



# Supporting the bottom-up road transport decarbonization for local level decision makers: a White paper

## Abstract

This white paper brings the current state of decarbonization of road transport in one of the countries of Alpe-Adria clean transport alliance. It summarizes the current most relevant figures on the types of propulsion systems in passenger cars and light commercial vehicles and the measures currently in force to decarbonize transport in accordance with the EU legislative framework and national strategic documents. It also provides the recommendations for faster implementation of EU and national strategies on the local level, according to the feedback of decision makers from local communities.

## Problem Statement

Transport is one of the challenges for any local and regional government. Creating conditions for the use of electromobility, biofuels and new technologies is a permanent goal of the energy transition.

Alpe-Adria clean transport alliance aims to support and empower the **local and regional government bodies, private funding bodies and civil society (both local action groups and civil society cooperatives)**. The goal is to **supply them with the complete picture on the energy transition in road transport, it's connection to the changes in energy systems, as well as channels for funding of projects aimed at electrification and decarbonization of transport**. This includes possible funding options in grants, commercial bank loans and community funding options. Also, **local and regional government bodies** are usually lacking in capacity to perform such projects, so the know-how and experiences are being transferred from larger government units (large cities with dedicated officials for transport and procurement) and from stakeholders on the similar level from other EU countries (e.g. The climate and energy model regions, local action groups). Urban planning departments at local level are the focus of planning the location plan of new installations.

Projects and decisions that the target group is being trained for include:

- Developing measures for local road transport decarbonization
- Decisions that support development of local infrastructure
- Green public procurement in the transport sector
- Drafting of action plans that support road decarbonization
- Understanding of embedment of road transport decarbonization in wider energy and climate transition framework

## Background

Recognizing the importance of combating climate change, the European Union has focused its development on a low-carbon economy in the 21<sup>st</sup> century. This culminated in the signing of the Paris Agreement, which committed 186 countries (including China, the US and the EU) to prevent 2 ° C global warming in 2050 and "do everything in their power" to keep global warming below the projected 1.5 ° C [1]. These goals are also the goals of the Montenegro as a country that is a candidate for membership in the European Union. The low-carbon economy is achieved through increased energy efficiency, the use of renewable energy sources (RES), the implementation of a circular

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economy, improved infrastructure and interconnections, increased mobility and competitiveness, and carbon capture and storage (CCS) technologies [2]. In addition to the obvious benefits of reducing emissions, the high share of renewable energy sources reduces Europe's dependence on fossil fuels, which Europe, compared to some other countries and areas, does not have much. Electric vehicles, when their production and the source of electricity used to charge batteries are taken into account, are smaller emitters than vehicles with internal combustion engines (ICE) [3]. In the transport sector, the EU roadmap for 2050 described in the White Paper on Transport is the absence of conventional fuel in cities, the use of 40% sustainable low-carbon fuels in air transport and a 40% reduction in emissions from the transport of goods, and roads so as to take over 50% of intercity traffic. It is estimated that all these measures should reduce greenhouse gas emissions in Europe by 60% [4].

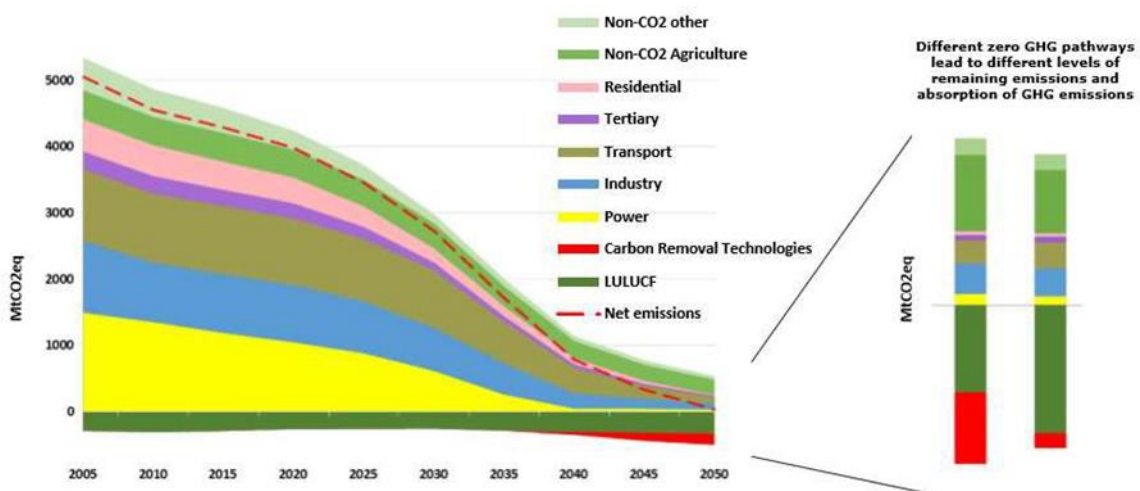


Figure 1 Vision of zero-emissions system of EU by 2050 [5,6]

Energy Development Strategy of Montenegro by 2030 states the following: "It is estimated that by 2020 about 2,750 vehicles (representing 1% of registered vehicles in Montenegro) will be electric and consume 1.9 GWh (0.163 ktoe) of energy. This share will increase to 15,550 road vehicles in 2030, which represents 5% of the national vehicle fleet and the consumption of 11 GWh (0.95 ktoe) of electricity. Given the amendments to Directive 2009/28/EC adopted in September 2015 and the support schemes for the production of electricity from renewable sources, it is expected that this type of energy will be significantly preserved and that its future development and use in transport will be much larger than originally expected. Montenegro as a country with a high share of electricity from renewable sources in its energy mix, as well as significant potential for the production of this energy in the future, can have significant benefits from this. " [7]. Given the fact that according to MONSTAT data in 2019, 145 electric vehicles were registered, it is not realistic to expect to meet the estimate in SRE for 2020 (2,750 EV).

Transport Development Strategy – Montenegro 2019-2035 within the specific objective 1.8: Achieving efficiency in operations, maintenance costs and budget allocation in order to promote more environmentally friendly projects in the field of transport proposes a measure Promoting alternative fuels and electromobility. The strategy envisages the preparation of a study on the introduction of alternative fuels in public passenger transport, which would indisputably address the topic of the introduction of electric public transport vehicles [8].

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National Strategy for Sustainable Development until 2030 recognizes transport as a significant sector in energy consumption, and among the proposed measures is the introduction of hybrid and electric vehicles [9].

Sustainable Urban Mobility Plan of the Capital City of Podgorica (SUMP Podgorica) attaches great importance to the topic of e-mobility. In his introductory words, the mayor notes that the infrastructure for charging electric cars is being built, that electric cars are being driven on the streets of Podgorica, thus giving unequivocal support to this type of drive. The Sustainable Urban Mobility Plan recognizes the number of electric buses as indicators within the strategic goals balancing all modes of transport with an emphasis on the promotion of public urban and non-motorized transport, as well as the number of electric vehicles within the strategic goal plan reducing the negative consequences of environmental traffic and population health. Within the chapter Strategic planning of the pillar, the Parking Plan envisages that it will be necessary to make a Parking Management Strategy, within which the Cadaster of parking spaces on the territory of Podgorica would be made as an integral part of the SUMP, with possible additional possibilities for building infrastructure for charging electric cars. The Action Plan Pillar II - Rationalization of the use of passenger cars in the third package of measures - Infrastructure Intervention envisages measure II-13 Planning and construction of underground public garages with infrastructure for charging electric cars [10].

UNDP, in cooperation with the Hrvoje Požar Energy Institute from Zagreb, has prepared a Feasibility Study for the concept of e-mobility in Montenegro, which contains 4 elements [11]:

- Situational analysis of the legal, institutional and financial framework for e-mobility in Montenegro
- Analysis of the e-mobility market in Montenegro
- Cost-benefit analyzes of the concept of e-mobility in Montenegro - case studies
- Proposal of economic and financial incentives for e-mobility in Montenegro

### Current status

Analyzing previous strategies and action plans, it can be concluded that all documents have a very similar vision of the future development of the transport sector. All documents identified more or less the same problems and recommended similar directions of development from different perspectives. However, it seems that these documents recommend the development of traffic infrastructure, with an emphasis on roads, tunnels and bridges (classic infrastructure), but does not provide or explicitly mention the necessary infrastructure for alternative propulsion systems (alternative fuels, electric vehicles, etc.), as a basis for energy efficient transport. In 2019, 145 hybrid and electric vehicles were registered in the Montenegro. These 145 vehicles accounted for 0.0589 % of the total number of vehicles in the Montenegro, which is compared to e.g. Norway, which has a 7.8% share of fully electric vehicles in the total number of vehicles. At the Faculty of Mechanical Engineering, University of Montenegro, in the Center for Engines and Vehicles, an E-mobility laboratory was established, in which one of the first chargers for electric vehicles in Montenegro was installed. The Laboratory tests electric vehicles, educates students and the laboratory is open to all citizens, primary and secondary school students, in order to educate as many percent of the population as possible on the topic of e-mobility. A solar photovoltaic power plant has been installed on the roof of the laboratory, which produces electricity to charge electric vehicles from the sun as a renewable source. This concept is expected to be widely accepted at the national level because Montenegro has huge potential when it comes to solar energy, which will lead to driving electric vehicles with zero greenhouse gas emissions.

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At the beginning of 2021, the Eco Fund published the first announcement for the award of a subsidy for the purchase of electric and hybrid vehicles.

### Recommendations

Montenegro, as a candidate country for membership in the European Union, has obligations related to the adjustment of the legal and strategic-planning framework. In this regard, special emphasis is placed on the need to develop and adopt a National Energy and Climate Plan in accordance with the Regulation on Managed Energy Union, transposition of Directive 2014/94/EU on the establishment of infrastructure for alternative fuels and development of a National Policy Framework for infrastructure on alternative fuels.

The development of mobility, as a basis for sustainable and clean transport, is one of the key elements of the transition to a low-carbon economy. The dynamics of this process depends on the success of overcoming barriers that prevent or slow down the development of market and business models, increasing the share of electric vehicles in the vehicle fleet and building the infrastructure for their charging. Globally, e-mobility is still in the initial stage of development, and in order to reach a state in which further development takes place exclusively on market principles, a wide range of incentive measures are applied by countries that aim to encourage that development. The problem of circular interdependence of the number of electric vehicles and publicly available charging infrastructure is well known - a small number of vehicles makes investing in infrastructure financially unprofitable, and poorly developed infrastructure discourages users from purchasing an electric vehicle. Therefore, it is desirable to act simultaneously on incentive measures in both of these market segments.

It is necessary to provide sufficient financial resources for the establishment of the incentive scheme. For this purpose, it is necessary to ensure that the Eco-Fund has stable and sufficient sources of income, and it is certainly proposed to use the funds from the tax on the use of vehicles, which must be previously 'greened'. It is necessary to work intensively on attracting international funds for this purpose.

In addition to the incentive scheme for electric vehicles, it is certainly proposed to establish an incentive scheme for the development of charging infrastructure for electric vehicles, **especially by local governments, which with infrastructure development and other non-financial measures in their environments can significantly accelerate e-mobility.**

Finally, it should be noted that in addition to formulating state financial incentives, encouraging e-mobility includes a number of other activities that need to be undertaken in Montenegro in the short term. These activities include:

- upgrading the legislative and strategic framework with clear goals for the use of electricity in transport, in line with EU legislation on the creation of infrastructure for alternative fuels;
- formation of an incentive legislative framework as a basis for the development of market and business models for e-mobility and integration of electric vehicles into the electricity system in accordance with EU legislation on the internal electricity market;
- creating more favourable conditions for the development of infrastructure for charging electric vehicles through tariff systems,

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• **establishing the policy of the local self-government unit that supports the development of e-mobility in the financial and non-financial sense, and**

• implementation of a series of promotional and educational measures aimed at citizens, the public sector and private legal entities

### General national level recommendations

Since the reduction towards 0% of GHG emissions from transport needs to be reached by 2050, to make transport compatible with the 1.5 °C target, and the normal life time of a vehicle is almost 20, to avoid stranded costs, the ban on selling of ICE cars needs to be in place by 2030. To achieve compatibility with 1.5 °C by 2030, emissions from transport need to be reduced by 75%, which implies the complete electrification of vehicles being sold right now (the green scenario).

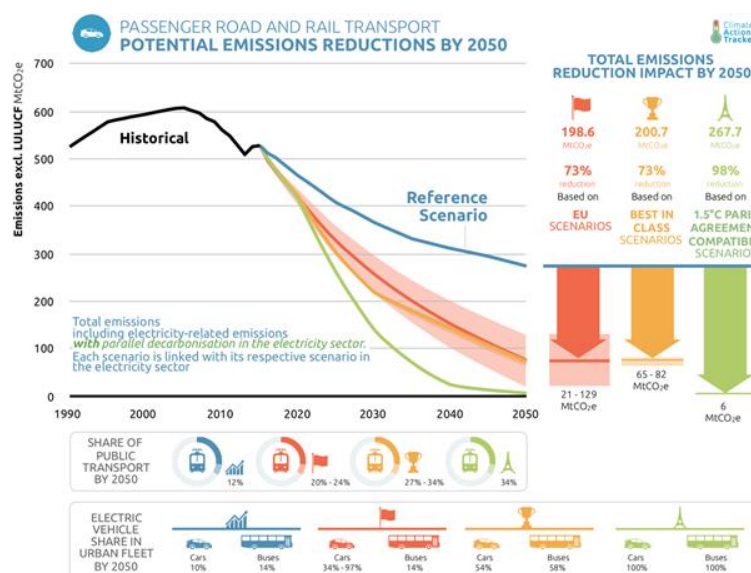


Figure 2 Emissions reduction in road and rail transport [12]

### References

- [1] *The Paris Agreement* (2019) UN Climate Change. New York: United Nations. Dostupno na: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- [2] Europska komisija (2019) *Clean Energy for All Europeans*. Luxembourg: Publications Office of the European Union.
- [3] Europska komisija (2018) *Čist planet za sve: Europska strateška dugoročna vizija za prosperitetno, moderno, konkurentno i klimatski neutralno gospodarstvo*. Luxembourg: Publications Office of the European Union.
- [4] Hoekstra, A. (2019) *The Underestimated Potential of Battery Electric Vehicles to Reduce Emissions*. U: Earis, P., ur. *Joule 3*. Cambridge (SAD): CellPress, str. 1404-1414.
- [5] Europska komisija (2011) *Bijela knjiga o prometu*. Luxembourg: Publications Office of the European Union
- [6] Opetuk, F. (2019) *Techno-economic analysis of implementation of alternative fuels in transport system in energy transition*, Master thesis, FSB (in Croatian)
- [7] *Energy Development Strategy of Montenegro by 2030*
- [8] *Transport Development Strategy – Montenegro 2019-2035*
- [9] *National Strategy for Sustainable Development until 2030*.
- [10] *Sustainable Urban Mobility Plan of the Capital City of Podgorica*
- [11] *Feasibility Study for the concept of e-mobility in Montenegro*
- [12] *Climate Action Tracker - Scaling up climate action in the European Union | Climate Action Tracker* (<https://climateactiontracker.org/publications/scalingupeu/>)

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