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## **DEVELOPMENT OF ELECTRIC VEHICLES: HOW DOES THE GROWING POPULARITY OF ELECTRIC VEHICLES AFFECT THE TRANSPORTATION SYSTEM AND LOGISTICS?**

*Barmina D.V., student,  
Yelizaveta Voronova, Associate Professor,  
Kharkiv National Automobile and Highway University*

The world of the automotive industry has recently undergone important changes related to the growing demand for environmentally friendly transport and the development of technology. Electric cars are becoming a real symbol of innovation in the modern automotive world.

Electric vehicles are vehicles that run exclusively on electricity, obtained from batteries or other sources of electrical energy. This technology represents an environmentally friendly and sustainable way of moving, which is already becoming an important choice for many car owners and car manufacturers.[1]

Today, electric vehicles are becoming more and more popular and the growth has a significant impact on the transportation system and logistics as follows:

- Impact on the transport system:
  - o Reduction of greenhouse gas emissions: Electric cars do not produce harmful gases, which makes them an environmentally cleaner mode of transport. This can help reduce air pollution and combat climate change. According to the International Clean Transportation Council, switching to electric vehicles could reduce greenhouse gas emissions from transportation by 60% by 2030;
  - o Increased energy security: Electric vehicles are not dependent on fossil fuels, which can help countries reduce their dependence on oil and gas imports. This can lead to greater energy independence and security;

- o Noise reduction: Electric vehicles are significantly quieter than gasoline and diesel vehicles, which can improve the noise environment in cities. Studies have shown that traffic noise can have negative effects on people's health, including the risk of cardiovascular disease, sleep disturbances and cognitive function.

- Impact on logistics:

- o New opportunities for logistics: The development of electric vehicles can open up new opportunities for logistics, for example, the use of electric vehicles for the delivery of goods in the "last kilometer" ("Last kilometer" is a term used in logistics to describe the last stage of delivery of goods from the transshipment point to of the final recipient) [2]. This can make the delivery of goods more economical and environmentally friendly;

- o Growing demand for charging infrastructure: Growing number of electric vehicles leads to growing demand for charging stations. The International Energy Agency estimates that by 2030 the world will need 125 million charging stations;

- o Changing delivery routes: Electric vehicles have a limited range, so delivery routes must be planned taking into account the location of charging stations. This may lead to increased logistics costs.

Despite numerous advantages, there are also disadvantages associated with the development of electric cars:

- High cost of electric cars: Electric cars, as a rule, are more expensive than gasoline and diesel cars;

- Necessity of disposal of batteries: Batteries used in electric vehicles need proper disposal in order not to pollute the environment;

- Limited range: Electric vehicles have a limited range, which can make them impractical for long-distance travel.

The future of motoring promises a number of exciting prospects and innovations that will define the way we travel for years to come. It is possible to single out such key aspects of the future transportation as:

- The development of autonomous vehicles (Autonomous vehicles: The development of autonomous vehicle technologies will define the future of motor

transport. Autonomous vehicles can move without a driver and offer great potential for improving safety and comfort on the road. With autonomous cars, human error can be avoided, which is the cause of most traffic accidents, and reduce traffic on the roads. Logistics and public transport: Autonomous vehicles can change the way we move around the city and long distances. They can be used for public transport, trucking and in rental services.);

- The use of artificial intelligence in the automotive industry (Autopilots and safety systems: Artificial intelligence is already used in electric cars to create autopilot systems and improve safety systems. Artificial intelligence allows the car to recognize road signs, determine the distance to other vehicles and interact with other elements of the road environment. Route optimization and traffic management: Artificial intelligence can help drivers choose optimal routes, reduce fuel consumption and avoid traffic jams.Using AI in traffic management can also improve traffic flow and reduce congestion);

- Changes in vehicle ownership (Car-sharing: Changes in vehicle ownership are becoming increasingly popular. The concept of car-sharing and rentals for a few hours or even minutes are becoming available thanks to electric cars.);

- Fast charging network development (Infrastructure expansion: Fast charging network development is an important aspect of the future of electric vehicle transport. More charging stations and their locations are important for the convenience and accessibility of electric vehicle users. Innovation in charging technologies: The development of new charging technologies such as wireless charging and charging from solar panels, can make charging electric cars faster and more affordable for users.).

The future of motoring promises to be exciting and innovative, with the growing development of autonomous vehicles, the use of artificial intelligence, changes in vehicle ownership and the continued development of the fast charging network. These trends will help create a more sustainable and efficient future for the automotive industry.

Therefore, the development of electric vehicles has a significant and positive

impact on the transport system and logistics. Their environmental friendliness, quietness and fuel economy make them a more attractive mode of transport, which leads to changes in infrastructure and logistics operations.[3]

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## **THE ROLE OF TRANSPORT IN HUMAN LIFE**

*Lykholiet A.I., student,*

*Yelizaveta Voronova, Associate Professor,*

*Kharkiv National Automobile and Highway University*

Transport is the totality of all types of communication routes, means of transport, technical devices and structures built on communication routes, which ensure the process of moving people and cargo of various purposes from one place to another; and the corresponding branch of the economy connected with the transportation of passengers and cargo. Transport infrastructure includes roads, highways, railways, airports, ports etc. It also covers the vehicles and vessels themselves, as well as the systems and organizations that manage and regulate the transportation.

Respectively, transport systems cover a wide range of modes and methods, each suitable for different purposes, distances and types of cargo. The most suitable transport mode depends on possible transport routings available between the point of origin and point of destination.

Basically, transport plays a large role in solving social problems, in providing cultural, business and tourist trips for the population, as well as in developing cultural exchange in the country and abroad.

Most people use transport for personal mobility. For instance, transport systems allow individuals to travel to work, school, shopping centers, and other destinations.