the generation</b>	<b>Type of life approach</b>	<b>Year of birth</b>	<b>Formative era</b>
Baby Boom Generation	Prophet (Idealist)	1943 – 1960	High: Superpower America
Generation X	Nomad (Reactive)	1961 – 1981	Awakening: Consciousness Revolution
Millennial Generation	Hero (Civic)	1982 – 2004	Unravelling: Culture Wars, Postmodernism
Homeland Generation	Artist (Adaptive)	2005–	Crisis: Great Recession, War on Terror

Source: authors based on Howe & Straus 2009 and van Twist & Newcombe 2021

Many authors, in addition to Howe and Strauss's delineation of Millennial century age cohorts, tend to narrow the time span and adjust the boundaries by a few years. Frequently, the literature adopts a taxonomy comprising Generation Y and Z (McCrindle, 2018; Prayag et al., 2022; Stelling, 2023; Zwanka & Buff, 2021) In this taxonomy, the Millennial generation is often used interchangeably with Generation Y. However, with the shortened birth time-span, Howe and Strauss's Millennials would encompass both Generation Y (referred to as Millennials) and Generation Z.

**Tab. 2 Generational cohorts according to McCrindle**

<b>Name of the generation</b>	<b>Year of birth</b>
Baby Boom Generation	1946 – 1964
Generation X	1965 – 1979
Generation Y	1980 -1994
Generation Z	1995 -2009
Generation Alpha	2010 -

Source: authors based on McCrindle 2018

## **1.2 Sustainability attitudes and behaviour**

Sustainability attitudes and behaviours are intertwined and influenced by various factors, as evidenced by recent research across different contexts and populations.

The crucial aspect is the relationship between attitudes and behaviours. Attitudes are behavioural predictors (Ovais, 2023). According to Swaim (Swaim et al., 2014), attitude represents the strongest influence on environmental sustainability intention. Baßler & Sprenger (2021) emphasized that positive attitudes towards sustainability can drive behavioural changes, suggesting that individuals with favourable attitudes are more likely to engage in sustainable practices.

Yet, attitudes do not always translate into actions. Prakash et al. (2023) highlighted the gap between positive attitudes and actual behaviour, indicating that awareness of green products is only minimally mirrored in purchasing decisions based on environmental factors. This opens the topic of an attitude-behaviour gap. Recent research among Millennials (Cairns et al., 2022) uncovered their tendency to act in opposition to their sustainability attitudes when purchasing fast fashion, resulting in feelings of cognitive dissonance.

The role of knowledge in shaping behaviours is also significant. Gallo et al. (2023) suggest that attention to environmental sustainability (knowledge about it) can influence consumer behaviour. Cogut et al. (2019) proved that there is a correlation between sustainability awareness and increases in sustainable behaviour. As well as Oinonen (Oinonen et al., 2023) in his research, found that perceived knowledge and outcome expectations affect engagement in sustainability action (behaviour) among young people in Finland. The study of Mohamed Saleh et al. (2022) shows that sustainability knowledge and sustainable attitude significantly impact the students' sustainability intention. Nevertheless, the effect of sustainability knowledge was less than the effect of the sustainable attitude. Ovaris came to the same conclusion (Ovais, 2023) that a sustainability attitude impacts sustainability behaviour more than sustainability knowledge, which is usually higher than sustainability attitude and behaviour.

Despite the previously emphasised positive relation between knowledge and behaviour, Alsaati et al. (2020) researching students' knowledge and behaviour found out that despite the lack of knowledge about sustainability (particularly regarding recycling materials and energy consumption measures) they show a high level of involvement in sustainability actions.

Other factors that influence sustainability behaviour are according to Lavuri et al. (Lavuri et al., 2023), are values and social consumption motivation. Researching the sustainable consumption behaviour in China and India, the authors found that pro-environment self-identity and attitude mediate the relationship between stimulus and response factors in driving sustainable behaviours. Viccaro et al. (2023) emphasize personal norms and environmental concern and their role. Furthermore, Mathers-Jones & Todd (2023) highlight individual factors such as eco-anxiety and action competence, which can influence sustainability behaviours. They demonstrated that higher eco-anxiety predicts greater behavioural engagement (Mathers-Jones & Todd, 2023). Additionally, Ovais (2023) suggest that economic concerns can also influence sustainability behaviour.

## **1.3 The impact of generation, age and gender on sustainability attitudes and behaviour**

According to most of the later referenced authors, generational cohorts, age, and gender play significant roles in shaping sustainability attitudes, knowledge, and behaviours.

Generational differences impact the intention to buy green and sustainable products. Casalegno et al. (2022) identified age as a key factor in the choice of environmentally friendly products. Ivanova et al. (2018) identified a generational effect on responsible consumer behaviour, particularly in the relationship between personal environmental concern and moral obligation to the environment with the intention to purchase environmentally responsible products. Mammadli (2023) also argues for intergenerational differences as a factor that plays a role in shaping sustainability attitudes and behaviours. Viccaro et al. (Viccaro et al., 2023) similarly noted that personal norms and environmental concern have different impacts across generations, highlighting the importance of considering generational perspectives in sustainability research.

Research by Nichols and Holt (2023) suggests that attitudes towards sustainability are more positive among younger consumers and women. According to them, gender and generational cohort differences contribute to variations in consumer reactions to sustainability initiatives, particularly in the food and grocery industry. Onel and Mukherjee (2014) found that gender and age differences influence eco-sensitive behaviours. While age differences primarily explain behaviours such as recycling cans and bottles, gender differences are associated with purchasing pesticide-free fruits/vegetables and avoiding environmentally harmful products.

Prayag et al. (Prayag et al., 2022) also highlight the significant influence of age on environmental attitudes and behaviours, with differences observed among generational cohorts. Moreover, Balińska et al. (2021) explored relationships between gender, place of residence, income, and pro-environmental behaviour and concluded that all these factors have a role in influencing sustainability behaviours.

In conclusion, understanding the complex interplay between generational cohorts, age, gender, and sustainability attitudes and behaviours is crucial for developing effective sustainability initiatives and promoting environmentally responsible practices among diverse populations.

## **2 METHODOLOGY**

The goal of this paper is to describe the changes in attitudes towards sustainable consumption and the transformation of behavioural patterns towards sustainability, particularly focusing on waste management and packaging considerations, which happened during the last decade among individuals representing Generations X and Y.

The data that became the source for analysis and presented results were gathered in Slovakia in the time-span of 11 years in four waves of qualitative and quantitative research.

Research Phase 1 was done in 2012 by collecting qualitative data by semi-structured personal face-to-face interviews with forty participants from Generation X and forty participants from Generation Y, proportionally men and women, living in country and urban areas, flats and houses, with primary, secondary and university education. The goal of this phase was to understand different behavioural patterns regarding sustainability. This phase helped to uncover the motives and barriers to sustainable consumption as well as what participants consider to be their role in sustainability. The results helped to guide further research goals as well as form Phase 2 questionnaire.

In research Phase 2 the quantitative data were collected from 217 respondents, proportionally Generation X and Y, male and female, living in country and urban areas, in flats and houses (refer to Table 3 for further details). The data from this research are analysed and compared to later quantitative data from Phase 4.

Before launching another quantitative phase monitoring the development in the researched field, a decade later, a need for understanding the changes first emerged. The qualitative Phase 3 was conducted to determine which of the topics researched in 2013 are no longer perceived as relevant by participants.

The quantitative data gathering in Phase 4, in 2023, used CAWI method to ask 392 respondents proportionally from Generation X and Y, men and women, living in country and urban areas about sustainability of their consumption (refer to Table 3 for further details).

**Table 3 Number of participants in quantitative waves of the research**

	<b>2013</b>	<b>2023</b>	<b>Total</b>
Generation X	109	201	310
Generation Y	108	191	299
Male	108	195	303
Female	109	197	306
<b>TOTAL</b>	<b>217</b>	<b>392</b>	<b>609</b>

Source: research results

Based on the literature research and current state of knowledge, the following research questions Q for the qualitative phase and research hypotheses H for the quantitative phases were formulated:

Q1: Which environmental challenge do consumers believe they have substantial influence over?

Q2: What types of household waste management behaviour do consumers have?

H1 (Pre-purchase Sustainability Considerations of Generations X and Y):

Individuals from Generation X and Generation Y vary in their consideration of packaging sustainability before making a purchase.

H2 (Gender Differences in Pre-purchase Sustainability Considerations):

There is a significant difference in the proportion of men and women considering packaging sustainability before making a purchase.

H3 (Post-purchase Sustainability Behaviour of Generations X and Y):

Generation X and Generation Y individuals have different behavioural patterns in household waste management.

H4 (Gender Differences in Post-Purchase Sustainability Behaviour):

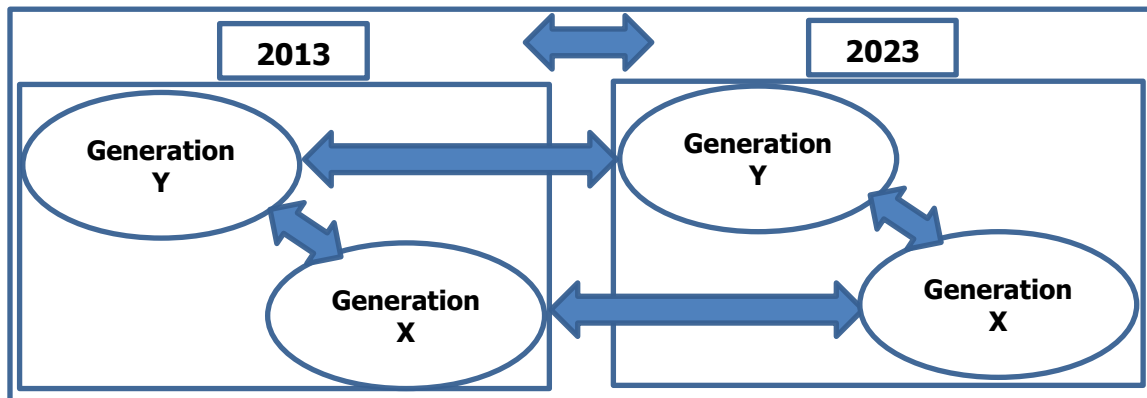
Waste separation behaviour differs significantly between men and women.

H5. (Evolution of sustainability attitudes and behaviour of consumers)

There has been a substantial change in pre-purchase packaging attitudes and household waste management behaviour during past decade.

To find out if the research hypotheses are valid, the data from 2013 and 2023 had to be compared on various levels as it is pictured on the Scheme 1. The quantitative data from 609 respondents were analysed by means of IBM SPSS software. The Chi-square goodness of fit test was used to find out if measured differences have statistical significance.

**Scheme 1 Research model**



Source: authors

### 3 RESULTS AND DISCUSSION

Based on the results of the qualitative research done in the first phase (2012), participants identified the excess of waste as the primary ecological threat that they believe they can minimize through their decisions and feel they should (Q 1). They recognize that waste causes many other problems and that they have the power to influence it through their daily decisions, particularly in two areas: reducing potential waste through pre-purchase decisions and effectively managing product residues (post-purchase decisions).

Therefore, the presented results of quantitative phases aim to direct the focus of monitoring of consumer sustainability attitudes and behaviour to two phases: pre-purchase and post purchase and analyse it from the perspective of packaging. In the pre-purchase phase, it is monitored whether and to what extent consumers consider the packaging in which the product is packaged and perceive it as one of the evaluation parameters. In the post-purchase phase, the research identifies four different approaches to handling packaging and product residues.

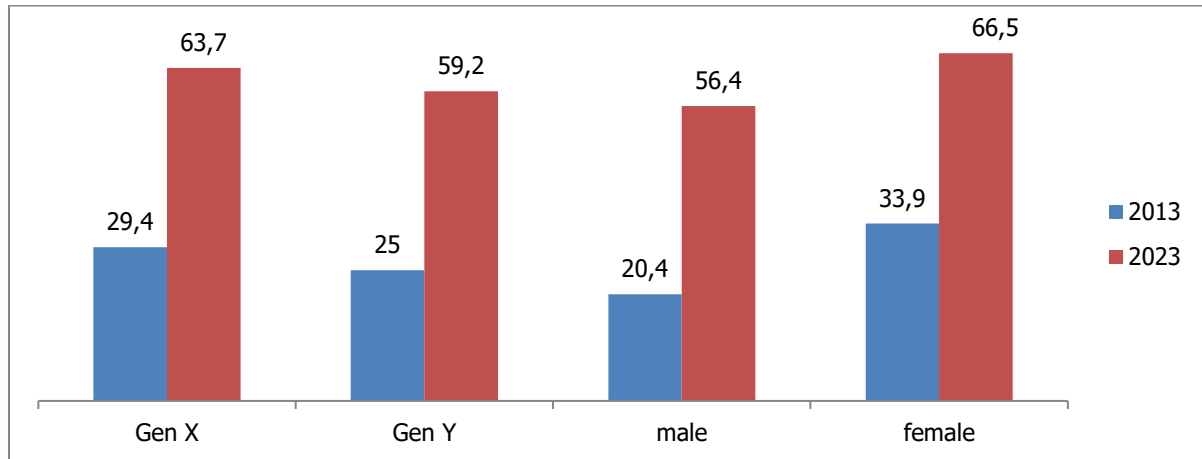
#### 3.1 Pre-purchase sustainability considerations

When researching the environmental issues that participants perceived as relevant for them in order to change their behaviour (in the first phase, 2012), most of the interviews brought out the topic of household waste management. Participants felt that in this area, they can do something that matters without investing too much neither money nor energy. Interestingly, linking the waste and purchase decisions was not that common. Some participants understood the cause-effect relationship and cautiously chose the better alternative when purchasing. As there was a need to quantify this pre-purchase attitude of preferring the alternative that is better for the environment, the quantitative phase in 2013 measured it. Respondents were asked, if they consider the packaging and its ecological impact before purchasing, searching to find the more sustainable choice. In the qualitative phase in 2022 the household waste management topic appeared again as a necessary part of sustainable living. The results show that the cause-effect relationship between purchase decisions and waste perceived by participants was much clearer. Participants spoke about the importance of choosing the right products in the right packaging, preferring less packaging and avoiding plastics that are not recyclable. The quantitative Phase 2023 measured the attitude to compare it with results from 2013.

Monitoring consumers' sustainability attitudes in the pre-purchase phase, particularly regarding packaging decisions, reveals a significant shift in attitudes towards sustainability

(H6). Statistically significantly ( $n=609$ ,  $p = 0.0$ ), the percentage of people considering if the package is recyclable or limiting purchases and usage of single-use packaging increased (see Figure 1).

**Fig. 1 Considering the packaging (pre-purchase stage)**



Source: research results

For Generation X the share of respondents that take sustainability of packaging into product purchase consideration increased from 29.4% to 63.7%, and for Generation Y grew from 25% to 59.2%. Both generations' sustainability grew. The difference in the level of package sustainability considerations in the pre-purchase stage is higher among Generation X in both 2013 as well as in 2023. The difference between the generations did not change as it is 4.4% in 2013 and 4.5% in 2023, yet the statistical difference between generations calculated with use of the Chi-square goodness of fit test is significant ( $n=392$ ,  $p=0,011$ ) in the 2023 results (H1).

Interestingly, gender seems to play a significant role in understanding the differences in considering product packaging sustainability in the pre-purchase phase. The increase in packaging sustainability awareness among men was from 20.4% to 56.4%, and among women, it was from 33.9% to 66.5%. Both men and women show increasing interest in how the packaging of the product influences the environment but it is important to note that the differences between men and women in considering the recyclability of packaging are statistically significant (the research carried out in 2013  $n=217$ ,  $p=0.025$  and the research carried out in 2023  $n=392$ ,  $p=0.040$ ). Women have a more sustainability-conscious attitude in their pre-purchase stage than men (H2). They tend to consider the type of packaging from the perspective of reusing, recycling, or reducing more than men.

### 3.2 Post-purchase sustainability behaviour

As previously discussed, the findings from the qualitative Phase 1 highlighted the perceived significance of household waste management as a prominent topic in participants' understanding of how individuals can reduce their environmental impact. In the first phase, the participants described their way of managing household waste and four types of approaches based on typical behavioural patterns were identified (**Q2**). The following four types were quantified in Phase 2 (2013) to gain more insight about their behaviour and frequency in the population.

The approach "I do not separate waste", stands for people that, from various reasons, do not separate waste nor recycle. In some cases, reasons for that are out of their control – such as

for example, the place they stay in does not offer possibilities of waste separation or recycling. In many other cases, their behaviour is caused by lack of motivation (why should I), lack of knowledge (how should I) or subjective norms.

The type "occasional separator" has inconsistent behaviour when it comes to separation and recycling. The participants' decisions on whether to separate or not are strongly dependent on circumstances and mood at the moment. Approximately 50 to 60 percent of their waste is unseparated.

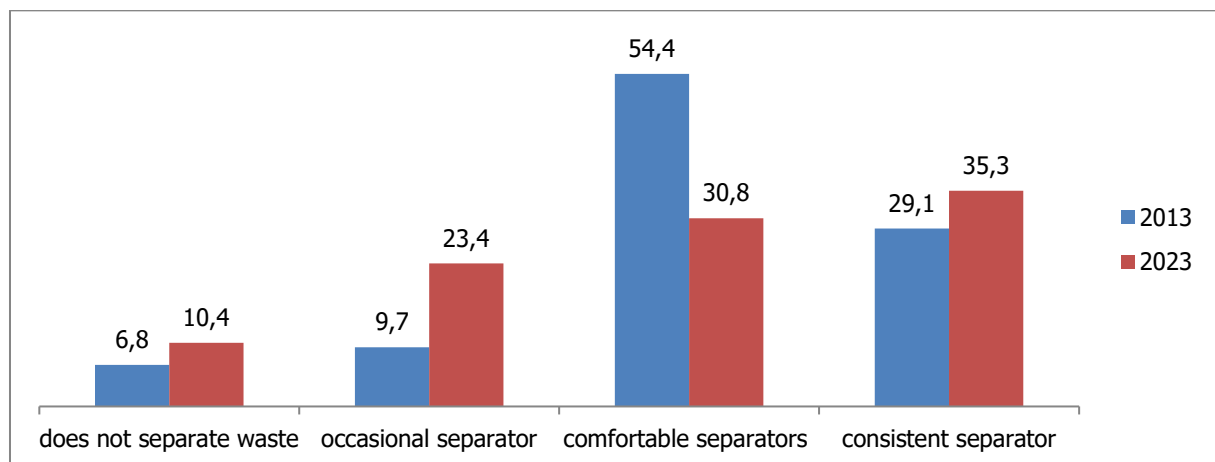
A "comfortable household waste separator" maintains consistent separation practices unless it involves additional effort or time. They are inclined to skip separation tasks that require extra steps beyond simply discarding the item. Common barriers for them include packaging that requires the removal of various components or materials or items that need to be washed before disposal. According to self-evaluation, these individuals estimate that they dispose of roughly 20-30% of items that could potentially be sorted with added effort.

The behaviour of "consistent waste separators" remains persistent, regardless of the additional effort that waste separation may require at times. Yet they still confess that there is approximately 10-20 percent of waste that they do not separate due to various reasons.

Results from the qualitative Phase 3 in 2022 suggest a shift in waste management behaviour, prompting the quantitative Phase 4 in 2023 to monitor and quantify this change among Generation X and Y populations.

Comparing the behaviour of Generation X (Figure 2), the percentage of those who occasionally separate increased from 9.7% to 23.4% (statistically significant,  $n=310$ ,  $p = 0.0$ ), while the percentage of comfortable separators decreased from 54.4% to 30.8%. Simultaneously, although mildly, the percentage of non-separating individuals slightly increased from 6.8% to 10.4%.

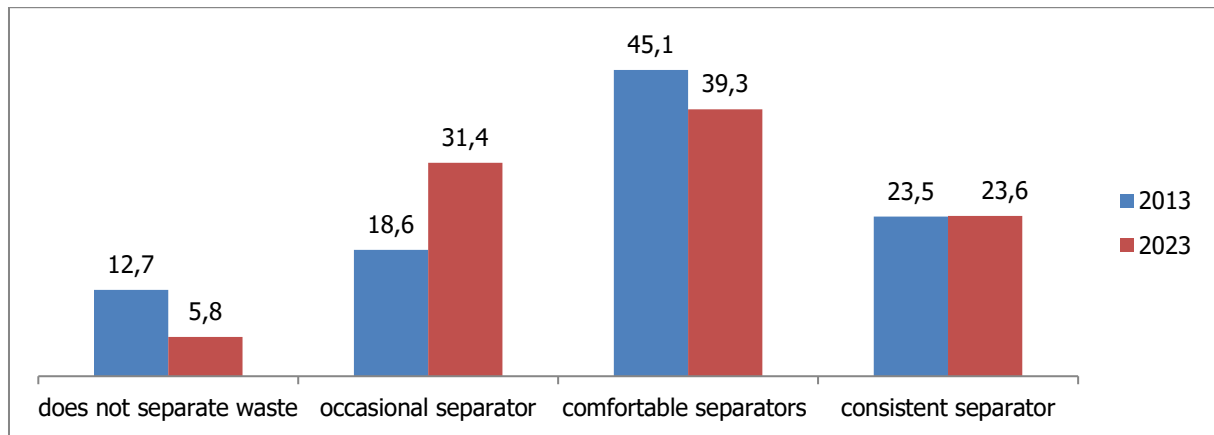
**Fig. 2 Waste separation behaviour of Generation X**



Source: research results

Among Generation Y (Fig. 3), the percentage of those who do not separate waste decreased by half (from 12.7% to 5.8%), and the percentage of comfortable separators also decreased from 45.1% to 39.3%. There was a statistically significant increase ( $n=299$ ,  $p=0.0$ ) in the percentage of those who occasionally separate waste, from 18.6% to 31.4%. The percentage of consistent separators remained unchanged.

**Fig. 3 Waste separation behaviour of Generation Y**

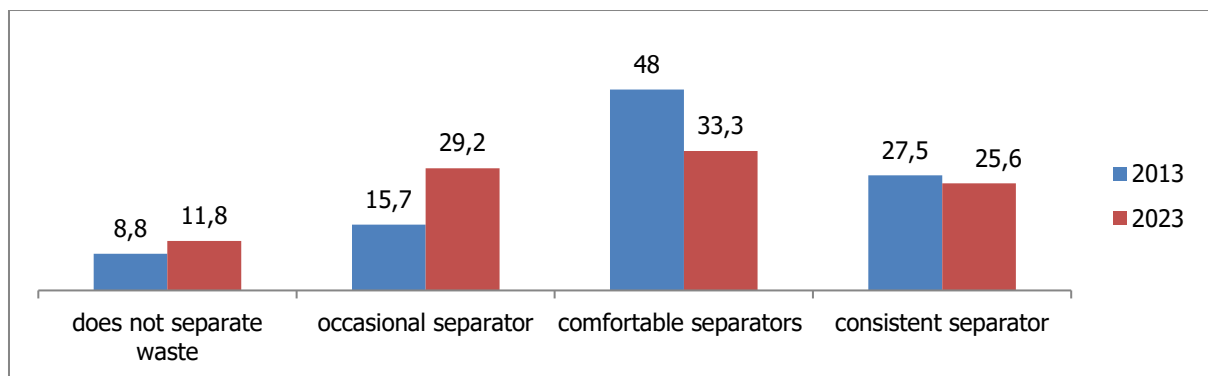


Source: research results

During the analysis, it became evident that distinctions in behavioural patterns of X and Y concerning waste separation did not emerge until recently. Whereas the earlier comparisons between Generation X and Generation Y did not reveal substantial discrepancies, recent findings (year 2023) demonstrate that Generation Y displays a higher tendency toward occasional and comfortable waste separation compared to Generation X ( $n=392$ ,  $p=0,009$ ). Conversely, Generation X demonstrates a stronger inclination towards consistent waste separation (H3)

When analysing differences in waste management of men and women, among males (Fig. 4), there was a notable increase ( $n=303$ ,  $p=0,0$ ) in the percentage of those who occasionally separated waste (Year 2013 versus Year 2023)

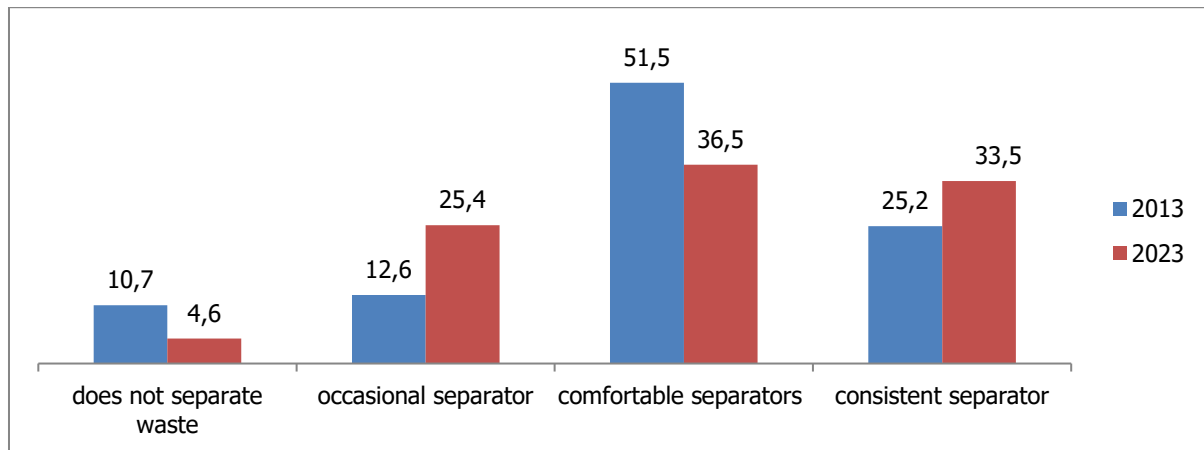
**Fig. 4 Waste separation behaviour among males**



Source: research results

Among women (Figure 5), there was a statistically significant increase ( $n=306$ ,  $p=0.0$ ) in the percentage of those who occasionally separate waste, from 12.6% to 25.4%, as well as in the percentage of consistent separators, from 25.2% to 33.5%. The percentage of comfortable separators decreased from 51.5% to 36.5%, and the percentage of non-separators decreased from 10.7% to 4.6%.

**Fig. 5 Waste separation behaviour among females**



Source: research results

During the analysis, it was found that in 2013, there were no significant differences in household waste separation behaviour between men and women. However, the study conducted in 2023 identified statistically significant differences ( $n=306$ ,  $p=0.028$ ). Among men, there was a higher percentage of non-separators (11.8% vs 4.6%), while among women, there were more consistent separators than among men (33.5% vs 25.6%) (H4).

## CONCLUSION

This study is aimed to investigate changes in attitudes towards sustainable consumption and behavioural patterns related to waste management and packaging considerations among individuals representing Generations X and Y over the past decade. The research methodology involved four waves of qualitative and quantitative data collection spanning from 2012 to 2023 in Slovakia.

### The key findings are the following:

**Pre-purchase Sustainability Considerations:** The research identified a significant increase in the proportion of individuals considering packaging sustainability before making a purchase, indicating a positive shift towards environmentally conscious consumer behaviour. Both Generation X and Generation Y showed growth in sustainability awareness, with Generation X displaying slightly higher levels of consideration for packaging sustainability. Hypothesis 1 was confirmed by results from the 2023 quantitative research.

**Gender Differences in Pre-purchase Sustainability Considerations:** The study revealed significant differences between men and women in terms of their attitudes towards packaging sustainability. Women exhibited a higher level of sustainability consciousness in their pre-purchase decisions compared to men, consistently showing greater concern for the environmental impact of product packaging. Hypothesis 2 was confirmed by research results of both quantitative waves.

**Post purchase Sustainability Behaviour:** Analysis of waste management behaviour indicated notable changes over the years, among both Generation X and Generation Y. While authors' earlier research did not reveal significant differences between the two generations, the findings from the recent wave showed that Generation Y displayed significantly different behavioural patterns especially a higher tendency towards occasional and comfortable waste separation compared to Generation X that showed stronger inclination towards consistent waste separation. Hypothesis 3 was confirmed by results from the 2023 quantitative research.

Additionally, differences in waste management behaviour between men and women became more pronounced over time, with women exhibiting a higher percentage of consistent waste separators compared to men. Hypothesis 4 was confirmed by results from the 2023 quantitative research.

The overall results show that attitudes and behaviours regarding waste management and packaging considerations have changed over the past decade, moving towards greater sustainability. Hypothesis 5 was verified by comparing the results from the second and fourth phases.

### **Implications:**

The findings of this study have several implications for Reformative Sustainability Marketing (Kemper & Ballantine, 2019), especially in understanding and promoting sustainable consumption behaviours among different demographic groups. Firstly, the significant increase in awareness of packaging sustainability among both generations suggests a growing concern for environmental issues and a willingness to make more sustainable choices. This presents opportunities for businesses to align their products and packaging with consumer preferences for sustainability.

Secondly, the observed gender differences highlight the importance of considering gender-specific approaches in sustainability initiatives and marketing strategies. Tailoring messaging and educational campaigns to resonate with the sustainability values and concerns of men and women could enhance engagement and behaviour change.

Lastly, the evolving trends in household waste management behaviour underscore the need for ongoing monitoring and adaptation of sustainability interventions. Recognizing and addressing the unique barriers and motivators influencing waste separation practices among different demographic groups can inform targeted interventions aimed at promoting more sustainable behaviours.

### Limitations and future research:

The first and most important limitation of the generalisation of study results is that the study had been done in a central European country and therefore, results may be influenced by culture specifics, the country's waste management policy and the extent of social marketing communication that is specific for this region. The second limitation is that the data were collected through self-reports from the participating individuals, which introduces a risk of response bias. This bias may occur from the social desirability associated with certain attitudes and behaviours related to sustainability research.

In the future, research should continue to monitor the differences in sustainability attitudes and behaviours between generations and focus on determining the extent to which they are influenced by the life phase of individuals or by characteristics typical of the generation.

In conclusion, this research contributes to our understanding of the dynamics of sustainable consumption behaviour among Generations X and Y, shedding light on key factors shaping attitudes and behaviours related to waste management and packaging considerations. By leveraging these insights, policymakers, businesses, and organizations can develop more effective strategies to foster a culture of sustainability and drive positive environmental impact.

## **ACKNOWLEDGEMENT**

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## REFERENCES

- Alsaati, T., El-Nakla, S., & El-Nakla, D. (2020). Level of Sustainability Awareness among University Students in the Eastern Province of Saudi Arabia. *Sustainability*, *12*(8), 3159. <https://doi.org/10.3390/su12083159>
- Balińska, A., Jaska, E., & Werenowska, A. (2021). The Role of Eco-Apps in Encouraging Pro-Environmental Behavior of Young People Studying in Poland. *Energies*, *14*(16), Article 16. <https://doi.org/10.3390/en14164946>
- Braßler, M., & Sprenger, S. (2021). Fostering Sustainability Knowledge, Attitudes, and Behaviours through a Tutor-Supported Interdisciplinary Course in Education for Sustainable Development. *Sustainability*, *13*(6), 3494. <https://doi.org/10.3390/su13063494>
- Cairns, H. M., Ritch, E. L., & Bereziat, C. (2022). Think eco, be eco? The tension between attitudes and behaviours of millennial fashion consumers. *International Journal of Consumer Studies*, *46*(4), 1262–1277. <https://doi.org/10.1111/ijcs.12756>
- Casalegno, C., Candelo, E., & Santoro, G. (2022). Exploring the antecedents of green and sustainable purchase behaviour: A comparison among different generations. *Psychology & Marketing*, *39*(5), 1007–1021. <https://doi.org/10.1002/mar.21637>
- Cogut, G., Webster, N. J., Marans, R. W., & Callewaert, J. (2019). Links between sustainability-related awareness and behavior: The moderating role of engagement. *International Journal of Sustainability in Higher Education*, *20*(7), 1240–1257. <https://doi.org/10.1108/IJSHE-09-2018-0161>
- Consumers Care about Sustainability—and Back It up with Their Wallets.* (2023) Retrieved 18 February 2024, from <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/consumers-care-about-sustainability-and-back-it-up-with-their-wallets>.
- Frey, S., Bar Am, J., & Doshi, V. (n.d.). *Consumers care about sustainability—And back it up with their wallets.* <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/consumers-care-about-sustainability-and-back-it-up-with-their-wallets>
- Gallo, T., Pacchera, F., Link to external site, this link will open in a new tab, Cagnetti, C., Link to external site, this link will open in a new tab, Silvestri, C., & Link to external site, this link will open in a new tab. (2023). Do Sustainable Consumers Have Sustainable Behaviors? An Empirical Study to Understand the Purchase of Food Products. *Sustainability*, *15*(5), 4462. <https://doi.org/10.3390/su15054462>
- Gleba, V. (2018). *Changing Consumer Behavior Towards Mindful Consumption Through Social Proof to Decrease Environmental Harm* [Portland State University]. <https://doi.org/10.15760/honors.564>
- Howe, N., & Strauss, W. (2009). *Millennials rising: The next great generation.* Vintage.
- Ivanova, O., Flores-Zamora, J., Khelladi, I., & Ivanaj, S. (2018). The generational cohort effect in the context of responsible consumption. *Management Decision*, *57*(5), 1162–1183. <https://doi.org/10.1108/MD-12-2016-0915>
- Kemper, J. A., & Ballantine, P. W. (2019). What do we mean by sustainability marketing? *Journal of Marketing Management*, *35*(3–4), 277–309. <https://doi.org/10.1080/0267257X.2019.1573845>
- Kirby, C. K., & Zwickle, A. (2021). Sustainability behaviors, attitudes, and knowledge: Comparing university students and the general public. *Journal of Environmental Studies and Sciences*, *11*(4), 639–647. <https://doi.org/10.1007/s13412-021-00717-x>

- Lavuri, R., Akram, U., & Akram, Z. (2023). Exploring the sustainable consumption behavior in emerging countries: The role of pro-environmental self-identity, attitude, and environmental protection emotion. *Business Strategy and the Environment*, 32(8), 5174–5186. <https://doi.org/10.1002/bse.3411>
- Mammadli, M. (2023). Factors Driving Sustainable Consumption in Azerbaijan: Comparison of Generation X, Generation Y and Generation Z. *Sustainability*, 15(20), 15159. <https://doi.org/10.3390/su152015159>
- Mathers-Jones, J., & Todd, J. (2023). Ecological anxiety and pro-environmental behaviour: The role of attention. *Journal of Anxiety Disorders*, 98, 102745. <https://doi.org/10.1016/j.janxdis.2023.102745>
- McCrinkle, M. (2018). *The ABC of XYZ: Understanding the Global Generations*.
- Mohamad Saleh, M. S., Mehellou, A., Huang, M., & Briandana, R. (2022). The influence of sustainability knowledge and attitude on sustainable intention and behaviour of Malaysian and Indonesian undergraduate students. *Research in Comparative and International Education*, 17(4), 677–693. <https://doi.org/10.1177/17454999221126712>
- Nichols, B. S., & Holt, J. W. (2023). A comparison of sustainability attitudes and intentions across generations and gender: A perspective from U.S. consumers. *Cuadernos de Gestión*, 23(1), 51–62. <https://doi.org/10.5295/cdg.211647bs>
- Oinonen, I., Seppälä, T., & Paloniemi, R. (2023). How does action competence explain young people's sustainability action? *Environmental Education Research*, 1–19. <https://doi.org/10.1080/13504622.2023.2241675>
- Okros, A. (2020). Generational Theory and Cohort Analysis. In A. Okros (Ed.), *Harnessing the Potential of Digital Post-Millennials in the Future Workplace* (pp. 33–51). Springer International Publishing. [https://doi.org/10.1007/978-3-030-25726-2\\_2](https://doi.org/10.1007/978-3-030-25726-2_2)
- Onel, N., & Mukherjee, A. (2014). Analysis of the predictors of five eco-sensitive behaviours. *World Journal of Science, Technology and Sustainable Development*, 11(1), 16–27. <https://doi.org/10.1108/WJSTSD-08-2013-0031>
- Ovais, D. (2023). Students' sustainability consciousness with the three dimensions of sustainability: Does the locus of control play a role? *Regional Sustainability*, 4(1), 13–27. <https://doi.org/10.1016/j.regSus.2023.02.002>
- Prakash, C., Kasireddy, S. R., Nannuri, S. R., & Adhireddy, S. R. (2023). A Study on Consumer's Perception, Preferences, and a Myth towards Eco friendly Products and Marketing with Reference to South India. *Academy of Marketing Studies Journal*, 27(6). <http://www.proquest.com/docview/2895108794/abstract/D734155A5F8141C6PQ/1>
- Prayag, G., Aquino, R. S., Hall, C. M., Chen, N. (Chris), & Fieger, P. (2022). Is Gen Z really that different? Environmental attitudes, travel behaviours and sustainability practices of international tourists to Canterbury, New Zealand. *Journal of Sustainable Tourism*, 0(0), 1–22. <https://doi.org/10.1080/09669582.2022.2131795>
- Roy, M. (2021). Greening behavior toward sustainable development. In *Sustainable Development Strategies* (pp. 53–90). Elsevier. <https://doi.org/10.1016/B978-0-12-818920-7.00001-3>
- Stelling, D. (2023). Do applicants from Generation X, Y, Z differ in personality traits? Data from selection procedures in aviation (1987–2019). *Frontiers in Psychology*, 14, 1173622. <https://doi.org/10.3389/fpsyg.2023.1173622>
- Strauss, W., & Howe, N. (1991). *Generations: the history of America's future, 1584 to 2069*. New York, William Morrow and Company Inc.

Swaim, J. A., Maloni, M. J., Napshin, S. A., & Henley, A. B. (2014). Influences on Student Intention and Behavior Toward Environmental Sustainability. *Journal of Business Ethics, 124*(3), 465–484. <https://doi.org/10.1007/s10551-013-1883-z>

*The Sustainable Consumer 2023*. (n.d.). <https://www2.deloitte.com/uk/en/pages/consumer-business/articles/sustainable-consumer.html>

Viccaro, M. (2023). Young People Are Not All the Same! The Theory of Planned Behaviour Applied to Food Waste Behaviour across Young Italian Generations. *Sustainability, 15*(20), 14741. <https://doi.org/10.3390/su152014741>

Zwanka, R. J., & Buff, C. (2021). COVID-19 Generation: A Conceptual Framework of the Consumer Behavioral Shifts to Be Caused by the COVID-19 Pandemic. *Journal of International Consumer Marketing, 33*(1), 58–67. <https://doi.org/10.1080/08961530.2020.1771646>