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THE CHALLENGING TRANSITION TO ELECTRIC MOBILITY. CONSUMER PERCEPTIONS AND PREFERENCES IN SELECTED WESTERN BALKANS COUNTRIES

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Abstract. Deemed instrumental in reducing GHG emissions in the upcoming decades, the transition towards electric mobility constitutes a well-articulated objective in multiple governance levels. The ability to reach the established goals for transport decarbonisation and climate change mitigation is broadly determined by consumer behaviour; therefore, understanding consumer preferences is fundamental. This study aims to explore consumer awareness, perceptions, preferences and public support for electric mobility in Albania, Montenegro, Kosovo, Bosnia and Herzegovina. Information on the consumer's readiness to use electric vehicles, the eventual knowledge gap on the topic, the potential role of the government and the perceived barriers and concerns are gathered by making use of exploratory sequential mixed-method research, which combines insights from interviews with the primary data of a questionnaire-based survey conducted using the snowball non-probabilistic sampling technique. Electric mobility is emerging in the selected countries, and multiple uncertainties act as barriers to EV penetration. Findings suggest low awareness and knowledge of electric mobility and electric vehicles. Nevertheless, there is a positive attitude towards electric mobility, while costs, limited infrastructure, and frail confidence are restraints to their actual behaviour (switching to electric mobility, including EVs, e-bikes, and other alternatives). Public authorities can build confidence around e-mobility through incentivisation schemes, investments in public, accessible, affordable charging infrastructure, and adjustments in the regulatory framework.

Keywords: electric mobility, consumer preferences, Western Balkans, decarbonisation, transport.

Introduction

The environmental impact of fuel combustion has emerged as a global issue, prompting a worldwide international effort to curb emissions, particularly those associated with road transportation and mobility. Accounting for an average of about 16% of the world's total greenhouse gas emissions, transport decarbonisation plays a key role in the climate neutrality goals outlined in the Paris Agreement, according to the European Council (EC, 2025). Improved living conditions, incomes, and accelerated urbanisation have significantly increased vehicle use and ownership. Around 75.3 million automobiles were sold in 2023, reflecting a 12% increase from the previous

year (Statista, 2025a). While this surge in vehicle use and ownership might be signalling positive economic growth, it has also precipitated several externalities, including traffic congestion and rising GHG emissions. Emissions from the transport sector reached about 7.8 billion tons in 2021, with passenger vehicles accounting for 72% of sector emissions (Barkenbus, 2020). This figure represents an annual growth of about 8%, notably higher than other sectors (cf. Fig. 1), headed by the USA and China. The environmental repercussions are substantial, particularly in deteriorating the air quality and exerting additional pressure on urban infrastructure. The European Strategy for Low-Emission Mobility (EEA, 2025) has officially recognised the role of e-mobility in decarbonising the transport sector and its contribution to fostering a low-carbon economy. Moreover, the European Commission has acknowledged the fundamental role of local authorities in implementing the low-emission strategy, thereby simultaneously addressing congestion and pollution (EC, 2016).

Road transport electrification is projected to significantly reduce GHG emissions in the upcoming decades and reconcile the need for adequate mobility with sustainability objectives (Haghani et al., 2024). Electrified vehicles (EVs) are not a novel of modern times, as Høyer (2008), Sovacool (2009) and Haghani et al. (2023) noted. Electric-powered vehicles comprised about 62% of motorised vehicles in the US market between 1901–1902, dropping to about 2% of the overall market in 1920. Far from being settled (Barkenbus, 2020), the transition to electric mobility has progressed differently in many countries and remains a developing endeavour. Notwithstanding its initial wave at the turn of the 20th century, electric mobility has gained renewed momentum in contemporary contexts, driven by commercial interests in electric mobility and a growing public awareness of its significance in combating climate change. Research by Woody et al. (2022) suggests that EVs emit, on average, approximately 64% less GHG than traditional gas-powered vehicles. The EPRI (2024) also estimates a net saving from a switch from internal combustion engines to EVs of about 1.8 Gt CO2-eq in the STEPS (Stated Policies Scenario). By 2023, approximately 40.3 million EVs were operating globally, with 16 million in China alone; of these, 69.6% were plug-in EVs (Statista, 2025b). Moreover, according to the same source, approximately 14 million EVs were sold in 2023; more than 60% were sold in China, 25% in Europe and 10% in the USA (EPRI, 2024). Accounting for about 18% of all cars sold in 2023, the adoption of EVs is progressing midway between early adopters to the early majority, according to the product diffusion model of Rogers (2003) and revisited in (Barkenbus, 2020).

EVs manufacturing sector competition has intensified, pushing for rapid innovation that continuously improves EVs' performance, safety and reliability. Tesla's disruptive business model – a blue ocean – attracted more than 20 major car manufacturers, many of whom set electrification targets (IEA, 2024). As competition in EV manufacturing and research activity for battery production and recycling intensifies, expectations for lower EV prices and greater affordability of EVs rise. As of September 2024, around 50 EV models are in the market, and over 150 models are expected to be introduced by 2025 (EPRI, 2024). Additionally, there is a growing market for other e-mobility means (such as two and three-wheelers), with one in five three-wheelers sold globally in 2023 being electric.

While highly praised for its economic, societal and environmental benefits, electric mobility is not immune to adverse, unintended and unknown effects or externalities (Haghani et al., 2023). Haghani et al. (2023) suggest four categories of EV-related externalities: environmental, infrastructural, socio-economic and safety. To begin with, battery manufacturing has pushed to an intensive extraction of raw materials such as lithium, nickel and cobalt with a negative impact on the environment and emissions, as highlighted by Hawkins et al. (2012) and Yu et al. (2021) as well as batteries disposal at the end of EV lifespan and recycling (Rajaeifar, 2022). The increasing trend in EV sales augments electricity demand, which is about 61% generated by using fossil fuels

(and renewables and nuclear energy, accounting for 30% and 9%, respectively, in 2023), according to Our World in Data (2025). Therefore, the environmental net savings from displacing fossil fuel vehicles might be outpaced by increased electricity production. From an infrastructural point of view, the increased demand for electricity will require additional investments in the electrical network and the charging infrastructure (initial and maintenance costs). Establishing the support infrastructure for the fluent operation of the EVs might burden local and user budgets and, to some extent, both land use planning and aesthetics (Carlton & Sultana, 2022; Haghani et al., 2023; Deveci et al., 2023).

Social and economic effects are also present since a new skill set must be developed for manufacturing, managing and maintaining EVs and charging infrastructure. The established supply chains in the automotive have to adapt, which might affect jobs and require additional investments in reskilling the existing labour force. Giampietro & Mayumi (2018) and Haghani et al. (2023) draw attention to the potential 'rebound effect', or the situation in which energy efficiency increases lead to increased energy consumption, offsetting at least in part the net benefits in terms of energy savings. Due to the current higher upfront purchasing costs and uneven distribution of charging infrastructure in the territory, disparities and inequalities might widen (Carlton & Sultana, 2023). In the future, the supply abundance of EVs might cause purchase prices to shrink and increase in affordability, leading to an increased number of road vehicles and increased frequency of travelling, exacerbating traffic congestion in urban areas (Haghani et al., 2023). The intensive use of raw materials for battery production, mined prevalently in developing countries, opens a new series of social and environmental problems. As Haghani et al. (2023) pointed out, loose labour and environmental legislation in developing countries opens the discussion on inadequate labour practices and conditions and the exploitation of underaged labour.

The safety of batteries is another drawback and perceived risk associated with EVs, particularly under harsh weather conditions (Aalund et al., 2021). Furthermore, emergency respondents need to be adequately trained to ensure their safety and, secondly, those of the users in case of accidents (Zhang et al., 2022). Similar risks arise also from the charging infrastructure and equipment (electric shocks, fire hazards, cyberattacks). The quietness during low-speed driving is another potential risk for pedestrians, particularly in urban areas (Cocron & Krems, 2013; Hou et al., 2024), and their weight is a factor contributing to the increased severity of injuries in case of accidents (Hou et al., 2024; Yu, Ma, & Yan, 2024).

Despite demystifying the benefits of the transition to electric mobility, the literature generally agrees on its undoubted role in the green transition. Nevertheless, EVs' penetration degree follows diverse patterns in different countries driven by multiple factors, among which heterogeneous consumer preferences. The latter has been thoroughly explored by Oliveira et al. (2015), Liao et al. (2017), Li et al. (2017), Buhmann and Criado (2023), Xiong et al. (2023), Krishnan (2024) and Naseri et al. (2024).

Stylised facts on electric mobility in the selected Western Balkan countries

In the selected countries in the Western Balkans (Albania, Kosovo, Montenegro, Bosnia and Hercegovina, Serbia and North Macedonia), the environmental effects associated with fuel combustion vehicles are exacerbated by country-specific factors, including rapid urbanisation,

underdeveloped public transport (predominantly reliant on buses rather than tram or metro systems) and a high propensity for car ownership. The latter is considered an indicator of wealth, status and freedom, which comes as a cultural response to the lack of private cars during the communist regime (Pucher & Buehler, 2004; Pojani et al., 2018). There are about 463 road motor vehicles for 1,000 inhabitants in Montenegro (MNE), followed by about 360 vehicles for 1,000 inhabitants in Serbia, 309 and 306 vehicles for 1,000 inhabitants in Albania and North Macedonia, respectively. Kosovo and BiH registered 271 and 282 vehicles per 1,000 inhabitants, respectively, in 2023. Excluding a slowdown during COVID-19, newly registered vehicles have followed an upward trend in the countries considered (Table 1).

Table 1. Road motor vehicles per 1,000 inhabitants

Country	Vehicles for 1,000 inhabitants	Vehicles	Population	Year
Albania	309	867,765	2,811,655	2023
Montenegro	463	285,257	616,177	2023
Kosovo	271	460,105	1,770,003	2023
Bosnia and Herzegovina	282	1,233,784	3,185,073	2023
Serbia	360	2,389,105	6,641,197	2023
North Macedonia	306	559,653	1,831,712	2022

Source: authors processing based on data from the Institute of Statistics (AL), Agency for Statistics of BiH, Kosovo Agency of Statistics; Statistical Office of Montenegro; Statistical Office of the Republic of Serbia; State Statistical Office of the Republic of Macedonia.

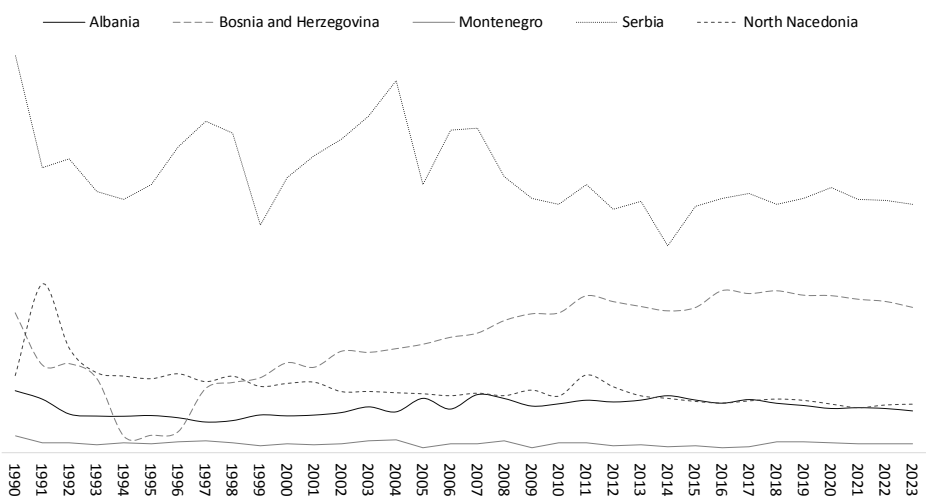

Figure 1. GHG emissions*
* data not available for Kosovo
Source: authors processing based on Our World in Data (2025).

The Western Balkan countries rely heavily on fossil fuels, showcasing a negative trade balance or being a net importer. The World Bank (WB, 2024) identifies the transport sector as the fastest-growing emitting sector, accounting for about 15% of the region's greenhouse gas emissions. At the country level, about 99% of these emissions come from road transport. This trend is expected to continue in the next decade due to rising vehicle registrations and economic growth perspec-

tives. The transport sector is the predominant consumer of oil products in the Western Balkans, accounting for about 62% in Albania, 83% in BiH, 57% in Kosovo, 67% in Serbia, 73% in North Macedonia and 69% in Montenegro (WB, 2024). According to Daul, et al. (2019), air pollution which emanates from GHG emissions in conjunction with other local pollutants, is responsible for contributing to an estimated 4% to 19% of total premature mortality and a reduction in life expectancy ranging from 0.4 to 1.3 years.

In November 2020, the Western Balkans countries reached a consensus to fully endorse the Green Agenda for the Western Balkans and commit to prioritising their efforts along five pillars: (i) climate, energy and mobility; (ii) circular economy; (iii) depollution; (iv) sustainable agriculture and food production and (v) biodiversity. In this context, the Western Balkans has pledged to foster the development and implementation of transport-resilient plans for transport networks, sustainable mobility plans for urban areas and sustainable mobility solutions, among others (RCC, 2020). The progress in the region's EU integration process has pushed governments to focus on sustainable transport and green mobility while aiming to reduce their environmental impact. Honouring commitments to curbing GHG emissions, the Intended Nationally Determined Contributions are pretty ambitious: Albania targets a 20.9% reduction of GHG emissions by 2030 compared to the business-as-usual scenario; Montenegro aims for a 35% of economy-wide GHG emissions by 2030 compared to the base year 1990; Bosnia and Herzegovina (BiH) plans to cut GHG emissions by 33.2% compared to 1990 by 2030, contingent international support; Serbia has committed to reducing GHG emissions by 9.8% by 2030 compared to base year levels (1990); and North Macedonia aims at reducing GHG emissions by 50% compared to 1990 levels.

Electric mobility is still in the early stages in the Western Balkans, accounting for a small fraction of the vehicle fleet (authors' assessment is based on stakeholder consultations and available information). Savings or the economic rationale seems to be behind switching to electric mobility (Bejtullahu et al., 2024). While public authorities have a generally positive attitude towards electric mobility, there is a shortage of data on the stock of vehicles in use, the newly registered electric vehicles and other electric mobility means, and charging infrastructure in the Western Balkan countries.

The only available data for the Western Balkan countries considered in this study concern mostly electric passenger cars (Table 2). Bosnia and Herzegovina counts about 331 electric passenger cars, making up 0.03% of the total fleet of road vehicles. Bićo et al. (2023) highlight the lack of incentives in BiH for the purchase and use of EVs. Nevertheless, the adoption of public incentives subsidising the purchase of hybrid and electric vehicles from the government of the Federation of BiH (as outlined in the Framework Energy Strategy of BiH 2035) is expected to contribute to increasing the number of electric vehicles in the future (Bićo et al., 2023). At the local level, some Cantons in BiH have introduced (and others are in the process) simplified procedures for building charging stations for electric cars through revised spatial planning laws. In Kosovo, there are about 56 electric passenger cars in total for 2021, which make up 0.01% of the total road vehicles fleet in 2023. In the Energy Strategy of the Republic of Kosovo 2022–2031 (Ministry of Economy, 2022), the government of Kosovo highlights the importance of sustainable transportation and transition to cleaner vehicles in alignment with the SDGs and the Green Agenda for the Western Balkans (by 2030, about 2% of passenger vehicles are projected to be electric and 5% hybrid-gasoline ones). The Multi-Modal Transport Strategy 2030 sets a more ambitious target, setting a 20% adoption rate across all registered vehicles based on the Kosovo Multi-Modal Transport Strategy 2023–2030 (Ministry of Environment, Spatial Planning and Infrastructure, 2023). Albania registered the highest number of electric passenger cars, 2,891 units, at the end of 2023, accounting for about 0.33% of the total stock of road vehicles in 2023 (Eurostat, 2025). Adopting electric vehicles is incenti-

vised by exempting first-time registration fees (about 75 Euro including registration fee, plates and inspection). Similarly, North Macedonia exempts electric vehicles from the motor vehicle tax (Sejdini et al., 2024). Serbia extended its ambition from using electric passenger cars (which 2023 accounted for about 0.07% of the total road vehicles) into being the first Balkan producer of electric vehicles in the Kragujevac factory (Kekic, 2024). The purchase of electric vehicles in Serbia is subsidised to an amount ranging from Euro 250 to Euro 500 for electric mopeds and similar to Euro 5,000 for electric cargo vehicles till the end of 2025 (SAIVP, 2025). According to the Odyssee-Mure (2025), the stimulus provided by the Eco Fund for the purchase of electric and hybrid vehicles has not produced any visible results in the case of Montenegro.

Table 2. Electric passenger cars and charging stations

Country	Number of EVs	% of total road vehicles	No charging stations
Albania	2,891	0.33%	+100
Montenegro	na	na	+55
Kosovo	56 (2021)	0.01%	+45
Bosnia and Herzegovina	331	0.03%	+50
Serbia	1,556	0.07%	+150
North Macedonia	561	0.10%	+55

Source: authors processing based on Eurostat (2025), PlugShare (2025), and Odyssee-Mure (2025).

Despite some progress during the last few years, EV penetration in Albania, Kosovo, BiH, and Montenegro remains low, doubtfully allowing harvesting of the proclaimed benefits of switching from fossil fuel to electric mobility. Different factors might hinder the progress in transiting to electric mobility in the considered countries, ranging from limited financial capacities, anaemic public policies supporting this transition, and lack of knowledge on electric mobility, consumer preferences, and other factors.

The research on electric mobility for the countries considered is limited and vague. In particular, there is a research gap regarding the investigation of public sector support for transiting to electric mobility and consumer perceptions, preferences and behaviours. Therefore, this research fills this gap by exploring consumer awareness, perceptions, preferences and public support for electric mobility in Albania, Montenegro, Kosovo, Bosnia, and Herzegovina. In particular, the paper assesses three research questions: (1) do citizens consider the transition to electric mobility? (2) is there a role, and what objectives should public authorities (local governments) prioritise to support this transition? and (3) what are the knowledge gaps and concerns regarding the transition to electric mobility?

Methodology

The study uses an exploratory sequential mixed-method research methodology to explore the region's consumer awareness, perceptions, and preferences regarding electric mobility (EM). This methodological approach integrates qualitative and quantitative (primary and secondary) data to contextualise and understand consumer awareness, perceptions, and current and future preferences for electrical vehicle mobility (Fig. 2).

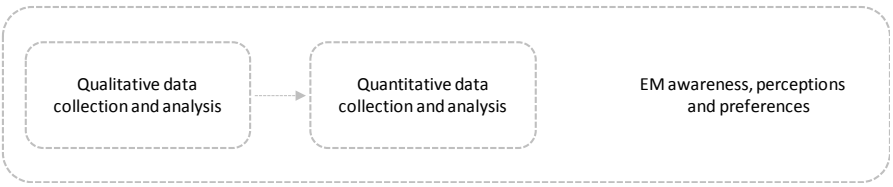

Figure 2. Exploratory sequential design
Source: authors processing.

Qualitative research includes a review of the literature on the topic and unstructured interviews with private and public stakeholders related to electric mobility. Information from the qualitative analysis informed on Albania, Montenegro, Kosovo and BiH's current state of play in electric mobility and helped design the content of the structured questionnaire for primary data collection. Therefore, the primary research builds on the information collected through a questionnaire-based survey implemented in June 2023 using the snowball non-probabilistic sampling technique simultaneously in all countries.[1] This technique allows the initially selected participants to refer the research to other participants, progressively increasing the total number of participants. The survey was implemented using a structured questionnaire with about 20 questions integrating multiple statements, organised into five sections: (i) the first section including questions related to the socio-demographics of respondents; (ii) the second section including questions aiming at exploring the use and approach to electric mobility; (iii) the third section including questions related to the role of local governments in transitioning to electric mobility; (iv) the fourth section including questions to identify gaps in knowledge on electric mobility; (v) the fifth section including questions on issues and concerns related to electric mobility. The same questionnaire was administered online (Google form document) in all countries and local languages to better comprehend the topics, questions and statements.

The database automatically generated by Google Forms was cleaned, checked for mistakes and coded in Excel format. The descriptive and correlational data analysis was carried out using the SPSS Software. The primary information from the survey was synthesised using frequencies (share of observations selecting an alternative versus total responses) and net balances[2].

[1] The design and implementation of the survey were funded by the EU—ERASMUS-EDU-2022-CBHE-STRAND-2 Project 'Partnership for Promotion and Popularization of Electrical Mobility through Transformation and Modernization of WB HEIs Study Programs—PELMOB.' In this research paper, we re-use the data produced from the PELMOB project in line with the project and EU data management policy (to share and disseminate the information produced). The detailed results used are available upon request to the corresponding author of this paper.

[2] Net balances are calculated as the difference between the percentage frequencies of positive and negative responses, expressed in percentage points (Toska et al., 2023a). The maximum value of the net balance is +100 pp (meaning all answers are positive), and the minimum value of the net balance is -100 pp (meaning all answers are negative). Example: in a three response Likert scale question (agree, neutral, disagree), if 100% of repondents have choosen the agree alternative the net balance is calculated as the difference between the percentage frequency of those selecting the agree alternative and those selecting the disagree alternative: net balance = 100% - 0% = 100%. On the contrary, if 100% of respondents have choosen the disagree alternative the net balance is calculated as the difference between the percentage frequency of those selecting the agree alternative and those selecting the disagree alternative: net balance = 0% - 100% = -100%.

Results

General profile of the respondents

Participation in the survey registered about 1,763 observations distributed across Albania (22%), Montenegro (24%), Kosovo (34%) and BiH (20%). Due to the snowball sampling method, there were no predefined criteria for selecting respondents. However, they constitute a well-balanced group, age-wise, gender-wise, and education-wise, making them suitable for the research. Men account for 53% of total respondents, a percentage dropping to 47% in Montenegro. At the aggregate level, the participants in the survey are relatively young, about 84% of the total respondents are less than 50 years old. Across countries, the youngest respondents are in Albania (83%). In comparison, those over 50 represent the highest percentages in Montenegro (28%) and Kosovo (20%). Respondents are well educated at the aggregated (about 82% completing bachelor, master and doctoral studies) and country levels. Most respondents are employed in the private sector (about 50% at the aggregated level) and, in part, in completing their studies (student). Countries have similar employment profiles, excluding Albania, where students accounted for 71% of the total respondents (Fig. 3).

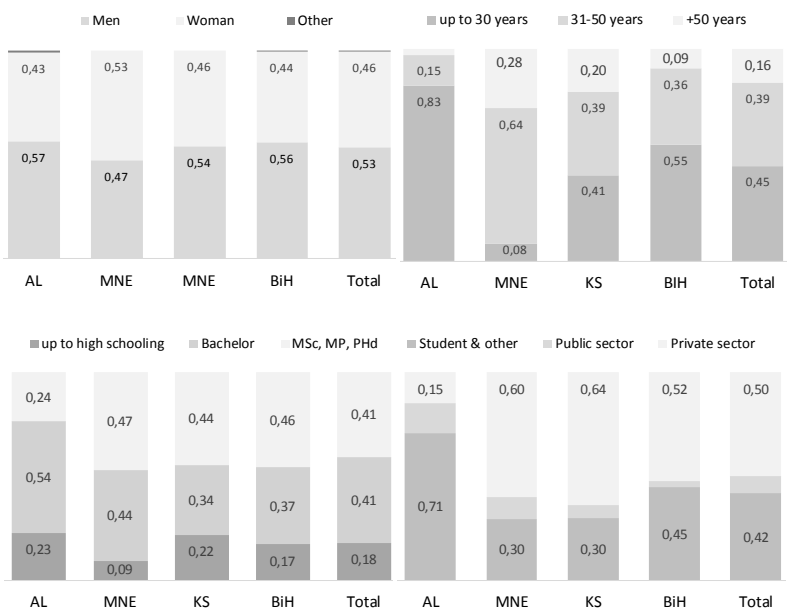

Figure 3. Socio-demographic profile of respondents
Source: authors processing.

Use and approach to electric mobility

There is a relatively low penetration of electric mobility vehicles in the countries subject to this study, with only 6% of total respondents reporting owning or regularly using electric vehicles. The highest percentage of respondents reporting owning or using electric vehicles is registered in Albania (10%), and the lowest in BiH (3%). Indeed, respondents affirm a low level of ownership and/or use of other e-mobility (e-bikes and others) at the aggregate and country levels (slightly high-

er in MNE and BiH). While still presenting a low level of penetration in the country, e-mobility adoption is an option for the future: about 36% of the total respondents affirm they have considered an electric vehicle (EV) as their next vehicle; 24% of respondents affirm considering buying an e-bike; and 30% of respondents affirm considering to acquire an e-mobility vehicle as their next one. At the country level, Albania respondents seem more disposed to acquiring an e-mobility vehicle (e-car, e-bike or other) in the near future, standing above the region's average. Respondents in BiH are less inclined to e-mobility vehicles, standing below the average of the region and the other countries participating in the survey. A correlation between age and inclination towards e-mobility can be observed in the case of Albania, where the high share of the younger population corresponds to the highest share of EV use and the level of readiness to purchase an EV compared to other countries (Table 3).

Table 3. Use and approach to electric mobility

Q	AL	MNE	KS	BiH	Total
Ownership and/or regular use of an electric vehicle (e-car):					
Yes	10%	6%	5%	3%	**6%**
No	90%	94%	95%	97%	**94%**
Ownership and/or regular use of e-bike and other e-mobility:					
Yes	4%	10%	8%	10%	**8%**
No	96%	90%	92%	90%	**92%**
Considering an electric vehicle as your household's next vehicle:					
Yes	55%	36%	36%	17%	**36%**
No	12%	19%	27%	33%	**23%**
Unsure	33%	45%	37%	50%	**41%**
Considering an e-bike as your next bike:					
Yes	32%	19%	23%	22%	**24%**
No	24%	53%	46%	48%	**44%**
Unsure	44%	28%	31%	29%	**33%**
Considering other electric mobility vehicles:					
Yes	48%	19%	29%	27%	**30%**
No	36%	51%	39%	45%	**43%**
Unsure	16%	31%	32%	28%	**27%**

Source: authors processing.

Multiple reasons act as barriers to acquiring an e-mobility means of transport (e-car, bike, or other). Respondents highlight that there are still high uncertainties related to the level of pollution of the EVs (in particular related to the batteries' dismissal), the costs and benefits associated with their use, and limited expertise in the market for maintenance in the medium and long term (Fig. 4). Purchasing an electric mobility vehicle is considered very expensive compared to classic vehicles. According to EPRI (2024), electric cars are 10% to 50% more expensive than internal combustion engine equivalents in the EU and USA, raising affordability issues. Operational costs are assessed to be high, and exposure to risks associated with electricity price volatility is brought in (and energy supply, too). A study from Cacaj (2023) on Albania found that in the scenario of complete conversion to electric vehicles of the current internal combustion fleet, the total energy needed for their charge is about 60% of the total energy produced in 2020. However, the price effect is about 54% less than a kWh produced by fuel burning.

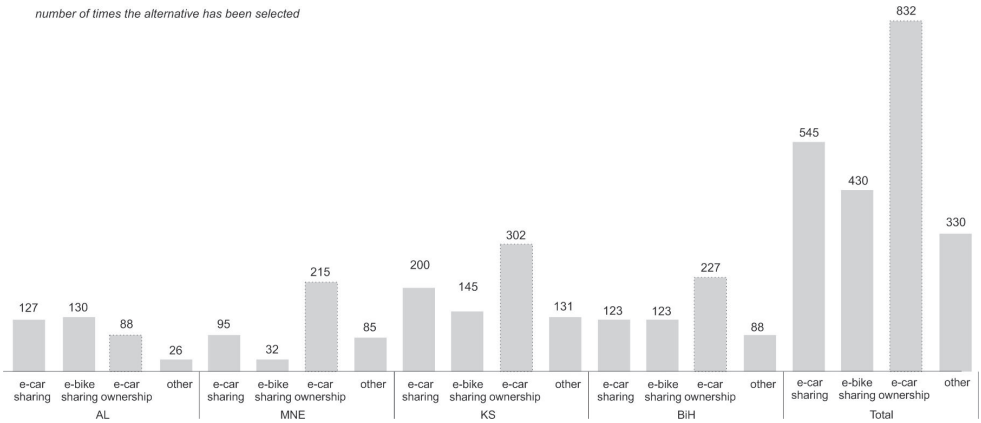

Figure 4. Preferences on electric mobility
Source: authors processing.

Charging infrastructure is assessed to be inadequate, there is a low territorial coverage, and the public sector needs to do more in this direction. The perceived performance of EVs is another barrier to dominating consumer preferences, including the range covered by batteries (autonomy and potential explosion), speed and safety concerns. In particular, respondents in Albania highlight that the largest share of EVs in the local market are imported from Korea and China (at a lower price compared to EU-originating ones and a lower perceived quality), which might adversely affect confidence in such vehicles. Regarding other e-mobility vehicles (such as e-bikes, scooters and others), alongside high purchase cost, the lack of dedicated lanes is a major concern. In addition, respondents highlighted the need for more safe parking spaces, which might deter the adoption of these other types of e-mobility forms.

Respondents' preferences on the typology of electric means of transportation are headed by electric car ownership at the regional level and in Kosovo, Montenegro and BiH. That is probably related to a pattern observed in Western Balkan countries, where car ownership is seen as part of a certain status symbol in post-socialist societies (Pojani et al., 2018) and continues to be considered a privilege for many young people (Continental, 2024). In addition, increasing disposable income over the last two decades and advancements in living standards have contributed to the acquisition of cars (new and used ones). Meanwhile, in Albania, respondents prefer e-car and e-bike-sharing services. E-car sharing is the second most favoured alternative in all countries, followed by e-bike and other e-mobility means sharing.

Role of local government (municipalities) and priorities in transitioning to electric mobility

Local governments are the governing authority closest to citizens, which can better address their needs due to informational advantages (Toska & Bejko, 2018; Toska et al., 2022; Toska et al., 2023b). As in other local services, municipalities have a role in local transportation services and environmental protection (NALAS, 2024). In this realm, respondents provided their perceptions on the importance of municipalities (local governments) in supporting the transition towards electric mobility. At the aggregated level, respondents affirm that it is important for the municipalities to support the transition towards e-mobility (the net balance is positive

and registered 42 pp). The same is valid at the country level headed by Albania (net balance +67 pp) and Kosovo (net balance +48 pp). Meanwhile, in Montenegro, Bosnia, and Herzegovina, net balances on the importance of municipalities in facilitating the transition towards e-mobility are still positive but lower compared to Albania, Kosovo, and the aggregated level (Table 4). As suggested by respondents, they affirmed not being very knowledgeable about how local authorities could have a role in this process.

Table 4. Importance of municipalities in supporting the transition towards e-mobility

Net balances in pp	AL	MNE	KS	BIH	**Total**
1. Importance of municipalities in supporting the transition to electric mobility	67	29	48	20	**42**
2. Objectives prioritised by municipalities to support the transition towards electric mobility:					
2.1. Reduction of GHG emissions and climate actions	80	81	86	77	**82**
2.2.Reduced air pollution	90	90	91	90	**90**
2.3. Cost savings for residents	89	75	80	77	**80**
2.4. Affordability of Transportation	89	77	81	78	**81**
2.5. Improving conditions for pedestrians, bicycling and transit	86	85	83	80	**84**
2.6. Job creation and economic opportunities	85	60	73	75	**73**
2.7. Promotion of social equality	80	51	61	64	**63**

Source: authors processing.

On the one side, the important role of local authorities (municipalities) in facilitating the transition to e-mobility might target and prioritise objectives such as the reduction of air pollution (net balance +90 pp) and of GHG emissions and climate actions (net balance +82 pp); On the other side, local authorities have to find an equilibrium and ensure that such a transition prioritises at the same time cost savings for residents and affordability of transportation (net balances +80 pp and +81 pp accordingly). In particular, improving public transportation services and improving conditions for pedestrians and cycling might be an impactful priority objective (net balance +84 pp). Compared to the other aspects, job creation, economic opportunities, and promotion of social equality are two other priorities that local authorities might also prioritise in the transition to e-mobility in the region.

The importance and prioritisation of objectives at the local level need to be accompanied by tangible actions and incentives to facilitate the transition to e-mobility in the considered countries. Respondents assessed the support and typology of instruments local governments could implement to promote electric mobility in the territories under administration. In all countries (to a lesser extent in BiH, the net balance is about 8 pp lower compared to the aggregated one), municipal investments in publicly accessible electric vehicle charging stations are important to facilitate electric mobility transition (net balances above the aggregate one). That means that respondents in all countries consider access to charging stations as an important incentive to promote the diffusion of electric mobility in their countries. In addition, municipal incentives for EV-ready retrofits of multifamily buildings can contribute in the same direction (Table 5). For the other forms of mobility, investment in dedicated bike lanes and parking (bicycling infrastructure) might be an instrument to boost citizens' adoption of e-bikes and similar.

Table 5. Instruments and incentive typologies for municipalities to promote electric mobility

Net balances in pp	AL	MNE	KS	BiH	**Total**
1. Municipal investment in publicly accessible EV charging stations	86	82	82	73	**81**
2. Municipal incentives for „EV Ready" retrofits of multifamily buildings	78	77	78	65	**75**
3. Municipal investment in bicycle infrastructure that suports e-bike adoption and similar	82	75	77	70	**76**

Source: authors processing.

Knowledge gaps in transition to electric mobility

Many uncertainties surround electric mobility, and contradictory messages are the order of the day (Faria et al., 2023; Chia et al., 2024). While many companies have converted their production from fuel to electric vehicles and praise their advantages, consumers generally lack knowledge of different aspects of characterising e-vehicles. There is a general lack of adequate knowledge in several aspects of electric vehicles, as affirmed by respondents in all countries (all net balances register a positive value, meaning that most respondents agree on the lack of sufficient knowledge on the aspect). Respondents do not understand how using EVs in practice might improve the quality of life and contribute to sustainable development (to a lower extent in MNE and Kosovo). Respondents to the survey agree that they lack sufficient knowledge of the real costs of driving an e-vehicle, tax breaks, reliefs, or other low-carbon mobility programs that might benefit them in the case of a shift to electric mobility. That is an important factor affecting their decision-making process since it might somehow compensate for the higher costs of purchasing these vehicles. Respondents affirm insufficient knowledge of how electric cars work, the charging process and supplementary equipment needed, and safety in using this typology of vehicles (Table 6).

Table 6. Knowledge gaps on electric vehicles

Net balances in pp	AL	MNE	KS	BH	**Total**
Lack or insufficient knowledge of how electric vehicles work	75	70	82	75	**76**
Lack or insufficient knowledge of how to "refuel" the electric vehicle	76	71	82	76	**77**
Lack or insufficient knowledge of how to connect or disconnect the electric vehicle at the charging station	73	53	67	73	**66**
Lack or insufficient level of knowledge regarding the technical aspects of using electric vehicles (ex., lack of additional equipment needed like the cable for charging a vehicle)	76	57	70	76	**70**
Lack of or insufficient knowledge about the real costs of driving an electric vehicle	84	82	81	84	**82**
Lack of or insufficient knowledge about appropriate tax breaks or other deductions and applicable low-carbon mobility programs	83	80	79	83	**81**
Lack or insufficient knowledge about the possibilities of improving the quality of life and the impact on sustainable development thanks to the application of e-mobility in practice	87	77	78	87	**82**
Lack of or insufficient knowledge regarding the safety of using e-vehicles (ex., issues of connecting the vehicle to the charger and concerns about the possibility of electric shock)	82	64	73	82	**75**

Source: authors processing.

Issues and concerns on the transition to electric mobility

In the last section of the questionnaire, respondents expressed their perceptions of a series of predefined issues/concerns related to electric mobility. The results described in net balances highlight that all aspects listed concern the majority of respondents (all net balances are positive), with some variation at the country level. Key challenges include insufficient charging stations and their performance (charging time and additional equipment needs), net balances registered +88 and +80 pp, respectively, registering the highest level in MNE (Table 7). These concerns are further compounded by the limited range of EV batteries, making them less appealing for long-distance travel. Additional concerns are related to the purchasing cost for these vehicles and the lack of information about fiscal incentives and/or incentive programs to compensate for (at least partially) and promote the switch to EVs. The environmental impact of material used in the production of batteries, their dismissal and safety issues are among the perceived concerns about EV practicality (lower perceived fears in the case of MNE).

Table 7. Perceived issues and concerns on electric vehicles

Net balances in pp	AL	MNE	KS	BiH	**Total**
Insufficient charging stations	87	90	87	87	**88**
Insufficient charging station performance	83	79	81	77	**80**
Very short range of electric vehicle batteries	78	73	81	85	**79**
Fear of poor-quality vehicles	85	68	71	76	**74**
Increasing costs of charging electric vehicles	82	65	74	77	**74**
Very high prices to own e-vehicles	85	88	83	86	**85**
Unclear and lacking regulations on e-vehicles	84	72	74	75	**76**
Tax exemptions or reliefs	82	84	78	81	**81**
Fear of environmentally hazardous materials used in the production of batteries for e-vehicles	81	61	70	73	**71**
Fear of the environmental risk of damaging the vehicle battery	85	58	67	71	**69**
Fear of the environmental risk of damaging the vehicle battery (battery exploding in the vehicle)	84	58	71	69	**70**

Source: authors processing.

Discussions and Conclusions

This study contributes to the research strand on the transition to electric mobility in Albania, Kosovo, Montenegro, Bosnia and Herzegovina through the lens of consumers.

Electric mobility is at an emergent phase in the countries subject to the survey, with a few opting for this solution. While being intrigued by electric mobility (considering them as the next vehicle), high costs, weak supporting infrastructure, and lack of confidence in such vehicles are among the factors hindering customer adoption. These findings align with those of (Bejtullahu et al., 2024) for Kosovo and (Bićo et al., 2023) in BiH. Respondents' preferences favour e-car ownership, followed by e-car sharing and other e-mobility means of transportation (in particular in Albania).

Increased communication and clarity on the advantages and disadvantages, costs, and reliability of electric mobility might be an instrument that supports the switch from traditional to EVs.

Local authorities are essential in facilitating the transition to e-mobility, being the closest public authority to citizens (Berisha et al., 2021). However, there are differences across countries, which might be explained by the limited knowledge and awareness about the role of local authorities in the green transition (and in promoting the transition to electric mobility). A gradual switch from internal combustion engine vehicles towards EVs needs the support of public policies at all levels of governance through adjustments in the regulatory framework, design and implementation of e-mobility incentivisation schemes (as in the case of Serbia and Albania) and infrastructure (as in the case of BiH through easing of procedures for building charging stations), and measures to ensure energy security and affordability. Therefore, joint efforts of central and local governments, the private sector and other stakeholders are key to ensuring the transition to a more sustainable transport sector in all Western Balkan countries.

Knowledge gaps in several aspects of electric vehicle use in practice are still high. In particular, there is insufficient knowledge about the actual costs of driving an EV (running and maintenance cost), how it affects the quality of life and sustainable development (socio, environmental and economic benefits), and any form of support or incentivisation to switch to an EV (tax reliefs or support programs). The intensification of investment in public affordable charging infrastructure, including charging stations for heavy vehicles such as buses and trucks, is a crucial determinant of adopting EVs.

Perceived risks and concerns about EVs and electric mobility highlight the need for improving technology and infrastructure, ensuring affordability and accessibility; policy and strategic framework alignment across levels of governance; ensuring energy security and affordability in view of the additional energy demand; transparency, public awareness and education on costs, benefits and long term sustainability. Improvement in these directions requires resources but is fundamental to fostering the adoption of EVs at a larger scale in the region.

The study has limitations. The study's main limitation is the samples' non-representativeness; therefore, results cannot be generalised. In addition, findings cannot be generalised to Western Balkan levels since the survey did not include Serbia and North Macedonia. Nevertheless, it constitutes a first step in accounting for regions' transport transition to e-mobility and identifying challenges and barriers hindering advancement. Another limitation of the study is related to aspects related to electric mobility that have not been considered in the questionnaire and/or not being advanced by consumers participating in the study, which could be a venue for future research.

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References

Aalund, R., Diao, W., Kong, L., & Pecht, M. (2021). Understanding the Non-Collision Related Battery Safety Risks in Electric Vehicles a Case Study in Electric Vehicle Recalls and the LG Chem Battery. *IEEE Reliability Society Section, 9*, 89527–89532. https://doi.org/10.1109/ACCESS.2021.3090304

Barkenbus, J. N. (2020). Prospects for Electric Vehicles. *Sustainability, 12*, 5813. http://dx.doi.org/10.3390/su12145813

Bejtullahu, A. L., Pozhegu, D., Caka, F., Jaha, J., Boshnjaku, S., Vela, S., & Veselaj, Z. (2024). An overview of electric vehicles in Kosovo. Kosovo United States Alumni (KUSA) Energy and Environment Team.

Berisha, E., Cotella, G., & Solly, A. (2021). Introduction: The Western Balkans between continuity and change. In E., Berisha, G., Cotella & A., Solly (Eds.). *Governing Territorial Development in the Western Balkans: Challenges and Prospects of Regional Cooperation* (pp. 1–19). Cham: Springer. https://doi.org/10.1007/978-3-030-72124-4_1

Buhmann, K. M., & Criado, J. R. (2023). Consumers' preferences for electric vehicles: The role of status and reputation. *Transportation Research Part D: Transport and Environment, 114*, 103530. https://doi.org/10.1016/j.trd.2022.103530

Bićo, E., Bešić, J., Damadžić, A., & Harbaš, N. (2023). Electromobility in BiH. *B&H Electrical Engineering, 17*, 33–43. https://doi.org/10.2478/the-2023-0016

Cacaj, P. (2023). The impact of electric vehicles on the energy system of Albania for a sustainable transport. *4th International Conference on Environmental Design (ICED2023). 436*, 11004. https//doi.org/10.1051/e3sconf/202343611004

Carlton, G., & Sultana, S. (2023). Transport equity considerations in electric vehicle charging research: a scoping review. *Transport Reviews, 43*(3). https://doi.org/10.1080/01441647.2022.2109775

Chia, E. S., Yang, Z., & Wang, H. (2024). Are Electric Vehicles Always Better for the Environment? *INCOSE International Symposium*, *34*, 1854–1866. https://doi.org/10.1002/iis2.13241

Cocron, P., & Krems, J. F. (2013). Driver perceptions of the safety implications of quiet electric vehicles. *Accident Analysis & Prevention, 58*, 122–131. https://doi.org/10.1016/j.aap.2013.04.028

Continental (2024). *Mobility Study 2024 - Key Findings.* Continental.

Daul, M. C., Kryzanowski, M., & Kujundzic, O. (2019). *Air Pollution and Human Health: The Case of the Western Balkans.* UN Environment.

Deveci, M., Erdogan, N., Pamucar, D., Kucuksari, S., & Cali, U. (2023). A rough Dombi Bonferroni-based approach for public charging station type selection. *Applied Energy, 345*, 121258. https://doi.org/10.1016/j.apenergy.2023.121258

EC (2016). A European strategy for low-emission mobility. Brussels. Retrieved November 23, 2024, from https://ec.europa.eu/commission/presscorner/detail/en/memo_16_2497

EC (2025). *Clean and sustainable mobility*. European Council. Retrieved from https://www.consilium.europa.eu/en/policies/clean-and-sustainable-mobility/

EEA (2025). A European Strategy for Low-Emission Mobility, SWD(2016) 244 final. European Environment Agency. Retrieved from https://eur-lex.europa.eu/resource.html?uri=cellar:e44d3c21-531e-11e6-89bd-01aa75ed71a1.0002.02/DOC_1&format=PDF

EPRI (2024). *Consumer Guide to Electric Vehicles.* Palo Alto: Electric Power Research Institute. Retrieved from https://www.epri.com/research/products/000000003002031124

Eurostat (2025). Passenger cars, by type of motor energy. Eurostat. https://doi.org/10.2908/ROAD_EQS_CARPDA

Faria, R., Marques, P., Moura, P., Freire, F., Delgado, J., & De Almeida, A. (2023). Impact of the electricity mix and use profile in the life-cycle assessment of electric vehicles. *Renewable and Sustainable Energy Reviews, 24*, 271–287. https://doi.org/10.1016/j.rser.2013.03.063

Giampietro, M., & Mayumi, K. (2018). Unraveling the Complexity of the Jevons Paradox: The Link Between Innovation, Efficiency, and Sustainability. *Frontiers in Energy Research, 6*. https://doi.org/10.3389/fenrg.2018.00026

IEA (2024). *Global EV Outlook 2024 – Moving towards increased affordability.* International Energy Agency. Retrieved from https://www.iea.org/reports/global-ev-outlook-2024/executive-summary

Haghani, M., Ghaderi, H., & Hensher, D. (2024). Hidden effects and externalities of electric vehicles. *Energy Policy, 194*, 114335. https://doi.org/10.1016/j.trd.2023.103881

Haghani, M., Sprei, F., Kazemzadeh, K., Shahhoseini, Z., & Aghaei, J. (2023). Trends in electric vehicles research. *Transportation Research Part D*, *123*, 103881. https://doi.org/10.1016/j.trd.2023.103881

Hawkins, T., Gausen, O. M., & Strømman , A. H. (2012). Environmental impacts of hybrid and electric vehicles – a review. *The International Journal of Life Cycle Assessment, 17*, 997–1014. https://doi.org/10.1007/s11367-012-0440-9

Høyer, K. G. (2008). The history of alternative fuels in transportation: The case of electric and hybrid cars. *Utilities Policy, 16*(2), 63–71. https://doi.org/10.1016/j.jup.2007.11.001

Hou, X., Su, M., Liu, C., Li, Y., & Ma, Q. (2024). Examination of the Factors Influencing the Electric Vehicle Accident Size in Norway (2020–2021). *World Electric Vehicle Journal, 15*(1), 3. https://doi.org/10.3390/wevj15010003

Kekic, T. (2024). Serbia becomes first Western Balkan country to produce electric vehicles. Intellinews. Retrieved from https://www.intellinews.com/serbia-becomes-first-western-balkan-country-to-produce-electric-vehicles-334933/

Krishnan, K. (2024). Consumer Perception and Acceptance of Electric Vehicles: A Cross-Cultural Analysis. *Journal of Electric Vehicles, 13*, 7–11. https://doi.org/10.36676/jev.v1.i3.14

Liao, F., Molin, E., & van Wee, B. (2017). Consumer preferences for electric vehicles: a literature review. *Transport Reviews, 37*(3), 252–275. https://doi.org/10.1080/01441647.2016.1230794

Li, W., Long, R., Chen, H., & Geng, J. (2017). A review of factors influencing consumer intentions to adopt battery electric vehicles. *Renewable and Sustainable Energy Reviews, 78*, 318–328. https://doi.org/10.1016/j.rser.2017.04.076

Ministry of Economy (2022). Energy Strategy of the Republic of Kosovo 2022-2031. Ministry of Economy. Retrieved from https://me.rks-gov.net/wp-content/uploads/2023/04/Energy-Strategy-of-the-Republic-of-Kosovo-2022-2031-1-1.pdf

Ministry of Environment, Spatial Planning and Infrastructure (2023). Strategjia e Transportit Multimodal 2023-2030. Ministry of Environment, Spatial Planning and Infrastructure. Retrieved from https://kryeministri.rks-gov.net/wp-content/uploads/2023/05/STRATEGJIA-E-TRANSPORTIT-MULTIMODAL-2030.pdf

Naseri, H., Waygood, E., Patterson, Z., & Wang, B. (2024). Who is more likely to buy electric vehicles? *Transport Policy*, *155*, 15–28. https://doi.org/10.1016/j.tranpol.2024.06.013

NALAS (2024). *Fiscal Decentralisation Indicators for Edition South-East Europe.* Skopje: NALAS.

Odyssee-Mure (2025). Montenegro profile. Odyssee-Mure. Retrieved from https://www.odyssee-mure.eu/publications/efficiency-trends-policies-profiles/montenegro.html

Oliveira, G. D., Dias, L. M., & dos Santos, P. C. (2015). Modelling consumer preferences for electric vehicles in Portugal: an exploratory study. *Management of Environmental Quality, 26*(6), 929–950. https://doi.org/10.1108/MEQ-03-2014-0047

Our World in Data (2025). Electricity Mix. Our World in Data. Retrieved from https://ourworldindata.org/electricity-mix

PlugShare (2025). Charging Stations. PlugShare. Retrieved from https://www.plugshare.com/

Pojani, E., Van Acker, V., & Pojani, D. (2018). Cars as a status symbol: Youth attitudes toward sustainable transport in a post-socialist city. *Transportation Research Part F: Traffic Psychology and Behaviour, 58*, 210–227. https://doi.org/10.1016/j.trf.2018.06.003

Pucher, J., & Buehler, R. (2004). Transport policies in Central and Eastern Europe. Retrieved from https://vtpi.org/PucherCentralEurope.pdf

Rajaeifar, M. A., Ghadimi, P., Raugei , M., Wu , Y., & Heidrich, O. (2022). Challenges and recent developments in supply and value chains of electric vehicle batteries: A sustainability perspective. *Resources, Conservation and Recycling, 180*, 106144. https://doi.org/10.1016/j.resconrec.2021.106144

RCC (2020). Sofia Declaration on the Green Agenda for the Western Balkans. Sofia: Regional Cooperation Council. Retrieved from https://www.rcc.int/docs/546/sofia-declaration-on-the-green-agenda-for-the-western-balkans-rn

Rogers, E. (2003). *Diffusion of Innovations* (3rd ed.). New York: Simon & Schuster.

SAIVP (2025, March 19). Announcement of Continued Subsidies for Electric Vehicle Purchases in Serbia. Serbian Association of Importers of Vehicles and Parts. Retrieved from https://www.uvozni-civozila.rs/en/news/vesti-i-saopstenja/the-continuation-of-subsidies-for-purchasing-electric-vehicles-in-serbia-announced.html

Sejdini, X., Ejupi, R., & Sinani, F. (2024). Electric vehicles and charging infrastructure in North Macedonia: tendencies and challenges. *Journal of Applied Sciences, 10*(19-20), 107–112. https://doi.org/10.62792/ut.jas.v10.i19-20.p2746

Sovacool, B. K. (2009). Early modes of transport in the United States: Lessons for modern energy policymakers. *Policy and Society, 27*, 411–427. https://doi.org/10.1016/j.polsoc.2009.01.006

Statista (2025a). Number of cars sold worldwide from 2010 to 2024, with a 2025 forecast. Statista. Retrieved from https://www.statista.com/statistics/200002/international-car-sales-since-1990/

Statista (2025b). Estimated number of electric vehicles in use worldwide between 2010 and 2024, by type. Statista. Retrieved from https://www.statista.com/statistics/1101415/number-of-electric-vehicles-by-type/

Toska, M., & Gjika, A. (2018). Territorial Administrative Reform and the Decentralization Strategy – Progress Towards the Desired Objectives after a Governing Mandate. *Annual Review of Territorial Governance in Albania, 1*, 69–83. https://doi.org/10.32034/CP-TGAR-I01-05

Toska, M., Delia, E., & Sipri, A. (2023a). An Innovative Inclusive Approach to Enhancing Agricultural Sustainable Development in Albania: The Case of Nucleus Albania. *WSEAS Transactions on Environment and Development, 19*, 1468–1474. https://doi.org/10.37394/232015.2023.19.133

Toska, M., Suparaku , S., Hysa, X., & La Sala, A. (2023b). A Quality Perspective of Sustainable Management of Water Services: Insights of Citizens' Perceptions in Five Albanian Municipalities. *Journal of Educational and Social Research*, *14*(2), 130-153. https://doi.org/10.36941/jesr-2024-0032

Toska, M., Toto, R., & Shutina, D. (2022). *Perceptimi qytetar mbi taksimin vendor dhe shërbimet publike.* Tirana: Co-PLAN, Instituti për Zhvillimin e Habitatit.

WB (2024). *Policies to Improve the Environmental Performance of Road Vehicles in the Western Balkans-Managing Road Vehicle Emissions and Embracing e-mobility.* Washington DC: The World Bank & CFC.

Woody, M., Vaishnav, P., Keoleian, G. A., De Kleine, R., Kim, H. C., Anderson, J. E., & Wallington, T. J. (2022). The role of pickup truck electrification in the decarbonisation of light-duty vehicles. *Environmental Research Letters, 17*(3), 034031. https://doi.org/10.1088/1748-9326/ac5142

Yu, M., Bai, B., Xiong, S., & Liao, X. (2021). Evaluating environmental impacts and economic performance of remanufacturing electric vehicle lithium-ion batteries. *Journal of Cleaner Production, 321*, 128938. https://doi.org/10.1016/j.jclepro.2021.128935

Yu, Q., Ma, L., & Yan, X. (2024). Modelling occupant injury severities for electric-vehicle-involved crashes using a vehicle-accident bi-layered correlative framework with matched-pair sampling. *Accident Analysis & Prevention, 199*, 107499. https://doi.org/10.1016/j.aap.2024.107499

Xiong, S., Yuan, Y., Yao, J., Bai , B., & Ma, X. (2023). Exploring consumer preferences for electric vehicles based on the random coefficient logit model. *Energy, 263*, 125504. https://doi.org/10.1016/j.energy.2022.125504

Zhang, B., Bewley, R., Tanim, T., & Lee, W. (2022). Electric vehicle post-crash Recovery – Stranded energy issues and mitigation strategy. *Journal of Power Sources*, *552*, 232239. https://doi.org/10.1016/j.jpowsour.2022.232239