

# Does the Education Level of Consumers Influence Their Recycling and Environmental Protection Attitudes? Evidence From Croatia

Doroteja Mandarić<sup>a</sup>, Anica Hunjet<sup>b</sup>

<sup>a</sup>University of Applied Sciences Burgenland, Campus 1, 7000 Eisenstadt, Austria

<sup>b</sup>University North, Jurja Križanića 31b, 42000 Varaždin, Croatia  
2219001036@fh-burgenland.at, anica.hunjet@unin.hr

## ARTICLE INFO

*Original Scientific Article*

*Article History:*

Received October 2023

Revised December 2023

Accepted December 2023

*JEL Classification:*

D19, F64, Q54, Q56

*Keywords:*

Consumer behavior

Recycling

Environmental protection

Waste management

Croatia

UDK: 366:502.17(497.5)

DOI: 10.2478/ngoe-2023-0023

*Cite this article as:* Mandarić, D., & Hunjet, A. (2023). Does the Education Level of Consumers Influence Their Recycling and Environmental Protection Attitudes? Evidence From Croatia. *Naše gospodarstvo/Our Economy*, 69(4), 51-61. DOI: 10.2478/ngoe-2023-0023.

©2023 The Authors. Published by Sciendo on behalf of University of Maribor, Faculty of Economics and Business, Slovenia. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Abstract

The empirical link between education and consumption varies depending on contextual factors. Some studies have sought to find out the relationship between education and environmental concerns. Evidence shows that education levels might significantly impact environmental actions. Still, some research indicates that the influence of education might not considerably affect green attitudes or depend on various contextual factors. This study explores whether the education level of Croatian consumers influences their attitudes toward environmental care, recycling, and waste disposal. It aims to determine whether there exists a statistically significant difference in attitudes among consumers with varying levels of education. By exploring this relationship, the article aims to shed light on the potential role of education in shaping consumers' environmentally friendly behaviours. By addressing this research gap and examining the specific case of Croatia, the article aims to contribute to the broader understanding of how education influences environmental consciousness and action, ultimately contributing to global efforts for a more sustainable future.

## Introduction

With emerging climate changes environmental topics are of utmost importance. Environmental science aims to extend the planet's time as much as possible and improve its current condition. Previous research has shown that the level of education can be associated with environmental attitudes and actions (Casalo & Escario, 2018; Rajapaksa et al., 2018; Wang et al., 2022; Santhakumar et al., n.d.). In an attempt to examine the issue of environmental action at a local level, this research sought to explore the attitudes of consumers in Croatia regarding environmental conditions.

Croatia already operates under green policies as part of the European Union (EU). The EU implements various policies and regulations to support the adoption of international environmental guidelines, primarily derived from multilateral environmental agreements. Notably, one of these policies focuses on waste management, where the EU supervises the trade of

<sup>\*</sup>Corresponding author

hazardous and non-hazardous waste to ensure environmentally responsible practices and minimize adverse effects on human health. Furthermore, the EU collaborates with the United Nations Environmental Programme to introduce initiatives that harmonize trade and environmental concerns. The EU also considers the potential impact of trade agreements on climate change by conducting Sustainability Impact Assessments.

Additionally, considering the increasing international trade that can lead to more significant greenhouse gas emissions, especially in shipping and air transport, the EU collaborates with the International Maritime Organization and International Civil Aviation Organization to address and resolve these issues (European Commission, n.d.). As a result, environmental policies are an integral part of the everyday lives of European citizens, who must adhere to various policies and regulations. However, there are significant disparities between EU members and different regions within each member state. For example, a previous study suggested that education as a strategy to decrease energy usage should be implemented and further investigated in developed nations. However, there was conclusive evidence that factors such as population, GDP, and urbanization lead to increased energy consumption, contradicting the theories of urban compaction and energy modernization (Inglesi-Lotz & del Corral Morales, 2017).

This research aims to determine whether consumers' education level in Croatia significantly differs statistically from their attitudes toward environmental care, recycling, and waste disposal. This understanding could be vital to educating people about the impact of their actions and consumption on the planet, thereby influencing their behaviour for the better. Although, the connection between education and consumption exhibits intricacy and is contingent upon contextual variables within distinct demographic groups (Wang et al., 2022). This paper aims to provide a deeper insight into consumer attitudes towards sustainability, environmental care, and recycling in Croatia, explore the possible correlation with education levels, and establish a framework for further research. Various research has proven that more years of education significantly affect the extent of one's environmental actions, but additional factors are also at play when looking at this relationship (Hoffmann & Mutarak, 2023).

The research paper addresses a notable research gap in the field of environmental science and sustainable consumer behaviour. Despite the existing body of research that highlights the link between education and environmental attitudes, there's a scarcity of studies that specifically

examine the influence of education on consumers' attitudes toward environmental protection, recycling, and waste management in a specific context, which in this case is Croatia. The unique contribution of this research lies in its focus on a regional level, where the European Union's overarching environmental policies coexist with local variations and disparities. This paper attempts to bridge this research gap by providing valuable insights into the relationship between education and environmentally conscious behaviour at a local level within the Croatian context.

This article commences with a literature review, encompassing research questions and hypotheses, to explore the relationship between education and environmental attitudes. Following that, the data and methodology section details the research design and data collection procedures, leading to the results, which present findings from the survey. The Discussion section analyses the implications of these results, culminating in the conclusion, summarizing key takeaways and their significance for understanding the relationship between education and environmental behaviour.

## Literature Review

Environmental protection involves preventing unwelcome changes to ecosystems and their essential parts (Encyclopedia of Ecology, 2019). To counteract the adverse environmental repercussions, notably biodiversity diminishment, a paradigm shift towards a circular approach in consumption and production is imperative. The European Commission has proactively introduced a comprehensive circular economy action plan to foster sustainable development, safeguard finite resources, and stimulate sustainable progression within the European Union. This holistic strategy entails the judicious reutilization of products and materials, the curtailment of non-renewable energy expenditure, and vigorous promotion of efficient recycling practices. Adopting a circular economy model can yield substantial benefits, including a healthier planetary ecosystem marked by diminished pollution levels, reduced emissions, and enhanced management of vital water and land resources. Furthermore, it can engender fresh avenues for business ventures, cultivate high-quality local employment opportunities, and fortify the resilience of value chains (European Commission, n.d.).

Sustainable practices have become crucial for businesses, with European countries demonstrating a high level of sustainable production compared to the rest of

the world. However, the implementation of the circular economy is still relatively low and varies among regions (Lafortune et al., 2022). The potential benefits of the circular economy include reducing negative environmental impacts, cost savings, improved waste management, efficient water usage, and increased use of renewable energy (Günther et al., 2023).

Education significantly influences an individual's consumption patterns (Sabates and Hammond, 2008) and ecological outlooks (De Silva & Pownall, 2012). The relationship between education and consumption is complex and depends on contextual factors for specific groups of people (Wang et al., 2022; Santhakumar et al., n.d.). The research on this topic has proven that increasing age and levels of education affect increasing environmental awareness and attitudes (Witzke & Urfei, 2001; Israel & Levinson, 2004; Veisten et al., 2004; Aminrad et al., 2011; Meyer, 2015; Casaló & Escario, 2018). On the contrary, some studies have shown that age negatively correlates with environmental involvement, as older individuals may not reap the long-term benefits of resource preservation (Whitehead, 1991; Howell & Laska, 1992). Education can lead to non-monetary benefits, enhancing consumption efficiency and optimization. Consumers consider various factors, such as environmental impact and profitability when purchasing. Informed and conscientious consumers consider multiple factors, the message conveyed through purchases, while also contemplating recycling and the environmental impact during the disposal stage of the product cycle. Examining a study on pro-environmental behaviours provides evidence that education leads individuals to have a heightened concern for social welfare, consequently resulting in more environmentally friendly behaviour (Meyer, 2015). Other research findings also reveal a positive correlation between educational attainment and increased pro-environmental attitudes and behaviours.

Moreover, the acquisition of environmental knowledge was identified as a mediating factor, facilitating the influence of education on pro-environmental attitudes and behaviours. However, it is essential to note that the effects of education on pro-environmental outcomes display heterogeneity among individuals, as previously mentioned (Wang et al., 2022). Although a positive association between formal education and environmental attitudes was identified, the significance of this relationship diminishes when considering the economic situation of individuals. A noteworthy mention is a strong correlation between political interest and the inclination to participate in environmentally friendly behaviour (Torgler & Garcia-Valiñas, 2005). Informal education also plays a

crucial role (Whitehead, 1991; Hidano et al., 2005; Torgler & Garcia-Valiñas, 2005). Well-informed individuals knowledgeable about environmental issues tend to have stronger environmental attitudes, as they are more aware of potential harm (Danielson et al., 1995).

The relationship between pro-environmental attitudes and actual behaviours is not always straightforward (Liere & Dunlap, 1981; Mainieri et al., 1997). People tend to adopt pro-environmental behaviours aligning with their priorities and values. Additionally, an individual's economic status is a significant factor. Wealthier citizens often display a higher demand for a clean environment and less environmental damage (Whitehead, 1991; Witzke & Urfei, 2001; Bulte et al., 2005; Israel & Levinson, 2004; Veisten et al., 2004; Hidano et al., 2005). Additionally, individuals may filter information about environmental dangers based on their existing mental frameworks, accepting information that supports their beliefs while rejecting contradictory information. For example, individuals firmly believing in growth and technological solutions might be less inclined to engage in pro-environmental behaviour (Gigliotti, 1992, 1994). Previous research also indicated a positive association between attitudes, nature-related activities, and environmental knowledge.

Additionally, educational background seemed to impact attitudes, activity levels, and knowledge, although other factors also played a role (Tikka et al., 2000). Furthermore, education levels were significantly related to environmental concerns in Croatia and other European countries. The association between education and environmental knowledge can partly explain the relationship between education and environmental concern. This suggests that formal education is crucial in shaping people's understanding and concern for environmental issues (Clery & Rhead, 2013). Achieving sustainability involves more than just adding to existing structures; it necessitates a fundamental shift in our cultural worldview, which extends to educational thinking and practices (Sterling, 2004).

One study has identified two groups of factors influencing pro-environmental behaviour: personal factors and social factors. Personal factors include childhood experiences, knowledge, education, personality traits, sense of control, values, political and world views, goals, felt responsibility, cognitive biases, place attachment, age, gender, and chosen activities. Social factors include religion, urban-rural differences, social norms, social class, proximity to problematic environmental sites, and cultural and ethnic variations, contributing to a comprehensive understanding of the issue (Gifford & Nilsson, 2014). Moreover, another perspective highlights the importance

of knowledge. A model has been presented, outlining four distinct types of knowledge: understanding the existence and spread of environmental problems, identifying their root causes, devising strategies for change, and developing alternative solutions. This viewpoint emphasizes that combining all these types of knowledge is crucial to fostering an environment conducive to significant change, contrary to the traditional emphasis solely on understanding the problems' existence and spread (Jenson, 2012). Another study highlights that proposals for education for sustainability often overlook the unsustainability of the current situation, leading to an illusion that education alone can solve all problems and achieve a sustainable society. However, it argues that honest stock-taking and fostering understanding through education are crucial for achieving the transition to sustainability and making individuals eco-literate (Jucker, 2002).

The key research question of our study is: Does the level of education influence consumers' attitudes toward environmental protection, recycling, and waste management in Croatia?

Two additional research subquestions are the following:

- To what extent does the level of education influence consumers' assessment of the statement that environmental protection is not sufficiently cared about in Croatia?
- How does the level of education impact consumers' opinion that it is not enough to only recycle and sort waste to preserve the environment?

Hypotheses were grounded in prior scholarly investigations and are briefly outlined as follows:

*H1: Depending on the level of education, consumers make a different assessment of the statement that Croatia does not sufficiently care about environmental protection.*

*H2: Depending on the level of education, consumers make different assessments of the statement that it is not enough only to recycle and sort waste to preserve the environment.*

In summary, safeguarding the environment is an indispensable imperative, with adopting a circular economy approach emerging as a pivotal driver for sustainable practices and conserving valuable resources. Education appears potent in moulding consumption patterns, with many personal and social factors intricately woven into the tapestry of pro-environmental behaviour. Comprehending these multifaceted determinants is paramount in promoting constructive environmental attitudes, actions,

and conduct. In light of this perspective, a pertinent question emerges: Does the educational level of individuals indeed serve as a catalyst, fostering more sustainable attitudes among consumers and consequently exerting a discernible influence on their behavioral choices? The answer to this query lies at the nexus of education, environmental consciousness, and the path to a greener, more sustainable future.

## Data and Methodology

For this research, an online questionnaire was meticulously crafted and administered via the Google Forms platform in January 2021. Respondents were recruited using a virtual snowball sampling method, primarily leveraging email outreach, social networks, and personal contacts. Notably, the questionnaire was not made publicly accessible or advertised. Due to limited resources, snowball sampling was chosen as the primary data collection method, allowing for efficient gathering of participants through existing connections and minimizing the costs associated with extensive sampling procedures. The study specifically sought responses from working-age Croatians who possessed purchasing power, as its primary focus was purchasing behaviour and its relationship with sustainability. The initial section of the questionnaire was designed to elicit socio-demographic information from the respondents. Subsequently, the questionnaire featured a series of closed-ended questions to explore the participants' behaviours and attitudes about sustainability. Respondents were instructed to employ a 5-point Likert scale to convey their attitudes, a choice based on familiarity and widespread usage for assessing attitudes. This research was conducted voluntarily within Croatia and garnered the participation of 262 individuals, comprising 175 females and 87 males. Two hypotheses were formulated to investigate the connection between educational attainment and attitudes concerning environmental care, recycling practices, and waste disposal.

The data collected from the respondents were subjected to analysis employing the One-way Analysis of Variance (ANOVA) method. This statistical technique was utilized to discern and ascertain any statistically significant disparities that might exist among the means of distinct groups categorized by their varying levels of education.

In the socio-demographic section of the questionnaire, respondents were provided with various finished levels of education to choose from, including High School, Bachelor's degree (Undergraduate study), Master's degree (Graduate study), Postgraduate specialist study (and/

or MBA), Master of Science, and Doctorate of Science (PhD). Due to some groups having a small number of respondents, the education levels were clustered into three groups as follows: High School as the first group, Bachelor's and Master's degrees as the second group, and Post-master degrees (Postgraduate studies, Master of Science, PhD etc.) as the third group. The following statements in the questionnaire were used to test the hypotheses:

- Rate from 1 to 5 the extent to which the following statement about the environmental situation corresponds to your views: Environmental protection is not taken care of enough in Croatia.
- Rate from 1 to 5 the extent to which the following statement about the environmental situation corresponds to your views: It is not enough to recycle and sort waste to preserve the environment.

The possible answers on the Likert scale were 1 (strongly disagree), 2 (somewhat disagree), 3 (neither agree nor disagree), 4 (somewhat agree), and 5 (strongly agree).

Both hypotheses were tested using One-way ANOVA to determine whether there were differences between the education-level groups.

## Results

The descriptive statistics report outlines the distribution of gender, age groups, and educational levels within the sample. Most respondents were female, comprising 66.8% of the sample, while male respondents constituted 33.2%. The age distribution groups were similar, with the highest percentage of respondents falling within the age range of 18 - 26 at 31.3%, followed by the 27 - 35-year-old group at 28.6%. Respondents aged 36 - 44 accounted for 20.6%, and those aged 45 or older represented 19.5%. Most respondents had completed either a Bachelor's or Master's degree, making up 69.8% of the sample. A notable portion had finished high school, at 23.7%, and a smaller fraction had attained a post-master's degree (MBA, PhD, etc.) at 6.5%.

After conducting a one-way ANOVA test, the first hypothesis did not show a statistically significant difference between groups with different levels of education ( $S^2=0.652$ ,  $p=0.683$ ). As the significance value ( $p=0.683$ ) is greater than the significance level ( $p<0.05$ ), there is insufficient evidence to reject the hypothesis that the group means are all equal. Therefore, the first hypothesis was rejected, and based on these results, it can be concluded that the different levels of education do not correlate

**Table 1**

*One-way Anova results on attitude toward environmental protection level in Croatia*

Level of education (finished degree)	N	Mean	Std. Deviation	Std. Error
High School	62	4.34	0.974	0.124
Bachelor's or Master's degree	183	4.29	0.919	0.068
Post-master's degree (MBA, PhD etc.)	17	4.12	0.781	0.189
Total	262	4.29	0.922	0.057

*Note: Rate from 1 to 5 the extent to which the following statement about the environmental situation corresponds to your views: Environmental protection is not taken care of enough in Croatia.*

*Source: Own research*

**Table 2**

*One-way Anova results on attitude toward recycling and waste sorting in Croatia*

Level of education (finished degree)	N	Mean	Std. Deviation	Std. Error
High School	62	4.32	0.825	0.105
Bachelor's or Master's degree	183	4.31	0.924	0.068
Post-master's degree (MBA, PhD etc.)	17	3.59	1.417	0.344
Total	262	4.27	0.954	0.059

*Note: Rate from 1 to 5 the extent to which the following statement about the environmental situation corresponds to your views: It is not enough to recycle and sort waste to preserve the environment.*

*Source: Own research*

with the assessment that environmental protection is not sufficiently prioritized in Croatia.

The second hypothesis revealed a statistically significant difference between groups with different levels of education ( $S^2=8.386$ ,  $p=0.009$ ). Interestingly, counter to initial expectations, elevated levels of education displayed an association with diminished mean scores in this context. It is imperative to emphasize that these results do not suggest a causal link between educational attainment and attitudes but offer an intriguing avenue for investigation. A plausible interpretation could be that educated individuals in Croatia may harbour reservations regarding the competence and efficacy of waste management institutions, potentially contributing to the observed lower mean scores within the higher education strata. However, it is worth noting that despite these differences, the mean scores indicate fairly agreeable attitudes, with 3 representing a neutral stance and 4 representing a somewhat agreeable attitude.

The Levene test assessing homogeneity of variances based on means yielded a statistically significant result ( $p=0.021$ ), rejecting the null hypothesis of equal variances. Consequently, the Welch test for equality of means was conducted. The Welch test did not demonstrate statistically significant mean differences among the groups ( $p=0.131$ ), suggesting insufficient evidence to reject the assumption of equal variances. Hence, the post hoc Bonferroni test was employed to identify any statistically significant differences among the education-level groups. The Bonferroni posthoc analysis indicated significant mean differences at the 0.05 significance level between

the first (high school) and third (postgraduate studies) groups, as well as between the second (undergraduate and graduate studies) and third groups. However, no statistically significant difference was found between the first and second groups. The results reveal a discernible variance in attitudes regarding environmental preservation and waste administration across distinct educational strata: secondary education, undergraduate studies, graduate studies, and postgraduate studies. These outcomes present an intriguing avenue for further investigation, warranting a qualitative inquiry to understand better the underlying rationales governing these attitudes. Integrating a qualitative dimension in future research can yield valuable insights into the determinants shaping attitudes concerning environmental issues concerning varying educational attainments.

## Discussion

Since the 70s, there has been an increase in the number of studies focusing on environmental preferences. However, there is still a noticeable gap in research analyzing various countries and their regions or examining the development over time. This paper is focused on addressing and mitigating these limitations. This research aims to interpret and contextualize the findings concerning the relationship between education levels and attitudes toward environmental protection and waste management in Croatia. The study explored the potential influence of education on pro-environmental attitudes and behaviours, considering that education is often considered a

**Table 3**

*Post-hoc Bonferroni test for H2*

LevelOfEdGroup	LevelOfEdGroup	Mean Difference	Std. Error	Sig.
I	J	I-J		
Finished High School (1 <sup>st</sup> group)	Finished Bachelor's or Master's degree	0.011	0.138	1.000
	Finished Post-master degree (MBA, PhD etc.)	0.734*	0.257	0.014
Finished Bachelor's or Master's degree (2 <sup>nd</sup> group)	Finished High School	-0.011	0.138	1.000
	Finished Post-master degree (MBA, PhD etc.)	0.723*	0.238	0.008
Finished Post-master's degree (MBA, PhD etc.) (3 <sup>rd</sup> group)	Finished High School	-0.734*	0.257	0.014
	Finished Bachelor's or Master's degree	-0.723*	0.238	0.008

Note: \*. The mean difference is significant at the 0.05 level.

Source: Own research

crucial factor in shaping individuals' knowledge, beliefs, and values related to sustainability. The results connected to the first hypothesis suggest that the level of education does not play a substantial role in determining individuals' attitudes toward environmental protection in Croatia. A prior research study has also revealed that the influence of education does not significantly correlate with the overall environmental concerns (Blake, 2001). The lack of a significant relationship may imply that other factors beyond education, such as cultural norms, personal experiences, and societal influences, could be more influential in shaping individuals' attitudes toward environmental issues, as previous research has shown (Wang et al., 2022; Santhakumar et al., n.d.), as well as socio-demographic factors such as household size and income (Golley & Meng, 2012; Hoffmann & Muttarak, 2020). Living in an urban environment rather than a rural one might also impact green attitudes (Rajapaksa et al., 2018). Some might argue that a decreasing number of individuals maintain regular contact with nature. This disconnection from nature can result in adverse outcomes, including declining public health and overall well-being, diminished emotional connection with the natural world, and decreased pro-environmental views and actions (Soga and Gaston, 2016). As it has been shown, numerous background aspects might influence environmental attitudes, not only one factor such as educational level. The second hypothesis revealed a statistically significant difference in attitudes toward environmental protection among individuals with different levels of education. Contrary to the expectations, higher education levels were associated with lower mean scores, indicating less favourable attitudes towards environmental protection. These results are surprising and could lead to several potential interpretations. One possible explanation for the lower mean scores among individuals with higher education levels is that they may have a more critical and skeptical perspective toward environmental protection efforts. Highly educated individuals might possess a deeper understanding of the complexities and challenges involved in environmental conservation, leading to a more nuanced and cautious approach in their attitudes. The other explanation might lie in non-environmental formal knowledge gained during the education period. A prior study proposed that formal environmental education might enhance environmental attitudes, yet it may not significantly influence students' involvement in hands-on environmental activities (Janmaimool & Khajohnmanee, 2019). Although there is some indication that environmental education programs can lead to altered beliefs and attitudes, this effect tends to be more pronounced in the short run (Gralton et al., 2004). Moreover, educated individuals may be more aware of the country's limitations

and inefficiencies in waste management institutions, which might negatively influence their attitudes toward environmental protection. Another perspective could be that educated individuals in Croatia might perceive environmental protection as the responsibility of policymakers and government institutions rather than individual actions. This perception could lead to lower pro-environmental attitudes among highly educated individuals, as they may place more responsibility on the competence of institutions to address environmental issues effectively. Individuals often attribute less personal responsibility to environmental protection, as they commonly view it as a task entrusted to the government (Rajapaksa et al., 2018). Some research has also shown inconsistent results regarding environmental attitudes with increasing levels of education, with the coefficient for the highest education level not being statistically significant (Escario et al., 2020). On the other hand, some studies have shown that age does not affect environmental attitudes (Hurst et al., 2013), and the respondents' age tends to increase with higher levels of education. Although the results of this research are inconsistent with most previous discoveries, it is essential to interpret these findings cautiously, as the results do not imply causality between education levels and attitudes. There might be underlying factors not considered in this study that could explain the observed differences. For instance, personal values, educational background, and socioeconomic status can all influence environmental attitudes independently of education levels. Future research could profitably incorporate qualitative elements to delve deeper into the motivations and rationale underpinning individuals' attitudes and behaviours concerning environmental sustainability to comprehend these intricate dynamics better. Ultimately, a comprehensive understanding of these multifaceted factors can guide policymakers and educators in crafting strategies that efficaciously promote sustainable attitudes and behaviours at the individual and societal levels.

Due to the exploratory nature of the research, there are evident limitations that affect the generalizability of the findings. The research has certain limitations that should be acknowledged. Firstly, the sampling is done via the snowball method, which might lead to selection bias, as the initial participants may refer individuals who share similar characteristics or perspectives, potentially excluding diverse viewpoints. It also must be mentioned that virtual snowball sampling is a nonprobability sampling method, which implies that the findings may not be readily generalizable to the broader population of adults in Croatia. Furthermore, the sample size is relatively small, and there may be disparities in gender, age, and education level distributions. Another study's

limitation lies in the sample's unbalanced representation of education levels, with about 70% holding higher education degrees. This contrasts with the broader adult population in Croatia and affects the findings' applicability to the population. Because of the non-experimental nature of the data, the analysis cannot establish causal claims. Variables like time preferences could account for the results.

Furthermore, the findings primarily stem from survey data, which are susceptible to measurement and reporting errors, particularly since they depend on self-reported environmental behaviour, potentially influenced by social desirability biases. Conducting the questionnaire online may introduce uncontrollable variables, affecting the reliability of the results. Participants completed the questionnaire independently, without supervision or guidance, relying solely on their judgment, potentially influencing the responses.

Future studies could explore a more nuanced classification of education levels to understand how specific educational paths impact attitudes toward environmental issues. Future research should aim to collect data from more diverse and representative samples, considering gender, age, and education level to provide a more comprehensive understanding of the population's attitudes toward environmental issues. Moreover, incorporating a qualitative component in future research could be beneficial to gain deeper insights into the respondents' attitudes and motivations. Qualitative methods can offer a more nuanced understanding of individuals' perspectives and shed light on the underlying reasons behind their attitudes toward sustainability and ethical behaviour.

## Conclusion

The primary objective of this paper is to provide a holistic comprehension of consumer attitudes pertaining to sustainability, particularly those related to environmental conservation and recycling practices within the context of Croatia. Moreover, it seeks to lay the groundwork for prospective investigations in this domain. The findings underscore the necessity of encompassing a multitude of determinants when scrutinizing attitudes concerning environmental safeguarding and waste handling. While

education potentially wields influence, it constitutes one component within a network of interconnected variables that jointly mould individuals' outlooks and conduct regarding sustainability. Further research is crucial to explore effective methods of stimulating and incentivizing sustainable behaviour among consumers. Policymakers and governmental bodies should concentrate on designing educational initiatives that promote desired behaviours and enforce regulations that foster sustainability. Increasing the availability of general education could be a vital and efficient approach to nurturing pro-environmental attitudes and behaviours among a wide-ranging population. Especially in countries like Croatia, where a significant portion of the population exhibits low levels of environmental awareness, the influence of general education in cultivating environmental knowledge is of utmost importance. Companies also play a pivotal role in transitioning towards a more sustainable future by incorporating robust corporate social responsibility practices and implementing eco-friendly measures in their production and shipping processes.

In summary, encouraging sustainable practices requires increasing consumer awareness regarding sustainable consumption and motivating behavioural changes. Key areas for further investigation include strategies to stimulate sustainable behaviour, effective approaches to educate and inspire individuals towards desired environmental actions, and mechanisms to enforce and regulate sustainable practices. The government needs to take decisive action and implement regulatory measures that influence the behaviour of companies, consumers, and all stakeholders to achieve meaningful progress. Additionally, local-level educational programs should be established to enlighten citizens about their environmental impact and inspire better choices. Nonetheless, personal responsibility plays a crucial role, as each individual can make a difference by adopting small changes in their behaviour that collectively significantly impact the environment. Setting an example for others and fostering a sense of community improvement can lead the way toward a greener future. In conclusion, fostering sustainability requires collective efforts involving policymakers, companies, consumers, and individuals. By addressing various aspects, such as regulation, education, corporate responsibility, and personal actions, we can work together to achieve a more sustainable and environmentally conscious society.



## References

- Aminrad, Z., Zakaria, S. Z. S., & Hadi, A. (2011). Influence of age and level of education on environmental awareness and attitude: Case study on Iranian students in Malaysian universities. *The Social Sciences*, 6(1), 15–19. DOI: <https://doi.org/10.3923/sscience.2011.15.19>
- Blake, D. E. (2001). Contextual Effects on Environmental Attitudes and Behavior. *Environment and Behavior*, 33(5), 708–725. DOI: <https://doi.org/10.1177/00139160121973205>
- Casaló, L. V., & Escario, J.-J. (2018). Heterogeneity in the association between environmental attitudes and pro-environmental behavior: A multilevel regression approach. *Journal of Cleaner Production*, 175, 155–163. DOI: <https://doi.org/10.1016/j.jclepro.2017.11.237>
- Clery, E., & Rhead, R. (2013). Education and attitudes towards the environment. Background paper prepared for the Education for All Global Monitoring Report 2013/4. *Teaching and learning: Achieving quality for all*. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000225928>
- Danielson, L. E., Hoban, T. J., Van Houtven, G., & Whitehead, J. C. (1995). Measuring the benefits of local public goods: environmental quality in Gaston County, North Carolina. *Applied Economics*, 27(12), 1253–1260. DOI: <https://doi.org/10.1080/00036849500000108>
- De Silva, D. G., & Pownall, R. A. J. (2012). Going Green: Does it Depend on Education, Gender, or Income? *SSRN Electronic Journal*. DOI: <https://doi.org/10.2139/ssrn.1999764>
- Escario, J.-J., Rodriguez-Sanchez, C., & Casaló, L. V. (2020). The influence of environmental attitudes and perceived effectiveness on recycling, reducing, and reusing packaging materials in Spain. *Waste Management*, 113, 251–260. DOI: <https://doi.org/10.1016/j.wasman.2020.05.043>
- European Commission. (n.d.). *Circular economy. Environment*. Retrieved from [https://environment.ec.europa.eu/topics/circular-economy\\_en](https://environment.ec.europa.eu/topics/circular-economy_en)
- European Commission. (n.d.). *Environmental protection. Trade*. Retrieved from [https://policy.trade.ec.europa.eu/development-and-sustainability/sustainable-development/environmental-protection\\_en](https://policy.trade.ec.europa.eu/development-and-sustainability/sustainable-development/environmental-protection_en)
- Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *International Journal of Psychology*, 49(3), 141–157. DOI: <https://doi.org/10.1002/ijop.12034>
- Gigliotti, L. M. (1992). Environmental attitudes: 20 years of change? *The Journal of Environmental Education*, 24(1), 15–26. DOI: <https://doi.org/10.1080/00958964.1992.9943491>
- Gigliotti, L. M. (1994). Environmental Issues: Cornell Students' Willingness to Take Action, 1990. *The Journal of Environmental Education*, 26(1), 34–42. DOI: <https://doi.org/10.1080/00958964.1994.9941431>
- Golley, J., & Meng, X. (2012). Income inequality and carbon dioxide emissions: The case of Chinese urban households. *Energy Economics*, 34(6), 1864–1872. DOI: <https://doi.org/10.1016/j.eneco.2012.07.025>
- Graltan, A., Sinclair, M., & Purnell, K. (2004). Changes in Attitudes, Beliefs and Behaviour: A Critical Review of Research into the Impacts of Environmental Education Initiatives. *Australian Journal of Environmental Education*, 20, 41–52. DOI: <https://doi.org/10.1017/S0814062600002196>
- Günther, J., Manshoven, S., Paleari, S., Fuchs, G., Carré, A. & Fischer-Bogason, R. (2023). *ETC/CE Report 2023/7 Circular Economy and Biodiversity. Eionet Portal*. Retrieved from <https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2023-7-circular-economy-and-biodiversity>
- Hammond, C., & Sabates, R. (2008). *The impact of lifelong learning on happiness and well-being*. Academia. Retrieved from [https://www.academia.edu/32125048/The\\_Impact\\_of\\_Lifelong\\_Learning\\_on\\_Happiness\\_and\\_Well\\_being](https://www.academia.edu/32125048/The_Impact_of_Lifelong_Learning_on_Happiness_and_Well_being)
- Hidano, N., Kato, T., & Aritomi, M. (2005). Benefits of participating in contingent valuation mail surveys and their effects on respondent behavior: a panel analysis. *Ecological Economics*, 52(1), 63–80. DOI: <https://doi.org/10.1016/j.ecolecon.2004.06.010>
- Hoffmann, R., & Muttarak, R. (2020). Greening through schooling: understanding the link between education and pro-environmental behavior in the Philippines. *Environmental Research Letters*, 15. DOI: <https://doi.org/10.1088/1748-9326/ab5ea0>
- Howell, S.E., & Laska, S. (1992). The Changing Face of the Environmental Coalition. *Environment and Behavior*, 24, 134–144. DOI: <https://doi.org/10.1177/0013916592241006>
- Hurst, M., Dittmar, H., Bond, R., & Kasser, T. (2013). The relationship between materialistic values and environmental attitudes and behaviors: A meta-analysis. *Journal of Environmental Psychology*, 36, 257–269. DOI: <https://doi.org/10.1016/j.jenvp.2013.09.003>
- Inglesis-Lotz, R., & del Corral Morales, L. (2017). *The Effect of Education on a Country's Energy Consumption: Evidence from Developed and Developing Countries* (Working Papers 201733). University of Pretoria, Department of Economics.
- Israel, D., & Levinson, A. (2004). Willingness to Pay for Environmental Quality: Testable Empirical Implications of the Growth and Environment Literature. *Contributions in Economic Analysis & Policy*, 3(1). DOI: <https://doi.org/10.2202/1538-0645.1254>
- Janmaimool, P., & Khajohnmanee, S. (2019). Roles of Environmental System Knowledge in Promoting University Students' Environmental Attitudes and Pro-Environmental Behaviors. *Sustainability*, 11(16), 4270. DOI: <https://doi.org/10.3390/SU11164270>
- Jørgensen, S. E., & Fath, B. D. (2019). *Encyclopedia of Ecology*. Amsterdam: Elsevier.
- Jucker, R. (2002). "Sustainability? Never heard of it!" *International Journal of Sustainability in Higher Education*, 3(1), 8–18. DOI: <https://doi.org/10.1108/14676370210414146>
- Lafortune, G., Fuller, G., Bermont-Diaz, L., Kloke-Lesch, A., Koundouri, P. & Riccaboni, A. (2022). Achieving the SDGs: Europe's Compass in a Multipolar World. *Europe Sustainable Development Report 2022*. France: Paris. Retrieved from <https://eu-dashboards.sdindex.org/chapters/part-1-performance-of-european-countries-against-the-sdgs>

- Liere, K. & Dunlap, R. (1981). Environmental Concern: Does it Make a Difference How it's Measured? *Environment and Behavior*, 13, 651-676. DOI: <https://doi.org/10.1177/0013916581136001>
- Mainieri, T., Barnett, E., Valdero, T., Unipan, J., & Oskamp, S. (1997). Green buying: The influence of environmental concern on consumer behavior. *The Journal of Social Psychology*, 137(2), 189-204. DOI: <https://doi.org/10.1080/00224549709595430>
- Meyer, A. (2015). Does education increase pro-environmental behavior? Evidence from Europe. *Ecological Economics*, 116, 108–121. DOI: <https://doi.org/10.1016/j.ecolecon.2015.04.018>
- Rajapaksa, D., Islam, M., & Managi, S. (2018). Pro-Environmental Behavior: The Role of Public Perception in Infrastructure and the Social Factors for Sustainable Development. *Sustainability*, 10, 937. DOI: <https://doi.org/10.3390/su10040937>
- Santhakumar, V, Shephard, K. & Gupta, R. (n.d.) *Do Higher Levels of Education Make People Environment-Friendly?* University Practice Connect. Retrieved from <https://practiceconnect.azimpremjiuniversity.edu.in/do-higher-levels-of-education-make-people-environment-friendly/>
- Soga, M., & Gaston, K.J. (2016). Extinction of experience: the loss of human-nature interactions. *Frontiers in Ecology and the Environment*, 14(2), 94–101. DOI: <https://doi.org/10.1002/fee.1225>
- Sterling, S. (2004). Higher Education, Sustainability, and the Role of Systemic Learning. In: Corcoran, P.B., Wals, A.E.J. (eds) *Higher Education and the Challenge of Sustainability*. Springer, Dordrecht. DOI: [https://doi.org/10.1007/0-306-48515-X\\_5](https://doi.org/10.1007/0-306-48515-X_5)
- Tikka, P.M., Kuitunen, M., & Tynys, S. M. (2000). Effects of educational background on students' attitudes, activity levels, and environmental knowledge. *The Journal of Environmental Education*, 31(3), 12–19. DOI: <https://doi.org/10.1080/00958960009598640>
- Torgler, B., & García-Valiñas, M. (2005). *The determinants of individuals' attitudes towards preventing environmental damage*. No 2005.110, Working Papers, Fondazione Eni Enrico Mattei. Retrieved from <https://econpapers.repec.org/paper/femfemwpa/2005.110.htm>
- Veisten, K., Fredrik Hoen, H., Navrud, S., & Strand, J. (2004). Scope insensitivity in contingent valuation of complex environmental amenities. *Journal of Environmental Management*, 73(4), 317-331. DOI: <https://doi.org/10.1016/j.jenvman.2004.07.008>
- Wang, Q., Niu, G., Gan, X., & Cai, Q. (2022). *Green returns to education: Does education affect pro-environmental attitudes and behaviors in China?* *PLOS ONE*, 17(2), e0263383. DOI: <https://doi.org/10.1371/journal.pone.0263383>
- Whitehead, J. C. (1991). Environmental Interest Group Behavior and Self-Selection Bias in Contingent Valuation Mail Surveys. *Growth and Change*, 22(1), 10–20. DOI: <https://doi.org/10.1111/j.1468-2257.1991.tb00538.x>
- Witzke, H.P., & Urfei, G. (2001). Willingness To Pay for Environmental Protection in Germany: Coping With the Regional Dimension. *Regional Studies*, 35, 207 - 214. DOI: <https://doi.org/10.1080/00343400120039614>

# Ali stopnja izobrazbe porabnikov vpliva na njihov odnos do recikliranja in varstva okolja? Dokazi iz Hrvaške

## Izvleček

Empirična povezava med izobrazbo in porabo se razlikuje glede na kontekstualne dejavnike. Nekatere študije so preučevale povezavo med izobraževanjem in skrbjo za naravno okolje. Dokazi kažejo, da lahko stopnja izobrazbe pomembno vpliva na okoljska dejanja. Kljub temu nekatere raziskave kažejo, da izobrazba morda ne vpliva bistveno na t.i. zeleno vedenje ali pa je slednje odvisno od različnih kontekstualnih dejavnikov. Ta študija raziskuje ali stopnja izobrazbe hrvaških porabnikov vpliva na njihov odnos do skrbi za naravno okolje, recikliranje in odstranjevanje odpadkov. Njen cilj je ugotoviti, ali obstaja statistično pomembna razlika v stališčih med porabniki z različno stopnjo izobrazbe. Z raziskovanjem te povezave želi članek osvetliti potencialno vlogo izobrazbe pri oblikovanju okolju prijaznega vedenja. Z odpravo te raziskovalne vrzeli in preučitvijo posebnega primera Hrvaške želi članek prispevati k širšemu razumevanju vpliva izobrazbe na okoljsko zavest in ravnanje porabnikov ter s tem prispevati k svetovnim prizadevanjem za bolj trajnostno prihodnost.

*Ključne besede:* vedenje porabnikov, recikliranje, varstvo okolja, ravnanje z odpadki, Hrvaška