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GREEN LOGISTICS DEVELOPMENT PLANS OF HUNGARIAN COMPANIES

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Purpose: When this abstract is completed, the economic situation caused by the pandemic will face serious problems. We have to do something. In our private and life and in our work also. The aim of our present study is to explore how environmental awareness is applied and in how it appears in companies, how it relates to the green supply chain, and what advantages and disadvantages companies could have they discovered.
Design/methodology/approach: Our research is based on a primary research, which was conducted with a structured questionnaire among Hungarian companies. Our main objectives were to see what is going on with the green logistics plans before the pandemic season what could be achieved in the near future.
Findings: Visible aspiration on the part of companies, we came across a number of good ideas, but unfortunately money is still a key motivation in the development plans of companies.
Research limitations/implications: For future research, we will consider the current study as a basis, and due to the current viral situation, it will most likely show a less favorable result than at present, especially in the field of innovation.
Practical implications: The article represents well the need for coordinated and collaborative developments more than ever, especially in the field of supply chain and green logistics.
Social implications: A layer has already emerged in society where individuals and companies take the irreversible problems of environmental pollution seriously. We hope that after the publication of our article, more people will think that more needs to be done for our environment at both the individual and corporate levels before it is too late.
Originality/value: The main originality of the study based on the fact that it is not enough to ask companies for their opinions on their own developments, it is also worth examining how much progress each development actually represents compared to the developments of others.

Keywords: developments, environmental protection, green supply chain, hungarian companies, logistics.

Category of the paper: Research paper.

1. Introduction

Environmental protection. One of the most important words today. According to the latest UN figures, there are 7.8 billion people in the world (UN, 2020). While more than 340,000 people died (Johns Hopkins University, 2020) in COVID-19, the Earth was able to breathe during the quarantine of the epidemic. Despite the mortality rate, it can still be said that the Earth is overpopulated. Flora and fauna are also victims of the problem of overpopulation. And this is the subject of much debate. Many people think that human life is more important than that of an animal or a plant. In their view, they exist only on Earth for the sake of serving people. We, the authors, do not agree with them. Absolutely. We need each other to maintain the chains. We need plants, animals, and we also need the resources they provide, which are essential for the development and maintenance of life. With pollution, with non-degradable materials, we only do damage to the maintenance of this chain. And the reason is often very simple. Expensive. Environmentally friendly materials are expensive so many times companies don't spend on them. They prefer to invest in other resources and assets, because their return is likely to be more spectacular and sooner than the environmental one.

We could argue about which is more important from a corporate or environmental perspective. But if we do not act, we cannot save the Earth. Greta Thunberg, a 17-year-old Swedish environmental activist, travels the world trying to raise awareness of how we can do more for our environment and wants an Earth where even our grandchildren can live, rather than one where atomic bombs are exploding or just famine, dehydration has occurred due to climate change. We have to pay attention. Not just to each other, but to our environment. Also for our own, our child, and our grandchildren. Also to the environment around our company so that we can still operate in the world. Use energy-saving light bulbs, collect garbage separately, do everything you can from a corporate and individual perspective! Our current study sheds light on how Hungarian companies apply the environmental mitigation tools that are potentially available to them and to us, how the company's approach to environmental protection appears, and how they raise environmental awareness in their employees. We also examine how these methods and their applications relate to the green supply chain and identify all their advantages and possible disadvantages. In addition to the methods and applications we want to describe, there are many others that can be used to make a small change in our workplace or even in our own lives, as change is needed.

2. The relationship of corporate value creation with environmental awareness

Nowadays, more and more articles about sustainability and sustainable development are published in the literature on management (Tóth-Kozma, 2016). According to The Economist, before the pandemic, most companies in the 21st century operated in an open trading system for many, many years. Mexican car exports showed a 90% downward trend in April, and overseas container shipments fell 21% in May. As countries reopen, economic activity will also begin to slowly return to normal. But this still takes a long time, as the financial impact of the economic changes that took place during the quarantine period could take up to 2022 (The Economist). The economic competitiveness is extremely important in the 21st century as well, but with a new approach. Two very important factors appear: sustainability and social development (Mester et. al., 2018). The companies must have a strong strategy, without it the realization of their goal would be impossible (Tóth et. al., 2017). According to Gáspár (2012), strategy is an approach, a system of thinking and a series of activities with sober judgment and insight. In this way, it can be said that it decides how to try to be consistent in the world of need and choice and the competitive revolution, market expansion and positioning, and it also has a huge role to play in coordinating functional areas and sustainability.

The sustainable development and control of supply chain, as well as the development and execution of strategies rank among the most important and most complex challenges of these days. All of these offer a chance to the treatment and control of future business crises, to the identification of possibilities of performance evaluation and to the formation of a deeply rooted sustainable production – with the purpose of surplus income (Tóth, Kozma, 2016).

Bian et al. (2020) believe that the social and environmental issues present in business practice have made CSR issues more important day by day. Unfortunately, there is plenty of evidence that companies violate social and environmental standards on a number of occasions. Achillas and his co-authors (2019) believe that companies operating today must already apply a modern corporate strategy, one of the most important points of which is social responsibility as well as, environmental sustainability. At the heart of these strategies are sustainability initiatives, and green supply chain management, which has a key role, what can provide a competitive advantage and increase corporate profits.

In a consumer-oriented world, there is a need for companies to make themselves unique, in as diverse a way as possible. Lehota (2001) argues that “the basic goal of market segmentation is to define sub-markets (segments) in the market where the behavior of the persons and organizations involved is minimally different, but the difference is maximum compared to other segments”. And Hochman (2010) interprets successful companies as having a treasure (thus different from the others), the so-called unique value. This is a value that no one else can copy, not even the competitors, because in this case we have to think not only

about the product itself, but also about the relationships that the company has already built with customers, customers, interactively. The corporate culture can be one of these value-drivers, which is also need to be controlled by the management (Kurucz, Potháczky-Rácz, 2018). These are built on trust and have a huge impact on brand loyalty and ultimately on profits as well. The values of a perfect company will no longer be unique but living. This statement is also evidenced by the authors Covey, Merrill (2011), who argue that "trust is an integral part of society. We all depend on trust, we take it for granted – until it gets dirty or disappears". Takács and co-authors (2015) believe that value is created when the costs that companies spend on employee motivation cannot exceed the reduction in individuals 'opportunity costs, because then the motivational factors begin to deteriorate. The concrete and abstract resources, competencies, and external opportunities of a firm can form the basis of its competitive advantage, especially if the corporate philosophy supports the exploitation of all of these. It is easy to see that building their continuous improvement is terribly important for realizing long-term profits (Nagy, Kozma, Gyenge, 2019). The authors Benedek, Takácsné (2016) believe that the large increase in corporate social responsibility in recent decades can be explained by the crisis of legitimacy of companies, which has been an important area in economic life due to constant changes. But in these times, the political, social, and technological changes that accompanied change in the economy also had an impact on natural factors. In summary, it is responsibility for all business entities – even if it is small, middle or big – to evaluate, analyze and strategically integrate external factors into the decision-making process (Kurucz, 2016). Kuisma (2017) explains that environmental responsibility appeared as early as the 1990s, but years later, with the advent of the ISO 14001 environmental standard, the principles and systems were better outlined in 1997. Environmental responsibility was followed by responsibility related to other areas, and then treating all of this as a large unit was called corporate social responsibility (CSR).

The WHO estimates that 7 million people die each year from air pollution. Smog and smoking in homes or factories also pose a serious threat to health and the climate. These contaminants significantly increase the number of deaths from stroke, cardiovascular disease, and lung cancer. (WHO, 2020) This is illustrated in Figure 1. The June issue of National Geographic was memorable in 2018. Because it shows the current status, what we are doing with the Earth and it has had the desired effect: it has shocked the world.

Figure 1. Planet or Plastic? Source: June issue of National Geographic, 2018.

We must not forget that if the pollution continues to such an extent, not only the fauna but also the flora will be destroyed around us. There will be nothing in our environment to filter the air, and smog and other gas emissions will have an even bigger and much more damaging effect on us. Do we really want this? In his book, Hawken (2019) believes that people should be encouraged to make a modal shift. This would reduce greenhouse gas emissions, which are responsible for 23% of the world's various modes of transport. As Yu et al. (2019) wrote in their publication „Once the unit emission exceeds the limit and breaks the environmental protection standard, a poor environment and serious emission problems are likely to produce a severe public health hazard, which will bring the involved companies harsh punishment from enforcement agencies and society". And this must be prevented. We also need to recycle the household waste. In this turbulent world, the vast majority of manufacturers think that they produce the product they want to put on the market, sell what they don't need (e.g. scrap from manufacturing), throw it away.

And for these reasons, companies that are self-conscious and even environmentally conscious will play a much bigger role in the supply chain market over time. The development and economic significance of the supply chain approach can be observed in almost every branch of industry. Thus, nowadays it is not only multinational companies enjoying the benefits of diversification, but small and medium-size enterprises also play an active role in global value chains (Tóth, Karmazin, 2016). According to Kozma, Pónusz (2016), the supply chain is a cross-company series of value-creating processes that can create products and services suitable for satisfying customer needs, the characteristics of which include cooperation, a strategic approach and customer focus. According to Yang and Lin (2020), green innovation and supply chain collaboration have not been adequately examined, as drivers and innovation relationships can help companies identify key elements of a common relationship that can have a positive impact on green innovation activities in the future. Today's companies operating within the supply chain should include figures affecting the environment in their strategy so they can get closer to entering the green supply chain by developing a program, strategy or strategies to reduce harmful emissions.

Hugos (2011) suggests that the supply chain is a network of companies that are able to work together and coordinate their operations in order to market their product (or service). He thought that traditional logistics companies are focusing their attention on activities such as e.g. sourcing, distribution, storage and warehousing. Supply chain management encompasses traditional logistics as a whole, and goes beyond even additional activities such as marketing, new product/service development, finance, and customer service. A study of Quintana, Garcia and co-authors (2019) by studying panel data found that selecting European manufacturing companies based on their environmental performance has a positive impact on increasing corporate reputation.

If we need to identify the most important factors in the supply chain, one of them would certainly be efficiency. The efficiency is a measurement process that can be used to demonstrate the amount of resources used to achieve goals (Frazer, 1994). The concept of sustainable development was formulated by Gro, Harlem, Bruntland (1987) in a form known to all in his study Our Common Future. According to this, sustainable development is not a harmonious state, but a process of change that the exploitation of resources, the direction of investment, the orientation of technological development and the direction of technological development and organizational changes, which are in line with the present and both in the future. Unfortunately, what kind of sources the author is talking about is not precisely defined. Popp et al. (2018) believe that "in relation to food production, it can be stated that the current mode of food production is unsustainable in the long run. Among other things, because the amount of irrigation water is reduced or, for example, meat production causes a serious burden on the environment. In the future, we need to produce more food with less water, chemicals and fertilizers". At least that's what we should do. But until we are not aware of the value of these resources, it is not possible to know whether a significant change will occur in the future.

But what if we can't find water anywhere? If there is a drought around us? What could we do, in a few years, if we are not able to show enough green logistics innovation to save ourselves, our business and the Earth? Today's companies can already detect many warning signs: epidemic, rising temperatures, constant storms, weather changes, which all indicate that humanity, corporations, must change their habitats. Profit will not be the most important thing if our grandchildren will have to look for water or food resources in order to survive. After all, the money does not equal the whole world. "Entrepreneurs and leaders who care about the health of our environment need a lot of courage and imagination. To the extent that the environmental condition of our planet is deteriorating, the more they need to act in an increasingly bold and innovative way. They need courage to rethink the habits of their lives. They need to consider the ecological impact of their activities and, in extreme cases, start all over again in a more environmentally sustainable industry". believes Winter (1997) in the late 1990s, a consideration that is becoming increasingly burning today.

3. Material and method

As the first part of our research, we needed to process the related international and Hungarian literature, which helped us to really feel our current topic. We are grateful to the following authors for their work – Yang and Lin (2020), Achillas et al. (2019), Popp et al. (2018), and the book of Kuisma (2017), the article of Takácsné (2016) and the work of Kozma, Pónusz (2016), which has allowed us to gain deeper insight into the topic we are researching. It will be seen later that the primary research was conducted on the basis of a corporate survey, what we processed like a case study. The study covers the green/inverse logistics activities of companies, that we examined in this publication.

Our study was conducted on the basis of corporate surveys at Hungarian companies, which play an important role in many areas of the supply chain, such as transport, automotive, manufacturing, etc. In analyzing the responses, we were able to learn about these companies and whether they have green/inverse logistics and, if so, what tools they use and how they are used. An important aspect of the research was to get a detailed picture of this activity or groups of activities that are used or, if they are not, for what reason it cannot be realized. Due to the sensitivity of the data, we do not disclose the names of the companies in our research. The research was conducted in 2019 and we are still working on it. The number of respondents is almost up to 200 companies, which continues to grow over time. This is a large number of data points, mainly large corporate research with a random search that is not representative but suitable for drawing approximate conclusions.

4. Results

In 2019, we created a structured questionnaire, the aim of which was not only to get to know Hungarian companies better, but also to put more emphasis on what green developments are taking place, have taken place or will take place in the future. Nowadays, more and more emphasis must be placed on such and similar developments, as the protection of the environment and the protection of our lives are extremely important, in addition to ensuring that business interests are not harmed.

In order to be better immersed in the green logistics activities/developments of the companies in the future, we first need to know the distribution ratio of the companies involved in the research. Table 1 shows the percentage distribution of companies currently operating in the supply chain market. It can be clearly see, that most of the companies are operating in the supply chain market more than 10 years.

Table 1.
Corporate presence in the supply chain market

Years	*Answers*	*%*
Less than 2 years	4	2%
Between 2-5 years	13	7%
Between 5-10 years	23	12%
More than 10 years	156	79%
Total	196	100%

Source: our own research, 2020.

Although our present research is not considered representative, we can state that a large part of the companies operating in the service sector are present in the distribution of large companies in the study. This distribution is shown in Figure 2.

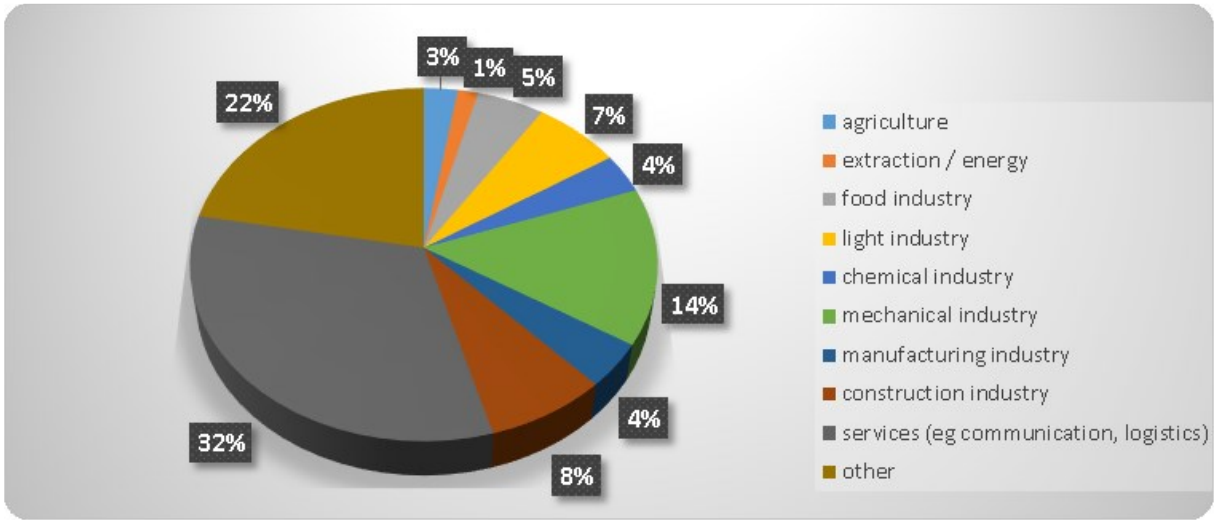

Figure 2. Companies distribution in the study. Source: our own research, 2020.

In second place in the distribution was the other category, which included the banking sector, hospitality and trade, and sectors not listed above. In third place was the mechanical engineering industry, which is only 14% in the distribution. We find it interesting that the construction industry is present in only 8% of the respondents, as there are many companies operating in this sector in Hungary. Unfortunately, the energy industry in Hungary is very insignificant, which is also well illustrated in the figure, with 1%. This is also unfortunate because, in our view, a number of wind farms could be installed across the country, which would not only provide jobs for people unemployed in the current coronavirus situation, but also help the economy to adopt greener solutions. Although the number of distributions in the statement cannot be related to the role in the supply chain, based on the above, we were very curious about the role of the responding companies. The ratio of this is illustrated in Figure 3.

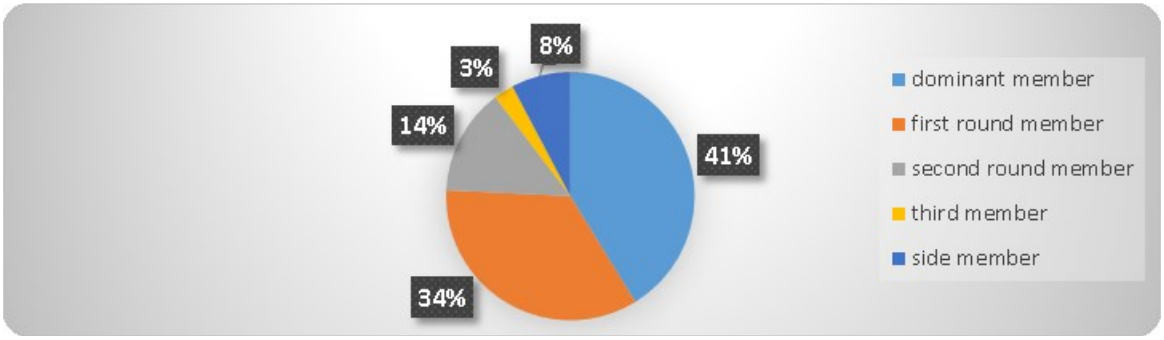

Figure 3. Companies role in the supply chain. Source: our own research, 2020.

For the better illustration, Figure 4 shows the position of the surveyed companies within the supply chain. As we can see most of the companies are manufacturers, that following closely the distributor (wholesaler) and the logistics provider companies and the main suppliers. There is no company among the respondents that deals with inverse logistics services, which will play an increasingly important role over the years (as increasingly modern and optimally offered green logistics technologies, tools and solutions become available).

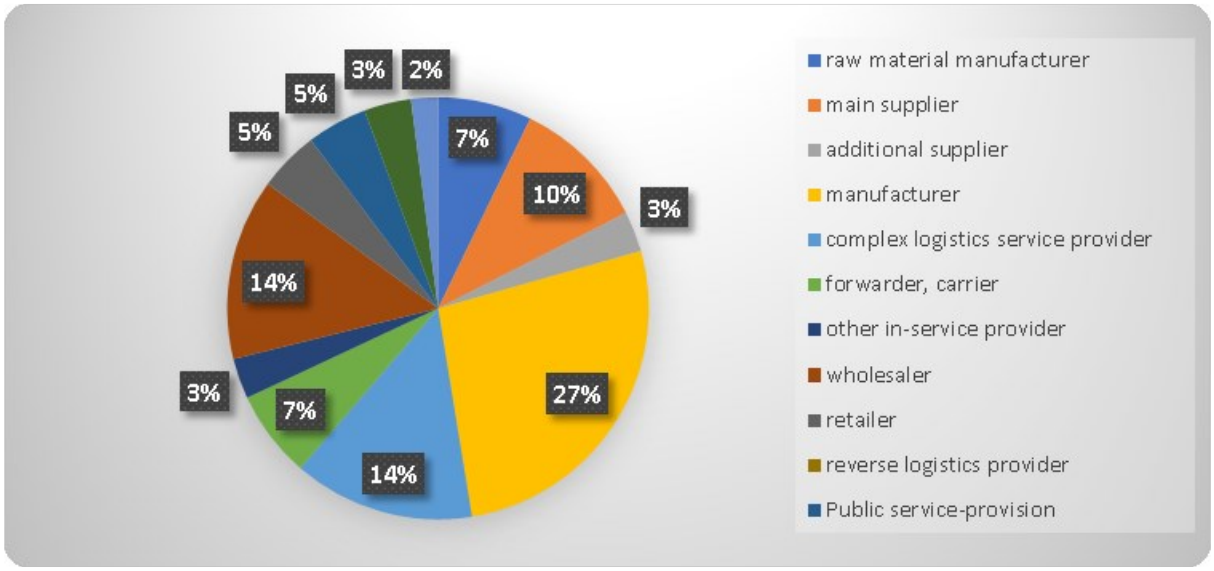

Figure 4. Companies main position in the supply chain. Source: our own research, 2020.

Previously, we described the companies, their roles, and their position in the supply chain that participated in the research. In the following, we will present their role in green logistics in more detail. We consider it important to look at this area, as the advantages and disadvantages of using green tools are closely linked to the supply chain market, where they have an extraordinary impact on market position as well as competition in the market.

Our current research was based on previous research by Kozma, Nagy, Pónusz authors (2020), regarding for the green implementations at the Hungarian companies. We asked some corporate employees about the companies where they work, what materials are most often recycled, and where and what they reuse. The most commonly used materials that can be found even in everyday life in our own household. By way of illustration, we have created the word cloud, based on the answers to the two questions side by side, as illustrated in Figure 5.

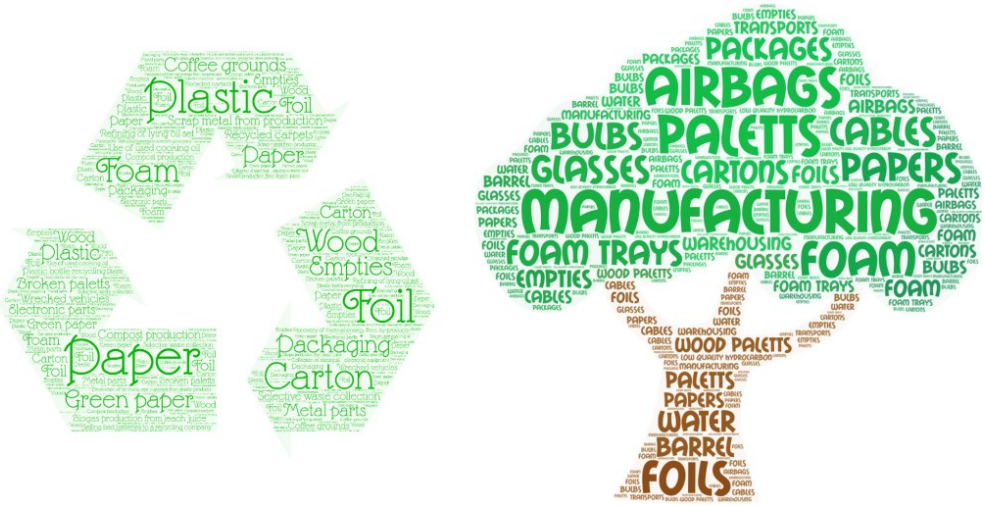

Figure 5. The employees answers about what do you recycling and where and what do you reusing at your company? Source: our own research, 2020.

The most recycled materials are still papers, glass, wood, cardboard, foils, and packaging. Interestingly, we would highlight one, perhaps less well-known method that could be useful to other companies as well: recycling coffee grounds. Used coffee grounds are collected by the company and used to fertilize the plants. The employees responses also highlighted that, if the company was willing and able to develop its green logistics area or just would have the opportunity, what would be:

- Transport.
- Solar panels for operating the office building.
- Wrapping.
- Modernization of buildings.
- Energy Reduction. Application of LED technology.
- Introduction of electronic processes.
- Purchase of hybrid cars.
- Container washing, electric milkrun network on site, application of Industry 4.0 solutions.

As part of the qualitative research, we would like to share some employee opinions that answered the question of what they think about sustainability, environmental protection in business. If they could spend extra money on the use of environmentally friendly technology in the short term, would you still use it?

- *My personal opinion is that it is in all our interests to support green investments, even if this is an extra cost for the company, as it can benefit the company and society in the long run.*
- *We strive to become an environmentally conscious company, but would not employ it in the event of over-spending.*

- *From an economic point of view, many environmentally friendly technologies, processes or materials represent an extra cost that can only be enforced in the consumer price at the expected profit margin.*
- *In my personal view, a company 's attitude towards the environment can be seen as a strategic investment in the long run. In the long run, you can create a win-win situation that can benefit both your company, its environment, and society, so if you put green technology at extra cost to a company in the short term, because it is a long-term investment.*

As we can see, in the modern world the employees want to take care about their environment. In the current situation, this is a very positive attitude, but there is no guarantee that it will remain so in the future. Respectively, the survey does not reveal the real motivation for sustainability, although individual goals largely determine future developments. We believe that these individual goals could be shared with managers or designated individuals within the company, who could potentially take steps toward green corporate solutions.

To prove this statement, we made some diagrams based on the responses shown in Figure 6. The questions focused on substitution with environmentally friendly materials and energy saving. It is clear from the figure that the replacement of environmentally friendly materials is not solved in most companies, while a lot of attention is paid to energy saving, either by upgrading the equipment or by solar panels. As the biodegradable packaging and filler has already appeared in Hungary, we hope that these responses will change in the later stages of the research (years from now).

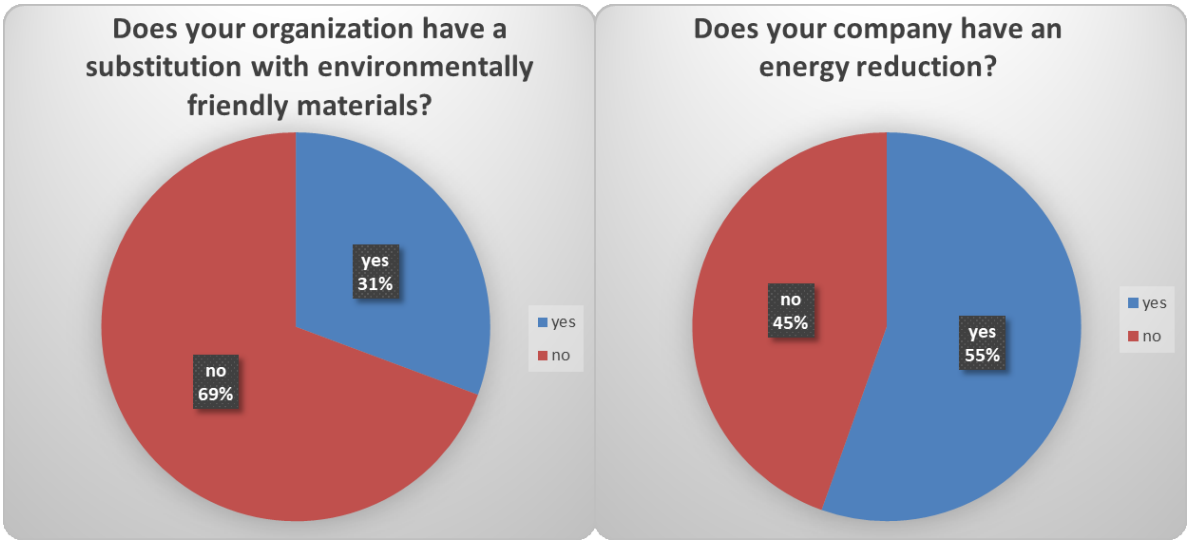

Figure 6. The answers regarding the environmental friendly solutions. Source: our own research, 2020.

There are many ways to approach environmentally friendly applications and why not apply them. Some companies have an environmental strategy and program that makes it mandatory for them (preferably) to have a corporate activity each year that can also demonstrate to company employees, managers, other organizations, and the government that they are doing something about their environment. For companies that (still in large numbers in our current

research) are unable or unwilling to sacrifice money to invest in the use of green tools. Unfortunately, in 2020, as well as in previous research, it can be observed that the strategic aspects of companies largely determine what money is spent on. We can say that money is still a determining factor in connection with the use of green technological innovations and tools, as these unfortunately do not always require easy and cheap corporate transformations. In our point of view the optimization also important due to the financial implications. One of the most common goals of the companies is to reduce their costs where possible, that is why optimization is a very important factor so that they can make efficient use of the resources and opportunities are available to them. And Figure 7 below shows whether respondents are recycling or reusing at companies. It is clear that, unfortunately, in the most cases, it still doesn't happen, but looking at the percentage distribution, the chances of these numbers changing later on are increasing. For companies that are reused, pallets and recycled packaging are the materials they reuse. In companies where the material of the products or the product itself is recycled, the most selective waste collection or recycling of the material of the product takes place.

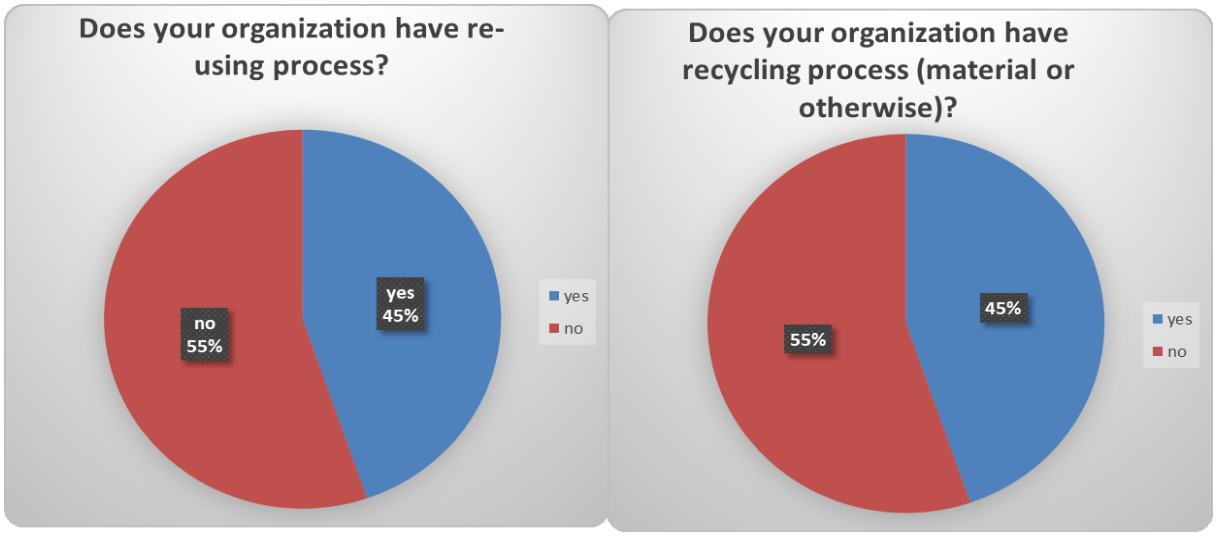

Figure 7. Re-using and recycling process at the companies. Source: our own research, 2020.

The question may arise, what can we say after this study that there is still so little focus on protecting our environment, using environmental technologies. Maybe you can't even say anything. Human attitudes, the fact that most people always want more, the more they have, cannot be changed. Yet, this needs to change. A change in individual and corporate attitudes could bring about an explosive change, even in the short term, in the supply chain market, where using green technologies would not only benefit our environment but also ourselves.

5. Summary

Based on the literature sources used for the research, we can state that in order to thoroughly examine the research topic, it is essential to map the corporate strategies and the goals to be achieved. Since it can be considered a basic need, it can be said to be like air. Without it, a company will be inoperable. During the secondary research, we tried to approach the topic from several sides, based on the research results of several authors.

Our primary research was based on a structured questionnaire, which is currently being completed among large companies in Hungary. Based on the responses provided by companies and corporate employees, it is clear that employees individually would like to do more for their environment, even within a company, but are aware that the hands of companies are tied to the decisions of senior management. You have to spend the money on what they set. Nevertheless, if we further examine these companies, of which a little more than half have an annual revenue of almost HUF 2 billion, the question arises as to why there is no technological innovation in the environment. This and similar issues will be further explored in another future study.

Based on our research, it can be said that one of the very important determinants of economic cycles and the supply chain is money, not natural resources, the exploitation of which would not only promote the use of greener technologies (e.g. wind power), but also the current market a gap could also be occupied.

We, the authors, do not intend to predict a dark future. But unfortunately, if this goes on like this and there is no change of any kind, then after a while we will not only have no medium but no water, which would help the survival of living organisms. We still believe that as long as someone sees hope that they can and will do for their environment, there is a chance that the world will change and green logistics activities will play a greater role within the supply chain.

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