

## CBA 2 Science in Society Investigation

### **Are electric cars good for the environment?**

An electric car is a plug in electric automobile powered by electric motors, using energy typically stored in rechargeable batteries.

Battery electric vehicles use electricity stored in batteries to power the electric motor and turn the wheels. When the batteries become empty they are then recharged using electricity coming from either a wall socket or a dedicated charging unit.

Many people say that the future of driving is electric. Many countries are even talking about banning sales of cars powered by internal combustion engines. For example Norway will allow having only electric cars around by 2025, India by 2035 and France and the UK are aiming to reach their goal by 2040. This changes are all made because of the protection of the environment but, how environmental friendly are electric cars, really?

Many studies show that electric cars are in fact environmental friendly and will help our environment but there are also other studies that say that electric cars aren't the answer for the environment's situation.

#### **Electric cars are good for the environment**

According to the Sustainable Energy Authority of Ireland the emission per km from driving electric is far less than driving petrol or diesel. This is true even when considering the emissions from the power station. An other point is that electric vehicles remove emission from the air saving pedestrians and cyclists from breathing in the dangerous gases.

Environmental pollution also involves noise. The quietness of an electric vehicle will reduce the amount of noise around us, especially in big cities.

When driven, electric cars don't produce tailpipe pollution as they don't have a tailpipe, however the electricity they use produces pollution at the source of its generation or in the extraction of fossil fuels. The amount of pollution produced depends on how the energy is made, in fact, electric cars that are powered by renewable sources, like wind or solar, are emission free.

1. Chooses an interesting topic and research question.

2. Positions the topic as Science in society.

3. Presents the information in a well-structured layout that is very clear to follow..

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Some electric cars have their interiors made of recyclable materials. When BMW launched the new electric i3 electric car they stated that the seats were made of recyclable materials.

Since the energy used to move an electric car is stored in batteries, their production does have an environmental impact. The batteries used to power electric cars can be recycled. After a battery has worn out, it can be used elsewhere as it'll still have approximately 70-80% of its original energy capacity.

### **Electric cars are not the answer to our environmental situation**

When the electric car goes in the streets, it is emitting no tailpipe emissions, but it will still produce pollution from tyre and brake dust. The real pollution is mostly produced in the factory.

A report by the Fraunhofer Institute for Building Physics revealed that it takes twice the amount of energy to build an electric car as a conventional vehicle.

The main problem is the battery. A report by IVL Swedish Environmental Research Institute found that battery production produces 150-200kg of carbon dioxide equivalent per kilowatt hour of produced battery.

An electric car is only as clean as the power it uses to keep moving, so if the electricity used to power the cars comes from burning fossil fuels the car is not as environmentally friendly as people might think.

### **My opinion**

Regarding this topic I personally think that electric cars are good for the environment in the long term. I think that by substituting petrol cars with electric cars the CO2 levels will for sure decrease compared to now and pollution will be concentrated in industrial areas which will be easier to manage. Since tailpipe pollution won't be present anymore, electric cars will also help us improve our health. I think that electric cars do have some negative impacts on the environment but nothing can be perfect. And I think that even if it may be a small change, compared to the environmental situation now, every little helps.

4. Relevant scientific terminology used however no representations used to present data.

5. Considers information from different sides of the argument.

6. Personal opinion that has been informed by research provided.

### Research Question - Article Evaluation -

**Q: Are electric cars really helping the environment?**

**Article 1:**

**How Green are Electric Cars? - The Guardian**

- The Article is coming from a reliable source since it's an extract from a popular British newspaper
- It doesn't state an opinion, the author wrote the article objectively
- The points in the article are all sustained by reliable facts and statistics
- Provides detailed diagrams to help the reader understand more about the topic
- Up to date
- Bibliography - at the end of the article there's a section with the source of the information provided

**Link: <https://www.theguardian.com/football/ng-interactive/2017/dec/25/how-green-are-electric-cars>**

7. Finds information from a number of balanced sources and gives a complete reference list

8. Evaluates the reliability and quality of the sources.

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### Article 2:

#### Even More Evidence that Electric Cars could Save the Planet - Wired

- The studies used to support the article are carried out by experts
- The article has been written objectively
- No opinions
- Statistics are up to date
- It's not biased as it compares both advantages and disadvantages of electric cars
- It's published on a newspaper

Link: <https://www.wired.com/story/even-more-evidence-that-electric-cars-could-save-the-planet/>

### Article 3:

#### The Environmental Benefits of Electric Vehicles - Sustainable energy authority of Ireland

- The article is from an official association on sustainability in Ireland
- It's written objectively
- Based on facts
- Uses statistics
- .ie URL

Link: <https://www.seai.ie/sustainable-solutions/electric-vehicles/why-drive-electric/the-environment>

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### Article 4:

#### Electric Cars and the Environment - Go Ultra Low

- The website focuses only on electric cars
- Studies are carried out by experts
- Based on facts
- Objective
- Not biased as it explains the bad and good things of electric cars

#### Link:

<https://www.goultralow.com/choosing/electric-cars-environmental-benefits/>

### Article 5:

#### Are electric cars actually worse for the environment?

- Rac.co.uk

- Points supported by facts and statistics
- Written objectively
- The website is focused on vehicles
- Up to date
- .co uk URL, more reliable than .com

#### Link:

<https://www.rac.co.uk/drive/advice/emissions/are-electric-cars-actually-worse-for-the-environment/>

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### Article 6:

#### Electric Cars are not the Solution - The Guardian

- Author: Gary Fuller, air pollution scientist focused on urban air pollution - reliable author
- Article written objectively
- Based on facts
- No opinions
- Published in a popular British newspaper

#### Link:

<https://www.theguardian.com/environment/2017/aug/13/electric-cars-are-not-the-solution-pollutionwatch>

