Topic: GCSE 4.3: Ecosystems – Is there more to Polar Environments than Ice?		Duration: 4 lessons	Composite: Unit test
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Polar, habitat, north pole (Arctic) and south pole (Antarctica), seasons, tundra, freezing, melting, adaptations, extreme environment, fragile, sustainable, marine, conservation, sanctuary, tourism, exploitation, industrial, NGO, Greenpeace, agreement, protocol, scientific, protection.	**Polar regions** -Polar habitats are located in the **very north and very south** of the globe – the two pole ends of the Earth. The **northern** polar region is called the **Arctic**, and in the **south** the polar region is the continent of **Antarctica**. Polar habitats have ju**st two seasons – summer and winter** (but even summer is normally very cold). In the **summer, it is light for 24 hours a day** (right at the north and south Poles, the sun doesn't set for six whole months when it is summer) and in the **winter it is dark for 24 hours a day**. Polar habitats have **tundra**, which is **ground that is nearly always frozen and lacks trees**. The very top of it will thaw in the summer months so **low-lying grasses** and **mosses** can grow, but there isn't enough room for long tree roots in the non-frozen soil. Because it is too cold for trees to grow in Arctic habitats, animals find other places to live such as holes in the ground, or in caves made from snow. **Animals** in the Arctic also can't rely too much on eating plants. Most are **carnivores** (they eat meat) and hunt for fish as well as smaller animals. Polar habitats get very, very cold – it can get as cold as **-50**°C in the Arctic, and temperatures in Antarctica have been as cold as **-89**°C Polar environments must be **sustainably managed** as they are extremely fragile. Activities such as whaling, oil exploration, mineral extraction, tourism etc. can be harmful to the environment. Case Study #1 : **Marine Wildlife Sanctuary (MWS) is smaller scale example** of management in the polar environment. It is located around Baffin Island, Northern Canada. It is a sanctuary for 2,000 bowhead whales and started in 2008. Whales have traditionally been hunted in this area sustainably as inuit people have used them for food. Industrial scale killing of whales has been banned. This is sustainable as the local people only take what they need and the population of whales has grown. It is supported by NGO's like Greenpeace. However, the whales are vulnerable to hunting when not in the Sanctuary. Case Study #2: **Antarctic Treaty (global scale**) This is in the southern hemisphere. An agreement formed in **1961 was signed by 46 countries** to stop weapons testing, share scientific research, stop nuclear explosions, allow no particular ownership by countries of the territory. It is sustainable as the area is now better protected, the natural environment has a greater value and we are learning more about the area due to everyone working together.	*Arctic – North Pole, Northern Hemisphere, MWS – Smaller scale. *Antarctica – South Pole, Southern Hemisphere – Global scale. * Polar environments extremely cold – limited number of species that live in these environments. Limited numbers of humans also who would choose to be in such harsh surroundings. Any species must be able to adapt. *Polar environments are very fragile. Many human activities have caused very damaging effects.	*Global hazards 1– climatic hazards. *Changing climate 2 – temperature, weather patterns. *Dynamic Development – 6 - raw materials, economic development, employment. *Resource Reliance – 8resource exploitation.

Topic: GCSE 8.1: Resource Reliance – Will we run out of Natural Resources?		Duration: 4 lessons	Composite: Unit test
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Resource, energy, water, food, availiability, supply, demand, quality of life, wealth, afford, modification, environment, finite, infinite, mechanisation, commercial, subsistence, fishing, fish farms, intensive, extensive, Hydro-electric -power, deforestation, fracking, water transfer scheme, reservoir.	1 – A resource is any feature of the environment which can be used to meet human needs is called a resource. Some are essential for survival, like food, energy and water whilst others are needed to maintain a standard of living. 2 - The amount of available resources is known as the supply. Demand refers to the level of resources that are wanted/needed by humans. Sometimes demand is greater than supply and resource stocks run low or even run out. This is partly because populations are increasing so more resources are needed and as QoL improves, people can afford to buy more. 3 – Humans are responsible for the modification of environments as a result of the pursuit of resources. Examples of the ways in which we do this are: - *Mechanisation - The process of using machines, technology, and automation to do work instead of using humans. e.g. Farms use tractors and combine harvesters instead of horse-drawn ploughs. Commercial Farming: farming for a profit, where food is produced by advanced technological means for sale in the market. *Commercial farms operate as businesses to make money. They might use the land intensively or they might farm big areas (extensive). *Subsistence Farmers are producing food to feed their families. They often use basic technology. Over time, these are developing and yields (amount of food crops grown) are improving. *Commercial fishing operates to make profit. Most boats catch fish from wild fisheries (seas/oceans). Over time, fishing boats have got bigger, bigger nets mean they catch more fish at once, they now process the fish whilst at sea and This has caused fish stocks to decline in some places. *Fish farms - large numbers of fish are kept in freshwater or seawater tanks and enclosures. This helps keep fish stocks at a sustainable level. *Obtaining energy resources (coal, oil, gas, HEP) can result in deforestation so we can get under the ground to extract them. Deforestation means the removal of trees. *Fracking' - is a technique used to capture gas found deep underground in shale rock. Shale gas is trapped inside tiny pockets of rock, which makes it hard to reach. * In order to increase the amount of water available water catchment areas can be increased in size or water can be transferred from one area to another.	*A resource is anything that can be used to meet a human need. *Supply= availability. *Demand = amount wanted/needed by humans. * Commonly demand is outstripping supply as a result of growing population and as places get more developed people can afford more and therefore more resources are used. *Humans are responsible for changing environments as a result of trying to obtain resources. They do this in many ways such as : mechanisation, commercial farming, subsistence farming, commercial fishing, fish farming, obtaining energy resources, deforestation, water transfer schemes, building dams an fracking.	*5 Urban Futures - urbanisation *6 Dynamic development - indicator data - calories per capita, life expectancy; PPD; bottom up & top down aid projects; bi-lateral aid; NGOs *4 Sustaining ecosystems - marine biomes *2 climate change - global warming

Topic: GCSE 8.2: Resource Reliance – Can we feed Nine Billion People by 2050 (A)?		Duration: 4 lessons	Composite: Unit test
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Resource, food security, physical, social, economic, nutrition, nutritious, healthy, active, temperature, climate, precipitation, pest, parasites, water supply, poverty, distribution, infrastructure, war, conflict, land ownership, climate change, waste, indicator, daily calorie consumption, % of household income spent on food, life expectancy, % of people living on less than a dollar a day, Global Hunger Index, Global Food Security Index, AC, LIDC, supply, demand, population, pessimistic – Malthus, optimistic -Boserup	1 - Food security is when all people, at all times, have [physical, social and economic] access to sufficient, safe and nutritious food to maintain a healthy and active life. * Physical factors that affect this are – temperature, soil, water supply, pests/diseases/parasites. *Human factors that affect this are – poverty, distribution/infrastructure, war/conflict, land ownership, waste and climate change. 2 – We can measure food security through indicators: average daily calorie consumption BUT some foods, eg rice, contain fewer calories than meat. % of people living on less than a dollar per day, % of household income spent on food, life expectancy. There are also other measures which combine multiple indicators such as the Global Hunger Index/ Global Food Security index. Usually LIDC countries are less food secure than ACs. 3- There are two main visions of the future in terms of resources devised by 2 different geographers: - *Malthus - He was pessimistic and believed that population grows geometrically (1, 2, 4, 8, 16) whilst food production increases arithmetically (1, 2, 3, 4, 5). so, demand for food would exceed supply and people would go hungry. *Boserup on the other hand was more optimistic believing that technology would continue to develop to ensure we could feed all people. Examples of technological developments are: The Green Revolution, Genetically Modified crops, and irrigation systems.	* Food security is when all people, at all times, have access to sufficient, safe and nutritious food to maintain a healthy and active life. *Physical factors – climate, soil, water *Human factors – war, land ownership, waste, climate change. * Ways of measuring food security – life expectancy, calories consumed per day, % of people living on less than a dollar a day, global hunger index. * Visions of the future – Malthus: Negative/pessimistic – population would decline when there were not enough resources. Boserup – Positive/Optimistic - population could continue to grow as people would always find solutions to problems.	*5 Urban Futures - urbanisation *6 Dynamic development - indicator data - calories per capita, life expectancy; PPD; bottom up & top down aid projects; bi-lateral aid; NGOs *4 Sustaining ecosystems - marine biomes *2 climate change - global warming

Topic: GCSE 8.2: Resource Reliance – Can we feed Nine Billion People by 2050 (B) Case Study: Tanzania		Duration: 4 lessons	Composite: Unit test
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Tanzania, Global Food Security Index, distribution, calories consumed per person, % undernourished, Goat Aid, bottom up, Babati, Toggenburg, dairy products, financially, safe, affordable, nutritious food, local, Canada Wheat Project – national scale, bi-lateral, drought, Barabaig, tribes, expensive, Southern Agricultural Growth Corridoor, SAGCOT, fertile, yields, infrastructure, investment, TNC, employment	1 - Tanzania is a country in East Africa. It is one of the poorest countries in the world and has a population of approx. 51 million. It is ranked 98 out of 109 countries in the Global Food Security Index (2015). Most people in this country live in rural areas. Over the last 30 years food has started to become more effectively distributed and the number of calories consumed per person has increased and the % of undernourished persons has declined. 2 - 'Goat-Aid', a bottom up local scale aid project has been used to improve food security for villagers in Babati. Farm Africa have provided Toggenburg goats for villagers. The goats provide up to 3l of milk daily, which can also be turned into other dairy products and sold. Goat manure is a natural fertiliser to boost crop yields. This benefits farmers financially and improves access to safe, affordable, nutritious food supplies locally. 3 - Canada Wheat Project. This is a national scale solution to boost food security in Tanzania. Tanzania received bi-lateral aid between 1968-1993 from Canada, to try to improve its wheat growing and become less reliant on food imports. Help in the form of seeds, expertise, fertilisers and machinery was provided. The scheme helped to provide 60% of all of Tanzania's wheat and created work for 400 people . More importantly in the 1992 drought, it was the only southern African country not to require food aid However, the scheme displaced the Barabaig tribe from their land, which threatened their existence and worsened their food security; provided only a small number of jobs and the tractors were too expensive to maintain Many Tanzanians could not afford bread made from wheat therefore food security wasn't improved. 4 – Southern Agricultural Growth Corridor of Tanzania (SAGCOT) – started in 2010 a strip of fertile land stretching from east to west. It is connected to the port Dar es Salaam with road and railway. Millions of dollars have been invested to increase food production and then distribute it. Earning money, providing jobs and aiming to lift thousands of people out of poverty by 2030. There are successes – some farms have doubled yields, better facilities and improved prices but some negatives are that TNCs largely benefit, not all the promised investment has been given and nomadic tribes have lost land.	*Tanzania – East Africa, population 51 million, LIDC, poor country, 98 of 109 countries on the Global Food Security Index. * Started to improve as more calories are being consumed on average per person. *Projects responsible for improvement include – bottom up local scale: Goat Aid – provides milk, manure and wool. Canada Wheat Project – link between Canada and Tanzania (Bi-lateral) limited success. Seeds, expertise and machinery provided. SAGCOT strip of fertile land with links to port. Aim to increase food production and links to national and global markets which will in turn bring people out of poverty by 2030. Some signs of success so far but also some criticisms.	*5 Urban Futures - urbanisation *6 Dynamic development - indicator data - calories per capita, life expectancy; PPD; bottom up & top down aid projects; bi-lateral aid; NGOs *4 Sustaining ecosystems - marine biomes *2 climate change - global warming

Topic: GCSE 8.2: Resource Reliance – Can we feed Nine Billion People by 2050 (C) Degrees of Success		Duration: 4 lessons	Composite: Unit test
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Ethical consumerism, purchasing, impacts, fair trade, world market, food waste, intensive farming, organic farming, fertiliser, pesticides, yields, genetically modified crops, urban gardens, permaculture, agribusiness	1 - Ethical consumerism is the purchase of products and services that have been produced with minimal environmental impact and that ensure workers are treated fairly. Food product examples include chocolate, coffee and bananas. 2 - Fair trade means that the producer receives a guaranteed and fair price for their product regardless of the price on the world market. This means their quality of life should improve, as well as the long-term prospects for their children. 3 – Reducing food waste. 4 - **Intensive farming** is where a large amount of produce is generated from a relatively small area of land. Inputs will be high to achieve a high yield per hectare. **Organic farming** uses natural methods to grow foods. This means using organic fertilisers and pesticides, such as animal manure and and no artificial fertilisers or pesticides. Yields from organic crops are initially low, but they increase over time until they are in line with non-organic crops. When farms are run like a large industrial business they are known as an agribusiness. They are large-scale, money-intensive commercial activities. This has led to the size of farms increasing significantly by: increasing field sizes. 5- Genetically modified crops - This involves farmers using seeds which have been altered by scientific techniques. This allowed farmers to grow strong plants which yielded large amounts of crops to sell. 6 - Smaller scale methods of increasing food security are urban gardens and permaculture. Urban farming involves growing food using space in and around cities. Urban farming plots can produce more food than equivalent areas of farmland. It also helps to reduce food miles, which is better for the environment. Permaculture is farming in a sustainable and self-sufficient manner	*Ethical consumerism – ensures minimal harm to the environment and that workers are treated fairly. *Fair trade – makes sure that the people who produce the item receive a fair price. *Reducing food waste is a key part of improving the success of food security. *Intensive farming maximises yields - large scale practices. Sometimes including pesticides and fertilisers. *Organic farming uses natural methods. *Agribusiness – farms run like large industrial businesses *Genetically modified crops – GMO: Seeds that are changed by scientific techniques. *Urban gardens – using urban space in and around cities. * Permaculture – farming in a sustainable self-sufficient manner.	*5 Urban Futures - urbanisation *6 Dynamic development - indicator data - calories per capita, life expectancy; PPD; bottom up & top down aid projects; bi-lateral aid; NGOs *4 Sustaining ecosystems - marine biomes *2 climate change - global warming