



EOC
EUROASIAN
ONLINE
CONFERENCES

ENGLAND CONFERENCE

**INTERNATIONAL CONFERENCE ON
MULTIDISCIPLINARY STUDIES AND
EDUCATION**



Google Scholar

zenodo

OpenAIRE

doi digital object
identifier

eoconf.com - from 2024



INTERNATIONAL CONFERENCE ON MULTIDISCIPLINARY STUDIES AND EDUCATION: a collection scientific works of the International scientific conference – London, England, 2026. Issue 6

Languages of publication: Uzbek, English, Russian, German, Italian, Spanish

The collection consists of scientific research of scientists, graduate students and students who took part in the International Scientific online conference «**INTERNATIONAL CONFERENCE ON MULTIDISCIPLINARY STUDIES AND EDUCATION**». Which took place in London 2026.

Conference proceedings are recommended for scientists and teachers in higher education establishments. They can be used in education, including the process of post - graduate teaching, preparation for obtain bachelors' and masters' degrees. The review of all articles was accomplished by experts, materials are according to authors copyright. The authors are responsible for content, researches results and errors.





ENVIRONMENTAL IMPACT AND ECOLOGICAL ADVANTAGES OF ELECTRIC TRANSPORT VEHICLES

Zumaqulova Zulayho Bahodirjon qizi

Andijan State Technical Institute

Department of Technological Machines and Labor Protection

Assistant Teacher

zulayhojumaqulova224@gmail.com

Abstract

The rapid growth of transportation has significantly contributed to environmental pollution and greenhouse gas emissions worldwide. Electric vehicles (EVs) have emerged as a promising alternative to conventional internal combustion engine vehicles due to their lower environmental impact and improved energy efficiency. This paper examines the ecological advantages of electric vehicles, including reductions in air pollution, greenhouse gas emissions, and noise pollution. Additionally, the study discusses the environmental challenges associated with battery production and disposal. The findings indicate that despite certain limitations, electric vehicles play a crucial role in promoting sustainable transportation and mitigating climate change.

Keywords: Electric vehicles, environmental impact, sustainable transportation, greenhouse gas emissions, ecological benefits, renewable energy.

Introduction

Transportation is one of the largest sources of environmental pollution globally. Conventional vehicles powered by gasoline and diesel engines emit significant amounts of carbon dioxide (CO₂), nitrogen oxides (NO_x), particulate matter, and other harmful pollutants. These emissions contribute to climate change, air quality degradation, and adverse health effects. In response to increasing environmental concerns, electric vehicles have gained popularity as a cleaner and more sustainable mode of transportation. Governments, industries, and researchers worldwide are investing heavily in EV technologies to reduce dependence on fossil fuels and achieve carbon neutrality goals. This paper explores the environmental impact of electric vehicles and highlights their ecological advantages compared to traditional vehicles. The transportation sector accounts for a substantial share of global greenhouse gas emissions. Internal combustion engine vehicles consume fossil fuels, releasing pollutants directly into the atmosphere. Major environmental issues caused by conventional vehicles include:

- Increased carbon dioxide emissions contributing to global warming.
- Air pollution caused by nitrogen oxides and particulate matter.
- Acid rain formation due to harmful exhaust gases.
- Noise pollution in urban environments.
- Depletion of non-renewable fossil fuel resources.

According to international environmental organizations, transportation contributes approximately one-quarter of global energy-related CO₂ emissions. Therefore, transitioning to cleaner transportation technologies is essential for environmental





sustainability. One of the most significant advantages of electric vehicles is their ability to reduce greenhouse gas emissions. Unlike conventional vehicles, EVs do not produce tailpipe emissions during operation. This characteristic significantly lowers the carbon footprint of transportation, particularly when electricity is generated from renewable energy sources such as solar, wind, and hydropower. Several studies indicate that EVs can reduce lifecycle greenhouse gas emissions by 30–70% compared to conventional vehicles, depending on the energy mix used for electricity generation. Urban air pollution remains a serious environmental and public health concern. Conventional vehicles emit pollutants that contribute to respiratory diseases, cardiovascular disorders, and premature deaths.

Electric vehicles help improve air quality by eliminating direct emissions of:

- Carbon monoxide (CO)
- Nitrogen oxides (NO_x)
- Sulfur dioxide (SO₂)
- Fine particulate matter (PM_{2.5})

As EV adoption increases, cities can experience substantial reductions in smog formation and airborne pollutants. Electric motors are considerably more efficient than internal combustion engines. While traditional engines convert only about 20–30% of fuel energy into useful motion, electric motors can achieve efficiencies exceeding 85–90%.

Higher energy efficiency results in:

- Lower energy consumption.
- Reduced operational costs.
- Better utilization of energy resources.

Decreased environmental burden from energy production. Traffic noise negatively affects human health, causing stress, sleep disturbances, and reduced quality of life. Electric vehicles operate much more quietly than conventional vehicles because they lack combustion engines and complex mechanical systems. Reduced noise pollution contributes to healthier and more comfortable urban environments. Despite their ecological benefits, electric vehicles are not entirely free from environmental concerns.

Conclusion

Electric vehicles represent an important technological solution for addressing environmental challenges associated with transportation. Their ability to reduce greenhouse gas emissions, improve air quality, enhance energy efficiency, and decrease noise pollution makes them a key component of sustainable development strategies. Although challenges related to battery production, resource extraction, and recycling remain, ongoing technological innovations and renewable energy integration can significantly mitigate these concerns. As global efforts to combat climate change intensify, electric vehicles will continue to play a vital role in creating a cleaner, healthier, and more sustainable future.





References

1. International Energy Agency (IEA). Global EV Outlook. Paris: IEA Publications, 2024.
2. European Environment Agency. Electric Vehicles from Life Cycle and Circular Economy Perspectives. Copenhagen, 2023.
3. United Nations Environment Programme (UNEP). Emissions Gap Report. Nairobi, 2024.
4. Hawkins, T.R., Singh, B., Majeau-Bettez, G., Strømman, A.H. Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles. *Journal of Industrial Ecology*, 2019.
5. Burchart-Korol, D., Jursova, S., Korol, J. Environmental Life Cycle Assessment of Electric Vehicles. *Sustainability*, 2022.
6. World Health Organization. Air Pollution and Health Report. Geneva, 2023.
7. IPCC. Climate Change 2023: Mitigation of Climate Change. Cambridge University Press, 2023.

