

**Bulcsú REMENYIK<sup>1</sup>**

*Budapest Business School, Budapest, Hungary*

**Lajos SZABÓ<sup>2</sup>**

*Hungarian University of Agriculture and Life Sciences, Godollo, Hungary*

**Kata Feketéné BENKÓ<sup>3</sup>**

*Hungarian University of Agriculture and Life Sciences, Godollo, Hungary*

**Richárd VETRÓ<sup>4</sup>**

*Hungarian University of Agriculture and Life Sciences, Godollo, Hungary*

## Green Purchase and Logistics in the Hungarian Tourism and Hospitality

**Abstract.** *Green logistics has its origin in the mid-1980s and characterizes logistics systems and approaches that use advanced technology and equipment to minimize environmental damage during operations. The relationship between green logistics and tourism is a less researched topic. In our opinion, Hungary lags in green procurement in the tourism industry. The development plans of the Hungarian Tourism Agency include that by 2030 country will receive 50 million foreign guests, and the number of participants in domestic tourism will double. The tourism industry will account for 16% of GDP by the end of the decade, and 16% of the employed will also work in tourism hospitality. Hungary has also undertaken to make our economy carbon-neutral by 2030, but in the field of tourism and hospitality, only the larger hotel chains have started in this direction; the lag among small and medium-sized enterprises is still very large. Europe's largest hotel chain, the Accor Group, is leading by example in the field of green transformation, but procurement logistics still seems unresolved. However, the 4.0 revolution in industry and logistics is also increasingly circulating in tourism, as evidenced by this study results. The authors tried to analyze the situation of green logistics in Hungary with the phasing questions. Data for analysis were collected through a questionnaire survey. The participants in this survey belong to the young age group, and their education is higher than average. It was found that the young age group has already grown up knowing the importance of environmental protection. More than 90% of young people are interested in environmental protection or are doing it in some form. Overall, thinking about carbon neutral operation is positive, but this doesn't seem to impact the buying decision process.*

**Keywords:** *green logistic, green procurement, environmentally preferable purchasing, tourism industry, environmental protection.*

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<sup>1</sup> **Bulcsú REMENYIK**, Budapest Business School, Budapest, Hungary.

**ORCID 0000-0002-7267-5280**

E-mail: [Remenyik.Bulcsu@uni-bge.hu](mailto:Remenyik.Bulcsu@uni-bge.hu) (*Corresponding author*)

<sup>2</sup> **Lajos SZABÓ**, Hungarian University of Agriculture and Life Sciences, Godollo, Hungary.

**ORCID 0000-0002-3136-7580**

<sup>3</sup> **Kata Feketéné BENKÓ**, Hungarian University of Agriculture and Life Sciences, Godollo, Hungary.

**ORCID 0000-0002-5780-4179**

<sup>4</sup> **Richárd VETRÓ**, Hungarian University of Agriculture and Life Sciences, Godollo, Hungary.

**ORCID 0000-0001-8183-3570**

## Зелені закупівлі та логістика в галузі туризму та гостинності в Угорщині

**Анотація.** Зелена логістика, що виникла в середині 1980-х років, характеризує логістичні системи і підходи, які використовують передові технології та обладнання для мінімізації шкоди навколишньому середовищу під час логістичних операцій. Зв'язок між зеленою логістикою та туризмом є однією з малодосліджених тем. На думку авторів цього дослідження, Угорщина відстає у сфері зелених закупівель у туристичній галузі. У планах розвитку Угорського агентства з туризму передбачено, що до 2030 року країна прийме 50 мільйонів іноземних гостей, а кількість учасників внутрішнього туризму подвоїться. До кінця поточного десятиліття індустрія туризму становитиме 16% ВВП, а 16% зайнятих також працюватимуть у сфері гостинності. Угорщина також взялася на себе зобов'язання до 2030 року зробити свою економіку вуглецево-нейтральною, але у сфері туризму та гостинності лише великі мережі готелів почали здійснювати заходи в цьому напрямку, відставання ж серед малих та середніх підприємств все ще дуже велике. Найбільша європейська мережа готелів Accor Group є провідним прикладом у сфері зеленої трансформації, але логістика її закупівель і досі не вирішена. Проте четверта промислова революція, яка охопила сферу логістики, все частіше проявляється і в сфері туризму, про що свідчать результати цього дослідження. Автори спробували проаналізувати ситуацію з зеленою логістикою в Угорщині за допомогою поетапних питань, провівши анкетне опитування, учасниками якого є представники молодшої вікової групи, а їх освіта вища за середню. Виявлено, що представники молодшої вікової групи вже мають достатні знання про важливість охорони навколишнього середовища, а рівень освіти має значний вплив на формування таких знань. Понад 90% опитаних зацікавлені в охороні навколишнього середовища або здійснюють різні заходи з цією метою. В сфері туризму і гостинності присутні роздуми про роботу без викидів вуглецю, але це ще не має великого впливу на процес прийняття рішень про покупку товарів, робіт, послуг.

**Ключові слова:** зелена логістика, зелені закупівлі, екологічно вигідні закупівлі, індустрія туризму, охорона навколишнього середовища.

### PROBLEM STATEMENT

2/3 of the environmental expenditure of the national economy has been provided by water supply, wastewater treatment, waste management, decontamination since 2005 (Figure 1).

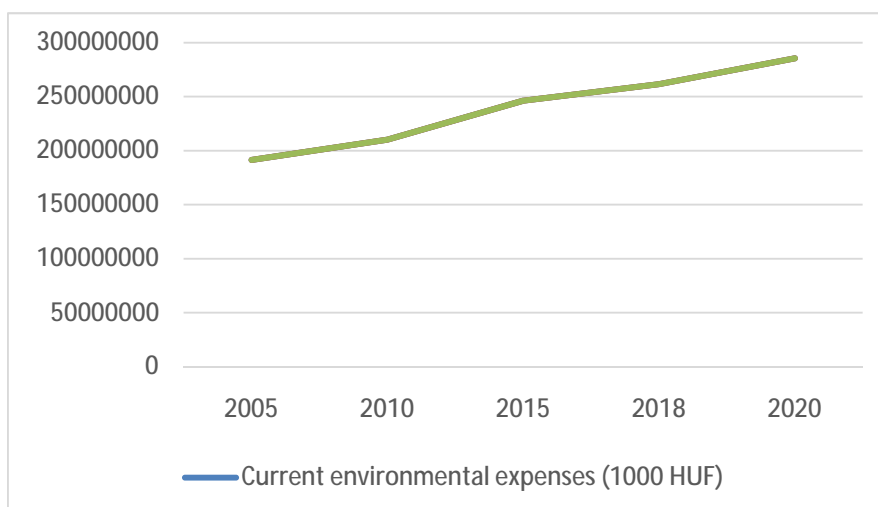


Figure 1. Environmental protection expenditures of the national economy

Source: (HSO 2021).

The number of greenhouse gases emitted by accommodation and food services decreased continuously in the 13 years studied (Figure 2).

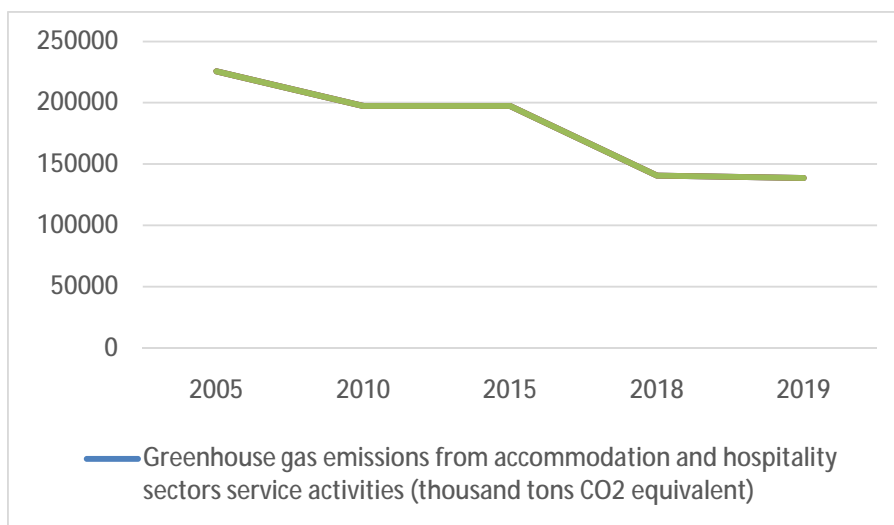


Figure 2. Increase in the amount of greenhouse gases in the field of accommodation and food service activities  
Source: (HSO 2021).

Expenditures classically related to tourism, such as accommodation and catering, account for only 0.25% of total expenditures. The figure shows that the state has withdrawn from financing the reduction of CO2 emissions in the tourism industry (Figure 3).

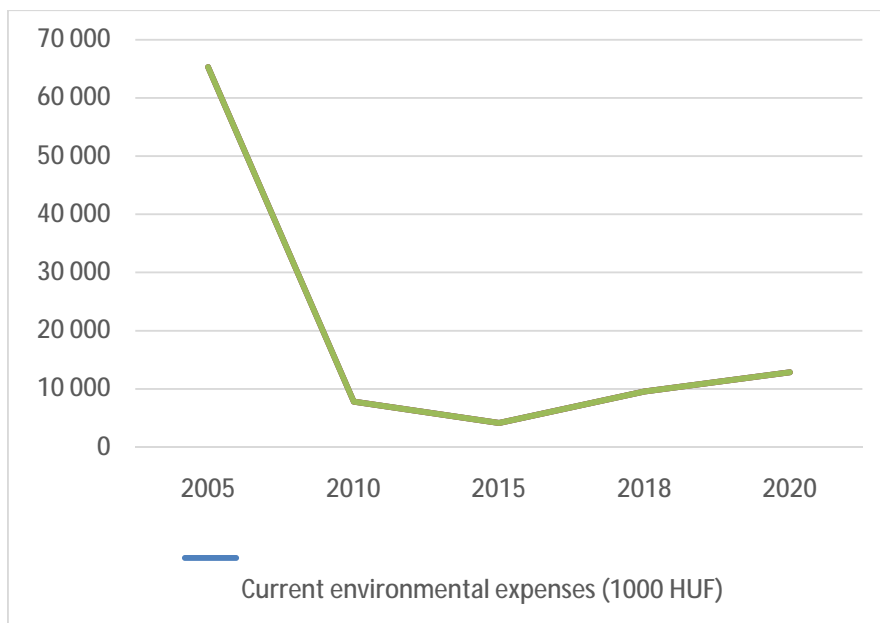


Figure 3. Current environmental protection expenditures in the protection of air quality in accommodation and catering service activities

Source: (HSO 2021).

The money spent on tourism has been reallocated to the headings Landscape and Nature Protection and Environmental Research. Figure 4 illustrates the increase in expenditure on education necessary for environmental education.

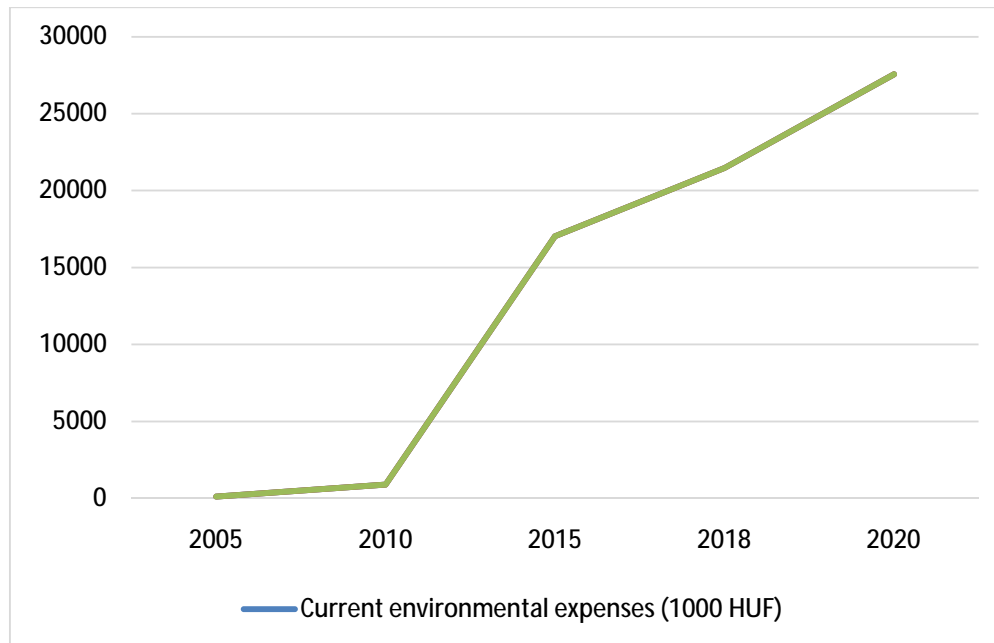


Figure 4. Change in the amount of education expenditure under the heading landscape and nature conservation  
Source: (HSO 2021).

#### LITERATURE REVIEW

The concept of the eco-label covers a voluntary certificate of a certain level of environmental performance. Its award is based on objective criteria and can be obtained by any product, manufacturer, or service provider that meets the prescribed conditions at a given time (Buckley, 2002).

Eco-labels encourage entrepreneurs to pay more attention to environmental, social, cultural, and economic sustainability requirements in their activities and to behave responsibly towards their environment. Eco-labels can differentiate between products and services that meet higher environmental, social and economic standards than required by law (Remenyik, 2016). This distinctive label allows consumers to make an informed choice about a certified product, and companies that manufacture and sell it can gain a competitive advantage (HOTREC, 2018).

In recent years, the green hotel award has been won the most by the hotels of the Accor group (HAH, 2021). Large international hotel chains seek to achieve the objectives of CSR (Corporate Social Responsibility) through projects built into their standards. In this, environmental and climate protection is just one slice, the responsibilities of each chain mention many other areas among their goals, such as condemning the exploitation of children, working with local communities, or avoiding overfished fish in their restaurants. Such a corporate trademark has become Accor Hotels' Planet 21 program or the Green Engage system of the IHG hotel group.

Novotel hotels, for example, have FCS wood beds and bedding made from recycled bottles, but the cleaning products and the bathroom soap come from an environmentally friendly source. The IHG has divided the Green Engage program into four levels. The first level is mandatory for all 5,500 hotels in the group and involves planning for energy consumption efforts (BOOST

software). It includes monitoring energy costs and building energy-efficient lighting. Hotels that reach the second tier are already seeing the benefits of sustainability and, for example, have introduced sustainable sourcing into their day-to-day processes. The third level requires sustainable building and energy management (Michalkó, 2017). And the fourth-highest hotels were able to reduce their energy use by 25% with their modern and thoughtful efforts. "From smart design and the use of innovative systems, every single thing our hotels do for sustainability can make a big difference to our planet. Staying in our hotels means you are part of a global effort to protect our environment." – adds as a conclusion the description of the IHG program (IHG, 2018). The program includes a web interface accessible to hotels where energy, water, and garbage can be tracked and reported. The unit's carbon footprint can be calculated too. The system includes recommendations for making the hotel greener and return on investment and involving guests to achieve goals.

The Accor hotel group aims to use healthy and high-quality ingredients from local producers in its restaurants and reduce the amount of food waste (Accor, 2018).

The Planet21 program pays attention to eco-friendly products (by 2015, 85% of Accor hotels used eco-friendly products, including environmentally friendly cleaning products (51%), wall paint (23%), and flooring (10%)), water use is important reduction. According to the survey, an Accor hotel uses about 15,000 cubic meters of water per year, 86% of which flows through the kitchen. Accor hotels have reduced their water consumption by 15% by 2015 compared to 2011. In 2015, 91% of hotels collected and recycled batteries, 91% of them also used fluorescent tubes, and 73% of hotels collected and recycled paper and cardboard. By 2015, 85% of hotels had recovered their waste (Planet21, 2018).

The group has committed to a unique reforestation project through the “Plant for the Planet” “Plant for the Earth” program. The principle is that guests can reuse towels, which equates to saving half the cost of washing. This amount of money saved is invested in seedling plantations. According to the rule, “5 reusable towels = one sapling”. In 2015, 60% of hotels participated in the “For the Earth” reforestation project (Planet21, 2018). Accor has planted two million seedlings within the reforestation program with the support of the United Nations.

### RESEARCH HYPOTHESIS

Digitization facilitates communication and information exchange between intelligent devices, thus opening up a whole new opportunity to develop shipping and warehousing. Logistics 4.0 was developed as a result of industry 4.0, which is more specifically part of industry 4.0, as industry 4.0 has an impact on the entire supply chain. Of course, companies already emphasize environmental protection and sustainability, which has resulted in green logistics. Protecting the environment and sustainability is an important part of social responsibility, or corporate responsibility (CSR). However, these activities play a role in CSR, but investment can also have a serious cost-reducing effect. “Corporate social responsibility is a key concept that helps companies voluntarily integrate social and environmental issues into their corporate activities and relationships with stakeholders” (csrkompetenz.de). CSR can be placed on three main pillars: economy (profit), social affairs (people), and environment (planet). “CSR management integrates social and ecological goals into corporate objectives in such a way that economic success can be combined with social and environmental benefits (the so-called win-win situation)” (csr-kompetenz.de). By complying with the “rules” of CSR, they can ensure that society promotes development in terms of the environment and does not harm it. Green logistics investments and developments can be realized by complying with these rules. Developments help advance our society in learning about environmentally friendly solutions; by using them, we can protect our environment for the future and keep businesses competitive by reducing costs. The most critical point in tourism-hospitality logistics is the solution of long-distance transportation and last-mile transportation.

Green logistics offers a range of solutions to simplify deliveries. Thanks to robotics, production and logistics centers can be located closer to the places of use, thus reducing the travel distance of products. By reducing the weight and size of the products, the environmental impact during transport can be reduced. With the help of software and online platforms, route planning can also be revolutionized, reducing the proportion of idle times that protect our environment and reduce our costs. It is also important to support environmental measures to preserve our health. If fewer goods have to be transported, fewer lorries will travel on the roads, and they will cause less noise pollution and lower levels of emissions. Green

logistics solutions will help achieve carbon-neutral operation under the Paris Convention by 2050.

For our country, carbon neutrality in 2030 means that “a balance will be struck between the amount of carbon dioxide emitted and the amount of carbon dioxide extracted from the atmosphere and stored in carbon sinks. The process of removing carbon oxides from the atmosphere and then storing them is called carbon sequestration. In order to achieve zero net CO<sub>2</sub> emissions, global greenhouse gas emissions must be offset by carbon sequestration” (Europarlament, 2020). In the following, for the sake of simplification, carbon neutrality means net zero carbon emissions. Achieving carbon neutrality in all activities of the entire company is still at a rudimentary level in many companies, but the companies have embarked on the path to it. For example, the Telekom Group has been operating carbon-neutral globally since 2015. It has been maintaining the trend ever since and is trying to further reduce its energy consumption and fossil fuels through projects. The company operates in Hungary from completely renewable electricity, and fossil fuels are neutralized by supporting green projects (Telekom, 2020). Many times innovation and sustainability go hand in hand: if they are innovative, they are often greener, and it is not in vain that the two topics fall under one hat.

During the logistics processes, the cost of human labour is one of the highest, but robotization is a solution to reduce costs, provide more precise service, thus maintaining and gaining a competitive advantage for companies. Tourism and hospitality companies can make even better use of the development process through collaborations, and companies can strengthen each other if they can work together. The concept of sustainable development was first found in a 1987 UN report entitled *Our Common Future*. The report put it this way: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (planetfanatics.hu). Overall, the report includes a joint interpretation of economic, social and environmental impacts for our future. Sustainability has become one of the slogans of the 21st century and has become a major public relations value in recent years. Conscious shopping has undergone significant development under the influence of the Internet. People are also paying more and more attention to environmental considerations when choosing products.

Of course, companies are launching sustainability projects not only to calm their own souls, but also because of the positive formation of the aforementioned public opinion. Environmental protection projects can usually be implemented at a high investment cost, as environmental protection can be said to be expensive in our time. However, the development of the world is bringing us increasingly profitable environmental solutions. In the field of solar panels, for example, there is a huge development in payback time, which is increasingly encouraging all companies to install them. Due to the value of PR, sustainability can have a decisive negative and at the same time positive effect on the life of companies. Greenwashing means a corporate activity that

sets the company or a particular product or service as environmentally friendly, green, but not really at all or not at all. It is important for the prudent customer to choose which product to buy from, which is why it has become one of the most misleading marketing tricks of our time. The term comes from a 1986 work by environmentalist Jay Westerveld, at the time before the Internet existed, the primary source of information was television, radio, and the newspaper, and people were less able to look at the reality of the information they received. In today's world, we can do this with a few clicks, but in many cases we still can't gain insight into the background of how companies operate and confirm the information they provide. The term is still a valid thing today, as more and more people are becoming environmentally conscious, which is also moving companies more and more in this direction. We can assume that companies are often not completely honest with the public about how they operate. Every year, several internationally significant scandals about sustainability can be heard (businessnewsdaily.com, 2020; tudatosvasarlo.hu, 2008).

### RESEARCH METHODOLOGY

We conducted a questionnaire survey in the field of green logistics. In general, the participants in our survey belong to the young age group and their education is higher than average.

We tried to analyse the situation of green logistics in Hungary with the phasing questions, the first question was: "Are you interested in environmental protection?" Based on the answer to the question, the questionnaire was broken down into 3 parts. Whoever marked the "Yes and I will do for him" option went on to the second section, who marked "Yes, but I will do nothing for him" chose the option, to the third section, which in turn is "Not busy with the thing" option, moved on to the fourth section. The sections contained different questions based on the answers, and then at the end, each thread runs into each other in the fifth section. A total of 218 continued to complete in the first section, 110 in the second section, 10 in the third section, and 2 in the fourth section. In our view, the removal of these 12 people from the substantive issues in the first and second sections resulted in more accurate data. Based on the answer to the question in the previous section, who says "Yes and I'll do it for you" option, that filler could continue filling in this section.

### RESULTS AND DISCUSSION

The Accor Hotel Group offers sustainable solutions for the SME sector for green renewal in almost all areas of tourism and hospitality. Logistics is completely out of this circle; those working in tourism and hospitality are unable to get rid of their cars and minibuses.

The questions in the second section were the main environmental issues. On the first such question, we were curious about what the respondents do for the environment. A good proportion can be said that 92.4% of the respondents collect their waste selectively and 83.1% use their own reusable bags. The savings came in third with water, electricity 40 and gas 69.5%.

Understandably, due to the majority of respondents in the capital, public transport was also at the forefront, with a large proportion of 66.9%. Only 53.4% of respondents seek to buy recyclable packaging products and 51.7% consume tap water instead of bottled water. We find the proportion of those who buy a local / domestic product reaching 39.8% quite low. For the other category, it was possible to provide our own answers that were not listed in the list. Several meal-related responses were received: consumption of fewer milk and meat products, as well as vegetarian and vegan diets were also indicated. Hybrid and electric vehicles were also mentioned.

Turning to the professional part, we asked the respondent which of the concepts listed are known. The list included: Industry 4.0; Logistics 4.0; Green logistics; Artificial Intelligence; Self-steering, autonomous robot; Big Data; IoT; 3D printing; Cloud-based systems and, as an extra option, None I Know is also an answer. Most, 90.7% marked 3D printing and were just slightly behind, with 89.8% performing on cloud-based systems. Artificial intelligence finished third with 85.6%. Surprisingly, only 18.6% know IoT, the Internet of Things and what this thing means as part of our daily lives. We were surprised to find that the concept of green logistics was known to 33.9% of respondents, which is a good proportion in our opinion.

A short explanatory text was also included in the questionnaire, as we wanted to inform the respondents about the concept of green logistics so that they could answer the next questions more accurately. The text was as follows: Green logistics (Oláh, 2018): uses the latest technological developments of our time to make the logistics industry more environmentally friendly. From route planning systems to smaller-space packaging to packages delivered by fully electric vehicles, companies can do a lot of things for the environment. In the following questions, we have covered how much it matters to you if a company uses green logistics innovations. Stakeholders in this question are how important a particular property is when choosing a product or service. The features were: Fully recyclable packaging; Packaging made from recycled materials; Products with less packaging; Package, goods delivered by electric vehicle; Green energy storage, retail space; Local / domestic products (less supplied); CO2 free production. Most nominated products with less packaging, for a total of 193 people. For 160 respondents, the local, domestic product is the most important of the listed. However, in terms of the average, the package, goods and green energy-operated storage and business premises properties delivered by the electric vehicle can be said to be approximately neutral. On the other hand, carbon-free production, although not the best average, is one of the most important characteristics based on the opinion of the respondents. The next question was a multiple-choice question, meaning that a variety of answers were expected to be received here. The question is: "Please write about companies / firms that you know are actively doing for the environment!" A total of 169 people answered this question. Companies entered several times: Tesla, Ikea, Aldi, Apple, DHL, Amazon,

Corn Oil Press. The last question from the section was: "What do you think of a company that you know will make it carbon neutral in the future? (For example, Accor has committed to this by 2040.)". More than 80% of respondents consider it a positive thing and prefer to buy or seek to buy only from such a company. 74.6% of most respondents think it is a positive thing and prefer to buy from a company that makes its operations carbon neutral.

Stage 3: Interested in the environment but not doing it: In the last question of the first stage, by filling in the option "Interested in the environment but not doing it", the respondents were immediately transferred to the third stage. A total of 10 fillers have been added to this section. The question asked here was why, if you are interested in the environment, why not fill it out for the respondent. Most of them marked the option "I don't have the option (for financial reasons, separate waste collection is not available at my place of residence, etc.)", but "I can't change my habits", "I don't know what I could do for it," appeared, "I don't have time deal with it" and "I don't think I can do anything substantive for the environment".

Section 4: Not concerned with the environment: In this section, we asked why the respondent is not concerned with the environment. The two respondents responded in two ways. One of them is "I don't think I have a chance to defend, so I don't even care". And the other is "I don't know, there's no particular reason" option. The third option is "I don't see the point in protecting the environment", but fortunately none of my fillers saw that there was no point in doing it for the environment.

Section 5 was about issues related to position and income, in this last section all the respondents took part again, I put the more delicate material question at the end so as not to act as a frightening factor at the beginning. In addition to income, we were also curious about the position, but due to the age group, it was expected that many people would still be in education. Most of them are also students based on the sample, 50.8% of the respondents are currently students, but 26.2% of them also work alongside their studies. Employees accounted for 36.2% and senior employees for 4.6%. Entrepreneurs were also 4.6% represented. Due to the young average age and the high proportion of students, the proportion of executives and entrepreneurs among the respondents remained very low. Despite filling in anonymously, providing income in questionnaires is usually a very sensitive topic. Because of the delicate question, we also gave you the option to "I don't want to give it". This option was chosen by 16.2% of respondents. The division looks very nice, with almost every income band graduating with a similar value. The reality of the data can also be questioned here due to the skew of people and the process of counting (we asked about the per capita income of people living in one household, but it is not possible to know who interpreted this). Surprisingly, the two largest proportions, 16.9% each, are between HUF

100,000-149,999 and income above HUF 300,000. The lowest share was 5.4%, income below HUF 50,000. Only 10.8% reported income between HUF 50,000 and HUF 99,999.

### CONCLUSIONS

With regard to tourism and hospitality, the emergence of green logistics solutions will become increasingly important, and hopefully they will receive state assistance to renew their software, hardware and vehicle fleet.

Based on our research, it can be concluded that the young age group has already grown up with the knowledge of the importance of environmental protection; however, in the case of the older age group, it is the task of society to develop this kind of awareness and sensitivity. In our opinion, the level of education also has a significant influence on the way of thinking about the current situation in the world. In the case of our sample, the awareness of young people seems to be evident, in the case of environmental problems, they also classified the serious problems as serious and more than 90% of them are interested in environmental protection, or are doing it in some form. Most do it with selective waste collection to protect the environment, but their own reusable bags and savings have also received a lot of labeling. Despite the fact that many indicated the local / domestic product as important as a product feature, on the other question of what they do for the environment, far fewer indicated the option to buy a local / domestic product. In the present example, too, the presence of intention may be in the background, but action seems to lag behind. As for the characteristics of the products, it was good to see that the environmental activities related to packaging (products that are completely recyclable, made from recycled material, with less packaging material) were strongly positive.

However, environmental measures related to the operation of the companies showed a neutral or slightly positive opinion. We believe that this thing is still in its infancy and that in the future it may become more and more common to improve the environmental performance of companies in the course of their operations. Overall, thinking about carbon neutral operation is positive, but this doesn't seem to have much of an impact on the buying decision process. From the survey, we can conclude among Generation Z that awareness is present but does not necessarily play a major role in their lives. The basic environmental steps are taken by almost all of them (selective waste collection), but they no longer commit to steps that require more serious effort. The level of environmental knowledge and action is likely to be much worse among the older age group. As sustainability develops, awareness is likely to increase among people, to which companies must also respond, thus generating the spread of environmentally friendly solutions.

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