

Year 7 Work: Week Commencing 15th and 22nd June

Tasks: Complete the questions below based on the information provided on the second page

1. Explain the causes and effects of global warming:
 - Use capital letters
 - Full sentences
 - Define global warming
 - State the natural causes
 - State the human causes
 - Explain in detail the effects on people
 - Explain in detail the effects on the environment

2. Explain how people can solve global warming
 - Explain what global warming is
 - Explain the problems with global warming
 - Suggest one way that we can mitigate global warming
 - Suggest one way that we can help countries adapt to global warming

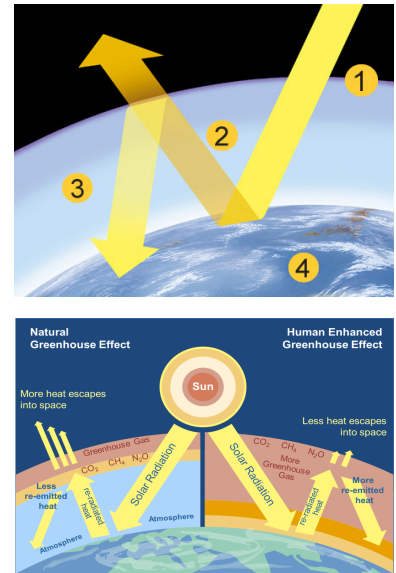
3. Describe the main features of a sustainable urban living project
 - Define sustainable community
 - Introduce your case study (Bedzed)
 - Describe the features of the project
 - What are they?
 - Why have they been introduced?



The Greenhouse Effect:

Climate change is a naturally occurring event, however global warming has increased significantly in recent years, and scientists believe that human activity has rapidly increased the temperature of the earth. Carbon dioxide is a greenhouse gas, which absorbs heat from the sun and prevents it escaping. The more greenhouse gases in the atmosphere, the hotter the atmosphere will become.

1. Sun's rays enter the Earth's atmosphere.
2. Heat is reflected back from the Earth's surface.
3. Heat is reflected by carbon dioxide (greenhouse gas) and as a result becomes trapped in the atmosphere.
4. The Earth becomes hotter as a result.



Causes of Global Warming

Natural factors can change the temperature of the Earth's atmosphere, but the factors which heat up the Earth the fastest are caused by human activity. Any activity which releases greenhouse gas into the atmosphere speed up the warming of the earth.

Natural causes:

- Volcanoes erupt and release sulphur dioxide.
- Bacteria in soil releases nitrous oxide.
- Lightning storms release nitrous oxide.

Human causes:

- Burning fossil fuels, such as oil and coal, is the main way the world generate energy.. When these fossil fuels are burnt, carbon dioxide is released into the atmosphere.
- Deforestation is another human cause. As trees are removed from the Earth, they can no longer remove carbon dioxide from the atmosphere.
- Methane is a greenhouse gas released into the atmosphere by cattle. The more cattle farms humans need the more is released.

Solutions to Global Warming

Mitigating (trying to stop global warming):

- Using alternative energy – renewable sources are sources of energy which can be replenished and do not release greenhouse gases into the atmosphere. These include solar, wind, tidal, geothermal, HEP, biomass and nuclear.
- Carbon capture: scientists are developing ways to store carbon dioxide safely underground.
- Replanting trees: more trees to take in carbon dioxide will reduce the amount in the atmosphere.

Adaptation (learning to live with the effects of global warming):

- Changing agricultural systems to cope with the higher temperatures. We might need to plant new crop types suitable to the climate of certain areas.
- Coping with sea level rise as sea level is predicted to rise by 82cm by 2100. We can build flood barriers. In areas that cannot afford flood defences people build their homes on stilts.
- Managing water supply, as unreliable rainfall and period of shortage will need to be managed so people have water. Rainwater can be collected and recycled and people can save on the water they are using.

Sustainable Energy Supply

To meet the increasing global demand for energy, while reducing the risk of damage to the environment it is important to manage energy sustainably. As well as using renewable resources, it is important that industry, transportation and consumers in their homes use energy more efficiently. For example, by:

- Walking, cycling or using public transport.
- Using smaller, more energy efficient cars.
- Reducing the amount of aircraft journeys made.
- Switching off lights and power sockets when not in use.
- Recycling and reusing plastics and oil-based products.
- Installing house roofs and double glazing to reduce the energy used for heating buildings.

Sustainable Buildings

More sustainable buildings, for example those with double glazing and that maximise opportunities to generate renewable energy, are key in a sustainable future. Eco-schools are a key example of a building which need to be more sustainable. Seaton Primary School, UK, try to be more sustainable by:

- Encouraging children to walk or cycle to school.
- Make their own electricity using wind turbines and solar panels.
- Educating about sustainability in every lesson.
- Using food waste to grow plants.
- Running an eco-club where children can be sustainable.

Sustainable Energy Use at Home

Using renewable energy in the home is a clear way to switch from using fossil fuels, however there are many things people can do in their homes to further manage energy sustainably. For example:

- Install double glazed windows, insulated rooves and layering up instead of turning the heating on.
- Switch all appliances off and unplug them – even when they are not on they may be using energy.
- Install smart energy meters in homes so people are able to see how much energy they are using, how much money it is costing and therefore they can reduce their usage.
- Opening curtains and allowing natural heat into homes, rather than using central heating.
- Getting children involved with sustainable energy use through education and switching off electronics.

Bedzed

BedZED (Beddington Zero Energy Development) is a housing development in Hackbridge, London. The housing here is different from common housing as it focuses on environmentally friendly systems and energy sustainability. It was built in 2000 and currently has 82 homes.

The key features include:

South facing houses which have large triple glazed windows to encourage natural heating.

There are wind cowls on the roof, which naturally air condition the homes with natural wind.

A waste centre maximises recycling.

Rainwater Is collected on the rooves and used to flush toilets.

