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Can EV solve environmental problems?

Environmental issues are among the most urgent challenges facing contemporary society, with climate change, air pollution, and resource depletion having a significant global impact. In this context, electric vehicles (EV) have emerged as a potentially promising solution. Compared to gasoline-powered vehicles, EV emit far fewer greenhouse gasses during operation, making them a more environmentally friendly option. However, the sufficiency of EV as a solution to environmental problems requires deeper consideration. As the adoption of EV increases, concerns about their power supply sources and manufacturing processes have begun to emerge. Notably, the production of EV batteries requires minerals like lithium and cobalt, whose extraction often leads to environmental degradation and social issues. These facts complicate the contribution of EV to solving environmental problems.

This paper posits that while EV are anticipated as a solution to environmental issues, the impacts of power supply and manufacturing processes indicate they do not fundamentally resolve these problems. A thorough assessment of the potential positive and negative environmental impacts of EV proliferation is conducted, exploring paths to a more sustainable future.

Firstly, three reasons are elucidated as to why EV may not resolve environmental issues. The first issue concerns power supply; the environmental impact of EV heavily depends on the generation methods of their electricity. Systems reliant on fossil fuels may not see a reduction in carbon dioxide emissions from the use of EV. The "Review and Meta-Analysis of EV: Embodied Emissions and Environmental Breakeven" study suggests that, depending on the power source, EV could emit more lifecycle greenhouse gasses than diesel vehicles (Dillman et al., 2020). The second issue lies in the manufacturing process. Producing EV requires various components, notably batteries, which consume significant amounts of critical mineral resources, thereby generating environmental burdens. Research in Nature suggests the chemical composition of batteries significantly contributes to their environmental impact, underscoring the importance of battery technology selection (Nature, 2023). The third issue revolves around reuse and recycling. Proper processing, reuse, and recycling of used EV batteries are crucial for minimizing environmental impacts. However, current battery recycling processes are complex and costly, with efficient reuse technologies still under development. Further advancements in chemical technology are necessary to mitigate potential environmental harm from improperly processed used batteries.

What technologies, other than EV, can solve environmental problems? I propose that the utilization of renewable energy, further development of existing automobile technologies, and societal rule-making can provide solutions to environmental issues. Renewable energy sources, including wind, solar, geothermal, hydropower, and biomass, offer significant benefits for climate change, health, and the economy. While all energy sources impact the environment, renewable energies have substantially lesser impacts compared to fossil fuels (Union of Concerned Scientists, 2013). The use of renewable energy can avoid air and water pollution, wildlife habitat loss, and greenhouse gas emissions. Further improvements in internal combustion engines could affect greenhouse gas emission reduction and fuel efficiency enhancement. Research by Iacobuţă, G. I., Höhne, N., van Soest, H. L., & Leemans, R. (2021), and Soergel, B. et al. (2021), indicates that technologies focused on renewable resources and efficiency can ameliorate environmental issues and provide broader societal benefits, including better employment opportunities. Moreover, the establishment of societal regulations can amplify the effectiveness of environmental measures. Proposals for international climate finance mechanisms and promoting diets that reduce meat consumption, which requires significant amounts of water, energy, and land, can benefit low-income individuals by lowering food and energy prices (Nature, 2023). Thus, the proliferation of renewable energy, further innovations in automobile technology, and strong support from societal rules can yield significant environmental benefits. These measures do more than just reduce greenhouse gas emissions; they create a healthier environment, improve public health, and promote long-term sustainable development.

Through this paper, it has become clear that while electric vehicles (EV) are regarded as effective solutions to environmental problems, issues with power supply methods, manufacturing processes, and reuse/recycling complicate their impact. These challenges may offset the positive environmental effects of EV, potentially leading to greater negative impacts. On the other hand, the expansion of renewable energy, the evolution of existing automobile technologies, and the establishment of societal regulations are shown to be effective approaches to addressing environmental issues. These approaches are key to reducing greenhouse gas emissions, creating a healthier environment, and promoting sustainable economic development in the long term. In conclusion, while EV can be part of the solution to environmental problems, they are not sufficient on their own. Achieving true sustainability requires the expansion of renewable energy usage, advancements in automobile technologies, and the establishment of effective policies and regulations. Through these integrated approaches, we can lay the foundation for a cleaner, fairer, and sustainable future. Continuous evaluation of the advancements in EV and related technologies, seeking new solutions to minimize their environmental impacts, and implementing policies and regulations to support and promote these technological innovations across society are essential.

References

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**Reflection Questions**

1. How did your purpose and audience shape the way in which you wrote your argument? (1-2 sentences)

My aim was to present a clear position on the fact that EVs are not the only way to solve environmental problems, and I wrote for an intended audience of all-stars who are interested in environmental issues. I was mindful to make my argument persuasive, with sufficient external research on EVs cited.

1. What was the most difficult part of writing your argumentative essay? (2-3 sentences)

In writing the paper, I spent a lot of time searching for and scrutinizing external research that complimented my ideas. The process of considering what research findings were necessary to increase the persuasiveness and how to write them into the paper was very difficult.

1. Which appeals did you use and how do you think they strengthened your argument? (3-4 sentences)

I wrote my paper with as much logical appeal in mind as possible. I could have tried to appeal to ethics in order to attract attention, but I thought it was important to have a logical structure in order to fully appeal to the purpose and intended audience of this project.

1. How has your understanding of argumentative writing changed after completing this unit? (2-3 sentences)

It was an opportunity for me to learn firmly the importance of the assumed reader and the approach to be taken in appealing to my own argument. Previously, I had assumed that logical appeal was what was important and had not assumed any other approach to argumentation. However, it was a very good experience for me to learn that it is important to appeal to spirit and ethics, depending on the intended audience and purpose.