Received on: 12 October 2022 **Revised on: 10 February 2023** **Accepted: 30 March 2023**

RESEARCH ARTICLE
DOI: 10.47703/ejebs.v1i67.186

Pro-Environmental Behavior and Household Waste Sorting in Kazakhstan: an Empirical Analysis

Aknur Zhidebekkyzy[1]* | **Aisulu Moldabekova[2]** | **Birganym Amangeldiyeva[1]**

[1] Al-Farabi Kazakh National University, Almaty, Kazakhstan

[2] Institute of Economics Science Committee MSHE RK, Almaty, Kazakhstan

Corresponding author:
***Aknur Zhidebekkyzy** - PhD, Associate Professor, Al-Farabi Kazakh National University, Almaty, Kazakhstan. Email: aknur.zh@gmail.com

For citation: Zhidebekkyzy, A., Moldabekova, A. & Amangeldiyeva, B. (2023). Pro-Environmental Behavior and Household Waste Sorting in Kazakhstan: an Empirical Analysis. Eurasian Journal of Economic and Business Studies, 67(1), 39-51.

Conflict of interest: author(s) declare that there is no conflict of interest.

Abstract

Climate change, deterioration of nature, pollution - all these have led to the fact that ecological behaviour has become a necessity for the conservation of nature and its resources. Pro-environmental behaviour is one of the most important factors for sustainable development. Thus, from year to year, pro-environmental behaviour becomes an important subject of discussion for many scientists and government bodies. The purpose of this study is to determine the level of pro-environmental behaviour among the population in household waste sorting and to identify the state of development of infrastructure for the disposal of household waste in the settlements of Kazakhstan. The methodology includes an Internet survey, which was conducted among the population of Kazakhstan aged 18 years and older. The survey involved 2264 respondents. Research results show that 3 out of 5 hypotheses that we assumed turned out to be positive. Thus, statistical analyses showed the following results: Pro-environmental behaviour and waste management mostly depend on - 1) the gender of the respondents, 2) the level of education of the respondents, and 3) the type of settlements of the respondents. Also, the sorting of household waste has a negative connection with the age and marital status of the respondents. Based on these results, it can be assumed that pro-environmental behaviour can be affected by gender, level of education, and the type of settlement. Policymakers should pay attention and give support at all levels like infrastructure, education, etc.

Keywords: Pro-environmental Behavior, Waste Sorting, Waste Management, Circular Economy, Kazakhstan

SCSTI: 87.01.21
JEL Code: Q01, Q53, Q51

Acknowledgements: This research was funded by the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan (Grant No. AP09259851)

1. INTRODUCTION

There are many issues related to the environment today – climate change, depletion of natural resources, increased waste, air pollution, etc. Environmental issues are always in first place, and humanity should already be thinking about a reasonable approach to production and consumption to save our planet (Report of the World Commission on Environment and Development 1987; S. Harris et al. 2021).

The circular economy in terms of production and consumption in the country is one of the alternatives to the current linear economy, which adheres to the principle of "take, use, dispose". Today, the linear economy is known for its harmful effects on the environment; not only scientists but also politicians from all over the world discuss this issue at the global level. That is why the need to transform from linear to alternative types of economy, namely the circular economy, is an actual topic for discussion (Ellen MacArthur Foundation, 2012; Acerbi & Taisch, 2020).

According to the World Health Organization (WHO, 2018), the circular economy can be described as focusing on closed-loop material flows. This means reducing the consumption level of natural resources, changing utilization patterns to extend a product's life cycle, and transforming the existing models of consumption. Consumer behavior is integral to the circular economy (Gomes et al., 2022). In this regard, we considered existing theories regarding consumer behavior, from the theory of planned behavior (TPB) to pro-environmental behavior.

The relevance of the study of pro-environmental behavior and household waste sorting in Kazakhstan is substantiated by the fact that today the level of sorting and ecological culture is deficient among the population of Kazakhstan. There needs to be more awareness about specific ways of sorting household waste. For example, most of the population needs to learn the need to deliver hazardous waste to particular organizations and know where they are accepted. In this regard, it is essential at the practical level to quantify at what level the culture of sorting household waste is by the population of Kazakhstan. On the one hand, it is essential to note the infrastructural obstacles that prevent household waste sorting.

Numerous studies are dedicated to the importance of reasonable consumption and production. However, there needs to be more vision of the factors affecting consumers' pro-environmental behavior. Therefore, the following research question was set in this study:

RQ1. Which factors affect pro-environmental behavior and waste sorting?

This study contributes to the current literature by increasing the materials for further research and strengthening the knowledge about influencing factors on the environmental behavior of consumers/population.

2. LITERATURE REVIEW

The theory of planned behavior

Several theories have been proposed to study people's behavior. Ajzen's theory of planned behavior (TBP) is one of the well-known theories in this field (Ajzen, 1991; Ajzen, 2012). TPB is an advancement of Fishbein and Ajzen's theory of reasoned action (TRA), which was developed in 1975. According to Ajzen: "Intention is the immediate antecedent of behavior and is itself a function of attitude toward the behavior, subjective norm, and perceived behavioral control; and these determinants follow, respectively, from beliefs about the behavior's likely

consequences, about normative expectations of important others, and about the presence of factors that control behavioral performance" (Ajzen, 2012). From this definition, it can be seen that the root of any behavior is – intention. According to the TPB, intentions can be determined by three main variables: 1 – personal attitudes (feelings, attitudes and complete knowledge when considering the behavior), 2 – subjective norms (one's perception/view of another's attitude towards behavior), 3 – perceived behavioral control (the degree to which one believes he/she can control his/her behavior). Figure 1 described three main variables of the intention.

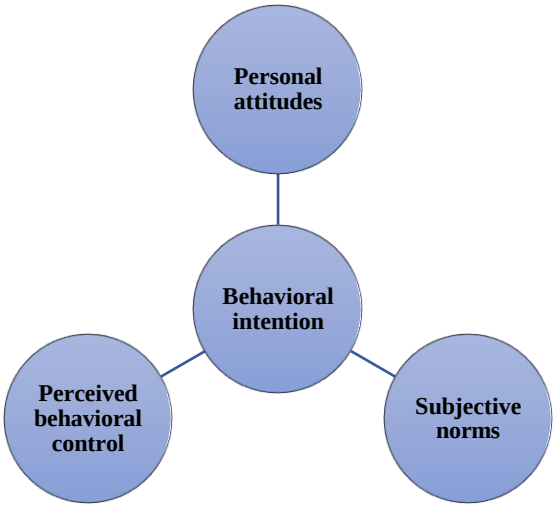

FIGURE 1. Three main variables of the intention

Note: Compiled by the authors based on references Ajzen (1991); Ajzen (2012)

Figure 1 shows the main three variables of the intention, according to Ajzen (Ajzen, 1991). As it can be seen, behavioral intention is driven by personal attitudes, perceived behavioral control, and subjective norms. Previous research shows a positive relationship between purchase intention and personal attitude. For instance, Kun-Shan Wu and Yi-Man Teng have studied that perceived control over purchases, environmental consciousness, and moral commitment directly affect purchase intention (Wu & Teng, 2011).

The pro-environmental behavior Thogersen and Noblet have conducted a survey study in the USA showing that every day "green" behavior and acceptance of wind power expansion are interrelated, and both are rooted in environmental concerns. It means that the promotion of such behavior as "green" can lead to the increasing acceptance of even bigger changes in the future to save the environment (Thogersen & Noblet, 2012).

Thogersen and Truelove, Carrico, Weber, Raimi, and Vandenbergh interpreted the spillover effect as a phenomenon in which an intervention aimed at reinforcing one targeted behavior may lead to an increase or decrease in another, non-targeted behaviors (Thogersen, 1999; Truelove et. al., 2014). According to the theory of cognitive dissonance, the Ecobuying attitude can be explained as follows: positive pro-environmental attitude and belief will lead to positive pro-environmental action. While assessing the predictability of GBB or Intention, the Ecobuying attitude (or pro-environmental attitude) has shown a positive and significant impact on most research outcomes.

Self-determination theory also can be related to the pro-environmental attitude. This study

shows that people's behavior is interrelated with motivation to grow and change. In particular, SDT explains the three basic inner psychological needs in changing an individual's behaviour: 1 – needs for competence, 2 – needs for autonomy, and 3 – needs for relatedness. Scientists claim that the propensity to be active or passive depends mainly on the social conditions in which people grow up. By this, it can be said that social support plays an important role – people's interactions can either foster or hinder a society's personal growth and development (Ryan & Deci, 2000).

A positive spillover effect of pro-environmental behavior has been discussed in many related studies. For instance, Thomas, Poortinga, and Sautkina found that Wales' one-time shopping bag policy encourages shoppers to reuse shopping bags and encourages appropriate sustainable behavior (Thomas et al., 2016).

Yang, Cheng, Wang and Li investigated waste-sorting policies in Chinese cities and concluded that penalty policies reduce people's sustainable consumption behavior through a negative spillover effect. In contrast, a voluntary participation policy markedly increases people's sustainable consumption behavior due to a positive spillover effect (Yang et al., 2021).

Tleppaev and Zeinolla conducted research on approaches to circular economy (CE) indicators in the European Union and the OECD countries (Tleppaev & Zeinolla, 2021). To evaluate one of the characteristics of CE, namely, the recycling of raw materials, they created a model that allows us to evaluate the impact of indicators on this characteristic. It also revealed a positive relationship between CE, economic development, and innovation.

As a result of the literature review, we concluded that people's behavior is influenced by many factors. We want to mention respondents' social and demographic parameters as variables. From there, the variables of this research can be defined as follows:

Independent variables are gender, age, education, place (city, region), marital status

The dependent variable is the sorting of household waste.

The value of this study lies in the fact that such research has not been carried out before in Kazakhstan.

According to the theories above, the following hypotheses are put forward:

H1. The sorting of household waste depends on the gender of the respondents.

H2. The sorting of household waste depends on the level of education of the respondents.

H3. The sorting of household waste depends on the type of settlements of the respondents.

H4. The sorting of household waste depends on the age of the respondents.

H5. The sorting of household waste depends on the marital status of the respondents.

3. METHODOLOGY

In this study, a quantitative research strategy will be applied. The quantitative research approach allows us to determine the causal relationship between the phenomena and the prevalence of the problem among the studied object (Kasim & Antwi, 2015). In particular, the correlation design of the study involves assessing the relationship between the variables sorting household waste and the social and demographic parameters of respondents. Also, the quantitative research approach allows statistical testing of research hypotheses. It highlights important aspects for further qualitative research to find the deep causes of the problem under study (Marvasti, 2018). In the data analysis, cross tables were built using the SPSS 25 program.

Furthermore, the Pearson chi-square correlation test was used for the statistical assessment of the relationship, allowing statistical verification to confirm or refute the study's hypotheses (Nihan, 2020). The survey method was used to collect primary data. This research methodology makes it possible to determine the interrelated factors of sorting household waste, considering the social parameters of the population of Kazakhstan. This differs research from previous empirical studies on this issue.

A population survey was conducted to study the environmental behavior of the population at the level of individuals. A quantitative survey of the population based on formalized research tools (questionnaires) makes it possible to assess the prevalence and magnitude of the studied parameters of ecological culture in the public consciousness. An online survey on the Google platform was used to collect relevant data. The choice of web-based survey tools is driven by low cost, faster feedback, and ease of generating a basis for analysis (Liaw, 2022). Links to surveys were also shared on social media. Previous research has shown that sending surveys to a well-defined and specific population has a positive effect on online survey response rates (Wu et al., 2022).

In April-May of the year 2022, a continuous survey of the population was conducted. The total sample size was 2264 respondents. Primary data were processed using the SPSS 25 program.

Thus, mainly young people (49.5%) and those aged 30 to 45 years - 42.6% participated in the survey. The share of other categories of the population was not significant. By gender, 48.4% of men and 51.6% of women participated in the survey. The sphere of activity of the respondents covers various areas: among the respondents, there are more employees - 60.2%. The number of self-employed and student respondents was 13% each. Basically, the respondents' level of education was higher - 62.9%. The majority of respondents have a monthly income of up to 300,000 tenges (608 euros), and 65.4% of the respondents have their own families.

TABLE 1. Socio-demographic characteristics of respondents

Questions	Answers	Distribution %
Your age	under 18	4,1
	19-29 years	49,5
	30-45 years	42,6
	46-55 years	3
	56-65 years	0,8
	Total	100
What is your current activity?	Hired worker	60,2
	Entrepreneur	4,2
	Self-employed	13
	Student	13
	Unemployed	6,2
	Retired	0,4
	On parental leave	3
	Total	100
Your level of education:	Secondary general education	8,3
	Secondary special education (technical school, college, etc.)	16,5
	Incomplete higher	12,3
	Higher (including bachelor's and master's degrees)	62,9
	Total	100
Your monthly income is	Under 60 000 tenge	23,3
	From 61 000 to 100 000 tenge	16,3

	From 101 000 to 200 000 tenge	28,9
	From 201 000 to 300 000 tenge	15,8
	From 301 000 to 400 000 tenge	8,8
	More than 401 000 tenge	6,8
	Total	100
Your marital status:	Married	65,4
	Not married	28,6
	Divorced	4,7
	Widower (widow)	1,2
	Total	100
Note: Compiled by authors		

4. FINDINGS AND DISCUSSION

Sorting household waste is a daily manifestation of environmental behavior. In this regard, the questionnaire included a question on sorting waste by residents. According to the survey results, 1/3 of the surveyed respondents sort waste into two categories - 32.7%. More than ¼ of the respondents do not sort waste at all. Waste is sorted into three categories by 22.2% of respondents. 10.6% found it difficult to answer this question. It should be noted that among the respondents, the proportion of those who sort waste into four or more categories is very small - 4.5% and 3.3%, respectively (Figure 2).

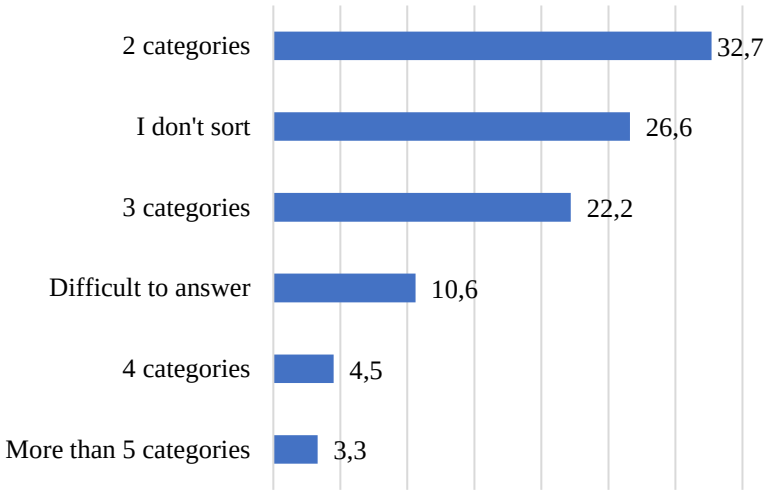

FIGURE 2. Distribution of answers to the question "Into how many categories do you sort waste?", %

Note: Compiled by the authors

As it turned out, the population mainly sorts first of all paper and cardboard (14.0%), then plastic packaging (11.3%), organic waste (11.0%), and hazardous waste (for example, batteries, and mercury lamps) (10.8%). Also, the option "none of the specified categories" was noted by 9.2%. For the rest of the positions, metal, glass, bottles, packaging, cans, organic waste, children's toys, and packaging materials have very low indicators (Figure 3).

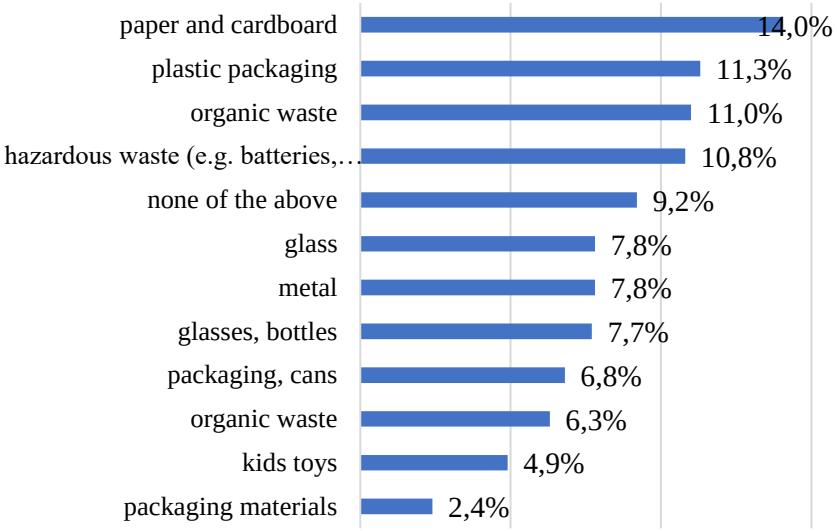

FIGURE 3. Distribution of answers to the question "What types of waste do you sort at home?", %

Note: Compiled by the authors

Cross-tabulations were built in SPSS 25 and Pirson's chi-square was calculated to test the hypotheses highlighted based on the literature review section. Based on the significance level, it is possible to confirm or disprove the hypotheses (see Table 2).

TABLE 2. Cross-table of questions: "Into how many categories do you sort waste?", "Your gender", "Your level of education", "Indicate your locality", "Your age", and "Your marital status."

Into how many categories do you sort waste?									
		No sorting at all	2 categories	3 categories	4 categories	More than 5 Categories	Difficult to answer	Total	Asymptotic Significance (2-sided) of Pearson Chi-Square

Your gender	Man	30,7%	29,3 %	20,1%	3,5%	3,7%	12,7%	100 %	**0,000**
	Woman	22,8%	35,9 %	24,2%	5,5%	2,9%	8,7%	100 %	
Your level of education	Secondary general education	36,2%	17,6 %	19,1%	3,2%	2,1%	21,8%	100 %	**0,000**
	Secondary special education (technical school, college, etc.)	22,0%	32,2 %	26,3%	7,8%	3,8%	8,0%	100 %	
	Incomplete higher	30,6%	34,9 %	19,1%	3,6%	2,5%	9,4%	100 %	
	Higher (including bachelor's and master's degrees)	25,8%	34,4 %	22,2%	3,9%	3,5%	10,1%	100 %	
Indicate your settlement	City of republican significance	26,0%	36,6 %	20,3%	3,8%	2,6%	10,7%	100 %	
	City of regional significance	24,3%	34,4 %	22,8%	5,8%	3,2%	9,5%	100 %	**0,001**
	City of district significance	26,6%	30,6 %	24,1%	3,6%	4,0%	11,2%	100 %	
	Village	31,1%	23,7 %	24,3%	5,0%	4,3%	11,5%	100 %	
Your age	under 18 years	31,5%	19,6 %	23,9%	8,7%	1,1%	15,2%	100 %	
	19-29 years	28,8%	31,2 %	22,5%	4,1%	3,3%	10,1%	100 %	
	30-45 years	23,9%	35,5 %	21,8%	4,1%	3,5%	11,2%	100 %	0,075
	46-55 years	22,1%	39,7 %	20,6%	8,8%	2,9%	5,9%	100 %	
	56-65 years	35,3%	23,5 %	23,5%	5,9%	5,9%	5,9%	100 %	
Your marital status	Married	24,9%	35,8 %	21,9%	4,0%	3,7%	9,6%	100 %	0,002
	Not married	30,2%	25,6 %	23,5%	4,6%	2,9%	13,1%	100 %	

	Divorced	27,8%	33,3 %	18,5%	9,3%	0,9%	10,2%	100 %	
	Widower (widow)	29,6%	25,9 %	25,9%	3,7%	3,7%	11,1%	100 %	
	Total	26,6%	32,7 %	22,3%	4,5%	3,4%	10,6%	100 %	Total
Note: Compiled by authors									

The survey results reveal that the sorting of household waste is influenced by the gender of the respondents, the level of education, and the type of settlements. In particular, the female population sorts more waste than men. The higher the level of education, the higher the level of waste sorting. A more significant proportion of the population sorts waste among the residents of big cities. However, it should be noted that more people sort waste into more than three categories among the rural population. Additionally, the survey showed that household waste sorting does not depend on the age and marital status of the respondents (Table 3).

TABLE 3. Hypotheses

H1. The sorting of household waste depends on the gender of the respondents.	+
H2. The sorting of household waste depends on the level of education of the respondents.	+
H3. The sorting of household waste depends on the type of settlements of the respondents.	+
H4. The sorting of household waste depends on the age of the respondents.	-
H5. The sorting of household waste depends on the marital status of the respondents.	-
Note: Compiled by authors	

The objective factor in environmental behavior is the development of appropriate infrastructure, a condition for sorting waste. In this regard, the survey included a question on finding the availability of eco points for receiving certain types of waste for recycling. In general, it turned out that the population needs to be made aware and have information about eco points (40.8%). Also, 35.8% indicated that there are no such opportunities and noted that they would like to take advantage of this if available. 13.8% of respondents noted that they have but do not want to use them. Only 6.7% of the population with such infrastructure use and recycle waste (Figure 4).

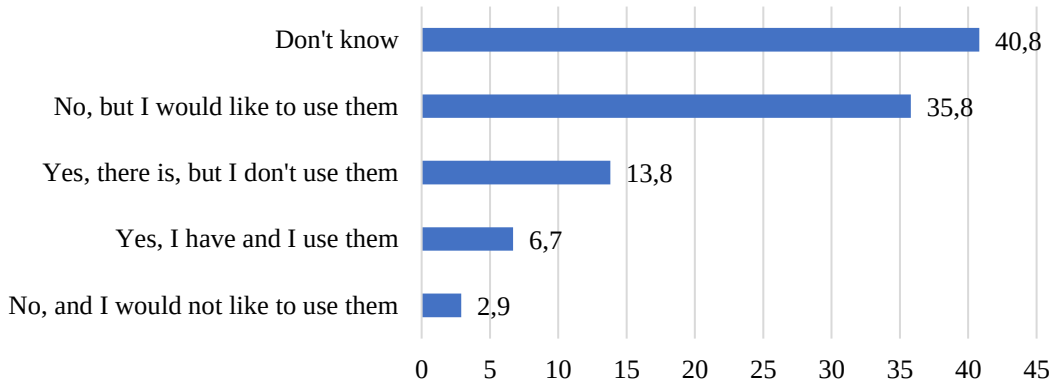

FIGURE 4. Distribution of answers to the question "Are there eco points in your region/city for receiving waste for recycling, and do you use them?", %

Note: Compiled by the authors

As it turned out, more than 1/3 of the respondents, 38.8%, do not know about household waste disposal in their settlements. Also, 31.8% indicated that waste is taken to landfills. Next is the answer "they don't do anything with the waste, the residents themselves take out their garbage" - 18.9%. The option "sorted and processed" was noted by only 6.9% of respondents and 3.6% - "burned at special plants" (Figure 5).

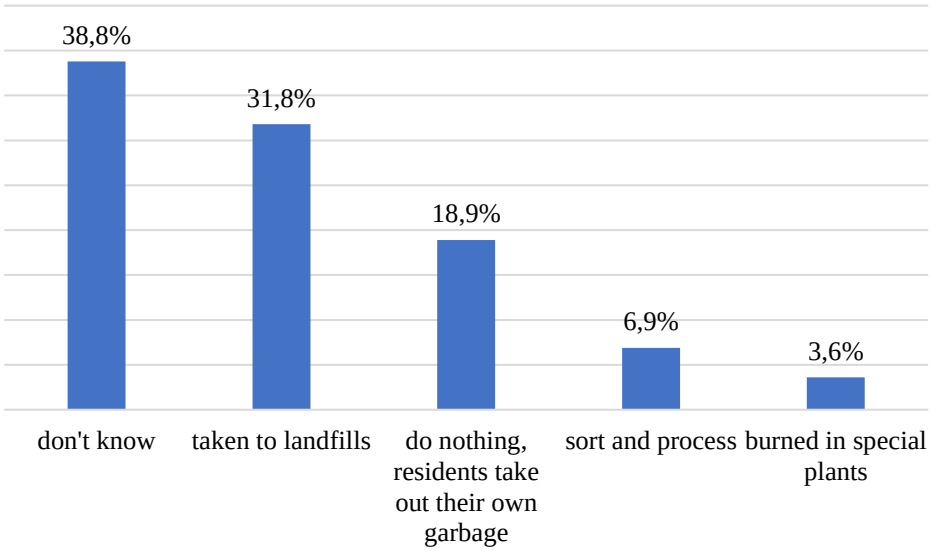

FIGURE 5. Distribution of answers to the question "How is waste disposed of in your settlement?", %

Note: Compiled by the authors

In the cross-tables on the questions "How is the waste disposed of in your settlement (select all that apply)? * Type of locality", it was found that in regional and district cities most of the waste is taken to landfills. They are burned in special plants and sorted and processed more in megacities. Thus, the infrastructure for household waste disposal is underdeveloped in district cities and rural settlements.

TABLE 4. Waste disposal options and types of settlements

	City of republican significance	**City of regional significance**	**City of district significance**	**Village**
Taken to landfills	32,3%	**47,7%**	41,7%	30,9%
Burned in special plants	**5,6%**	4,9%	1,5%	2,0%
Sort and process	**9,6%**	9,8%	5,8%	3,8%

Do nothing, residents take out their own garbage	13,4%	16,1%	**26,5%**	**44,2%**
Don't know	**57,8%**	**39,4%**	36,3%	30,1%
Chi-Square Tests Asymptotic Significance (2-sided) - 0,000				
Note: Compiled by authors				

5. CONCLUSIONS

The literature on environmental behavior is growing daily, indicating great interest in this term involving governments, institutions, and businesses. Recent researches suggest that priority should be given to pro-environmental behavior. However, the relationship between pro-environmental behavior and factors that may influence pro-environmental behavior still needs to be well explored.

This study attempts to fill this gap by analyzing the correlation between pro-environmental behavior and factors that may influence pro-environmental behavior. This article investigated the factors influencing waste sorting in the Republic of Kazakhstan. In this work, data obtained through an Internet survey among the population of the Republic of Kazakhstan aged 18 years and over were used. Information about the respondents, their pro-environmental behavior, and waste sorting methods were collected and analyzed statistically. An empirical analysis was carried out on a sample of 2264 respondents using the SPSS 25 program. According to the results of the research, the following conclusions were made:

The results of the survey and analysis showed that there are factors influencing waste sorting, such as:

- the gender of the respondents affects the sorting of waste among the population of the Republic of Kazakhstan;
- the level of education of respondents also affects the sorting of waste among the population of the Republic of Kazakhstan;
- the type of settlement of the respondents also showed a positive result as an influencing factor on waste sorting among the population of the Republic of Kazakhstan.

In addition, according to the results of empirical analysis, it was found that age and marital status do not affect the sorting of household waste.

The prospect of this study is to conduct qualitative research to identify the deep causes and socio-cultural factors that affect the environmental behavior of the population. Also, based on statistical data on the regions of Kazakhstan on household waste and the level of air pollution, a comparative analysis can be carried out with the results of this empirical study.

References

1. Acerbi, F., & Taisch, M. (2020). A literature review on circular economy adoption in the manufacturing sector. *Journal of Cleaner Production, 273,* 123086. https://doi.org/10.1016/j.jclepro.2020.123086.
2. Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behavior and *Human Decision Processes, 50,* 179-211. https://doi.org/10.1016/0749-5978(91)90020-T
3. Ajzen, I. (2012). The theory of planned behavior. *Handbook of theories of social psychology, 1,* 438-459. https://doi.org/10.4135/9781446249215.n22
4. Ellen MacArthur Foundation (2012). Towards the circular economy Vol. 1: an economic and business rationale for an accelerated transition. [Cited October 7, 2022]. Available: https://ellenmacarthurfoundation.org/towards-the-circular-economy-vol-1-an-economic-

and-business-rationale-for-an
5. Gomes, G.M., Moreira, N., & Ometto, A.R. (2022). Role of consumer mindsets, behavior, and influencing factors in circular consumption systems: A systematic review. *Sustainable Production and Consumption, 32*, 1-14. https://doi.org/10.1016/j.spc.2022.04.005.
6. Harris, S., Martin, M., & Diener, D. (2021). Circularity for circularity's sake? Scoping review of assessment methods for environmental performance in the circular economy. *Sustainable Production and Consumption, 26*, 172–186. https://doi.org/10.1016/J.SPC.2020.09.018
7. Liaw, S.S. (2022). An Internet survey for perceptions of computers and the World Wide Web: Relationship, prediction, and difference. *Computers in Human Behavior, 18*(1), pp. 17–35. https://doi.org/10.1016/S0747-5632(01)00032-2
8. Kasim, H., & Stephen, K. A. (2015). Qualitative and Quantitative Research Paradigms in Business Research: A Philosophical Reflection. *European Journal of Business and Management, 7*, 217-225.
9. Marvasti, A. (2018). Research Methods. *The Cambridge Handbook of Social Problems, 1* (3), 23–37. https://doi.org/10.1017/9781108656184.003.
10. Nihan, S. T. (2020). Karl Pearsons Chi-Square Tests. *Educational Research and Reviews, 15* (9), 575–580. https://doi.org/10.5897/err2019.3817
11. Report of the World Commission on Environment and Development (1987), Our Common Future. [Cited September 12, 2022]. Available: https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf
12. Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68
13. Thogersen, J. (1999). Spillover processes in the development of a sustainable consumption pattern. *Journal of Economic Psychology, 20*(1), 53–81. https://doi.org/10.1016/S0167-4870(98)00043-9
14. Thogersen, J., & Noblet, C. (2012). Does Green Consumerism Increase the Acceptance of Wind Power? *Energy Policy, 51*, 854-862. https://doi.org/10.1016/j.enpol.2012.09.044.
15. Thomas, G.O., Poortinga, W., & Sautkina, E. (2016). The Welsh Single-Use Carrier Bag Charge and behavioral spillover. *Journal of Environmental Psychology, 47*, 126–135. https://doi.org/10.1016/J.JENVP.2016.05.008
16. Tleppaev, A.M., & Zeinolla, S.Zh. (2021). Assessment of Indicators of the Circular Economy on the Example of the Countries of the European Union and the Possibility of Application in the Conditions of Kazakhstan. *Economics: the strategy and practice, 16*(3), 128-141. https://doi.org/10.51176/1997-9967-2021-3-128-141
17. Truelove, H., Carrico, A., Weber, E., Raimi, K., & Vandenbergh, M. (2014). Positive and Negative Spillover of Pro-environmental Behavior: An Integrative Review and Theoretical Framework Global Environmental Change. *Global Environmental Change, 29*, 127–138. https://doi.org/10.1016/j.gloenvcha.2014.09.004.
18. World Health Organization (2018). Circular economy and health: opportunities and risks. [Cited October 2, 2022]. Available: http://www.euro.who.int/en/publications/abstracts/circular-economy-and-health-opportunities-and-risks-2018.
19. Wu, K.-S., & Teng, Y.-M. (2011). Applying the extended theory of planned behavior to predict the intention of visiting a green hotel. *African Journal of Business Management, 5*, 7579-7587. https://doi.org/10.5897/AJBM11.684
20. Wu, M.-J., Zhao, K., & Fils-Aime, F. (2022). Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports, 7*, 100206.

https://doi.org/10.1016/j.chbr.2022.100206
21. Yang, S., Cheng, P., Wang, S., & Li, J. (2021). Towards Sustainable Cities: The Spillover Effects of Waste-Sorting Policies on Sustainable Consumption. *International Journal of Environmental Research and Public Health, 18,* 10975. https://doi.org/10.3390/ijerph182010975.

AUTHOR BIOGRAPHIES

***Aknur Zhidebekkyzy** – PhD, Associate Professor, Al-Farabi Kazakh National University, Almaty, Kazakhstan. Email: aknur.zh@gmail.com, ORCID ID: https://orcid.org/0000-0003-3543-547X

Aisulu T. Moldabekova – PhD candidate, Institute of Economics of the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan, Almaty, Kazakhstan. Email: kazsocium01@gmail.com, ORCID ID: https://orcid.org/0000-0003-4330-5595

Birganym A. Amangeldiyeva – PhD candidate, Al-Farabi Kazakh National University, Almaty, Kazakhstan. Email: amangeldiyeva.birganym@gmail.com, ORCID ID: https://orcid.org/0000-0003-3466-5871