



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research
Vol. 13, Issue, 03, pp. 62230-62234, March, 2023
<https://doi.org/10.37118/ijdr.26568.03.2023>



RESEARCH ARTICLE

OPEN ACCESS

WHY EV CAN BE THE FUTURE

*Pruthvi Sindogi, Chinta Raj Kumar, Varun, Rakshith, Rohith Purasthu and Sucheta Roy

Jain University – Center for Management Studies

ARTICLE INFO

Article History:

Received 10th January, 2023
Received in revised form
12th February, 2023
Accepted 27th February, 2023
Published online 30th March, 2023

KeyWords:

Mindset, Awareness, Education System,
Menstrual Hygiene.

*Corresponding author: Pruthvi Sindogi,

ABSTRACT

In recent times, electric vehicles (EVs) have emerged as an eco-friendly and sustainable alternative to traditional gas-powered vehicles. Governments and automakers are investing heavily in EV technology, addressing concerns regarding air pollution, energy security, and climate change. Electric vehicles offer advantages such as reduced greenhouse gas emissions, lower fuel expenses, and decreased maintenance costs. The expansion of renewable energy sources and advancements in battery technology have accelerated EV adoption. Additionally, the growing demand for EVs is driving innovation in areas like charging infrastructure, battery recycling, and vehicle-to-grid integration. As a result, electric vehicles have the potential to transform the automotive sector and become the transportation mode of the future.

Copyright©2023, Pruthvi Sindogi et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Pruthvi Sindogi, Chinta Raj Kumar, Varun, Rakshith, Rohith Purasthu and Sucheta Roy. 2023. "Why ev can be the future". *International Journal of Development Research*, 13, (03), 62230-62234.

INTRODUCTION

Electric vehicles (EVs) have the potential to be the future of transportation for several reasons. First, they are environmentally friendly, emitting significantly fewer greenhouse gases and pollutants than traditional internal combustion vehicles. EVs provide a means to lessen our environmental impact and improve air quality as concerns about climate change and air pollution increase. Moreover, owning and operating an EV is becoming more cost-effective compared to conventional vehicles, thanks to technological advancements and decreasing battery costs. This, along with the prospect of lower maintenance costs, makes EVs appealing to a wide range of consumers. Lastly, it is increasingly evident that EVs will play a significant role in the future of transportation as governments worldwide enforce stricter emissions regulations and offer incentives for their adoption. Thus, electric vehicles present a cleaner, more cost-effective, and more sustainable means of transportation, making them a compelling choice for consumers and policymakers alike. As a promising way to reduce greenhouse gas emissions and enhance air quality, electric vehicles (EVs) have attracted increasing attention in recent years. EVs are powered by rechargeable batteries, which can be charged from various sources, including renewable energy sources like solar and wind power, as opposed to traditional gas-powered cars. The adoption of electric vehicles has the potential to significantly decrease our dependence on fossil fuels and mitigate the effects of climate change as the world moves toward a more sustainable future.

Research on electric cars encompasses numerous aspects, such as environmental impact, technology, efficiency and performance, market potential, and societal implications. This field offers various opportunities for researchers to explore factors such as adoption rates, impact on the power grid, battery technology, and the overall potential to revolutionize transportation. As the demand for sustainable transportation grows, electric cars represent a significant area of interest for researchers aiming to investigate their potential to reduce carbon emissions, promote sustainable practices, and contribute to building a greener future.

CASE STUDIES

1. In recent years, there has been a growing trend towards the use of electric vehicles (EVs) due to the increasing concern for sustainable and environmentally-friendly transportation. The rise in popularity of EVs can be attributed to multiple factors such as advancements in battery technology, government initiatives and regulations, and heightened awareness of climate change among the general public. One company that has been a prominent player in the EV industry is Tesla. Established in 2003, Tesla has emerged as a frontrunner in the market with a lineup of vehicles that offer impressive performance, long-lasting battery life, and advanced features like autonomous driving. Despite initial reservations from experts in the field, Tesla has successfully disrupted the traditional automotive sector and has become a well-known brand. As more and more

companies begin to invest in EV technology, it is expected that the demand for these vehicles will continue to increase.

2. The importance of electric vehicles (EVs) is increasing as we strive to decrease our carbon footprint and address the effects of climate change. The transportation sector is a major contributor to global greenhouse gas emissions, and EVs provide a cleaner alternative to conventional gasoline-fueled cars. Through the use of renewable energy sources to power EVs, we can significantly reduce our reliance on fossil fuels and help combat global warming. Furthermore, the adoption of EVs can bring about economic benefits, such as job creation in the clean energy sector and a reduction in healthcare costs related to air pollution. With the ongoing challenges posed by climate change, the significance of EVs in our transition to a more sustainable future cannot be overstated.
3. The future of electric cars is promising, as they continue to gain popularity and become more accessible to the public. With advancements in battery technology and the expansion of charging infrastructure, electric cars are becoming more practical for everyday use. Additionally, governments worldwide are incentivizing the adoption of electric cars and implementing regulations to reduce emissions from the transportation sector. The electric car market is projected to grow significantly in the coming years, with forecasts indicating that electric cars will be cost-competitive with traditional gasoline-fueled cars by 2025. This shift towards electric cars is also anticipated to have a positive impact on the environment, reducing greenhouse gas emissions and air pollution. As technology continues to advance, the future of electric cars looks promising.
4. Electric vehicles (EVs) are considered a more sustainable option compared to conventional gasoline-fueled cars as they produce zero emissions, which helps reduce our reliance on fossil fuels and mitigate their environmental impact. However, the sustainability of EVs is contingent on multiple factors, with one of the biggest challenges being the production and disposal of batteries. The materials used in EV batteries, such as lithium and cobalt, are limited resources, and their extraction may have adverse ecological and social effects. Additionally, if batteries are not disposed of correctly, it may pose environmental risks. Despite these challenges, there are efforts being made to improve the sustainability of EVs, such as developing new battery technologies and implementing recycling programs. As technology advances, it is expected that EVs will become even more sustainable in the future.
5. Electric cars are considered superior to traditional gasoline-powered cars for various reasons. Firstly, they produce zero emissions, which is environmentally beneficial and can help reduce our reliance on fossil fuels. Secondly, electric motors are more energy-efficient, converting 75% of the chemical energy from the battery into power for the wheels, compared to gasoline engines that only convert around 20%. Additionally, electric cars require less maintenance since they have fewer moving parts and don't need oil changes. Lastly, electric cars are quieter and provide a smoother driving experience than traditional cars. With all these advantages, it is clear that electric cars are a better choice than conventional cars.
6. The market for electric cars is becoming more competitive as an increasing number of companies are entering the market and working to develop innovative electric vehicles. This competition has resulted in a variety of electric cars that offer different styles, features, and prices, making it easier for consumers to find an electric car that suits their needs. Additionally, with the advancements in battery technology and the expansion of charging infrastructure, electric cars are becoming more practical for everyday use, making them even more appealing. As the electric car market continues to expand, we can expect to see more competition and innovation in the future.
7. Electric cars are widely regarded as the future of transportation due to their many advantages over traditional gasoline-powered cars. Firstly, they produce no emissions, which is beneficial for

the environment and can help to reduce our reliance on fossil fuels. Secondly, they are more energy-efficient, with electric motors converting a higher percentage of the chemical energy from the battery into power for the wheels, compared to gasoline engines. Thirdly, advancements in battery technology and the expansion of charging infrastructure are making electric cars more practical for everyday use. Finally, governments worldwide are promoting the adoption of electric cars through incentives and regulations, further driving the growth of the market. With all of these factors in play, it is evident that electric cars are the future of transportation.

Questions

1. What are the key factors driving the adoption of electric cars, and what barriers still exist to widespread adoption?
2. How does the environmental impact of electric cars compare to traditional gas-powered vehicles, and what are the potential long-term benefits for the environment?
3. What technological innovations have been made in the field of electric car batteries, and what are the implications of these developments for the future of transportation?
4. How does the performance and efficiency of electric cars compare to traditional vehicles, and what are the limitations of current technology?
5. What is the economic potential of electric cars, and what role will government policies and incentives play in driving adoption and growth in the market?
6. How will the widespread adoption of electric cars impact the power grid, and what infrastructure changes will be necessary to support this transition?
7. What are the social and cultural implications of electric cars, and how will they shape the future of transportation and mobility?

LITERATURE REVIEW

The findings of this literature review focus on the effectiveness of electric cars' operation without compromising the state of the global economy and their efficiency in transportation, as well as the ways in which their adoption could help conserve the environment. As humans, we share the responsibility of ensuring that future generations can meet their needs, particularly in the energy sector and the environment as a whole. In particular, according to Bhandarkar (2013), the automobile industry has been the primary cause of environmental pollution and climate change. This literature review and the paper are organized according to the following topics in order to respond to the research questions: a) The potential for electric vehicles to replace gasoline-powered vehicles, as well as the challenges they face and solutions to them; (b) Finding a solution to the issue of long-distance travel and the charging time for electric vehicles; (c) The limitations of electric vehicles and the alternative energy sources they use; and to demonstrate human accomplishments since the introduction of electric vehicles. Opportunities and major obstacles to electric vehicles replacing gasoline-powered ones A number of factors have made electric vehicles the most common alternative engine vehicle (Wilberforce et al., 2017). First of all, "8" customers pay the same amount for electricity as they do for gas. Second, almost everyone who drives a car can have electricity in their homes. Charging is a doddle. In the 2006 documentary *Who Killed the Electric Car*, it was shown that when electric cars first hit the market, they didn't work because major automakers didn't want to make them, they were expensive, and people didn't know about them. However, since 2006, a lot has changed. On the roads of the United States and Europe, electric cars are becoming more and more popular. However, will electric vehicles continue to lag behind their predecessors or can they truly replace gasoline-powered vehicles? According to Ortar and Righaug (2019), the first major obstacle for 4444 is the cost of switching from gasoline-powered vehicles to electric ones. An electric vehicle has always been more expensive to buy at first than a car with a gasoline engine. Although the new technology's \$20,000 price tag makes it more competitive, the

purchase price is still an important consideration. The cost of owning a car, on the other hand, is Spins and tire changes are still necessary, but oil changes and gas station visits are not. An electric vehicle generally has lower operating and maintenance costs than a vehicle with an internal combustion engine. The price is a lot higher. When it comes to owning an electric vehicle, batteries are another obstacle that many individuals face. The majority of electric vehicles have a limited range despite Tesla Motors' (TSLA) efforts to improve battery technology. The Nissan Leaf, for instance (disclaimer: My dad owns a Nissan Leaf, which can only travel between 100 and 200 miles on a full charge, and even fewer miles with the heater or air conditioner running. 2 This automobile is ideal for daily commutes, but not for extended journeys or car trips. If you want to go back, you'll have to spend some time plugging it in, even if you can find a charger in the middle of the street (Rieper and Albrecht, 2020). Batteries still prevent electric vehicles from reaching their full potential, despite the fact that chargers are becoming less expensive. It takes an entire night to charge my dad's Nissan Leaf from 0% to 100% using a standard wall outlet. Seven hours are all it takes to fully charge a home charging station that costs thousands of dollars to buy and install. New charger innovation permits batteries to be energized to 80% shortly, yet these chargers are costly and hard to acquire. The price will be more reasonable than that of a gasoline-powered car and may save money in the long run if the typical consumer saves \$10,000 on gasoline over five years (a high estimate). Specifically, if your electric vehicle has sufficient power to take you where you want to go. How to Shorten the Charge Time for Electric Vehicles With so many new electric vehicles coming onto the market this year, many people are wondering how we will be able to charge them all. Since there are approximately 15 electric cars for every public charging station, this is a reasonable question to ask. The 10:1 ratio is not significantly better even in California, which has the most developed market for electric vehicles (Ait-Ouahmed, 2018). These figures do not take into account the fact that approximately 95% of the public chargers that are currently available are Level 2 chargers. This means that it will take between 8 and 12 hours to fully charge a Tesla. It will be extremely difficult to develop a public transportation system that operates in a manner to which people are accustomed when electric vehicles inevitably become commonplace. Accordingly, electric vehicles, for example, the Tesla Model 3 are bound to disappointment, as some have anticipated. Possibility of Using Electric Vehicles for Long-Distance Travel When electric vehicles first became available to the general public, traveling by car was not an option. The high cost of electric vehicles, the lack of charging stations across the country, and the slow charging of batteries all made long-distance driving difficult.

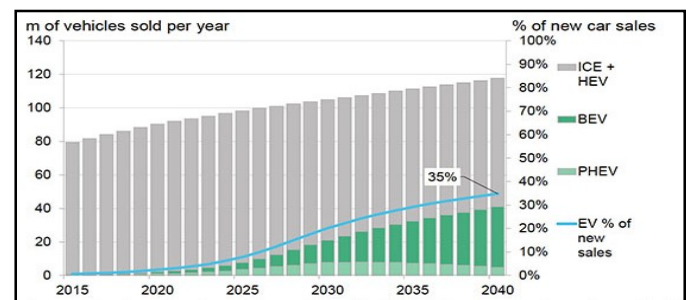
METHODOLOGY

The sources of information for this study included case studies from the publishing industry, scholarly research published in academic journals, eBooks, and Google Scholar. The study also utilized resources such as science direct, research gate, and Google Books, which contributed significantly to the study's comprehensive findings. In particular, the study incorporated a case study on Tesla Motors, which provided an excellent illustration of the company's various constraints and leverages. The keywords used in the search included future transportation, the impact of electric cars on the environment, the effects of fossil fuel emissions, Tesla's mergers and geographic expansion, the influence of consumerism on car demand, the green movement, and demand for electric cars. The study utilized deductive reasoning-based content analysis models to determine the overall perspective of Table 1. The study also included a list of keywords and articles used in the study, as well as a list of authors and their findings. Additionally, other visual sources, like illustrations on YouTube, were used to come up with more reliable information that could help startup's and government parastatals ensure the adoption of electric cars is well-served. The study highlighted the effects of climate change and pollution caused by fossil fuels, and emphasized the importance of transitioning to electric vehicles to mitigate these effects. Developed nations like China and the United States were

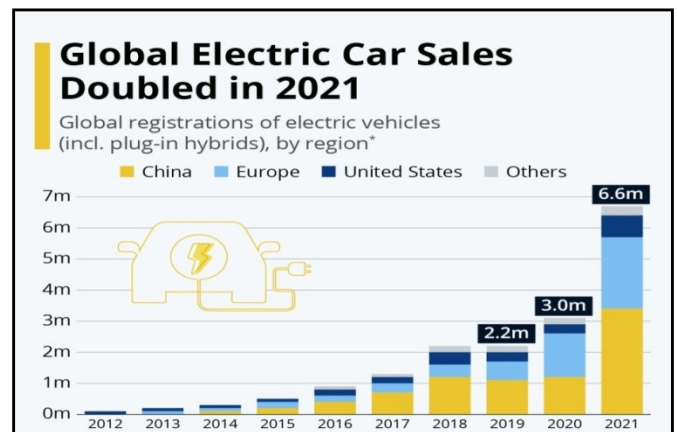
identified as having the highest emissions, highlighting the urgent need for action to address this issue.

RESULTS

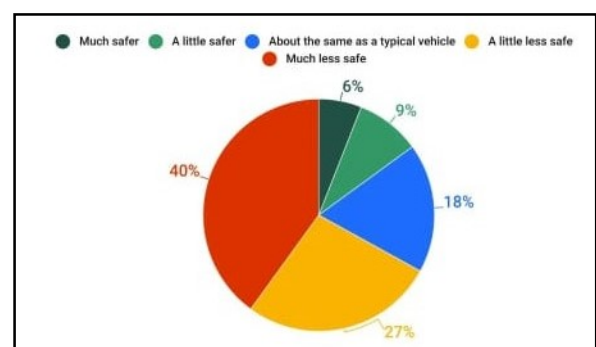
At a compound annualized growth rate (CAGR) of 21.7%, the global market for electric vehicles (EVs) continues to expand. By 2030, it is anticipated to reach 39.21 million units, up from 8.1 million. There are a number of things driving this exponential growth, including worries about pollution. Consumers are demanding low-emission commuting over fossil fuel-driven vehicles, which are putting our planet in danger, and governments around the world are encouraging the EV industry through subsidies and regulations. Due to the first electric vehicles' high initial costs, constrained battery range, sluggish speeds, and drastically reduced environmental concerns, the sector failed to take off. However, during the past 10 years, governments, consumers, and original equipment manufacturers (OEMs) have all shown a significant amount of interest. As a result, large investments in EV manufacturing and battery technology have been undertaken, which has resulted in the sale of millions of vehicles in a number of different countries. The majority of global and Indian OEMs have made investments and introduced electric vehicles. Unicorns have been created as a result of the numerous new OEMs that have drawn substantial investments, introduced models that are wildly successful, and increased demand for EVs.



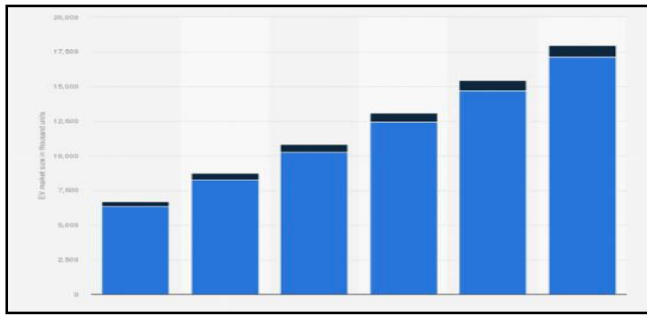
Graph 1. (Future Projection of EV sales)



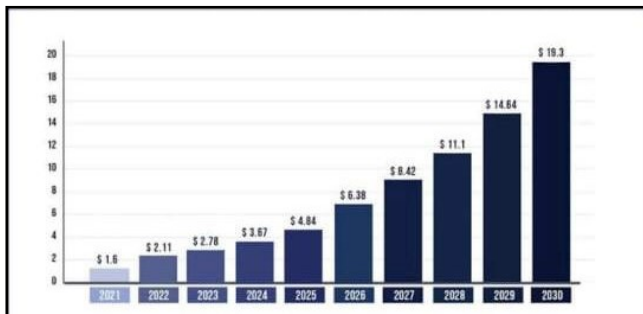
Graph 2. (Global Hike of Sales in 2021)



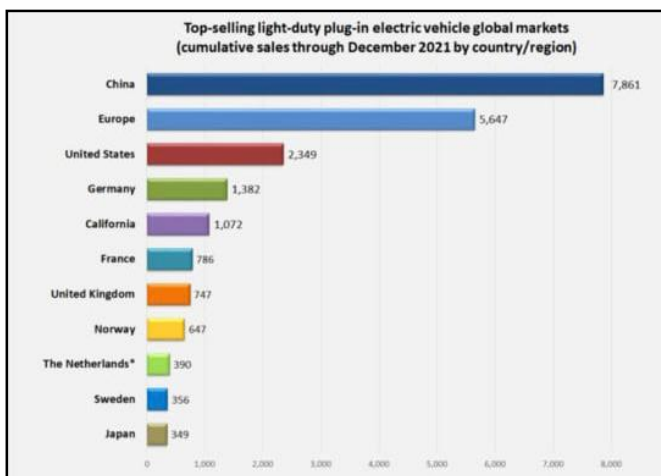
Graph 3. (Driverless vehicles, how does the lack of a vehicle operator feel)



Graph 4.



Graph 5. (EV Battery Recycling market size, 2021 to 2030 (USD BILLION))



Graph 6.

DISCUSSION

Electric vehicles don't have many parts that can break or need to be replaced. As a result, it is easier and less expensive to change the engine oil without having to worry about it. Even though newer EVs are without a doubt the cars of the future for transportation, chemistry and developments will continue. The following elements, however, make the tendency irreversible:

It is already commonly known that owners of electric cars (EVs) pay substantially less on fuel/energy and maintenance because EVs have fewer moving parts than gasoline engines, making them easier to maintain. This results in significant operating and maintenance cost savings for buyers. An important element of the cost of owning a car is the cost of operation and maintenance. Materials may be employed in battery. Electric vehicles don't have many parts that can break or need to be replaced. As a result, it is easier and less expensive to change the engine oil without having to worry about it. Even though newer EVs are without a doubt the cars of the future for transportation, chemistry and developments will continue. The following elements, however, make the tendency irreversible:

It is already commonly known that owners of electric cars (EVs) pay substantially less on fuel/energy and maintenance because EVs have fewer moving parts than gasoline engines, making them easier to maintain. This results in significant operating and maintenance cost savings for buyers. An important element of the cost of owning a car is the cost of operation and maintenance. The main energy source, oil, causes a number of problems because transportation still depends on it. An electric vehicle, however, offers a better and greener form of transportation for all. As more electric vehicles are driven on the road, the demand for millions of barrels of oil will decline. By 2030, India will save about one gigatonne of carbon dioxide emissions by converting to electric vehicles. CO₂ emissions may be reduced more sustainably. Every electric car on the road makes a difference in the amount of dangerous air pollution that is released into the atmosphere. Conflicts and political tensions between countries are growing as a result of the global campaign against climate change and global warming. Electric vehicles don't have many parts that can break or need to be replaced. As a result, it is easier and less expensive to change the engine oil without having to worry about it. Even though newer EVs are without a doubt the cars of the future for transportation, chemistry and developments will continue. The following elements, however, make the tendency irreversible:

It is already commonly known that owners of electric cars (EVs) pay substantially less on fuel/energy and maintenance because EVs have fewer moving parts than gasoline engines, making them easier to maintain. This results in significant operating and maintenance cost savings for buyers. An important element of the cost of owning a car is the cost of operation and maintenance. Car customers are eager to do their part for the environment by converting to electric vehicles, which have no exhaust emissions and so help safeguard our environment from smog and climate change. This is a great initiative to enhance public health and lessen negative environmental effects. Better air quality will result from less damaging emanations being released, which means fewer health problems.

Amazing experience when driving by lowering weariness and stress: As there are no gears in electric vehicles, you won't have to worry about using challenging controls. You only need to accelerate, brake, and turn to manage and take pleasure in a calm, practical, safe, and quiet ride. A further advantage of driving an electric vehicle is that it produces less noise. Electric vehicles don't have many parts that can break or need to be replaced. As a result, it is easier and less expensive to change the engine oil without having to worry about it. Even though newer EVs are without a doubt the cars of the future for transportation, chemistry and developments will continue. The following elements, however, make the tendency irreversible:

It is already commonly known that owners of electric cars (EVs) pay substantially less on fuel/energy and maintenance because EVs have fewer moving parts than gasoline engines, making them easier to maintain. This results in significant operating and maintenance cost savings for buyers. An important element of the cost of owning a car is the cost of operation and maintenance. Electric motors are incredibly silent when compared to internal combustion engines and their exhaust systems. Vehicle noise, according to multiple studies, can have a wide range of negative impacts, including a rise in anxiety, depression, high blood pressure, heart disease, stroke, and other illnesses. The noise pollution may also cause people to exhibit more severe depressed symptoms. Electric vehicles don't have many parts that can break or need to be replaced. As a result, it is easier and less expensive to change the engine oil without having to worry about it, even though newer EVs are without a doubt the cars of the future for transportation, chemistry and developments will continue. The following elements, however, make the tendency irreversible:

It is already commonly known that owners of electric cars (EVs) pay substantially less on fuel/energy and maintenance because EVs have fewer moving parts than gasoline engines, making them easier to maintain. This results in significant operating and maintenance cost savings for buyers. An important element of the cost of owning a car

is the cost of operation and maintenance. Convenient charging: Rather than using fossil fuels like gasoline or diesel to charge their batteries, electric vehicles rely on electricity. The battery charging options for EV users include using charging equipment from the convenience of their homes.

CONCLUSION

- Firstly, electric cars are environmentally friendly as they produce zero emissions during operation, which reduces pollution and helps to mitigate climate change.
- Secondly, electric cars have lower operating costs compared to traditional gasoline-powered cars since electricity is generally cheaper than gasoline.
- Thirdly, the technology behind electric cars is improving rapidly, leading to longer driving ranges, shorter charging times, and more efficient batteries.
- Fourthly, governments around the world are providing incentives for consumers to buy electric cars, including tax credits, rebates, and subsidies.
- Lastly, as more and more countries set goals to reduce their carbon emissions, the demand for electric cars is likely to increase, which will drive down their costs and make them more accessible to consumers.
- All these factors suggest that electric cars are a promising solution for the future of transportation and could play a significant role in reducing our reliance on fossil fuels and mitigating the effects of climate change.

REFERENCES

International Energy Agency (IEA) - Global EV Outlook: <https://www.iea.org/reports/global-ev-outlook-2021>

U.S. Department of Energy (DOE) - Office of Energy Efficiency & Renewable Energy (EERE), Alternative Fuels Data Center: <https://afdc.energy.gov/>

Tesla - Official Website: <https://www.tesla.com/>

Union of Concerned Scientists - Electric Vehicles: <https://www.ucsusa.org/resources/evs>

World Health Organization (WHO) - Burden of disease from environmental noise: https://www.who.int/quantifying_chimpacts/publications/e94888/en/

BloombergNEF - Electric Vehicle Outlook 2021: <https://about.bnef.com/electric-vehicle-outlook/>

National Renewable Energy Laboratory (NREL) - Electric Vehicle Research: <https://www.nrel.gov/transportation/project-ev-grid-integration.html>

McKinsey & Company - The global electric-vehicle market is amped up and on the rise: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-global-electric-vehicle-market-is-amped-up-and-on-the-rise>

Environmental Protection Agency (EPA) - Green Vehicle Guide: <https://www.epa.gov/greenvehicles>

InsideEVs - Electric Vehicle News, Reviews, and Reports: <https://insideevs.com/>

Statista - Electric Mobility: <https://www.statista.com/topics/2086/electric-mobility/>

World Economic Forum - The Future of Electric Vehicles: <https://www.weforum.org/agenda/2019/02/a-sustainable-approach-to-electric-vehicles/>

Deloitte - Electric Vehicle Trends: <https://www2.deloitte.com/global/en/pages/energy-and-resources/articles/electric-vehicle-trends.html>

Journal of Power Sources - An Elsevier scientific journal focused on the science and technology of energy generation, conversion, and storage: <https://www.journals.elsevier.com/journal-of-power-sources>

Electrek - Electric Vehicle News and Reviews: <https://electrek.co/>
