Exploring Global Warming: Understanding its Impact

Introduction

Welcome to this worksheet on global warming and its effects on the Great Barrier Reef, rising sea levels, and geological changes. This worksheet is designed for 14-year-old students in the UK and is aligned with the primary school curriculum.

The activities and questions in this worksheet cater to mixed ability differentiation, with foundation, core, and extension levels to ensure that all students can access the learning objectives.

Foundation Level - What is Global Warming?

1. What is global warming?

2. What is the main cause of global warming?

3. How does global warming affect the Great Barrier Reef?

Answers:

1. Global warming is the increase in the average temperature of the Earth's atmosphere.
2. The main cause of global warming is the increase in greenhouse gases, such as carbon dioxide, in the atmosphere.
3. Global warming causes coral bleaching, sea level rise, and changes in ocean chemistry, which affect the health and biodiversity of the Great Barrier Reef.

Core Level - The Carbon Cycle

1. What is the carbon cycle?
2. How do human actions affect the carbon cycle?
3. What are the consequences of disrupting the carbon cycle?

Answers:

1. The carbon cycle is the process by which carbon is exchanged between the atmosphere, oceans, land, and living things.
2. Human actions, such as burning fossil fuels and deforestation, release carbon dioxide into the atmosphere, disrupting the carbon cycle.
3. Disrupting the carbon cycle leads to an increase in greenhouse gases, which contributes to global warming and its effects on the environment.

Extension Level - Geological Changes

1. What are the geological changes caused by global warming?
2. How do these changes affect human populations and the environment?

3. What can be done to mitigate the effects of geological changes?

Answers:

1. Geological changes caused by global warming include melting glaciers, sea level rise, and changes in ocean chemistry.
2. These changes affect human populations by causing coastal erosion, flooding, and saltwater intrusion into freshwater sources, and affect the environment by altering ecosystems and biodiversity.
3. To mitigate the effects of geological changes, we can reduce carbon emissions, transition to renewable energy sources, and implement sustainable land-use practices.

Foundation Level - Rising Sea Levels

1. What is the main cause of rising sea levels?
2. How do rising sea levels affect coastal communities?
3. What can be done to protect coastal communities from rising sea levels?

Answers:

1. The main cause of rising sea levels is the melting of glaciers and ice sheets due to global warming.
2. Rising sea levels cause coastal erosion, flooding, and saltwater intrusion into freshwater sources, which affect the livelihoods and homes of people living in coastal communities.
3. To protect coastal communities, we can build sea walls, implement early warning systems, and relocate communities to higher ground.

Core Level - The Great Barrier Reef

1. What is the Great Barrier Reef?
2. How does global warming affect the Great Barrier Reef?

3. What can be done to protect the Great Barrier Reef?

Answers:

1. The Great Barrier Reef is the world's largest coral reef system, located off the coast of Australia.

2. Global warming causes coral bleaching, sea level rise, and changes in ocean chemistry, which affect the health and biodiversity of the Great Barrier Reef.
3. To protect the Great Barrier Reef, we can reduce carbon emissions, establish marine protected areas, and promote sustainable fishing and tourism practices.

Extension Level - Sustainable Solutions

1. What are some sustainable solutions to mitigate the effects of global warming?
2. How can individuals contribute to reducing carbon emissions?
3. What role can governments and organizations play in addressing global warming?

Answers:

1. Sustainable solutions include transitioning to renewable energy sources, increasing energy efficiency, and implementing sustainable land-use practices.
2. Individuals can contribute by reducing their carbon footprint, using public transport, and supporting organizations that promote sustainability.
3. Governments and organizations can play a crucial role by implementing policies and practices that reduce carbon emissions, investing in renewable energy, and promoting sustainable development.

Foundation Level - Carbon Footprint

1. What is a carbon footprint?
2. How can we reduce our carbon footprint?

3. Why is it important to reduce our carbon footprint?

Answers:

1. A carbon footprint is the amount of carbon dioxide emitted into the atmosphere as a result of human activities.
2. We can reduce our carbon footprint by using public transport, carpooling, and reducing energy consumption.
3. Reducing our carbon footprint is important because it helps to mitigate the effects of global warming and promotes a sustainable future.

Core Level - Climate Change

1. What is climate change?

2. How does climate change affect the environment and human populations?

3. What can be done to address climate change?

Answers:

1. Climate change refers to the long-term warming of the planet due to an increase in greenhouse gases in the atmosphere.
2. Climate change affects the environment by altering ecosystems and biodiversity, and affects human populations by causing extreme weather events, sea level rise, and changes in temperature and precipitation patterns.
3. To address climate change, we can reduce carbon emissions, transition to renewable energy sources, and implement sustainable land-use practices.

Extension Level - International Cooperation

1. Why is international cooperation important in addressing global warming?

2. What are some examples of international agreements on climate change?

3. How can individuals and organizations contribute to international efforts to address global warming?

Answers:

1. International cooperation is important because global warming is a global issue that requires a collective response.
2. Examples of international agreements on climate change include the Paris Agreement and the Kyoto Protocol.
3. Individuals and organizations can contribute by supporting international efforts, promoting sustainable practices, and advocating for climate change policies.

Conclusion

In conclusion, global warming is a critical issue that affects not only the environment but also human societies and economies. By understanding the carbon cycle, the effects of global warming on the Great Barrier Reef, rising sea levels, and geological changes, we can develop the knowledge and skills needed to address this issue.

Remember that every small action counts, and collective efforts can make a significant difference in mitigating the effects of global warming.

Assessment Rubric

* Foundation level: 1-3 pages completed, with some understanding of the topic

* Core level: 4-6 pages completed, with a good understanding of the topic

* Extension level: 7-10 pages completed, with an excellent understanding of the topic and demonstration of critical thinking and problem-solving skills