CLEETHORPES ACADEMY HOME LEARNING

Year 10: Geography

We Are ***CARING*** We Are ***CURIOUS*** We Are ***CREATIVE***

SELF QUIZZING

OUR EXPECTATIONS

- The act of self-quizzing supports retrieval. Retrieval is important because the more we revisit knowledge and ideas, the more likely we are to remember it. The more we remember, the greater sense we can make of our learning.
- You should spend a minimum of *30 minutes a night* focusing on a specific subject's retrieval activity.
- You should bring your completed work to form, every Tuesday, where your work will be checked and additional retrieval activities will be completed to support your retention of the information studied at home.
- Failure to complete the activities each week, will result in further sanctions.

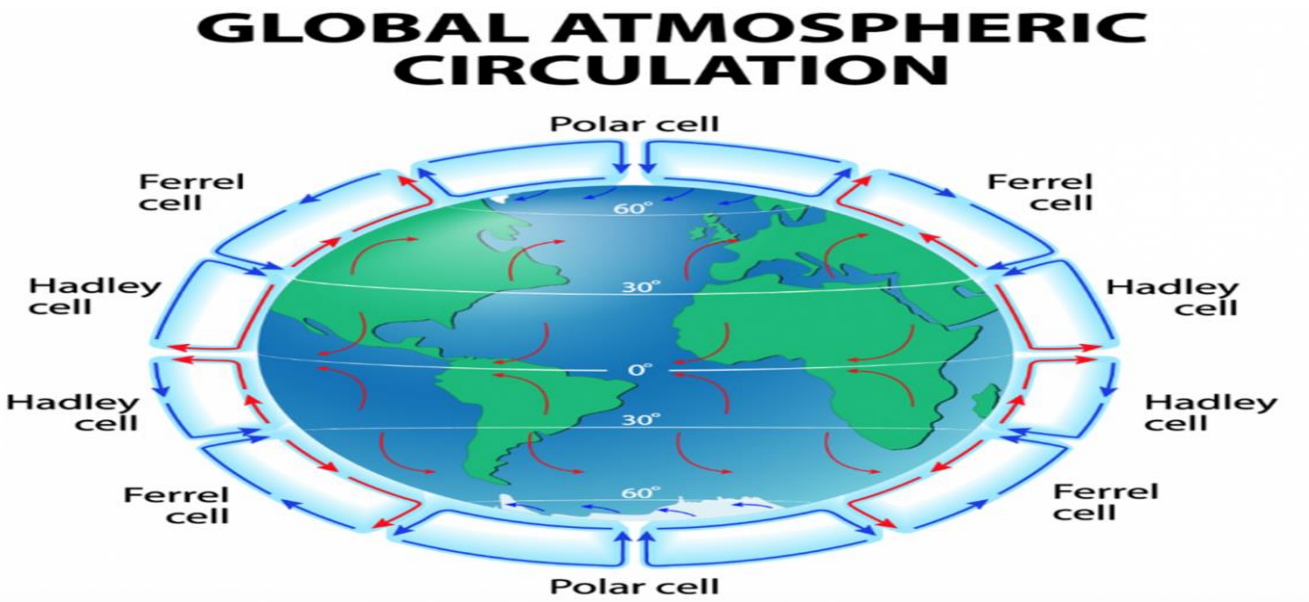
WHAT YOU SHOULD DO

- Each night, select a subject to focus on.
- Read the subject's information really trying hard to remember what you have read. You might want to highlight and add your own notes to the information you have been given.
- Once you are confident that you can recall the information without having to recheck, use the following blank page to write down everything you can remember, using a black or blue pen. Don't worry if you can't remember everything
- In form time, your tutor will ask you to check through your work and use a green pen to "gap fill" any information you may have missed.
- Your tutor will also ask further questions in relation to the information you have read each week, to further support your retention of new knowledge.
- You will be rewarded with carrot points for your efforts each week.

WEEK 1
Geography

The Global Atmospheric Circulation

1. The sun's energy is concentrated at the equator, making the temperature hot. Hot air rises, creating a low pressure belt. When the air reaches high altitudes it moves north and south.
2. As the air moves away from the equator it cools and begins to sink. Sinking air creates a high-pressure belt at 30° north.
3. Wind is the movement of air from high pressure to low pressure. When the sinking air reaches the surface, some moves back to the equator as trade winds, this completes the Hadley cell. Some air moves north as westerlies to start the Ferrell cell.
4. Winds moving north meet cold winds from the Polar cell. The warmer Ferrell cell winds are forced to rise, creating another low-pressure belt at 60° north.
5. Air moving north in the Polar cell cools and sinks at 90° north. This creates high pressure. Winds move from high pressure at 90° to low pressure at 60° north, completing the Polar cell.



Week 2
Geography

How do tropical storms form?

1.They only form over shallow, tropical seas at 27˚C,

2.The waters at least 60 meters deep,

3.5º – 15º North/South of the equator - heat,

4.5º – 15º North/South of the equator - spin,

5.Strong upward movements of air draws water vapour from the warm ocean surface,

6.As the evaporated air cools as it rises it condenses to form tall thunderstorm clouds,

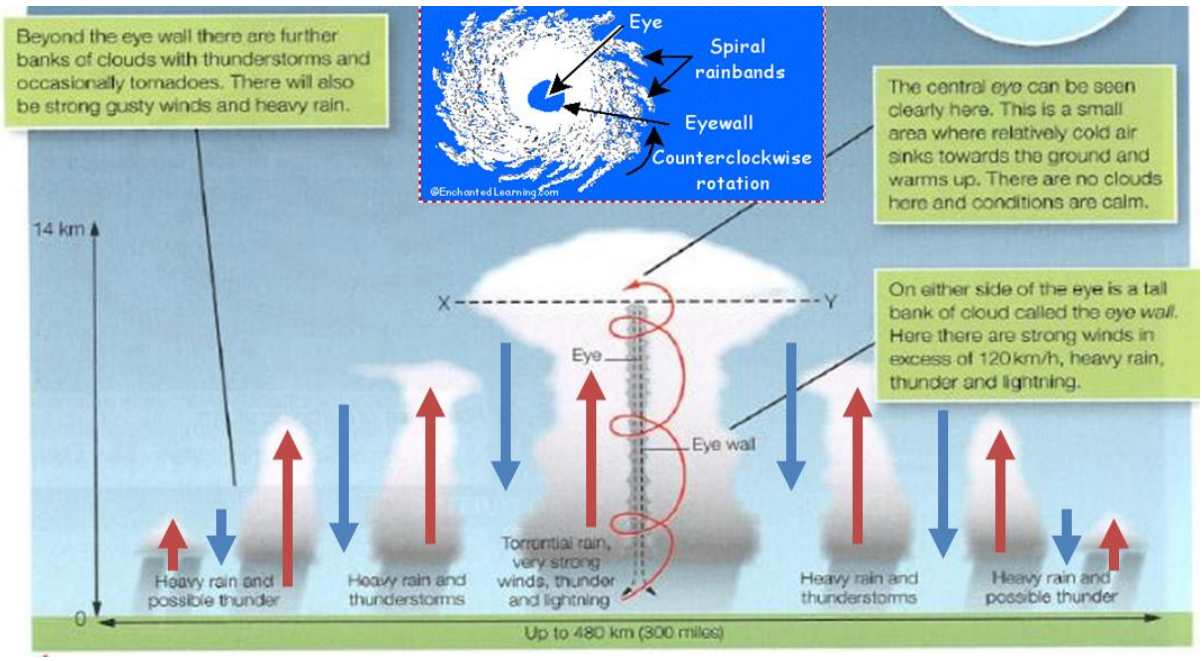
7.The Energy transfer (latent heat) generated by Evaporation and Condensation is needed to fuel the towering cloud formation,

8.Westerly wind blows constantly pushing water, air, clouds and smaller thunderstorms join together due to the spin of the Earth and the resultant westerly winds,

9.The hurricane spins anticlockwise in northern hemisphere due to Earth's rotation.

10.They are low pressure as warm air is rising,

11.As it reaches 75mph it becomes a tropical storm.



Week 3
Geography

Typhoon Haiyan

Primary effects (impacts of strong winds, heavy rain and storm surge)

- About 6300 people killed – most drowned by the storm surge.
- Over 600000 people displaced and 40000 homes damaged or flattened – 90% of Tacloban city destroyed.
- Tacloban airport terminal badly damaged.
- The typhoon destroyed 30000 fishing boats.
- Strong winds damaged buildings and power lines and destroyed crops.
- Over 400mm of rain caused widespread **flooding**.

Secondary effects (longer-term impacts resulting from primary effects)

- 14 million people affected, many left homeless and 6 million people lost their source of income.
- Flooding caused landslides and blocked roads, cutting off aid to remote communities.
- Power supplies in some areas cut off for a month.
- Ferry services and airline flights disrupted for weeks, slowing down aid efforts.
- Shortages of water, food and shelter affected many people, leading to outbreaks of disease.
- Many jobs lost, hospitals were damaged, shops and schools were destroyed, affecting people's livelihoods and education.
- Looting and violence broke out in Tacloban.

Week 4
Geography

Reducing the effects of a tropical storm

Planning

Education – they know what to do if a tropical storm hits. Where and how could this be done?

Disaster Aid
- Set up relief camps to provide food, water, shelter and basic services in the immediate aftermath of the storm.

Promote individual responsibility
Education –
- Raising individual and community awareness e.g. USA – National Hurricane Preparedness Week; focussing on potential dangers and setting own plan for their house.
- Get insurance for their lives, houses and belongings.
- Know what to do in the event of a tropical storm through the media, leaflets, talks or meetings.
- Offer low-cost loans to strengthen their houses e.g. storm shutters
- Low-cost loans to help re-build their houses after the storm has gone

Protection

Strengthen buildings – they could withstand the hurricane force winds/water (storm surge)/power.

Hazard resistant design
- Build embankments or levees around settlements to reduce the impacts of flooding or a storm surge.
- Strengthen houses and roofs against high winds and flooding.
- Build houses on stilts.
- Improve sanitation so there is less danger of sewage leaking into drinking water.
- Build better roads to help evacuation.
- Raise river banks to allow more water in them to reduce flooding.
- Protect the coastline from storm surges and flooding by building a sea wall.

Prediction and Monitoring

Improve warnings – more people are prepared. They are able to move people quickly, less loss of life, able to protect homes.

Warning and forecasting
- Improve weather stations so that they can give early warning of storms.
- Improve training for warnings and evacuations. Use more satellites; if they are LICs they can use the technology from a HIC.
- Improve land use planning.
- Plant mangroves and trees along the coast line to help shield the homes from the storm surge or strong winds.
- Land use zoning: build communities away from the coast. Allow agricultural land to flood.
- Create areas of swamplands on coastlands and allow them to flood.

Week 5
Geography

Reducing the effects of a tropical storm

Hazard	Impacts	Example
Strong Winds	• Strong winds (gales) can damage properties and disrupt transport. • Uprooted trees and debris can injure or kill people.	In 2018, Storm Ali killed two people when 100 mph winds blew over several trees.
Heavy Rainfall	• Too much rain can cause flooding, which can damage homes, disrupt transport networks and drown people. • Recovering from flooding can cost millions of pounds.	Parts of South Wales flooded in 2018 after over 180 mm of rain fell in 48 hours during Storm Callum.
Snow and Ice	• Snow and ice can cause injuries due to slipping and deaths due to the cold. • Schools and businesses can be forced to shut, and disruption to travel can have economic impacts.	In March 2018, the 'Beast from the East' brought up to 50 cm of snow, causing major disruption to traffic and schools.
Drought (a lack of precipitation)	• Water supplies can run low, causing economic impacts such as crop failures. • Rules to conserve water (like banning hosepipes) have to be introduced.	From April 2010 to March 2012, southern and eastern England only received 75% of their average monthly rainfall. By spring 2012, groundwater levels were very low.
Thunderstorms	• Heavy rain, strong winds and lightning can all occur during thunderstorms. • Lightning can cause fires, which can damage property and the environment, and can occasionally kill people.	In July 2014, a series of thunderstorms struck southern and central England, with lightning strikes causing power cuts and delaying flights.
Heat Waves	• During long periods of hot weather, pollution builds up in the air. This can cause heat exhaustion or breathing difficulties, which can kill people. • Disruption to transport from rails buckling or roads melting can cause economic impacts — but the tourism industry may benefit from the better weather.	2018 was one of the hottest summers on record, with temperatures reaching 35 °C in Kent. 

Week 6
Geography

Reducing the effects of a tropical storm

Background-
•Beast from the East meets Storm Emma.
•March 2018
•Polar Vortex, Low pressure from Siberia.
•Temperatures dropped to -10ºC
•Wind Chill of -22ºC
•Wind speeds exceeding 70mph
•10 killed across the country
•Hundreds trapped on roads and motorways.
Gas supplies running low.

Primary effects
Impacts caused directly by the storm
•15-20cm of snow fell over the course of three days.
•Storm Emma brings winds in excess of 70mph.
•Snow drifts in excess of 7m in rural locations.
•Waves batter coastlines across the country.
•Hundreds stranded for up to 36hrs on the M80 Motorway in Scotland and A roads in Devon.

Secondary effects
Impacts caused after the storm
•UK issued with a gas 'Deficit' warning.
•NHS cancelled non-urgent operations and clinics.
•Trains stranded on tracks overnight in Dorset.
•Thousands of homes left without power.
•Schools across the country closed for up to 3 days.
•Flights cancelled.

Responses
Help immediately during the storm-
•Armed forces deployed to rescue drivers and drive NHS workers to work.
•Greggs delivery driver hands out cakes to stranded drivers.
•Community centers open for homeless people to shelter from the conditions.
•Taxi firms offering to shop and fetch medicine/ supplies for elderly people.
•Met office issues 'Red' weather warning to stop people from travelling.
•Snow ploughs, gritters and tractors go out in force to clear snow and roads.
•Government asks businesses to reduce gas usage over the coming days.
•Red Cross issues blankets/camp beds to people stranded at Glasgow Airport.

Week 7
Geography

Climate Change

Evidence for Climate Change

Fossils - These can be studied for information covering longer time periods. For instance, limestone found in Yorkshire would have been formed on the bottom of a warm seabed millions of years ago. This can tell us what the climate used to be like when they had been first created.

Ice Cores - Locked inside ice are molecules and trapped air, which are preserved year on year with more snowfall. Subtle changes in temperature can be measured from ice cores extracted in Antarctica. These can be used to tell the climate from millions of years ago.

Analysis of pollen and trees - By looking at this you can work out if more or less pollination has taken place. This shows a past climate as more pollen would suggest a warmer climate as there would be more pollen and less pollen would indicate the opposite.

The characteristics of the rings inside a tree can tell scientists how old a tree is and what the weather conditions were like during each year of that tree's life. Very old trees can offer clues about what the climate in an area was like long before measurements were recorded.

Weather Recordings - Thermometers are more accurate now (reliable weather recordings began in 1910) and digital readings can be recorded remotely. This means you can easily tell if the climate has changed as you can compare different dates at different times.

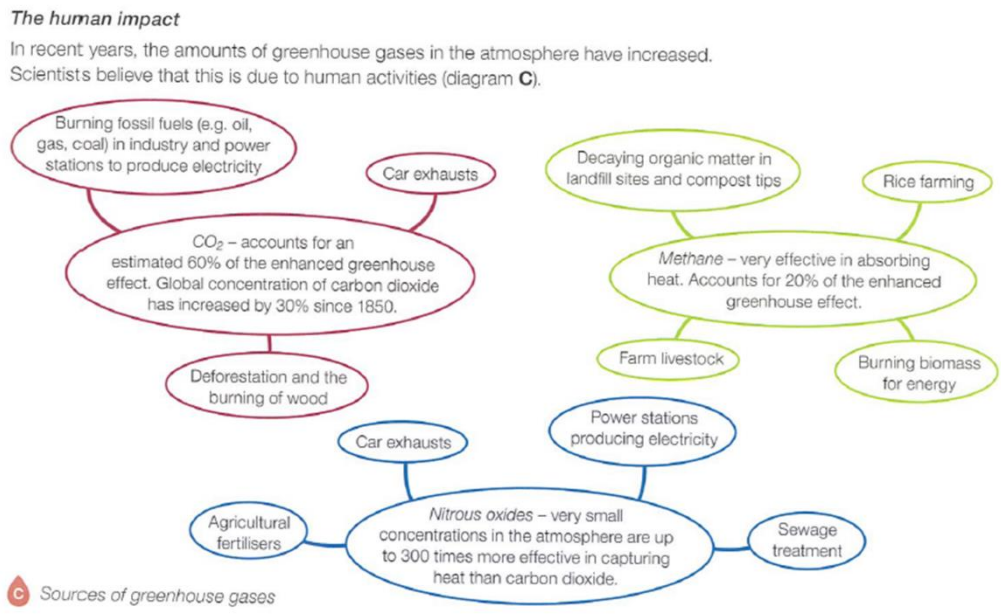
Natural Causes: Orbital Changes – Milankovitch

a) Axial Precession – the Earth wobbles on its axis.

b) Tilt / Obliquity – this means that the Earth changes its tilt every 41,000 years.

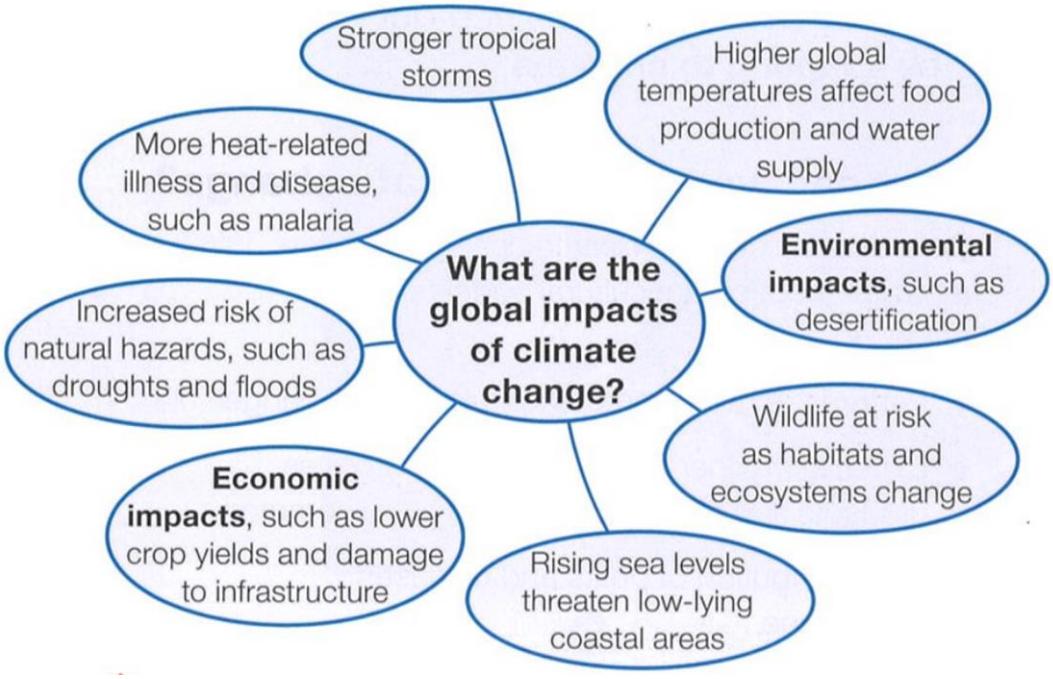
c) Eccentricity – this stretch of the earth's orbit will vary from a circular to a more elliptical (oval-shaped) orbit.

Human Causes: Enhanced Greenhouse Effect



Week 8
Geography

Impacts of Climate Change



Case Study: The Maldives

Fact
99% of all tourist industry is within 1 mile of the coastline.
42% of the population live within 100m of the coastline.
50% of houses are within 100m of the coastline.
Both main international airports are within 50m of the sea.
Around 75% of all communication facilities are within 100m of the coastline.
80% of energy production is located within 100m of the coastline.
70% of fishing infrastructure is within 100m of the coast.
64% of beaches have reported erosion.
Climate change is causing more rain in the wet season and longer, drier conditions in the dry season.
Fresh water is collected from rainwater; used for drinking, cooking, cleaning and washing. Bottled water is expensive to import in. Desalination is expensive and small scale in the Maldives.

Week 9

Geography

Impacts of Climate Change

Agriculture

- The crops that we grow for food need specific conditions to thrive, including the right temperature and enough water. A changing climate could have both positive and negative effects on crops.
- For example, the **northern parts of the United States** have generally cool temperatures, so warmer weather could help certain crops grow. In southern areas where temperatures are already hot, even more heat could hurt crop growth. Global climate change will also affect agriculture and food supply in many other ways.

Health

Temperature–Related Illnesses

- •Heat waves are uncomfortable for everyone, but for infants and young children, the elderly, and people who are already sick, they can be especially dangerous. Extreme heat can cause illnesses such as heat cramps, heat stroke, and even death. **A 2003 heat wave in Europe caused about 50,000 deaths, and a 1995 heat wave in Chicago caused more than 600 deaths.** In fact, heat waves cause more deaths in the United States every year than hurricanes, tornadoes, floods, and earthquakes combined.
- •On the flip side, as the world gets warmer, the number of illnesses and deaths related to extreme cold (like hypothermia and frostbite) may decrease.

Energy

- Global climate change will affect how much energy we need and when we need it. As temperatures rise, more people will need to keep cool by using air conditioning, which uses a lot of electricity. However, some people might need less energy to heat buildings in the winter because it may not get as cold as it used to be. Climate change could also make it harder to produce certain types of electricity, such as hydropower.

Water Supplies

- Climate change is affecting where, when, and how much water is available for people to use. Many parts of the world already have very little water, and climate change could make this problem worse. Rising temperatures, changing precipitation patterns, and increasing droughts will affect the amount of water in lakes, rivers, and streams, as well as the amount of water that seeps into the ground to replenish ground water.

Plants, animals and ecosystems

- Most plants and animals live in areas with very specific climate conditions, such as temperature and rainfall patterns, that enable them to thrive. Any change in the climate of an area can affect the plants and animals living there, as well as the makeup of the entire ecosystem. Some species are already responding to a warmer climate by moving to cooler locations.
- For example, some North American animals and plants are moving farther north or to higher elevations to find suitable places to live. Climate change also alters the life cycles of plants and animals.
- For example, as temperatures get warmer, many plants are starting to grow and bloom earlier in the spring and survive longer into the fall. Some animals are waking from hibernation sooner or migrating at different times, too.

Week 10
Geography

Adaptations to Climate Change

Agriculture

1.Patterns of rainfall and temperature will change.
2.Extreme weather e.g. heatwaves, droughts or floods will become more common.
3.Pests and diseases will change location.
4.Biotechnology and the use of genetically modified crops may need to be used more frequently to maintain food supplies.

In low latitudes (near the equator):

- Maize production in Southern Africa may reduce by 30%.

•Rice production in South Asia could fall by 10%.

In Middle Latitudes (E.g. Europe)

- Warmer climate could mean an increase in crops such as wheat.
- Some Mediterranean crops (such as olives) could grow further north and thrive in places such as the UK.
- Water Supply

Managing water supplies (LIC)

Cloud Catching in Peru

•The small town of Villa Lourdes in Peru has no access to running water.

•Three times a week they are visited by a truck from Lima delivering water.

•In summer they will get a delivery of water everyday.

•Their fields were arid and bare until they began harvesting the daily fog for water. Using large nets they built 'Atrapanieblas', nets that turn fog into water, so that they could irrigate (artificially water) their fields.

•Harvesting fog for water is a low tech method of irrigating crops.

•This is just one example of how communities across the world are finding creative, appropriate solutions that enhance yields, save money and move their economies away from depending on fossil fuels.

Managing water supplies (HIC)

•Dry areas are predicted to become even drier over time.

•To combat these water shortages water will have to be managed and used more efficiently and with greater care.

•Water meters can be installed in homes to discourage the wasting of water.

•Grey water can be used. This is water that has already been used for something already. Some industries collect rain water and then use it to flush their toilets. Water from bath tubs, washing up bowls can be used to water the garden or wash cars.

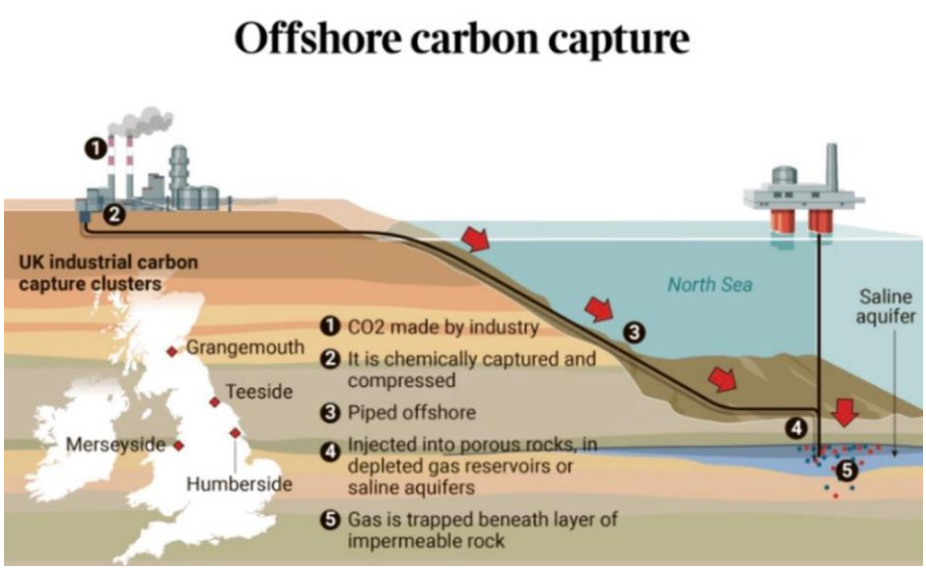
Week 11
Geography

Mitigation of Climate Change

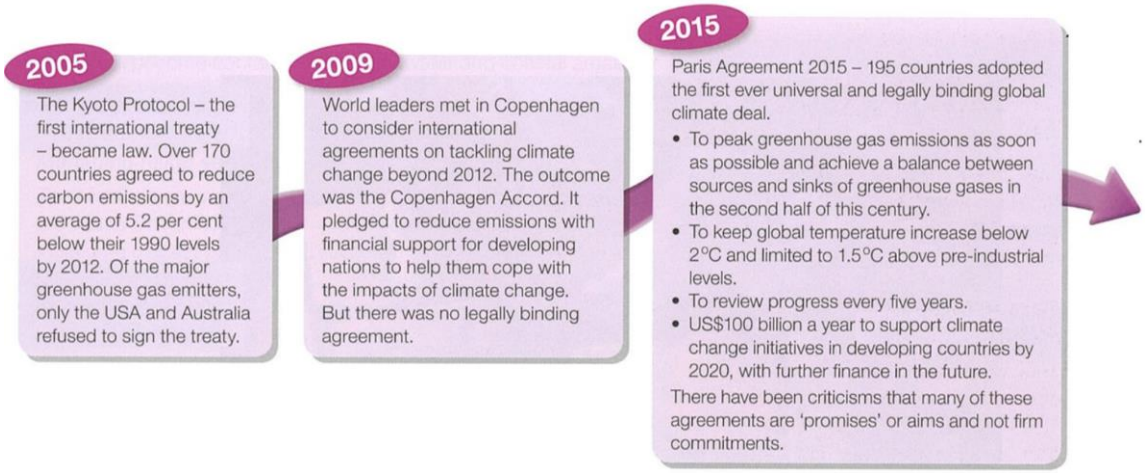
Local scheme – House Improvements

1. Insulate your loft
2. Upgrade your boiler
3. Hang thick curtains and insulate your doors
4. Watch your energy consumption
5. Switch to a cheaper energy tariff
6. Use a water-saving showerhead
7. Fit double or triple glazing
8. Invest in a eco efficient electrical products
9. Install solar panels
10. Insulate your cavity walls

National / Local Scheme - Carbon Capture



International Agreements



Week 12
Geography

Mitigation of Climate Change

COP 21 – Parie Agreement

Approved by 195 countries. Take affect from 2020

Temperature 2100
Keep increases in temperature well below 2°C above pre-industrial levels

Continue all efforts to limit the rise in temperatures to 1.5°C

Finance 2020–2025
Rich countries must provide a 'foundation' of $100 billion from 2020

Differentiation
Developed countries must continue to take the lead in the reduction of greenhouse gases

Emissions objectives 2050
Aim for greenhouse gas emissions to peak as soon as possible

Burden sharing
Developed countries must provide financial resources to help developing countries

Review mechanism
A review every five years with the first review in 2023

Climate damage
Vulnerable countries have won recognition of the need to avert, minimise and address losses suffered due to climate change