

## Unit 2: Global Climate—Vulnerability and Resilience

### 1. Causes of global climate change

Suggested teaching time 7–8 hours

| Geographic inquiry                                                      | Geographic knowledge and understanding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>How natural and human processes affect the global energy balance</b> | <p>The atmospheric system, including the natural greenhouse effect and energy balance (incoming shortwave radiation and outgoing longwave radiation)</p> <p>Changes in the global energy balance, and the role of feedback loops, resulting from:</p> <ul style="list-style-type: none"><li>● solar radiation variations, including global dimming due to volcanic eruptions</li><li>● terrestrial albedo changes and feedback loops</li><li>● methane gas release and feedback loops</li></ul> <p>The enhanced greenhouse effect and international variations in greenhouse gas sources and emissions, in relation to economic development, globalization and trade</p> <p><b>Synthesis, evaluation and skills opportunities</b></p> <p>The complexity of the dynamic climate system and the spatial interactions of different processes and feedback mechanisms</p> |

### 2. Consequences of global climate change

Suggested teaching time 7–8 hours

| Geographic inquiry                                                                         | Geographic knowledge and understanding                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>The effects of global climate change on places, societies and environmental systems</b> | <p>Climate change and the hydrosphere, atmosphere and biosphere, including:</p> <ul style="list-style-type: none"><li>● water stored in ice and oceans, and changing sea levels</li><li>● carbon stored in ice, oceans and the biosphere</li><li>● incidence and severity of extreme weather events, including drought</li><li>● spatial changes in biomes, habitats and animal migration patterns</li><li>● changes to agriculture, including crop yields, limits of cultivation, soil erosion</li></ul> |

Impacts of climate change on people and places, including health hazards, migration and ocean transport routes

**Synthesis, evaluation and skills opportunities**

The uneven spatial distribution of effects and uncertainty about their timing, scale and impacts for individuals and societies

### 3. Responding to global climate change

Suggested teaching time 7–8 hours

**Geographic inquiry**

**Geographic knowledge and understanding**

**Possibilities for responding to climate change and power over the decision-making process**

Disparities in exposure to climate change risk and vulnerability, including variations in people's location, wealth, social differences (age, gender, education), risk perception

- *Detailed examples of two or more societies with contrasting vulnerability*

Government-led adaptation and mitigation strategies for global climate change:

- global geopolitical efforts, recognizing that the source/s of greenhouse gas emissions may be spatially distant from the countries most impacted
- carbon emissions offsetting and trading
- technology, including geo-engineering

Civil society and corporate strategies to address global climate change

- *Case study of the response to climate change in one country focusing on the actions of non-governmental stakeholders*

**Synthesis, evaluation and skills opportunities**

Why perspectives and viewpoints may be different about the need for, practicality and urgency of action on global climate change