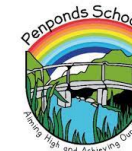


# Planet B Knowledge Organiser

## How do we make sure there is enough for everyone?

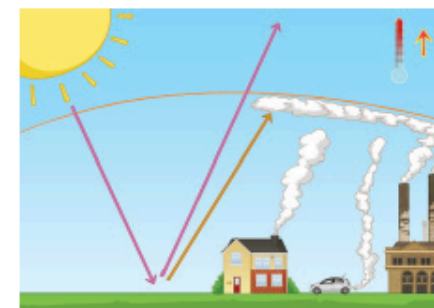
### Tregonning Y5/6 Spring Term



- Natural hazards pose major risks to people and property.
- Natural hazards are natural processes which cause damage, injury and death.
- Meteorology hazards are caused by the weather and climate.
- Different factors affect hazard risk including the severity of the natural hazard, the ability of a place to cope with the hazard and the likelihood that a hazard will occur.

### Climate Change

- Significant change in the Earth's climate over time is called climate change.
- The quaternary period (the last 2.6 million years) has seen many cold (glacial) periods and warmer (inter-glacial) periods.
- The last glacial period was 15 000 years ago and since then Earth's climate has been warming up.



### Possible Causes of Climate Change

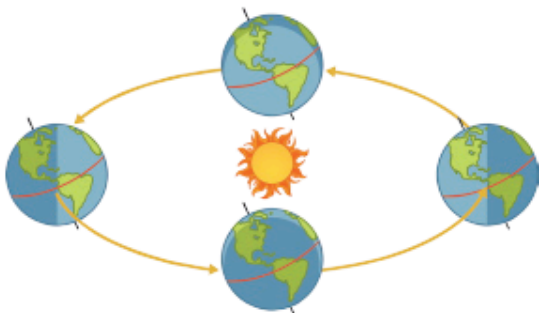
#### Natural Causes

- Volcanic activity – volcanic ash can block out/reflect the Sun's rays and cause the Earth to cool down (e.g. 1991 Mount Pinatubo eruption).
- Solar output – the Sun's solar output varies. Some scientists believe this might affect global climate.
- Orbital variation – the way the Earth orbits the Sun varies over time. This may have caused global climate change.

#### Human Activities

Many scientists believe an enhanced greenhouse effect is responsible for global warming. They believe that various human activities have caused this including:

- Burning fossil fuels (coal, oil, gas) – this releases CO<sub>2</sub> (a greenhouse gas).
- Farming – cattle and flooding rice paddy fields emit methane (a greenhouse gas).
- Deforestation – chopping down trees mean that they cannot absorb CO<sub>2</sub>. Burning trees also releases more CO<sub>2</sub>.



### Evidence of Climate Change

#### Tree Rings

- Tree rings provide evidence of climate change for the last 10 000 years.
- Each year trees grow a new ring. During warm periods the ring is thicker.
- A thin tree ring represents poor growing conditions.

#### Glaciers

- Glaciers can indicate climate change over millions of years.
- Moraines mark the extent of ice sheets during glacial periods. Materials in these moraines can be dated.
- Data from satellites reveal that since 2009 the land ice sheets in Greenland and Antarctica have seen an acceleration of ice mass loss.

#### Pollen Analysis

- The 'shell' of pollen resists decay.
- The type of pollen found in different layers of sediment show variations in plant communities which could indicate what the climate was like when the sediment was deposited.

#### Ice Cores

- Scientists can take cores from ice sheets.
- Each year a new layer of ice builds up.
- The gases trapped in different layers of ice can be analysed. They can reveal what the temperatures were when the ice was formed.

## Keywords

adaptation, climate change, mitigation, orbital changes, Quaternary period

### Effects of Climate Change

#### Effects on the Environment

- Melting glaciers and ice sheets could cause sea levels to rise.
- Melting sea ice is reducing polar habitats.
- Flooding of low-lying areas as a result of sea-levels rising. This could lead to species extinction due to habitat loss, e.g. the natural habitat of the tiger (mangrove forests of India and Bangladesh) are at risk of flooding.
- Precipitation patterns are changing which will affect crop yields.
- Increased temperatures could lead to species extinction, e.g. the orange-spotted filefish (which lives off the Japanese coast) faces extinction.
- Increased sea temperatures cause coral bleaching, destroying their habitat.

#### Effects on People

- More extreme weather, e.g. the 2017 hurricane season.
- Reduced crop yields could cause an increase in malnutrition and death.
- Melting ice could lead to the flooding of low lying areas.
- Migration and overcrowding due to loss of land.
- Increased heat could cause death.
- New diseases/migration of diseases to new areas, e.g. Anopheles mosquitoes could move further into temperate latitudes, increasing the incidence of malaria.
- Water shortages could lead to political tensions, especially between countries competing for water.

### Managing Climate Change

#### Mitigation Strategies (Reduce the Causes of Climate Change)

- Alternative energy production – using renewable energy instead of fossil fuels.
- Carbon capture – Carbon Capture and Storage (CCS) traps, transports and stores CO<sub>2</sub>.
- Planting trees – increases the amount of CO<sub>2</sub> absorbed from the atmosphere.
- International agreements – the Kyoto Agreement was signed by most countries in the world. They agreed to monitor and reduce greenhouse gas emissions.

#### Adaptation (Responding to Change)

- Change agricultural systems – plant different crops/use biotechnology to ensure crop success, e.g. grapes can now be grown in Southern England.
- Managing water supply – water meters could discourage wasting water. Also, rainwater can be collected and used.

