



# Module 1: Carbon

# Years F to 10

## Module 1 – Carbon: Summary of specific learning outcomes for years F to 10

Key themes (Essential questions)	What is carbon?	What is the carbon cycle?	What is climate change and what role does carbon play in it?	What is my carbon footprint and how can I reduce it?	What can be done to mitigate climate change on a regional scale?
Foundation	Living things and non-living things are made up of carbon  Carbon can occur in many different forms	Carbon is part of the air, the water, the soil and all living things  Living things, such as people, can do things that move carbon from other places into the air	The amount of carbon in the air affects the weather  When there is too much carbon in the air, it can make the weather different to what has happened in the recent past	People can reduce the amount of carbon they put into the air by doing some simple everyday things differently	
Year 1 to 2	When living things grow, change and reproduce, they are using carbon in some way to make this happen	Carbon exists in different forms in different parts of the Carbon cycle  Natural processes control the movement of carbon between parts of the carbon cycle	When there is too much or too little carbon in the air, the effects on the weather can be dramatic	People can do everyday things that add carbon to the air, prevent carbon from entering the air and take carbon out of the air	
Year 3 to 4	Pure carbon is a chemical that exists naturally in the environment in a range of different forms; these forms have different properties	Living things take and use carbon from the environment and return it to the environment in a variety of natural and man-made processes	The greenhouse effect is a natural and essential process for life on Earth  The enhanced greenhouse effect causes the Earth to heat up as a result of too much carbon being present in the atmosphere	I can calculate my carbon footprint, using digital technologies, by providing information about the lifestyle of myself and my family  My carbon footprint can tell me how many planet Earths would be needed if everyone's lifestyle was like mine	My actions and decisions can impact on the livelihoods and lifestyles of people in other places in the Asia-Pacific region
Year 5 to 6	Carbon is a chemical substance that can join chemically to other substances to form molecules such as carbon dioxide, crude oil and sugars	Humans can make use of natural processes that occur in the carbon cycle to generate electricity  Some of these processes produce carbon dioxide as a by-product	When atmospheric temperatures rise, there are many consequences for the living and non-living things on the Earth	I can reduce my carbon footprint by making some simple changes to my daily life	People in other places in the Asia-Pacific region have lifestyles with a variety of carbon footprints for a variety of reasons
Year 7 to 8	The chemical bonds between carbon atoms in molecules such as carbon dioxide, crude oil and sugars can be broken to release energy	Energy is transferred between different forms to generate electricity.  The inefficiencies of energy transformations can result in the production of heat	Some of the consequences of climate change are short term and some are long term.  Some of the consequences of climate change are reversible and some are permanent	I can reduce my carbon footprint by reducing my energy consumption from non-renewable resources	Countries in the Asia-Pacific region have renewable and non-renewable resources and can make individual and collective decisions about their energy sources and use
Year 9 to 10	Carbon is involved in many types of chemical reactions	Carbon can be stored and sequestered, which reduces the concentration of atmospheric carbon	Some of the consequences of climate change involve a tipping point. Once this tipping point is reached, the change is irreversible	Through communication and interaction with family, friends and others in my local area, our collective carbon footprints can be reduced	People in different countries in the Asia-Pacific region can collaborate to reduce the carbon footprint of the region