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MANAGEMENT OF SUSTAINABLE MOBILITY AND THE PERCEPTION OF THE CONCEPT OF ELECTRIC VEHICLE DEPLOYMENT

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Abstract: Currently, the issue of sustainable management of electromobility is becoming more and more topical for at least two reasons. The first, economic reason, is the increasing price of conventional fuels. The second reason is the global environmental problem related to climate change. The perception of electromobility and the increasing interest in purchasing electric vehicles are, therefore, crucial elements in the process of achieving climate neutrality by 2050 and meeting the targets to which the EU has committed itself by adopting European legislation. The aim of the paper is the analysis of the attitudes and interests of inhabitants of a selected area of Slovakia towards electromobility in terms of its environmental impacts, declared benefits and interest in purchasing an electric vehicle, and analysis of relations between education and interest in buying a car. Primary data were obtained through a questionnaire survey and processed using tables, graphs, and correlation analysis. The results of the analysis showed low public interest in purchasing electric vehicles, mainly due to high price, insufficient network of charging stations, low battery life and low awareness.

Keywords: electromobility, management of sustainable mobility, electromobility perception, electric vehicles, renewable resources of energy.

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Introduction

Mobility and transport are an important part of life. The transport sector, as the second-largest part of European household expenditure, accounts for 5% of European GDP and directly employs around 10 million workers. Although transport brings many benefits to its users, it also has a number of drawbacks. These include greenhouse gas emissions, noise, water and air pollution, traffic accidents, congestion, and loss of biodiversity. Clearly, the most serious challenge facing the transport sector is to significantly reduce emissions and increase sustainability. At the same time, this transformation offers major opportunities for a better quality of life and European industry within value chains, in the form of modernisation, the creation of high-quality jobs, development of new products and services, enhanced

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competitiveness and global leadership as other markets are rapidly moving towards zero-emission mobility (European Commission, 2020).

Low-emission mobility is one of the essential components of the transition to a low-carbon circular economy. The transport sector is the largest consumer of fossil fuels, accounting for almost a quarter of the EU's greenhouse gas emissions (EuroStat Greenhouse Gas Emission Statistics, 2021) and is the main cause of urban air pollution (European Commission, 2016). It is also the only sector experiencing a continued increase in greenhouse emissions (EEA, 2016; Taefi et al., 2016).

Transport accounts for a fifth of total EU emissions. Road transport accounts for the largest percentage of transport emissions. In 2021, it was responsible for 72% of all EU domestic and international transport greenhouse gas emissions (European Parliament, 2022). With the European Green Deal (European Commission, 2019), the EU has committed itself to achieve climate neutrality by 2050 and has anchored its target, based on the 2015 Paris Agreement, in European climate legislation (Regulation EU 2021/1119 of the European Parliament and of the Council, 2021). In addition, it has set a more ambitious target of reducing greenhouse gas emissions by 55% by 2030 compared to 1990. In this context, it has put forward a "Fit for 55" package (European Commission, 2021) containing 13 proposals to update EU legislation and introduce new initiatives to achieve the increased climate ambition. As stated in the Strategy for Sustainable and Smart Mobility (European Commission, 2020), the transport sector should reduce its emissions by 90% by 2050.

In July 2021, the European Commission proposed to reduce the limit for emissions from cars and vans by a further 15% from 2025, followed by a 55% reduction for cars and 50% for vans by 2030 and to reach zero emissions by 2035.

Therefore, climate neutrality by 2050 will only be achieved by introducing more ambitious policies that reduce transport's dependence on fossil fuels as soon as possible and in synergy with zero pollution efforts. Electromobility, specifically the introduction of electric vehicles (Usmani and Rösler, 2015; Wappelhorst et al., 2020) and their public acceptance, become a key element of the transition.

Thus, this study focuses on the attitudes of the Slovak population towards electromobility from an economic-environmental perspective. The perception of electromobility by Slovak residents in the selected regions is also important as the Slovak Republic lags behind other EU countries in the support and awareness of this issue.

The role of electromobility management in the context of carbon neutrality

Electricity is currently the fuel with the smallest ecological footprint. Electric car travel in the EU emits an average of 78 grams of CO_2 per kilometre, compared to an average of 185 grams of CO_2 per kilometre for fossil fuel vehicles. Emissions from electric cars will decrease even further with the development of electricity generation from renewable sources (e.g., solar and wind). The potential for renewable electricity in transport is much greater than for biofuels. This is because land use for bioenergy production is very inefficient.

Electromobility, or electric mobility, is a road transport system based on vehicles that are powered by electricity (MoE, SR, 2015). Currently, there are several types of electric vehicles with a range of different technologies, including plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs), battery electric vehicles with extended range (E-REVs), and hybrid electric vehicles (HEVs) (Adnan et, al., 2016). The central element of such a transport system is electric vehicles, complemented by charging infrastructure, appropriate information technology and legislation. Apart from building charging infrastructure, electromobility does not require any special interventions in the road infrastructure (MoE, SR, 2015).

To achieve emission-free transport, measures can be implemented in two transport segments, passenger and freight (Taefi et al., 2016). Light and heavy utility vehicles are major contributors to CO_2 emissions, air pollution, noise, and traffic (Kaplan et al., 2016). Although these vehicles account for only 13% of vehicles in Europe, they contribute more than a third of total CO_2 emissions from road transport (EEA, 2016). Electromobility in freight transport, therefore, represents a huge potential for reducing environmental impacts. Passenger cars, on the other hand, account for 83.4% of inland passenger transport in the EU and contribute around two-thirds of total emissions from road transport (EEA, 2016).

Perceptions of the advantages and disadvantages of electromobility

The Slovak Electric Vehicle Association (SEVA, 2022) states that electromobility enables transport without direct emissions, independent of fossil fuels. A major advantage of electric vehicles is that their motors can also work in reverse, for example, by recharging energy when braking, thus 'regenerating' the battery. Electric vehicles, therefore, offer several advantages: 1) They get their energy from electricity that can be generated from renewable sources; 2) They do not burn fuels, have no exhausts and do not produce local emissions, thus contributing to improved air quality and healthier environment; 3) They have significantly fewer mechanical parts, making them much more efficient and requiring less maintenance than combustion-powered vehicles; 4) They are quiet and do not create noise pollution; 5) In the future, they will become an important element of a new, modern energy system based on renewable energy sources, smart grids and local energy storage.

However, electromobility also has its drawbacks, which need to be addressed in the near future. According to Březinová (2019), they are, firstly, higher acquisition costs, shorter range, slow battery charging, and thermoregulation problems (harsh winters reduce the range of these cars by almost half). The lack of battery recycling is another of the drawbacks of the rapid development of EVs. Lithium-ion batteries are characterised by their low lifetime and are still very difficult and expensive to recycle. The available recycling methods are approximately five times more expensive than extracting new raw materials. The largest plants in China are starting to adopt more advanced technologies, and moving li-ion batteries into the hazardous waste category, bringing their disposal under stricter state supervision, could help.

In their recent research, Biresselioglu et al. (2018) identified several important factors that play a role in decision-making on electromobility at three levels while

also mapping the main motivators and barriers to acceptance of electric vehicles that need to be taken into account while implementing adequate policies at local, regional, as well as European levels.

The main barriers to the diffusion of electric vehicles are lack of charging infrastructure, economical and cost concerns, technical and operational restrictions, lack of trust, information and knowledge, limited supply of electricity and raw materials, and practicability concerns. Thus, key motivators appear to be environmental, economic, and technical benefits associated with electric vehicles and personal and demographic factors, which are influential in determining individual consumption preferences.

To support the transition towards cleaner, greener and smarter mobility in line with the EGD targets (European Commission, 2019), it is essential to increase the sustainability of all transport modes, make sustainable alternatives widely available in the multimodal transport system and put in place the right incentives to support this transition. Although the number of new electric vehicle registrations is increasing yearly, the share of electric vehicles in the fleet is currently too low.

In 2020, almost 30,000 electric vans were sold, representing 2.2% of the market share and an increase of around 0.8 percentage points from 2019. The majority of electric vans sold were BEVs. Non-plug-in hybrid electric vehicles represented 12% of new registrations in 2020, an 8-percentage point increase since 2019. In 2020, the share of electric vehicles (BEVs and PHEVs) in national new car registrations increased in all countries (EU-27, Iceland, Norway, and the United Kingdom) compared with 2019. The highest shares were found in Norway (75%), Iceland (46%), Sweden (33%) and the Netherlands (28%) (EEA, 2021).

In the Slovak Republic, the number of electric vehicles increased by 32.5% in 2020 compared to 2019. While the registration included 697 plug-in hybrids (PHEVs) for the whole year, as of 30 June 2020, this number has already grown to 1,021 vehicles. In the case of battery electric cars (BEVs), the number has increased from 1,194 to 1,582 (MoE SR, 2020). Although the overall numbers are not dramatic, we can observe a positive trend of growing interest in electromobility.

It is important to say that, according to the September 2019 Eurobarometer survey, people are willing to switch to more sustainable modes of transport, especially as part of their daily mobility, but the main conditions for such a switch for them are cost, accessibility and speed. This is also why the transition to sustainable and smart transport must be fair; otherwise, there is a risk it will not happen.

According to Šimkovič (2019), the positive contribution of electromobility is mainly in its application in the mass transport of people, various materials, raw materials and goods, especially rail transport such as tram, metro and train. Currently, constructing a means of transport with the power and durability of an average passenger car requires a significantly higher amount of energy in the case of an electric vehicle compared to a conventional combustion-powered alternative. Last but not least, the recycling of e-waste is a prerequisite for the introduction of electro-mobility and the increased use of electrical equipment. Higher recycling rates are a

prerequisite for finding alternatives to fossil fuels in energy and materials engineering.
Based on the literature review, the following research questions were formulated to elaborate on the empirical part of the paper: What are commonly used forms of transport in Eastern Slovakia? Are residents interested in electromobility? What are the biggest barriers and benefits of electric cars perceived by the inhabitants of Eastern Slovakia? What are the motivators for considering the purchase of an electric vehicle? Is there a connection between education and an interest in buying an electric vehicle?

Research Data and Methodology

A questionnaire survey was used to obtain primary data. The questionnaire was created using Google forms. To obtain the largest possible sample of respondents, the authors used a non-random occasional selection to collect data. The research sample consisted of residents of the Prešov and Košice self-governing regions of all ages with different levels of education. Data collection was gathered via social networks and conducted during January 2022.
A questionnaire survey was carried out on a sample of 212 respondents (90 males and 122 females) from Košice (113 respondents) and Prešov (99 respondents) self-governing regions to determine the interest of the Slovak population in the issue of electromobility and its perception from the environmental and economic point of view. The age distribution of respondents is shown in Table 1.

Table 1 Respondents by age.

Age category	Number of respondents
18-25 years	15
26-35 years	83
36-50 years	79
51-60 years	24
Over 60 years	11
Total	**212**

Data obtained were processed in the form of tables and graphs in MS Excel. Spearman's correlation coefficient was used to analyse the relationship between the education of respondents and interest in buying electric vehicles, and the analysis was carried out in IBM SPSS Statistics 26.

Research Results and Discussion

The questionnaire surveyed the respondents' interest in the environment, forms of transport used, use of alternative energy sources, and their knowledge of

electromobility issues. Up to 78.3% of the respondents confirmed their interest in environmental issues (respondents answered the question "I am interested in environmental issues" on a scale from 1 to 5, where 1 - completely agree, 5 - completely disagree).
When asked about commonly used forms of transport, it was confirmed that the private car is the most used form of transport (84.9%), followed by walking (63.7%). The least used modes were reported to be motorbike/moped/motor scooter (75%), scooter (66%), bus, including public transport (50.1%; public transport: 59%) and train (55.7%) (Figure 1).

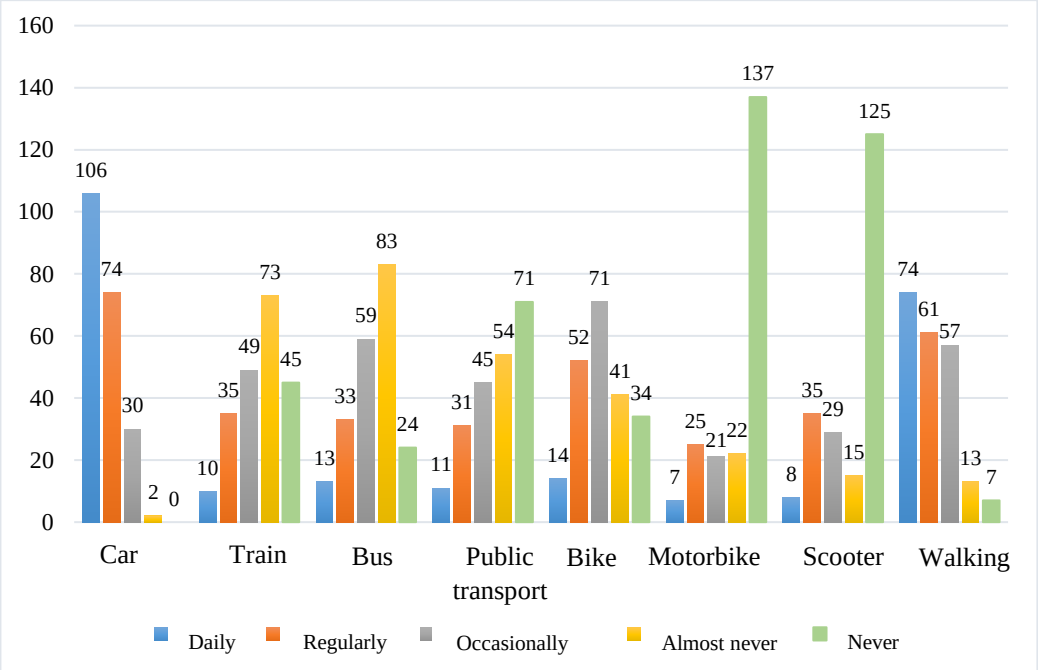

Figure 1: Overview of respondents' use of transport.
Source: own processing.

76.9% of the respondents have encountered the term electromobility, and 53.8% of them confirmed their interest in this issue. Up to 65% of respondents stated that the means of transport they use do not use alternative energy sources. The positive environmental impact of electromobility was shared by 52.8% of the respondents, while 31.6% of the respondents could not answer. Only 35.4% of respondents agreed with the statement, "I think that the development of electromobility will have an impact on reducing transport pollution".
Respondents considered the high cost of electric vehicles (67.5%), the lack of charging stations (61.8%), low battery life (56.1%) and low awareness (40.6%) to be the biggest barriers to wider use of electric vehicles. Political and economic

interests of mining companies and producers of conventional fuels, such as diesel and petrol, were a barrier for 37.7% of respondents.

On the other hand, the survey showed several motivators for considering the purchase of an electric vehicle. Two main motivators were a state subsidy or contribution of at least EUR 5000 and at least 50% lower costs of operating an electric car compared to a conventional car. In the first case, up to 60.9% of respondents would consider buying an electric car; 59% of respondents would be convinced by at least half the cost. If the cost of running an electric car were at least 25% lower than a conventional car, only 38.2% of respondents would consider buying one; 34.9% would consider buying an electric car because of free parking (35.8% could not answer). State subsidy of at least EUR 2000 would not convince 32.1% of respondents, and 31.1% could not answer. Only slightly more respondents are considering buying an electric car in the future (36.3%) compared to those not considering buying one (34.9%). 28.8% of them could not answer.

The survey also asked whether respondents knew or had heard of the benefits associated with the operation of electric vehicles. The most well-known benefit was low-emission zones. More than half of the respondents had not heard of most other benefits (Figure 2).

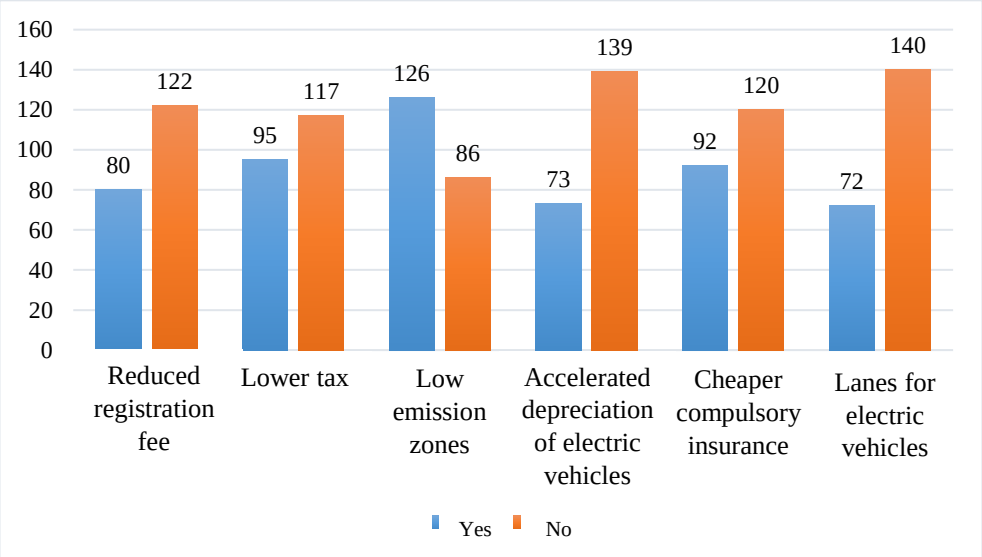

Figure 2: Responses to the question: "There are many benefits associated with the operation of electric vehicles. Please tick which ones you have heard of".
Source: own processing.

Spearman's correlation coefficient was used to analyse the association. When investigating the relationship between respondents' education and interest in buying an electric car with a state subsidy, a statistically significant association was found

if the subsidy was at least 2000 EUR; this is a negative relationship, which means that for respondents with higher education, the interest in buying an electric car with the mentioned state subsidy decreases. There was no statistically significant relationship between the education variable and the interest in buying an electric car with a state subsidy of at least EUR 5000 (Table 2). Why a statistically significant relationship was not shown with a higher subsidy can be the subject of further analyses.

Table 2. Correlation between education and interest in buying a car according to subsidy level.

Measurement of the correlation	N	r_s	p
Education and interest in buying an electric car with a state subsidy of at least 2000 EUR	212	-0.171	**0.013**
Education and interest in buying an electric car with a state subsidy of at least 5000 EUR	212	-0.125	**0.070**

Explanation: N - number of respondents, r_s - Spearman's correlation coefficient, p - p-value; Source: own processing

Respondents with secondary education with a leaving exam were most interested in buying an electric car (Table 3).

Table 3. Interest in buying an electric car by education.

Interest in buying an electric car	State subsidy min. 2 000 EUR			State subsidy min. 5 000 EUR		
	N	**M**	**SD**	**N**	**M**	**SD**
Secondary school without leaving exam	19	2.95	1.43	19	3.42	1.64
Secondary school with leaving exam	79	3.28	1.14	79	3.92	1.07
University	114	2.71	1.37	114	3.46	1.31
Total	**212**	**2.94**	**1.32**	**212**	**3.63**	**1.28**

Explanation: N - number of respondents, M - average interest in buying an electric car with a state subsidy (1=least interested; 5=most interested), SD - standard deviation; Source: own processing

In terms of age, respondents aged 26-35 years were most interested in buying an electric car in the future (M=3.16; SD=1.30), and respondents aged 51-60 years were least interested (M=2.50; SD=1.14).

According to our analysis, the interest in purchasing an electric vehicle by Slovak respondents would be encouraged by the provision of an adequate state subsidy, as well as reduction in the cost of operating an electric car compared to its conventional version. Mock and Yang (2014) and Biresseliouglu et al. (2018) state that there are a number of policy incentives to increase the sales of EVs; however, the most effective ones are direct subsidies (one-time bonus upon purchase of an EV) and fiscal incentives (purchase reduction and/or annual tax for EVs).

Respondents perceive electromobility as a modern and economical mode of transport. In order to expand this form of transport in a city or region, it is necessary to create conditions that would convince people of the effectiveness of its use. The analysis showed that despite some positive facts, it is necessary to build awareness and information on the issue of electromobility.

An important aspect is EV charging. It is important to highlight that the current situation is an early market stage, in which EVs are adopted by users with a higher comparative advantage in choosing them. In the next decades, increased deployment of EVs in the middle- and lower-income households without home-charging options, especially in urban environments, will likely require significant public charging infrastructure. Estimations of the share of public EV charging in EU countries will increase from 5% – 28% in 2020 to 47% – 59% in 2030, depending on the scenario (Engel et al., 2018). The analysis conducted by Falchetta and Noussan (2021) highlighted the rapid and continuous increase of public accessible EV charging infrastructure in most European countries in the last five years, with a gradual increase of fast and ultra-fast charging points in 2019 and 2020. Such trend is in line with the increasing EV sales in European countries, which is even larger. The implications of their results suggest that decision-makers concerned with the support to increasing EV fleets should not only focus on cities but also guarantee equitable access to infrastructure to citizens outside of the main urban areas to avoid increasing the urban-rural divide. Still, it is important to remember that in rural areas, household EV charging may play a more important role than in densely populated cities.

As part of the comparison of Slovakia with other countries, many countries offer relatively high subsidies for electric vehicle purchases; for example, in Croatia, the subsidy for BEV is 9,200 EUR, Romania 10,000 EUR, Spain 5,000 EUR, Germany 9,000 EUR or Slovenia 7,500 EUR. Some countries do not offer direct subsidies but only tax incentives, e.g., Belgium, Denmark or Latvia. Lithuania does not offer any support for e-vehicle buyers (Baraniak & Starzyński, 2020; Łuszczyk et al., 2021). In the context of the Visegrad Group countries, The National Environment and Water Management Fund in Poland is implementing a program to co-finance the purchase of electric vehicles. The subsidy for the electric vehicle represents 15% of the costs, but up to a maximum of PLN 18,750. The vehicle must also cover up to 10,000 km per year, and its price must not exceed PLN 125,000. Due to the low subsidies and

excessive purchase prices, there is not much interest in purchasing this type of vehicle among consumers in Poland. The need to build a network of charging stations is also emphasized there (Bennett et al., 2015; Ślusarczyk et al., 2019; Ślusarczyk, 2020). In Hungary, the subsidy for e-vehicle purchase represents 7350 EUR for BEV if the price is up to 32,000 EUR and 1500 EUR if the price is 32,000-44,000 EUR. Electric vehicles in Hungary are exempt from the property acquisition fee and registration tax. Their popularity is growing, and in the last quarter of 2021, the number of electric passengers increased by 21% compared to the previous quarter (Baraniak & Starzyński, 2020; Łuszczyk et al., 2021; Versinetic, 2021; Patricolo, 2022). The survey by Institute for Democracy and Economic Analysis (2019) in Czech Republic showed that the purchase of electric vehicles is on the rise, and many Czechs are planning to buy an electric vehicle in the coming years. The Czech Republic plans to use EU support under the National Recovery Plan in the coming years. Out of a total package of more than EUR 38 million, the Czech Republic wants to support the purchase of 3,525 electric cars, as well as 30 hydrogen cars and 1,000 cargo e-bikes. The money should be distributed by the end of 2025 (Krajčovič 2022).

Conclusion

In the coming years, the development of electromobility will advance worldwide, including in Slovakia. The transition to electric propulsion will reduce fossil fuel consumption and improve air quality in exposed locations with dense traffic. Current historical tendencies suggest that the number of electric vehicles in the Slovak fleet may reach 28 thousand to 41 thousand in 2030. Oil fuel consumption will only decrease if the electric vehicle is used as a replacement for the internal combustion engine vehicle. Combined with low-carbon way of electricity generation in the SR, electromobility can contribute to reducing greenhouse gas emissions and improving air quality. The transition to electromobility will increase society's dependence on electricity. A key challenge will therefore be to ensure the availability of raw materials for low-carbon electricity generation, the safety, stability and efficient management of the electricity transmission system, which will be important in the case of simultaneous charging of a larger number of electric vehicles in households in densely populated areas. Electromobility is not the only solution to reduce fossil fuel consumption, overall energy consumption, greenhouse gas emissions and impacts of climate change. It must also be accompanied by the development and implementation of other solutions, such as alternative fuels, public passenger transport, and the application of circular economy principles throughout the life cycle of electric vehicles, including recycling of components, sharing economy activities, such as car sharing, municipal initiatives in line with the smart city concept, changing the concept of mobility, and others (Krešák et al. 2018; Repíková 2019; Brzeziński and Jesionkiewicz-Niedzińska 2021). At the national and local level, clear priority should be given to the development of public transport, walking

and cycling, as well as connected and shared mobility services. On the one hand, the COVID-19 pandemic disrupted mobility and transport, but on the other hand, cities, in particular, have also been forced to improve active mobility infrastructure as a result. Therefore, it is now more than necessary to emerge from the crisis with a more resilient, smarter and sustainable urban mobility system, which is also key to the overall resilience of the transport system and the economy. Rapid and significant measures and investment at EU, national, regional and especially local level is needed to achieve a significant transformation in urban mobility (European Commission, 2021a).

To support raising awareness of electromobility and consequent interest in purchasing electric vehicles, a possible solution could be to build a permanent organizational unit in the form of an information and counseling center at least in regional cities, where the necessary information could be gathered for e-mobility development and decision-making on the use of e-mobility. We also consider the promotion of electromobility through micro-grant schemes to be a suitable alternative, mainly because electric cars are still relatively expensive. Therefore a real micro-grant policy should be considered, which will address the type, character, and form of assistance. The construction of a network of shared electric cars can also support the interest in electric cars. From the customer's point of view, a dense network of charging stations and financial measures, such as tax and energy cost reductions, are other important prerequisites for us to increase our interest in buying an electric vehicle. Manufacturers of electric cars could promote electromobility by offering test drives, versatile electric cars, special credit offers with low-interest rates for electric cars and promoting information campaigns.

In order to achieve widespread public acceptance and use of electric vehicles, charging and maintenance infrastructure must be widely available across Europe. The EU supports this deployment financially and through its platforms with participation of stakeholders. Standardisation and interoperability are essential to maximise the scope of the internal market, and barriers to EV charging within the EU need to be removed (European Commission, 2016). A comprehensive policy is also needed to stimulate demand for zero-emission vehicles without barriers across the single market while fully respecting the EU's international commitments. Increased deployment and use of renewable and low-carbon fuels must go hand in hand with the creation of an aggregated network of charging and refuelling infrastructure to fully enable the widespread deployment of low- and zero-emission vehicles in all modes of transport (European Commission, 2020).

The possible limitations of the study can be the size of the study sample and the fact that the data were obtained only within the Prešov and Košice self-governing regions. On the other hand, it can be mentioned that there is a possibility for future research in the context of researching this issue throughout the Slovak Republic. Future research could also focus on comparing results within this issue between other regions based on selected characteristics (e.g., gender, education, age, residence, etc.) or comparing other EU countries.

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ZARZĄDZANIE ZRÓWNOWAŻONĄ MOBILNOŚCIĄ I POSTRZEGANIE KONCEPCJI WDROŻENIA POJAZDU ELEKTRYCZNEGO

Streszczenie: Obecnie problematyka zrównoważonego zarządzania elektromobilnością staje się coraz bardziej aktualna z co najmniej dwóch powodów. Pierwszym powodem ekonomicznym jest rosnąca cena paliw konwencjonalnych. Drugim powodem jest globalny problem środowiskowy związany ze zmianami klimatycznymi. Postrzeganie elektromobilności i rosnące zainteresowanie zakupem pojazdów elektrycznych są zatem kluczowymi elementami w procesie osiągnięcia neutralności klimatycznej do 2050 roku i realizacji celów, do których zobowiązała się UE, przyjmując europejskie prawodawstwo. Celem artykułu jest analiza postaw i zainteresowań mieszkańców wybranego obszaru Słowacji wobec elektromobilności pod kątem jej wpływu na środowisko, deklarowanych korzyści i zainteresowania zakupem pojazdu elektrycznego oraz analiza relacji między edukacją a zainteresowaniem zakupem samochód. Dane pierwotne uzyskano za pomocą ankiety i przetworzono przy użyciu tabel, wykresów i analizy korelacji. Wyniki analizy wykazały niskie zainteresowanie społeczeństwa zakupem pojazdów elektrycznych, głównie ze względu na wysoką cenę, niewystarczającą sieć stacji ładowania, niską żywotność baterii i niską świadomość.

Słowa kluczowe: elektromobilność, zarządzanie zrównoważoną mobilnością, percepcja elektromobilności, pojazdy elektryczne, odnawialne źródła energii

可持续交通管理和对电动汽车部署概念的理解

摘要：**目前**，**至少有两个原因**，电动汽车的可持续管理问题变得越来越热门。首先，经济原因是传统燃料价格上涨。**第二个原因是与气候**变化有关的全球环境问题。因此，对电动汽车的看法和对购买电动汽车的兴趣日益增加，是到 2050 **年**实现气候中和和实现欧盟通过欧洲立法承诺实现的目标的关键因素。本文的目的是分析斯洛伐克选定地区的居民对电动汽车的环境影响、宣布的利益和购买电动汽车的兴趣以及教育与购买兴趣之间的关系的态度和兴趣。一辆车。主要数据是通过问卷调查获得的，并使用表格、图表和相关分析进行处理。分析结果显示，公众对购买电动汽车的兴趣不高，主要原因是价格高、充电站网络不足、电池寿命短、认知度低

关键词：电动汽车，可持续交**通管理**，电动汽车感知，电动汽车，可再生能源