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# ELECTROMOBILITY IN LOCAL ADMINISTRATION OFFICES OF PROVINCIAL CITIES IN POLAND – STATUS AT THE END OF 2022

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ABSTRACT: The objective of this article is to investigate behaviours related to electromobility in terms of owned vehicle fleets and charging stations in local administration units, the role of zero-emission vehicles in building the image of the administration and the promotion of environmentally friendly behaviours among its employees as at the end of 2022. The completion of the objective was based on surveys of the data collected using the CATI technique from provincial offices (POs) and municipal offices (MOs)* of provincial cities. The survey showed that the primary means of transport owned by the entities surveyed are internal combustion engine vehicles. Of these, the largest group is made up of passenger cars – the average age of vehicles at the time of the survey was approx. eight years. In sum, the local administration in the provincial cities is approaching the target value established by law. The average share of BEVs in the passenger vehicle fleet is 9%. In terms of charging station ownership, there were three dominant patterns. There is a perception among respondents that a fleet of environmentally friendly vehicles builds a positive, pro-environmental image of the office, while in none of the offices was there any action to support the environmentally friendly behaviour of employees in terms of travelling to and from work.

* The survey covered local government administrative units in 16 cities where local government offices are located and involved provincial local government offices (POs) and municipal local government offices (MOs).

KEYWORDS: electromobility, local administration offices

## Introduction

The development of the economy and the drive to implement solutions worldwide to improve the quality of life of society, including by protecting the environment, is an ever-present goal for the functioning of social and economic systems.

The economy is, therefore, faced with the challenge of pursuing its own objectives in a way that is compatible with the sustainable development strategy, the original principles of which were drafted as early as the middle of the 20th century in response to the environmental crisis caused by intensive development, particularly in the sphere of production (Szadziewska et al., 2021). The concept of sustainable development, in the form of an idea, was disseminated in 1987 in the 'Our Common Future' report by the World Commission on Environment and Development, the goal of which was to point to meeting the needs of society without compromising the quality of life of future generations (Mierzejewska, 2015). This concept is a starting point in the pursuit of social goals and planning for the development of the economy. The European Green Deal initiative, which aims to protect the environment and make the European economy climate-neutral by 2050, now fits in with the sustainable development strategy (Nowak, 2021). Reducing emissions, developing industry for a green and digital Europe, and a strategy for developing the food economy are some of the assumptions of the European Green Deal, which are intended to become a tool for implementing the assumptions adopted in the concept (Marcinkowski, 2023).

## An overview of the literature

The projected population growth, particularly in large urban areas, and the increase in life expectancy (ageing population), in combination with the increase in energy demand, the ongoing energy crisis and the significant spike in energy prices as well as continuing environmental pollution, are all challenges that the contemporary society must face.

In response to these problems and to the progressing adverse climate change, the concept of a European Green Deal was developed, with the fundamental goal of achieving climate neutrality by 2050. This is to be achieved through appropriate sectoral policies, including those pertaining to the transport sector – which is responsible for a quarter of the EU's greenhouse gas emissions (Pomykała & Raczyński, 2020; Melkonyan et al., 2024). Transport is one of the largest sectors of the global economy, making a major contribution to its development and employment and the mobility of society. Transport in 2018 accounted for 6.1% of GDP globally, 7.8% in the EU and 6.8% in Poland. It also accounted for 3.99% of total employment in the EU and 3.8% in Poland (Motowidlak, 2020). The European Green Deal is a concept that seeks to transform society and the economy, pursuing the goals of low-carbon, resource-efficient and sustainable transport (Motowidlak, 2020). Transition to sustainable and smart mobility is linked to the setting of specific targets, i.e., reducing emissions from passenger cars by 55% and emissions from delivery vehicles by 50% by 2030 and zero emissions from new passenger cars by 2035. (Deloitte, 2024). The EU institutions and the Member States must put in place, at both the EU and national level, the measures/actions necessary to achieve the objectives set. European countries and within them, local administrations are required to implement the objectives of the sustainable development plan (Ziemacki, 2021). One aspect of this plan that offers real prospects for improving air quality is the development of electromobility. The economy is, therefore, forced to meet targets based on solutions that are green and, at the same time, improve the quality of life of society. One of the key economic areas and a challenge in meeting social goals are cities, which are responsible for an average of 70 percent of greenhouse gas emissions and more than 60 percent of the energy consumed worldwide (International Energy). More than 50% of the world is now urbanised (Joshi et al., 2016), and the urban population has continued to grow in recent decades (Gil-Garcia et al., 2023). To meet these challenges, the concept of the Smart City (Hajduk, 2020) has emerged, which envisages the possibility of the city becoming capable of improving the quality of life of its inhabitants through the possibility of sustainable cultural, economic and social development in a healthy, safe, stimulating and dynamic environment while remaining true to the principles of sustainable development (Casini, 2017). A smart city 'is one that increases infrastructural efficiency through the use of the latest technologies, primarily information and communication technologies'

DOI: 10.34659/eis.2024.90.3.873

(Tota, 2017), but it also means changing the face of cities, the functioning of services and the behaviour of residents. It is a smart, sustainable and inclusive urban model. The Smart Cities concept covers 12 areas. These areas form a hierarchical structure of smart cities, i.e., smart appliances, smart transport, smart environment, smart home, smart building, smart energy, smart logistics, smart agriculture, smart security, smart health, smart education, smart hospitality (Lim et al., 2018) (Figure 1).

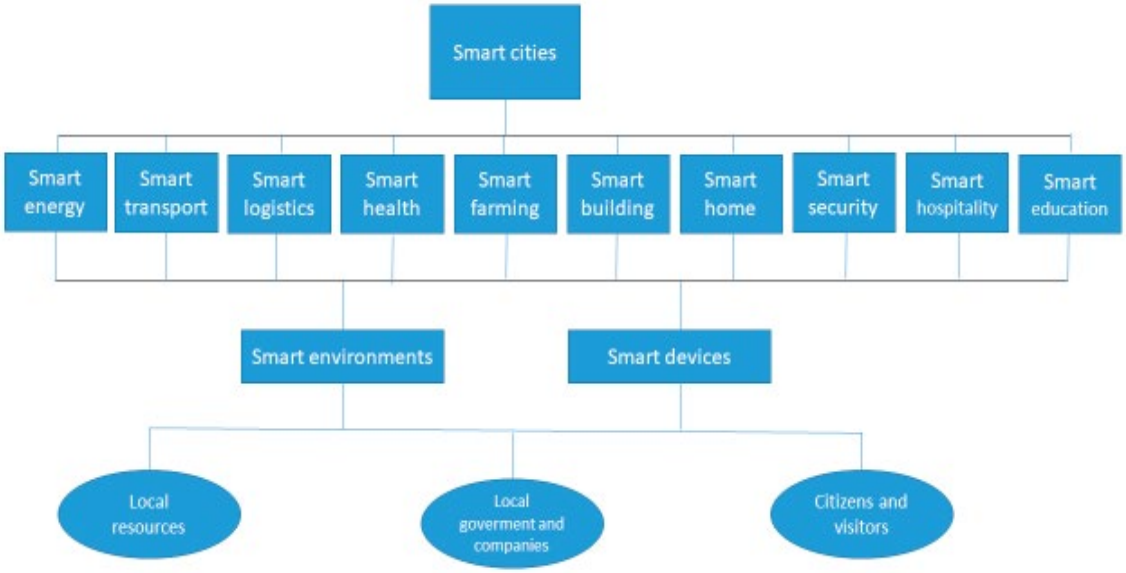


**Figure 1.** Smart Cities structure

Source: authors' work based on Chiehyeon et al. (2018).

One of the main pillars of the Smart City concept is also transport (smart mobility), which is a key aspect of the smart city (Casini, 2017). Smart Transport is a new mobility culture that aims to balance transport in cities and urban areas, positively influencing the standard of living and satisfaction of residents as well as other transport participants, and which cares for the environment while supporting economic growth (Krawiec, 2016). The concept of smart mobility is based on the premise of pursuing a sustainable development strategy and, more specifically, the idea of sustainable transport. This area relies on a decidedly innovative way of thinking to bring about changes in transport in order to offset externalities, improving not only safety and efficiency but also the degree of environmental pollution (Augustyn, 2020). As a goal, the concept of smart mobility implies a transition to an economy based on resource efficiency and low carbon emissions. In the European Union and Poland, 'smart mobility' is being implemented through the concept of so-called 'electromobility', which includes the introduction of the market and the use of emission-free, environmentally friendly means of transport (Janczewski, 2017). By definition, the development of electromobility should, therefore, contribute to improving air quality in Poland.

The European Union is committed to the development of sustainable transport and environmental protection, as evidenced by the 2014 EU Directive issued by the European Parliament on the development of infrastructure for alternative fuels and charging infrastructure for electric vehicles (Krawiec & Krawiec, 2017). Targets related to the use of low- and zero-emission vehicles by administrations, in particular local authorities, should also be included within these policy objectives. The initial work on electromobility in Poland started with the preparation of the Electromobility Development Plan, which was adopted in 2016 by the Ministry of Energy. This plan stipulated, among other assumptions, that (Ministerstwo Energii, 2017):

- by 2025, the number of electric cars in use in Poland will reach one million,
- electrification of public transport will be carried out,
- by 2025, half of the vehicles in the fleet operated by public administrations will be electric.

The plan was divided into three phases. Phase One (2016–2018) was preparatory; it assumed the implementation of pilot programmes to encourage electromobility in society. Phase Two (2019–

DOI: 10.34659/eis.2024.90.3.873

2020) involved the development of electric vehicle charging infrastructure in selected urban areas and along the TEN-T (Trans-European Transport Network). Phase Three (2020–2025) assumed that the previous stages would result in the increased popularity of electric cars and that the Polish power grid would be ready to supply energy for approximately one million electric vehicles. The consequence of this plan was the enactment of the Act of 11 January 2018 on electromobility and alternative fuels.

One of the most important options for reducing $CO_2$ emissions is undoubtedly to increase the number of electric vehicles in use, as, according to the International Energy Agency, around 14% of greenhouse gases worldwide are produced by the transport sector (Ministerstwo Klimatu i Środowiska, 2022). Electric vehicles play a key role in the development of smart cities and the reduction of $CO_2$ emissions. Consequently, the use of zero-emission cars reduces fuel consumption, provides energy savings and, at the same time, improves air quality (Razmjoo et al., 2021). Taking this into account, it can, therefore, be concluded that the development of electromobility is carried out at multiple levels – EU, central, regional and local. It is a concept that poses a number of challenges to city, metropolitan and regional administrations in the process of developing and implementing sustainable transport technologies (Parlament Europejski, 2023). The Act on electromobility and alternative fuels adopted by the Polish government (Act, 2018) imposes obligations on state and local authorities local administration units, according to which state and local authorities must gradually increase the share of electric vehicles in their own vehicle fleet. For larger municipalities and districts, i.e., over 50,000 inhabitants, according to the act, the share of electric vehicles in the fleet of vehicles used by local administration bodies should be at least 30% in 2025 (Ziemba, 2020).

The Electromobility Development Plan also envisages the development of vehicle charging infrastructure and the related construction of charging stations at public buildings. By 2025 (the cut-off date is the end of 2024), every public building falling under the category defined when setting the obligation should be equipped with at least one charging point (Ministerstwo Energii, 2017). The changes being made on the part of state and local administrations and their degree of compliance with their obligations under the Act are closely linked to the pace of electromobility development. Indeed, the behaviour and actions of the administration have a direct impact on shaping the policy, culture, and awareness of electromobility and its impact on community sustainability (Uchwała, 2019).

## Research methods

In order to assess the degree to which the public administration has implemented the smart city concept resulting from the assumptions of the Electromobility Act, a survey was conducted using data collected from 32 entities (local administration offices). These entities included provincial and municipal offices based in provincial cities. The survey was conducted in late 2022 and early 2023. The last data was obtained in spring 2023. A Polish company was responsible for conducting the survey and collecting the data. The data of this study was collected using computer-assisted telephone interviews (CATI), as the administration of the questionnaire by an interviewer ensures a higher response rate and more complete and accurate responses than do self-completion questionnaires. The design of the questionnaire, which was in line with the objectives of the study as well as the main study assumptions, was developed by the study authors. The study distinguished four groups of vehicles according to their design purpose. The first group consisted of commercial vehicles (forklifts, golf carts, etc.), the second consisted of passenger vehicles, the third consisted of delivery vehicles, and the last comprised heavy goods vehicles. In the vehicle groups analysed, the type of propulsion was distinguished, and these were diesel or petrol internal combustion engines, LPR or CNG internal combustion engines, hybrid electric vehicles (HEVs), battery electric vehicles (BEVs) and vehicles equipped with hydrogen cells (fuel cell). The population was also surveyed on whether they own charging stations for electric and hybrid vehicles, the advantages and disadvantages of electric and hybrid vehicles, and their plans to purchase vehicles and build charging stations.

DOI: 10.34659/eis.2024.90.3.873

## Results of the research

The study population includes all types of vehicles, from commercial vehicles to cars, vans, and trucks. The most numerous group of vehicles owned by municipal and provincial offices are passenger vehicles. All offices have passenger vehicles with internal combustion engines. Half of the surveyed population of local administration offices own hybrid passenger vehicles (HEVs), just over half – 18 – have electric passenger vehicles (BEVs). Approximately 60 percent of offices own delivery vehicles powered by internal combustion engines. The least numerous group– two units – are those with electric delivery vehicles. The survey also included a question regarding fuel cell vehicles – these vehicles are not owned by local administration offices. The number of offices with specific vehicle groups is shown in Figure 2.

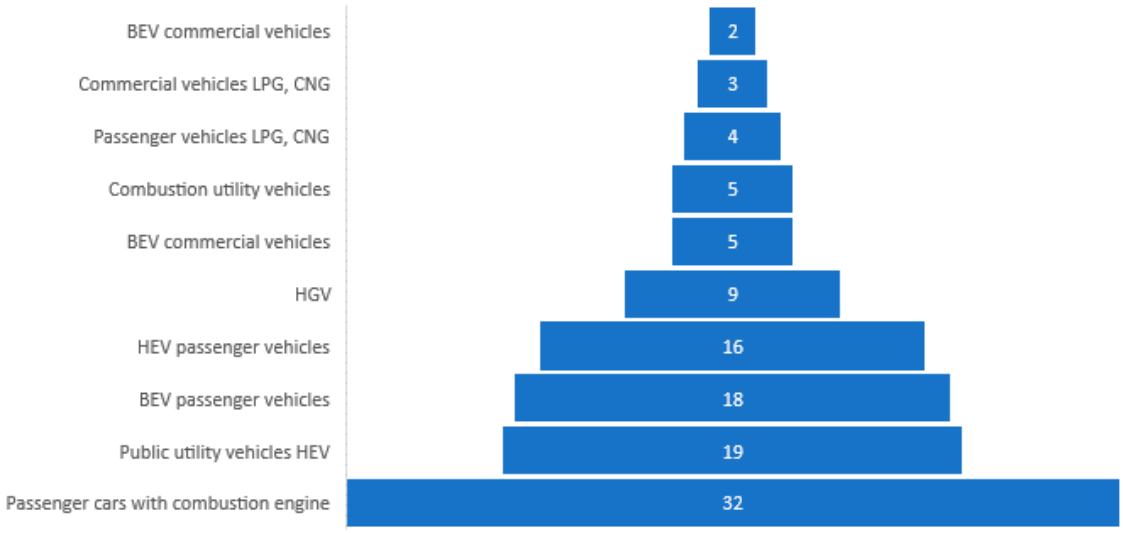


**Figure 2.** Number of offices with vehicles by type

The primary means of transport owned by the entities surveyed are petrol or diesel internal combustion engine vehicles. Among these, passenger cars are the largest group. The spread of ownership of combustion passenger cars in the individual provinces is from 2 (Kielce MO) to 43 (Warsaw PO). The dominant figure in this group of vehicles is 12 vehicles of this type, although the mean value is 16. The average age of vehicles is almost 8 years, and the dominant age is 7 years; however, the oldest cars are 13 years old, and the youngest are 5 years old.

The second dominant group in the surveyed entities are delivery vehicles. These vehicles are owned by 19 offices, with a spread of ownership in the range from 17 as a maximum (Rzeszów MO) to 0 (13 offices). The dominant vehicle in this group is 1, and the mean value is 2. The average age of vans owned by provincial offices and provincial townships is similar to passenger vehicles, at almost 8 years, and the dominant age is 7 years, although the oldest is 18 years old and the newest is 2 years old. The fleet of internal combustion vehicles also includes large goods and commercial vehicles. Data on the number and characteristics of internal combustion vehicles owned by local administration offices are presented in Table 1.

DOI: 10.34659/eis.2024.90.3.873

**Table 1**. Number and characteristics of internal combustion vehicles owned by local administration offices

| Type of vehicles | Number of entities owning the vehicles concerned | Ownership in pcs. | | | | Age in years | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Max. number | Min. number | Dominant number | Mean number | Max. age | Min. age | Dominant age | Mean age |
| Internal combustion commercial vehicles | 5 | 2 | 1 | 2 | 1.8 | 26 | 4 | 7 | 7.9 |
| Internal combustion passenger vehicles | 32 | 43 | 2 | 12 | 16.3 | 13 | 5 | 7 | 7.9 |
| Internal combustion delivery vehicles | 19 | 17 | 1 | 1 | 2.9 | 18 | 2 | 7 | 7.9 |
| Internal combustion large goods vehicles | 9 | 5 | 1 | 3 | 2.9 | 14 | 4 | 7 | 7.2 |

The fleet of vehicles powered by internal combustion engines is supplemented by those with LPG or CNG systems. The gas-powered fleet consists mainly of passenger vehicles (4 offices have a fleet of this type) and commercial vehicles. The average age of gas-powered passenger vehicles is 8.3 years, while commercial vehicles are 11.3 years old. The youngest vehicles in this group are 3 and 4 years old, respectively, while the oldest vehicles are 14 (passenger) and 28 years old (commercial), respectively.

The implementation of environmental policy and the pursuit of the objectives of the Green Smart City concept, including electromobility, are primarily concerned with reducing atmospheric emissions. This is possible through the use of hybrid and electric vehicles for transport tasks and official travel. Hybrid electric vehicles (HEVs), as well as battery electric vehicles (BEVs) are owned by over 10 offices. There are 18 operators in the BEV group and 16 in the HEV group, and these are passenger cars. Warsaw City Hall is unquestionably leading the way in reducing emissions, with 16 BEV passenger vehicles and 25 HEV passenger vehicles. Two offices have delivery vehicles powered solely by electricity (Opole MO with 2 vehicles, and Rzeszów PO with 1 vehicle). For the most part, it is not possible to demonstrate regularity for individual provinces in terms of the 'electrification' of the passenger vehicle fleet. Exceptions in this respect are the MO and PO in Szczecin as well as the MO and PO in Opole, where a similar trend can be observed. The numbers of vehicles by type of propulsion – combustion, HEV, BEV – making up the passenger vehicle fleet of municipal and provincial offices are shown in Figure 3.

DOI: 10.34659/eis.2024.90.3.873

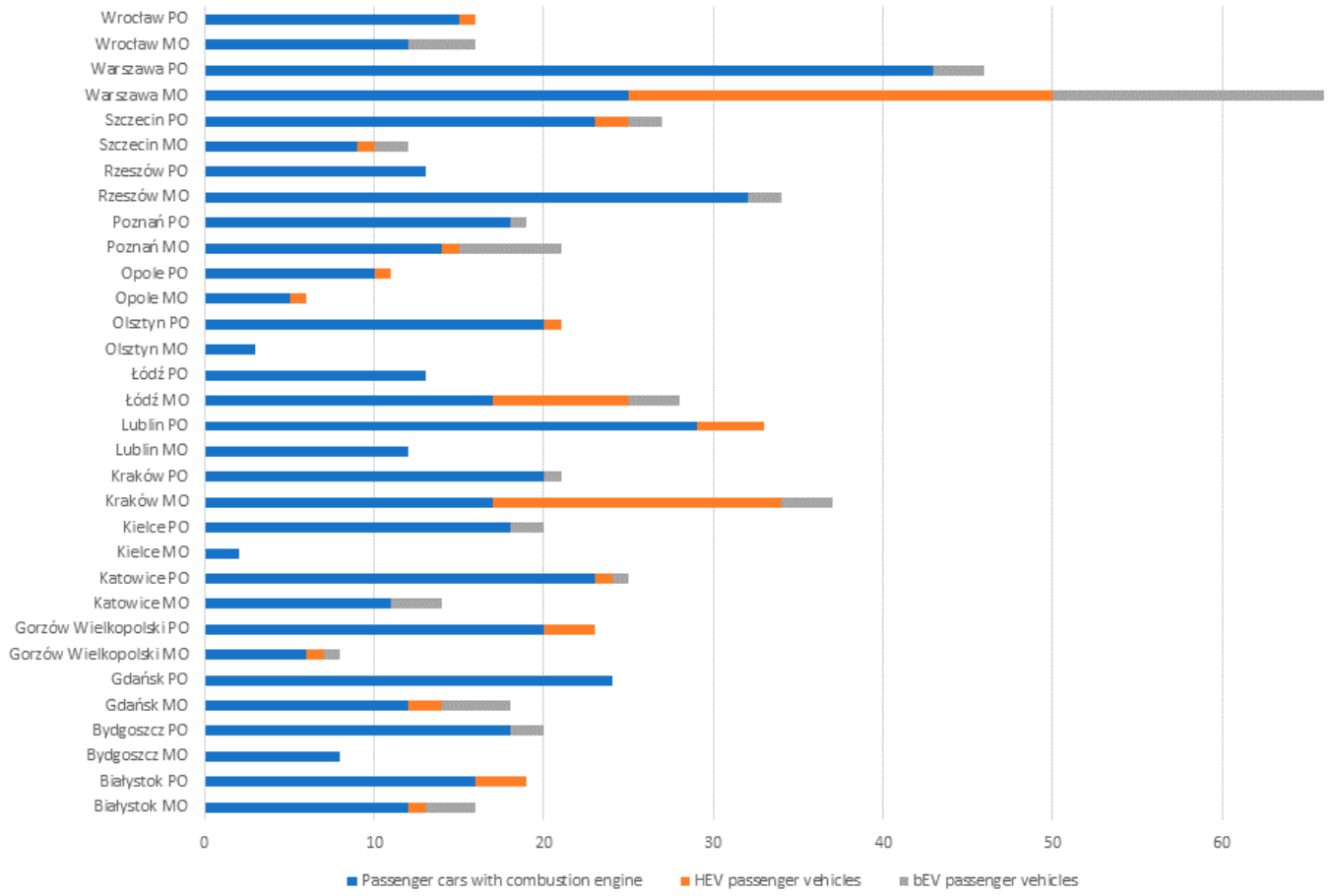


**Figure 3.** Numbers of vehicles by type of propulsion (combustion, HEV, BEV) making up the passenger vehicle fleet of municipal and provincial offices

The ownership status of electric vehicles by local authorities is one parameter describing the approach to electromobility. However, it should be remembered that a statutory threshold has been set for the share of the electric fleet in the total number of vehicles. One of the cut-off points in time is precisely 2022, for which the share of electric vehicles in the fleet of vehicles owned by local authorities is 10%. As passenger cars are the largest group of vehicles and the other groups (vans, trucks and commercial vehicles) have little impact on the share of electric vehicles in the vehicle fleet, Table 2 shows the share of passenger cars in the fleet of these vehicles owned by local administration offices.

**Table 2.** Share of hybrid (HEV) and electric (BEV) vehicles in the total number of passenger vehicles of local administration offices

| Office | Total number of passenger vehicles in the fleet | share of HEVs | share of BEVs |
|---|---|---|---|
| Białystok MO | 16 | 6% | 19% |
| Białystok PO | 19 | 16% | 0% |
| Bydgoszcz MO | 8 | 0% | 0% |
| Bydgoszcz PO | 20 | 0% | 10% |
| Gdańsk MO | 18 | 11% | 22% |
| Gdańsk PO | 24 | 0% | 0% |
| Gorzów Wielkopolski MO | 8 | 13% | 13% |
| Gorzów Wielkopolski PO | 23 | 13% | 0% |

DOI: 10.34659/eis.2024.90.3.873

| Office | Total number of passenger vehicles in the fleet | share of HEVs | share of BEVs |
|---|---|---|---|
| Katowice MO | 14 | 0% | 21% |
| Katowice PO | 25 | 4% | 4% |
| Kielce MO | 2 | 0% | 0% |
| Kielce PO | 20 | 0% | 10% |
| Kraków MO | 37 | 46% | 8% |
| Kraków PO | 21 | 0% | 5% |
| Lublin MO | 12 | 0% | 0% |
| Lublin PO | 33 | 12% | 0% |
| Łódź MO | 28 | 29% | 11% |
| Łódź PO | 13 | 0% | 0% |
| Olsztyn MO | 3 | 0% | 0% |
| Olsztyn PO | 21 | 5% | 0% |
| Opole MO | 6 | 17% | 0% |
| Opole PO | 11 | 9% | 0% |
| Poznań MO | 21 | 5% | 29% |
| Poznań PO | 19 | 0% | 5% |
| Rzeszów MO | 34 | 0% | 6% |
| Rzeszów PO | 13 | 0% | 0% |
| Szczecin MO | 12 | 8% | 17% |
| Szczecin PO | 27 | 7% | 7% |
| Warszawa MO | 66 | 38% | 24% |
| Warszawa PO | 46 | 0% | 7% |
| Wrocław MO | 16 | 0% | 25% |
| Wrocław PO | 16 | 6% | 0% |
| In total | 652 | 11% | 9% |

Overall, it must be said that, on balance, the local administrations of the provincial cities have not met the objectives set by the law, although they are getting closer to it. The average share of BEVs in the passenger vehicle fleet is 9%. There are both commendable and regrettable exceptions in the population. The former include those where the share of BEVs in the fleet exceeds 20%, i.e., the Municipal Offices of Gdańsk, Katowice, Poznań, Warsaw and Wroclaw. The regrettable exceptions are the offices where the share of BEVs in the total number of passenger vehicles is 0%, i.e., the municipal offices in Bydgoszcz, Kielce, Lublin, Olsztyn, Opole and the provincial offices in Białystok, Gdańsk, Gorzów Wielkopolski, Lublin, Łódź, Olsztyn, Opole and Wrocław. It is noteworthy that in three cities, neither of the local administration offices own BEVs, and these are the offices in Lublin, Olsztyn and Opole.

Hybrid and electric vehicles and their use for freight and travel are not significantly different from internal combustion engine vehicles from a usability and comfort point of view. However, it is possible to identify their advantages as perceived by respondents relating to the specifics of their purchase and use in the office. Among the most significant advantages, respondents included the cost of operation, which was identified as the low cost of operation factor, namely the cost of electricity compared to the price of fuel. The vast majority of respondents – 26 offices – cited this characteristic as the most important, followed by low periodic maintenance costs, environmental protection and, lastly, the purchase subsidy. There was an interesting distribution of recognition of the greatest advantage among those who did not consider the low-cost driver as the most important. Within this

DOI: 10.34659/eis.2024.90.3.873

group, the most indications were environmental protection – 3 indications of reduced emissions in urban areas – followed by 2 indications of low maintenance costs and 1 indication of purchase subsidies.

The question about the advantages of electric vehicles was juxtaposed with the question about their disadvantages due to the specifics of the authority's financing and operation of the vehicles. Respondents identified the high purchase cost as the biggest disadvantage of electric vehicles with 16 indications, followed by the need for frequent charging (11 indications) and the small number of charging points (nine indications). A similar number of indications (8) identified the poor range of electric and hybrid vehicles as a disadvantage. In last place was the high cost of battery replacement and disposal. The most important disadvantage of hybrid and electric vehicles, as perceived by the offices, is the high purchase costs, which can be offset by subsidies. Only five local administration offices (POs in Białystok, Olsztyn, Szczecin, Bydgoszcz and Lublin) have benefited from this support, but 22 offices are already planning to purchase BEVs or HEVs.

Purchasing and owning a fleet of electric vehicles requires access to or ownership of a charging station. In this respect, the policies implemented in the local administration offices include three schemes. The first stipulates that offices with electric vehicles also have their own charging stations, which are not accessible to residents. This model is applicable in 11 offices. The second scheme is the scheme stating that the authority is the owner of charging stations that are made available to residents – here, five entities can be identified (MOs in Rzeszów, Gorzów Wielkopolski and Wrocław, and POs in Bydgoszcz, Krakow and Lublin). If the office has its own stations, it usually has one or two. The maximum number of charging stations – 4 – are those of the Warsaw Municipal Office, which is due to its possession of the largest number of electric vehicles. Among the offices with electric-powered vehicles, it is also possible to identify some that do not have their own charging stations and use public ones (Szczecin MO and Katowice PO), but there are also some that, having their own charging stations, also use public ones. There are five such offices: the city offices in Gdańsk, Poznań and Łódź and the provincial offices in Poznań and Kielce. Progress in fleet electrification also requires the development of charging infrastructure. Among the local administration offices planning to build charging stations in the next three years are both those that already operate such stations and those that do not. Data on plans to build charging stations is presented in Table 3.

**Table 3**. Plans to build electric vehicle charging stations

| Office | Number of own electric vehicle charging stations not accessible to the public | Use of public charging stations for electric vehicles | Realised or planned use of incentives, subsidies from the State and/or the European Union for the construction of charging stations |
|---|---|---|---|
| Gdańsk MO | 1 | yes | yes |
| Białystok MO | 3 | no | no |
| Lublin MO | 0 | no | yes |
| Krakow MO | 2 | no | no |
| Olsztyn PO | 0 | no | no |
| Poznań PO | 1 | yes | yes |
| Kielce PO | 2 | yes | no |
| Opole MO | 2 | no | yes |
| Bydgoszcz MO | 0 | no | no |
| Rzeszów MO | 2 | yes | no |
| Bydgoszcz PO | 2 | no | no |
| Katowice PO | 0 | yes | no |

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Also included in the statement is a question regarding the willingness to use incentives and subsidies, whether through the use of national or European Union funds to build charging stations. The majority of local administration offices plan to use their own funds to build electric vehicle charging stations, whereas only 4 plan to support their own funds with grant money.

The final element of the survey was the question of the perception of the process of building the image of the office as an environmentally friendly entity among the urban community and the promotion of environmentally friendly behaviour among employees. In only five cases (MOs in Lublin and Warsaw, POs in Białystok, Rzeszów, Warsaw) was the fleet of environmentally friendly vehicles considered to build a positive, pro-environmental image of the office in the external environment. None of the offices indicated measures aimed at employees to support environmentally friendly behaviour (electric cars, bicycles, scooters) for travelling to and from work.

## Conclusions

The sustainability of socio-economic systems is a multidimensional phenomenon. However, it is situated within the domain of reducing negative environmental impacts. In the social domain, one of the dimensions of sustainable development is that of local authorities, which, according to EU and national guidelines, should aim to build smart cities. The smart city concept encompasses many aspects, one of which is smart mobility, which in principle means creating the behaviour and conditions to reduce the emissions of vehicles on urban roads, i.e., promoting the use of low- or zero-emission vehicles. Within local administration, this involves organising public transport so that it encourages urban residents to use public transport and equipping public transport providers with vehicles whose exhaust has a low or zero impact on the urban environment. It also implies the use of hybrid or electric vehicles by local authorities, with consequences both directly for the city's environment and indirectly for the community of the city through the promotion of this type of behaviour. Promoting environmentally friendly behaviour is also about supporting and motivating office staff to use environmentally friendly modes of transport for commuting to and from work.

EU laws and directives require local and regional authorities, in particular cities with a population of more than 50,000, to carry out tasks related to electromobility. These tasks are concerned with building an environmentally friendly fleet, thus improving air quality in the city. 2002 was the first year for which a requirement was set for local authorities to have a fleet consisting of a minimum of 10% BEVs. The 2022/2023 survey of municipal and provincial offices of provincial cities in Poland indicated that, on average, the share of BEVs in the fleet of these offices is 9%, which does not meet the statutory requirement. This average result has been influenced by municipal and provincial offices, which have more than double the share of electric vehicles than the required minimum, but also those that do not have any vehicles of this type. A certain curiosity is the three cases of provincial cities in which neither the provincial nor the city council has electric vehicles. Some justification is that these offices operate HEVs, although out of these 6 cases, two offices in two different provinces had neither hybrid nor electric vehicles. The state points to 2024 as the year in which the majority of expenditure of local administration funds on the purchase of electric vehicles should be made in order to meet the statutory requirements.

Owning and operating electric vehicles requires charging them. Hence, patterns of use of such infrastructure elements were verified in the study population. Four patterns can be identified. The first can be described as ownership and exclusive use of BEV charging stations, the second is not owning charging stations and instead using public stations, while the third is a model of owning charging stations and making them available to the public, and finally, the fourth is ownership of charging stations as well as and use of public charging stations. Of the 12 local administration offices planning to expand their infrastructure for charging stations, only a clear minority, namely four, plan to take advantage of EU and government incentives for capital expenditure in this area. Promoting electromobility is about building the image of an urban environmentally friendly authority manifested in the belief that owning a hybrid or electric fleet supports environmentally friendly behaviour and attitudes among city residents. Only four entities considered this activity important for their image building, while none offered incentives to their employees to encourage them to use environmentally friendly means of personal transport for their commute to and from work.

DOI: 10.34659/eis.2024.90.3.873

## Discussion/Limitation and Future Research

The provincial and municipal offices, as local government offices, have a duty to enhance community well-being. One dimension of this community's well-being is the right to clean air, nullified, among other things, by vehicles with internal combustion engines. The direct interface between local government action and the goal of clean air is public transportation. Organizers of local transportation are obliged to reduce emissions, which they do through streetcars, trolleybuses or the purchase of electric buses, as well as by organising the network of connections and fares in such a way as to encourage citizens to use public transportation or create infrastructural conditions for the use of personal transportation (bicycles, scooters) (Letkiewicz, 2022; Letkiewicz & Szulc, 2022). There are many publications about the positive impact on the urban environment of replacing combustion-powered vehicles with hybrid or electric vehicles and the consequent introduction of the infrastructure elements necessary for their proper operation (charging stations) (e.g. Saeter, 2022). There are also publications pointing to the limitations of introducing electromobility in cities (e.g. Brodowicz & Stankowska, 2021). However, the authors managed to find only one publication on the internal activities of local government offices in the field of electromobility – the Report of the Supreme Audit Office (NIK, 2020), hence the dimension of local government offices' activities in this field was and is interesting to be recognised.

The research carried out presents a slightly better state of implementation of local administration goals and obligations to build a low- or zero-emission fleet than in the Supreme Audit Office report in its description of the situation as it stood at the end of 2019, as the report states that 'the low implementation of the threshold volumes indicates that most units will have to meet the statutory obligation, i.e., to increase the share of electric cars in their fleets to 30% within five years (NIK, 2020). The failure to meet electromobility targets for the beginning of 2023 is owed in part to the COVID-19 pandemic. However, the end of the pandemic in July 2023 marked the creation of a time horizon of 1.5 years to reach a 30% share of BEVs in the fleet of local administration offices. This points to two issues – firstly, the bulk of the expenditure should be planned and implemented in fiscal year 2024, and secondly, it is necessary to repeat the survey at the beginning of 2025 on the same population or to carry out an extended survey covering cities with a population of over 50,000.

### The contribution of the authors

Conceptualisation, A.L.; literature review, A.W. and J.K.; methodology, A.L.; formal analysis, A.L., A.W. and J.K.; writing, A.L., A.W. and J.K.; conclusions and discussion, A.L.

The authors have read and agreed to the published version of the manuscript.

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## ELEKTROMOBILNOŚĆ W URZĘDACH ADMINISTRACJI LOKALNEJ MIAST WOJEWÓDZKICH W POLSCE

STRESZCZENIE: Celem artykułu jest zbadanie zachowań związanych z elektromobilnością w zakresie posiadanego taboru i stacji jego ładowania w jednostkach administracji samorządowej, roli pojazdów zeroemisyjnych w budowaniu wizerunku urzędu oraz wspierania zachowań proekologicznych wśród ich pracowników wg stanu na koniec roku 2022. Realizację celu oparto na badaniach danych zebranych techniką CATI z urzędów wojewódzkich oraz miejskich miast wojewódzkich. Badanie wykazało, że podstawowym środkiem transportu posiadanym przez badane podmioty są pojazdy napędzane silnikiem spalinowym. Wśród nich największą grupę stanowią samochody osobowe – średni wiek pojazdów w momencie badania to ok. 8 lat. Sumarycznie organa administracji lokalnej miast wojewódzkich zbliżają się do celu ustanowionego w prawie. Średni udział pojazdów BEV we flocie pojazdów osobowych wynosi 9%. W zakresie posiadania stacji ładowania wystąpiły trzy dominujące schematy. Wśród respondentów panuje przekonanie, że flota pojazdów przyjaznych środowisku buduje pozytywny, prośrodowiskowy wizerunek urzędu, natomiast w żadnym z urzędów nie wystąpiły działania wspierające zachowania proekologiczne pracowników w zakresie przemieszczania się do i z pracy.

SŁOWA KLUCZOWE: elektromobilność, urzędy administracji lokalnej

DOI: 10.34659/eis.2024.90.3.873