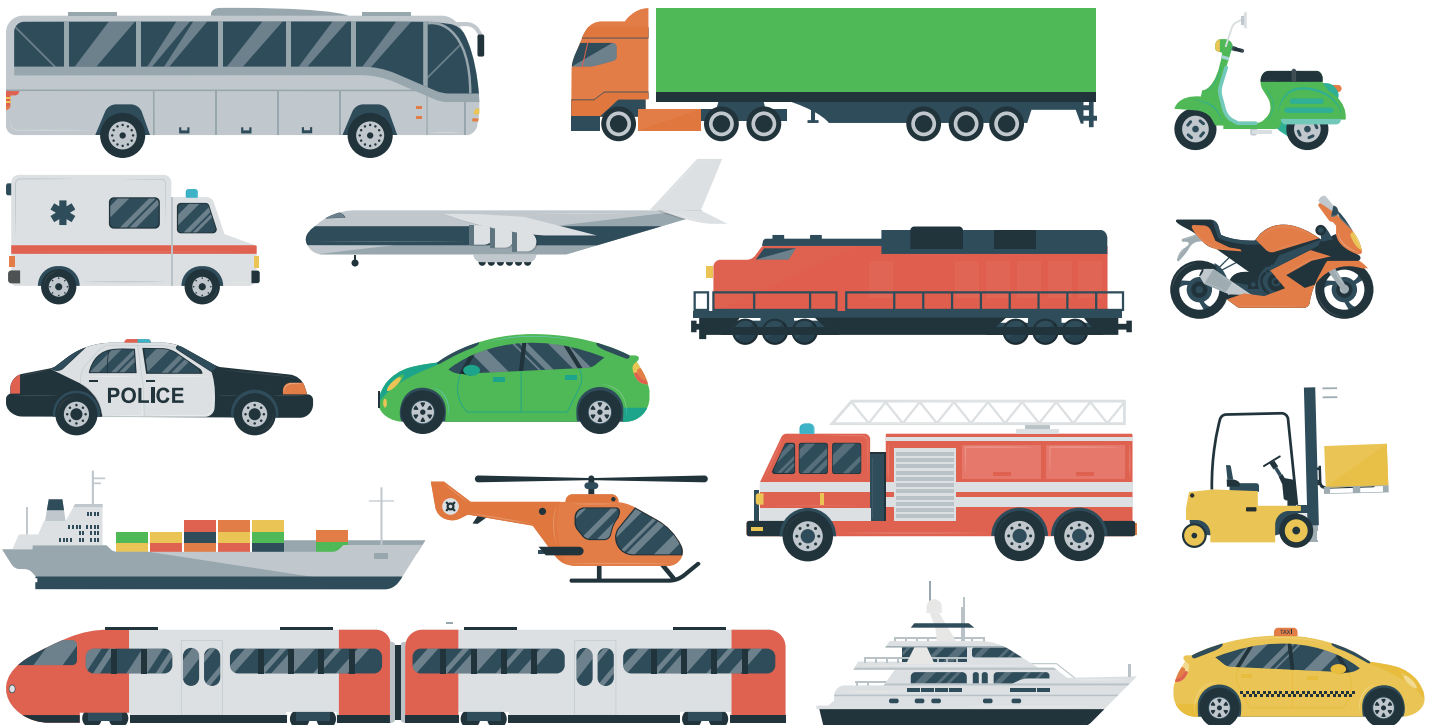


CLEAN ENERGY VEHICLES

SECTION 1: INTRODUCTION

Hello! My name is **Louise** and I am a research scientist at **Imperial College London**. This means I do experiments so that we can discover new things. My research uses chemistry to help tackle challenges in our environment. I am investigating a new way of producing hydrogen fuel. My research means that hydrogen can be used as a fuel in things like vehicles. Fuels are substances that produce heat or power to make things like vehicles work.

HELLO THERE!
MY NAME IS
LOUISE.



SECTION 2: A GLOBAL CHALLENGE

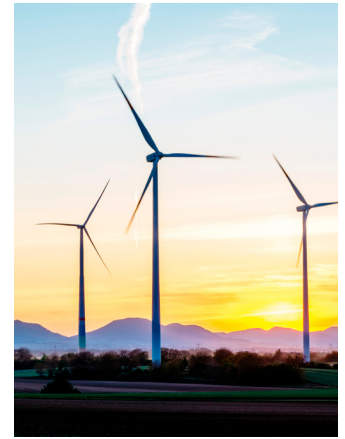
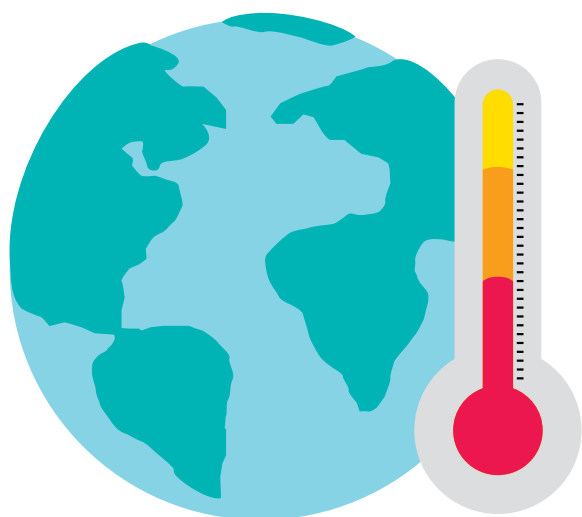
How many different types of vehicles do you know? Chat with your family.

Did you think of cars, buses, motorbikes, aeroplanes, coaches and trains? You also may have thought of some others as well!

Most vehicles are currently powered by burning petrol or diesel. This means they need petrol or diesel to work. These materials are called fossil fuels. Fossil fuels are a finite resource. This means they are being used up faster than they are being made and will soon run out.

The other big problem with fossil fuels is that when they are burnt, they produce greenhouse gases especially one called carbon dioxide. Greenhouse gases trap heat in the Earth's atmosphere. This is also known as **global warming**. Global warming means **the Earth is becoming too hot**.

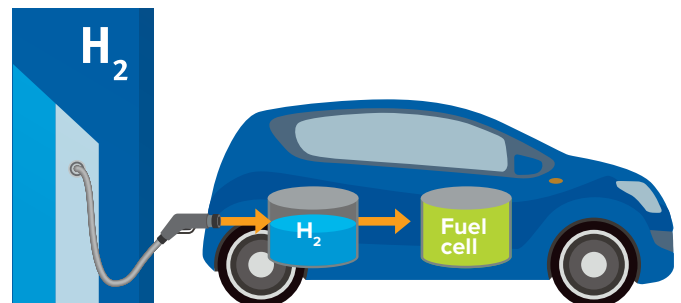
Scientists are designing vehicles that are better for the Environment. **Electric vehicles** are a very good and popular choice because they use batteries to power them **and batteries do not release any carbon dioxide**. Sometimes, this electricity can be made without burning fossil fuels. This is **clean electricity**.



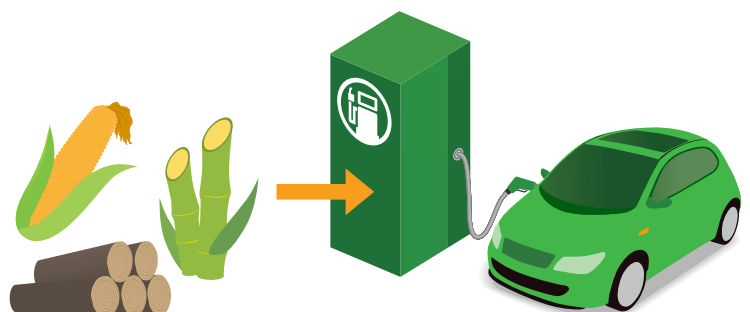
Options of producing clean electricity include:

- **Solar Power** – electricity is made from sunlight using solar cells and panels.
- **Wind Power** – electricity is made when the wind spins a turbine.

Hydrogen-powered vehicles are also an alternative. Hydrogen (H_2) can be changed into electricity using a device called a **fuel cell**. This electricity powers the vehicles without releasing any greenhouse gases into the environment.



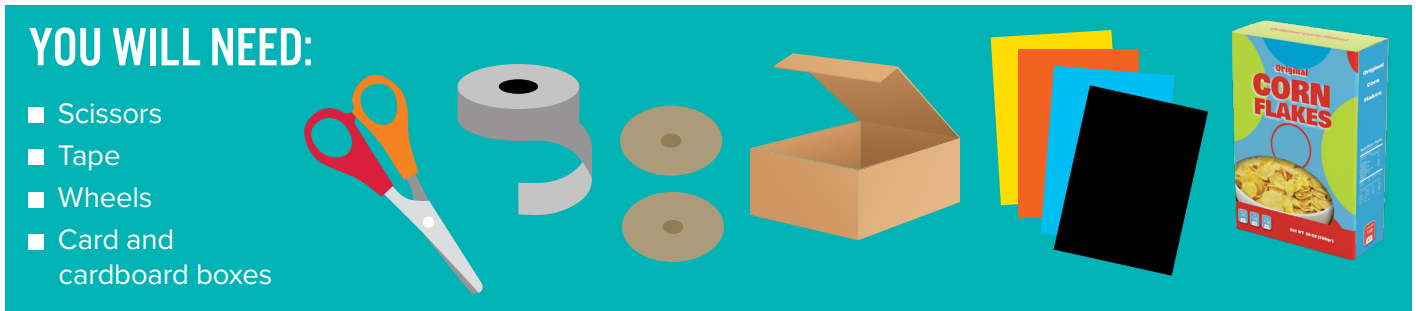
Another alternative are **biofuel-powered vehicles**. Biofuel is made from natural materials such as plants and trees. When it is burnt, biofuel produces energy that can power the vehicle.



SECTION 3: YOUR TASK

I can't do as this by myself – I need your help!

Will you please help me to design a vehicle that can help our planet?



Your task is to **design and make a new environmentally friendly vehicle.**

Use the items in the craft pack, and anything that you may have at home (like boxed and plastic bottles) to design and make your new vehicle.

Here are five steps to help you in your design process.

.....

→ 1 Choose a vehicle.

Are you making a car, an aeroplane, a train or something else entirely?

.....

→ 2 How will you power your vehicle?

Choose one or more out of electric, hydrogen and biofuel.

.....

→ 3 How will your vehicle move?

Does it need wheels, wings or something else? Maybe it has legs? Be as creative as you want.

.....

→ 4 What will your vehicle look like?

Your vehicle needs to be comfortable to sit in and exciting to look at so that everyone wants to use it.

.....

→ 5 Add new and exciting features to your design that can also help Earth and our environment.

Your car could have electric arms that pick litter as it drives, or your aeroplane could water plants as it flies over the world. Perhaps your train could be covered in a special paint that absorbs carbon dioxide. Use your imagination and be creative - if you say something is something, then it is!

After you've thought about your vehicle, you can start making. This is a great chance to re-use some items like plastic bottles, cans and cardboard that might have been in your recycling.

I've also made a sheet to help you plan or record your vehicle on the next page. It's up to you if you make first then draw, or draw first and then make your vehicle, we all work in different ways!

