

History

Natural Resources



Year 4 - Summer 1

Name: _____

Class: _____

10 Important Natural Resources

Natural Resource	What is it?	What is it usually used for?
Phosphorite	Rock	Fertiliser
Uranium	Metal	Nuclear energy
Coltan	Metal	Electronic devices
Cobalt	Metal	Making engines
Coal, oil and natural gas	Fossil fuels	Energy
Soil	Biomass	Agriculture (farming)
Iron (Fe)	Metal	To make stainless steel (for example in knives and forks)
Air	Mixture of gases	Breathing and photosynthesis
Water	Liquid	Sustaining life of the planet
Timber	Biomass	Building homes and burning for fuel

Coal



Keywords
Natural resources
Exhaustible / non-renewable
Consumption
Abundance
Scarcity
Fossil fuels
Renewable
Lucrative
Extraction
Mining

Materials that exist in the natural environment that are useful to humans. Most natural resources are unevenly distributed and exhaustible.

A material that is exhaustible will run out and not last forever. It is non-renewable.

The action of using a resource.

A large quantity of a material.

A short supply of a material.

Coal, oil and gas. These are formed from the remains of plants and animals, that are changed into fossil fuels by millions of years of heat and pressure. They are non-renewable, exhaustible sources of energy..

A material that will keep being generated, such as fish and forests. (Renewable resources can become exhaustible without careful management.)

Making lots of money.

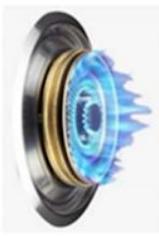
The removal of something, such as a natural resource.

The process of taking a natural resource out of the ground. It usually refers to the extraction of metals, stones and coal.

Oil



Gas



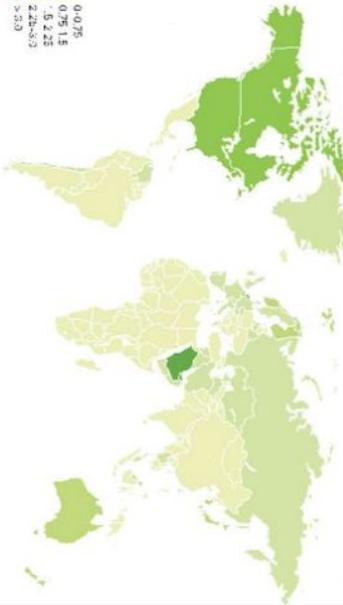
Iron



Copper



Oil Consumption by capita



Source: BP Statistical Review of World Energy (2014)

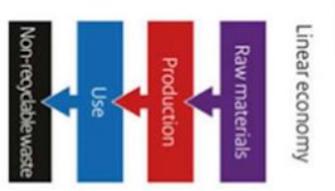
The world's resources are not evenly used around the world. This map shows how much oil is used per person.

The world's natural resources are not evenly spread out.

This map shows where gold is mined and produced.



The Linear Economy: "take, make, use, throw-away".



The Circular Economy: "take, make, use, re-use, re-make, take-less".



Lesson Question	You will learn:	Review
Where are the world's natural resources?	What natural resources are What the world's most important natural resources are Which countries have the most natural resources	
How has the use of natural resources changed?	How the world's population has changed over time How the use of natural resources has increased Why the use of natural resources has increased	
What resources does Chile have?	Where Chile is located Which natural resources Chile has Why Chile mines copper	
What resources does the UK have?	Which natural resources the UK has How coal, oil and gas form How to access fossil fuels	
How does resource exploitation cause problems?	How using fossil fuels causes problems for the environment Why mining is very dangerous Examples of dangerous mines.	
What is the circular economy?	How humans throw away a lot of materials The difference between a linear economy and a circular economy How the circular economy will benefit people and the planet	

LESSON ONE: Where are the world's natural resources?

Use your knowledge organiser to find the definition.

 What is a natural resource?

 Write the definition in your own words.

 What natural resources do you use each day?

For example: the wood in a pencil; the plastic that makes up a pencil sharpener was made from oil

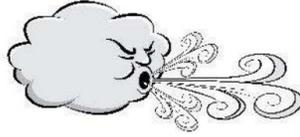
Name each resource and explain why it is important.

These are 9 of the world's most important resources, which are also at risk of running out or being irreversibly damaged.



Phosphorite

It is used as a fertiliser and is used to grow most of our food.



Clue: Fe (a metal in the periodic table)





Natural resources around the world

Natural resources are the commodities which exist without any action from human beings. They are the raw materials which are used to produce and manufacture all of the products we use. The price of these resources varies depending on how rare they are to find, their quality and demand. These resources are very valuable and are often one of the most important ways in which a country makes money. This can be by selling the natural resources or by using the natural resources to create other products that can be sold for money.

Many resources are only found in certain places, because of the way the Earth formed. For example, diamonds can be mined in the Democratic Republic of Congo and South Africa but not in the UK. This is because the important processes that produce diamonds do not occur everywhere. Humans have to take care of the world's natural resources because lots of natural resources are running out as the Earth is not able to replace them. Many natural resources take millions of years to form.

Some of the countries with the most natural resources in the world include:

Brazil

Brazil's top resources include uranium, gold, iron, timber and oil. Even though they have vast oil deposits, the most valuable resource is timber: Brazil supplies over 12.3% of the world's timber.



Australia

Australia has the largest gold reserve in the world, and it supplies about 14.3% of the world's gold. The country also contributes over 46% of the world's uranium and has large reserves of iron, copper, timber, aluminium and coal.



Democratic Republic of the Congo

Democratic Republic of the Congo (DRC) has a very large mining industry. The DRC has the biggest coltan reserve in the world and large reserves of cobalt. The country is also known for its large gold, tin, diamond and copper reserves.



Venezuela

The South American state is the leading producer and exporter of numerous minerals including oil, iron ore, gold, coal, and bauxite. Venezuela has the largest oil reserve in the world and the world's second largest gold deposit.



United States of America

The United States of America (USA) is the leading producer of coal. It is estimate that 89% of the USA's natural resource value is from timber and coal. The United States also has a large deposit of copper, gold, oil and natural gas.



Russia

The Russian mining industry is one of the biggest in the world. Russia produces lots of silicon, nitrogen, copper, arsenic, and aluminium.



India

The mining sector in India contributes about 2.5% of the country's wealth. India has the fourth largest coal reserves on Earth and large reserves of limestone, petroleum, diamonds, natural gas, titanium ore and bauxite.



Canada

Canada has a lot of limestone, rock salt, uranium, coal and metals such as nickel, zinc, copper and lead. Canada also has precious metals: platinum; silver; gold. Canada has very large reserves of oil and timber.



Saudi Arabia

Saudi Arabia's primary natural resource is oil. Saudi Arabia has the second biggest oil reserve in the world, but is the largest producer and exporter of oil in the world. The country's economy depends on the income from oil.

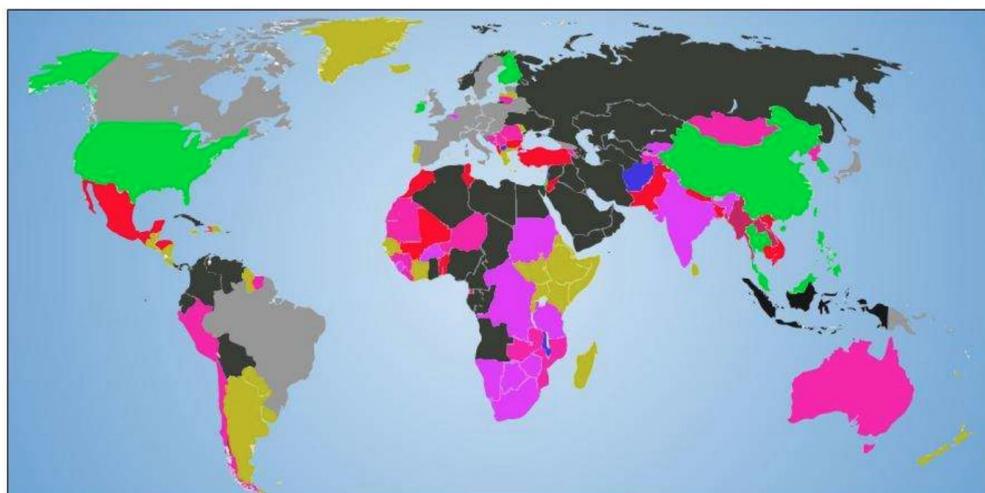


China

China is one of the leading producers of phosphates, graphite, coal, tin, lead, zinc and gold. China also has a lot of cobalt, silver, and copper



 **Annotate the map below by labelling 5 of the countries from the article above, adding in their most important natural resources.**



■ Food / Drink ■ Metals/Minerals ■ Precious Metals/Minerals
■ Wood Products ■ Oil ■ Textile/Apparel
■ Machinery/Transportation ■ Electronics ■ Other

LESSON TWO: How has the use of natural resources changed



Retrieval Practice

1. What is a natural resource?

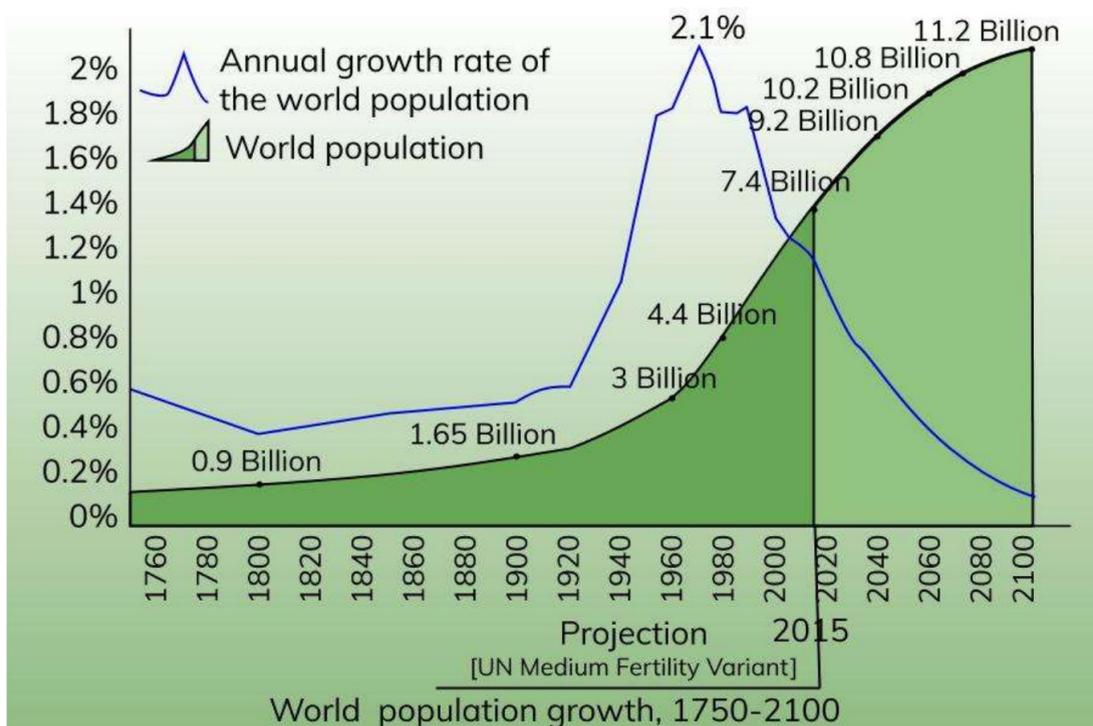
2. Which word can be used to describe most natural resources:

- a. Renewable
- b. Exhaustible

3. Name one metal that is a really important natural resource.

4. Name one country that mines gold

Complete the sentences to describe the changes shown in the map.



- a. Overall, the world population has _____.
- b. In the year 1800, there were _____ people on the planet.
- c. By 2015, there were _____ people on the planet.

d. By 2100, it is predicted that there will be _____ people on Earth.

e. The world's population grew most quickly between

[1800 and 1900]

[1920 and 1970]

[1980 and 2015].

f. In the future, it is predicted that the rate (speed) of population growth will

_____.

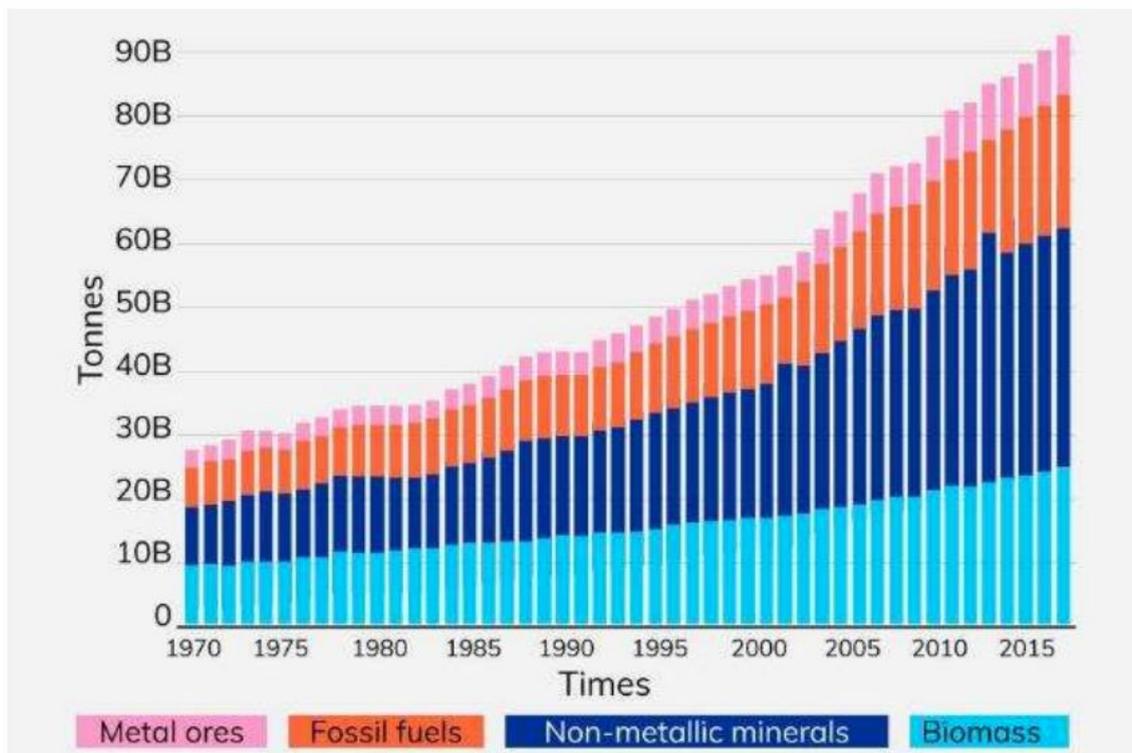


What do you think has happened to the amount of natural resources that are being used each year? Explain your reasons



What does the graph show you about the amount of natural resources that are being used each year? Add 3 annotations to the graph to describe the change.

Global Extraction of Natural Resources 1970-2017



Why has the use of natural resources changed?



Photo: A busy train in India



Photo: A landfill site in Brazil

 Return to page 3 to complete the learning review.

LESSON THREE: What resources does Chile have?

Retrieval Practice

1. What has happened to the world's population over the last 100 years?

2. Give one reason why the use of natural resources has increased.

3. Name one important natural resource that Canada has.

4. What does it mean if a resource is renewable?

5. Match the metal to its common use:

Coltan
Uranium
Iron

Stainless steel for knives and forks
Electronic devices such as mobile phones
Nuclear energy



Describe the shape and location of Chile.

From north to south, Chile is 4,270 km / 2,653 miles long, but on average only 177 km / 110 miles wide.



The geography of Chile is unique and very varied. As you travel from the north to the south, you encounter many different ecosystems. For example, in the north you will find the Atacama Desert but further south near Valdivia you have many lakes, wetlands and forests. At Chile's southernmost tip, there are glaciers, taiga (coniferous forests) and tundra (a very cold and rocky ecosystem, where trees cannot grow, and only small plants survive).

Chile is separated from Peru and Bolivia by the Atacama Desert and Chile is separated from Argentina by the Andes Mountains, which is a very long mountain chain, which has many volcanoes.

Chile has a lot of natural resources because of its special geography. The same processes that have formed the mountains, volcanoes and the deep sea trench that mirrors Chile's coastline, have produced very valuable metals, such as copper, silver, gold and iron.

Chile's climate means that it is able to grow lots of goods. For example: grapes (Chile produces a lot of wine); tomatoes; avocados; olives. The soil throughout Chile is good quality, meaning that good quality grass grows, which allows livestock such as sheep and cattle, to survive.

Chile also has very large natural gas reserves in the south and because the climate supports extensive forests throughout much of the country, timber is another valuable natural resource.



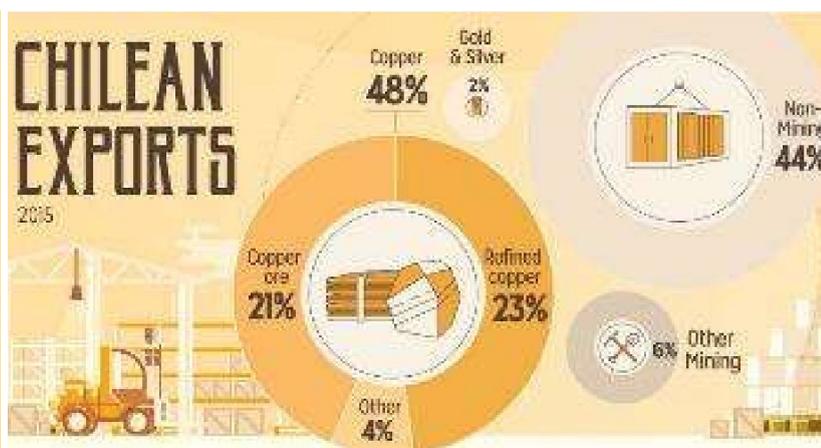
In the text circle the natural resources that Chile has.

This is a photo of a big copper mine in Northern Chile. Can you spot the buildings and the big trucks?



3. Why do you think Chile mines copper?

This is a graph of products that Chile exported in 2015 and a graph of Chile's Gross Domestic Product, which is the total amount of money that is made.



How has copper helped Chile?

Copper is an important natural resource in Chile.

In 2015, _____ % of all exports from Chile were copper. This means that nearly half of all the products that Chile sold to other countries was _____ . I think that copper has helped Chile because

Keywords you could include: richer; valuable; international; important product; earn; income

LESSON FOUR: What resources does the UK have?



Retrieval Practice

1. Name one metal that is mined in Chile.

2. Name one other natural resource in Chile.

3. Name one country that borders Chile

4. Define lucrative.

5. What are fossil fuels?

- Fossil fuels are stone fossils (remnants of ancient plants and animals) that can be burnt for energy.
- Fossil fuels are energy sources that formed from the remains of plants and animals that have had millions of years of heat and pressure changing them into fossil fuels.
- Fossil fuels are energy sources that formed from the remains of plants and animals over a period of ten years.



The United Kingdom (UK) includes Wales, Scotland, Northern Ireland and England. Ireland is part of the European Union, but not the UK.

The UK has many natural resources. Coal, oil and gas helped the UK develop and become richer. The UK also has resources such as limestone and iron ore, which were very important in the UK's steel and ship-building industries.

Furthermore, the UK has very good land for agriculture. There are large, flat areas that have good soil and a good climate for growing crops such as wheat, potatoes, oats, fruits and vegetables.

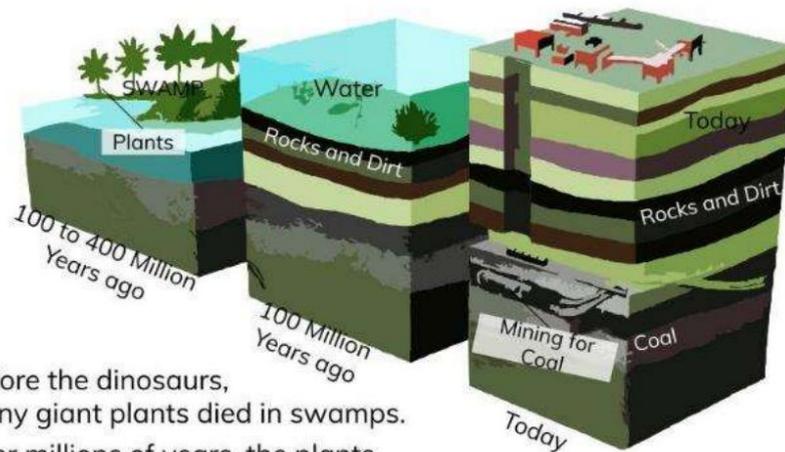


In the text circle the natural resources that the UK has



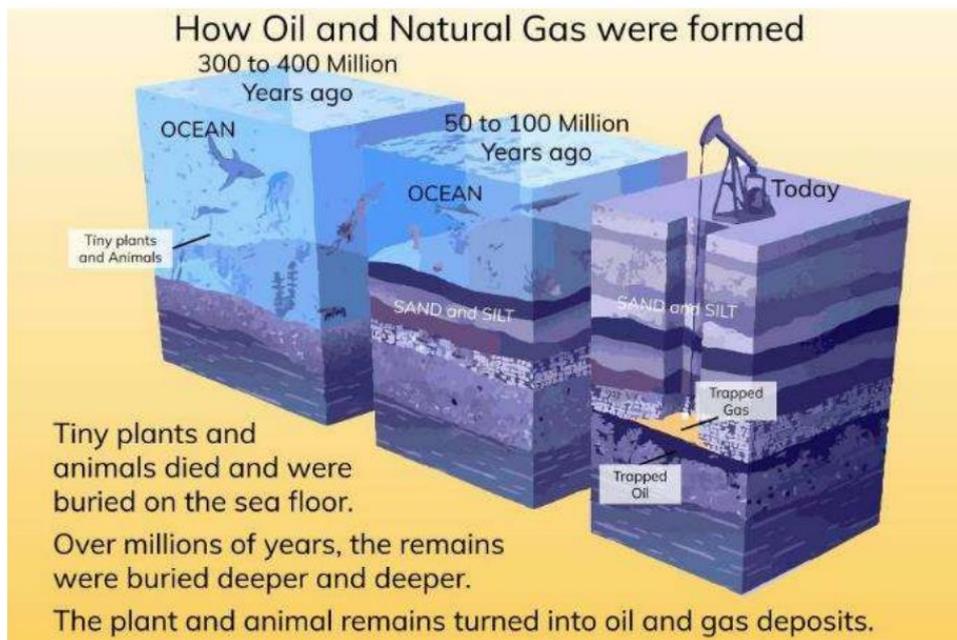
We are going to focus on coal, oil and gas. How do they form?

How Coal was formed



Before the dinosaurs, many giant plants died in swamps. Over millions of years, the plants were buried under the water and dirt. Heat and pressure turned the dead plants into coal.

How Oil and Natural Gas were formed



Tiny plants and animals died and were buried on the sea floor. Over millions of years, the remains were buried deeper and deeper. The plant and animal remains turned into oil and gas deposits.

👁 Give two differences between how coal was formed and how oil and gas were formed.

👁 State 2 similarities between how coal was formed and how oil and gas were formed

👁 Add 4 annotations to each photograph: how do people access the coal, oil and gas in the UK?



Photo: Coal mine, 1934 The UK has now closed all of its deep coal mines.



Old oil rigs off the coast of northern Scotland

LESSON FIVE: How does resource exploitation cause problems?



Retrieval Practice

1. Name the three fossil fuels.

2. What is important for the formation of all 3 fossil fuels?

3. Why is copper important to Chile?

4. Define consumption.

5. Which industry in the UK benefited from the UK's iron ore supplies?

Since the Industrial Revolution, the UK has been burning coal, oil and gas in large amounts, in order to fuel its development. The UK used to have many coal-powered factories and power stations but most of these have now closed down. The small number of remaining coal-fired power stations are slowly being converted to gas and biomass.

The problem is that burning fossil fuels releases lots of harmful gases; we need carbon dioxide in the atmosphere but there is now much more than there used to be and this is causing climate change. Coal is the most harmful fossil fuel to burn.

Today, the UK generates electricity in different ways. The main way in which the UK generates electricity is by burning fossil fuels. The UK uses natural gas mostly, but also still burns some coal. The UK also uses nuclear energy and some renewable energy.



What problems do coal-fired power stations cause?





What problems might closing down coal-fired power stations cause?



In 2010, 33 miners became trapped in San José gold and copper mine in Northern Chile. The miners were trapped 624 metres underground for 2 months. They were rescued in October 2010, through a specially-devised capsule that brought them up, one by one.

Photo: A miner being rescued in Chile in 2010.



However, around the world, hundreds of thousands of people die each year in mining accidents and though illnesses that can develop because of mining. Accidents often happen because passageways underground collapse, and miners often develop lung problems.



Photo: Sulphur mining at Kawah Ijen Volcano, Indonesia

It is estimated that there are 30 million men, women and children who mine by hand around the world. Often people are forced to do this sort of work due to poverty.

Photo: A man mining for silver in Bolivia



Why does resource exploitation cause problems?

Exploiting the world's natural resources is necessary for humans to survive. However, it also causes many problems. For example, mining for _____ in _____ causes problems for _____ because _____

Furthermore

LESSON SIX: What is the circular economy?



Retrieval Practice

1. Name the three fossil fuels.

2. What is important for the formation of all 3 fossil fuels?

3. Why is copper important to Chile?

4. Define consumption

5. Which industry in the UK benefited from the UK's iron ore supplies?



What do we throw away? Annotate the photograph with as many things as you can think of that get put in the rubbish bin.





Humans need lots of natural resources to help them survive. However, over time, humans have created more and more waste by developing products that can't be easily broken down by nature or recycled. Plastic has created big problems for the natural environment. This linear economy can be summarised as "take, make, use, throw-away".

In your own words, what is the linear economy?



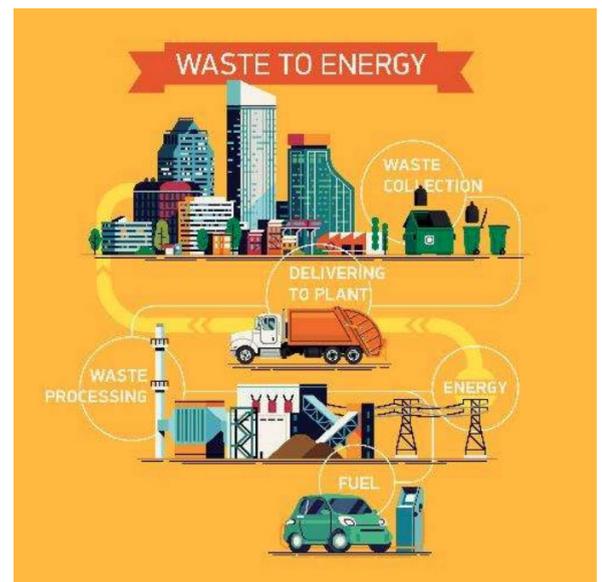
The circular economy is different. By recycling much more of what humans use, and by changing the way we make different items so that they can be reused, we can reduce the amount we are throwing away. The circular economy can be summarised as "take, make, use, re-use, remake, take-less".

In your own words, what is the circular economy?



Waste to Energy is a new technology that is being developed, where electricity can be generated by burning rubbish in a way that does not harm the environment. The power plants even use the energy created from the waste they burn to run.

Diagram: Waste to Energy





Redesign a product or process you use each day so that it could become part of the circular economy.