



Ecosystems under threat – Coral Reefs

Importance of Coral Reefs

Tourism

- Australia’s Great Barrier Reef generates well over US\$1 billion per year.
- Sustainably managed coral reef-based tourism can provide significant sources of income to poorer coastal communities in developing countries.
- They provide income for local communities as well as national and international companies.

Fishing

- They form the nurseries for about a quarter of the ocean's fish.
- If properly managed, reefs can provide around 15 tonnes of fish and other seafood per square kilometre each year.
- An estimated 500 million people have some dependence on coral reefs for food and income.

Coastal protection

- Coral reefs break the power of the waves during storms, hurricanes, typhoons, and even tsunamis.
- By helping to prevent coastal erosion, flooding, and loss of property on the shore, the reefs save billions of dollars each year.
- They are a natural form of defence, meaning that there is less need for man-made coastal defences on beaches around the coast.

Medicines

- Secosteroids, an enzyme used by corals to protect themselves from disease, is used to treat asthma, arthritis and other inflammatory disorders.
- Coral reef organisms are also being used in treatments for diseases like cancer and HIV.
- We may continue to find the answers to medical problems in the coral reefs - so long as we can keep them healthy.

Threats to Coral Reefs

Although some people rely on coral reefs for income from tourism and fishing, if this is not properly managed, they can cause huge amounts of damage.

The two biggest threats to Coral Reefs are:

- Climate Change
- Plastic Waste

Climate Change

Increases in greenhouse gas emissions from increased energy consumption, car use and industry is causing the earth’s temperature to increase.

This can cause coral bleaching, ocean acidification and more extreme weather events such as hurricanes.

As coral reefs are highly specialised to survive in specific environments, any small changes can have huge consequences.

Coral reefs will be damaged beyond repair, and this in turn will cause imbalances in the food webs, endangering animals.

Plastic Waste

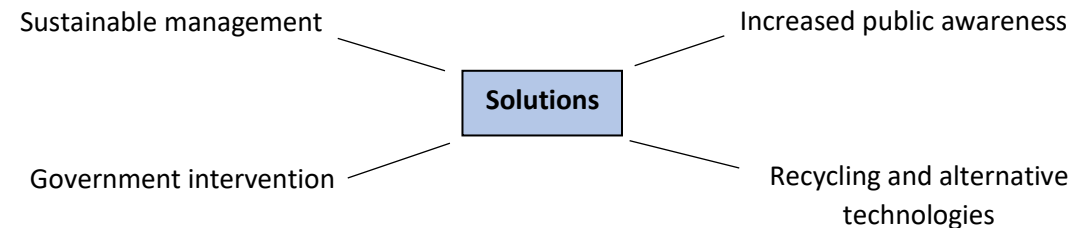
Plastic waste can be highly toxic to marine life

When it finds its way into the sea, it is broken down into tiny pellets called microplastics

These are then consumed by animals and are passed along the food chain

This in turn damages the coral polyps and reefs stop growing and begin to die off

Larger pieces of plastic can also damage the reef itself, destroying animals’ habitats.






Ecosystems under threat – Coral Reefs

Key word	Definition
Symbiotic relationship	A relationship in which organisms, people, or things exist together in a way that benefits them all
Habitat	the natural home or environment of an animal, plant, or other organism.
Biodiversity	The variety of plant and animal life in the world or in a particular habitat
Ecosystem	All the plants and animals that live in a particular area together with the complex relationship that exists between them and their environment
Climate change	Large-scale, long-term shift in the planet's weather patterns and average temperatures. This can have a drastic impact on specialised ecosystems.

Skills:

- Relate global issues to coral reef ecosystems and explain the impact both locally and globally.
- Form an opinion on these issues, using evidence to support.

Location of the Worlds' Coral Reefs



- Coral reefs form in the warm tropical waters near the equator.
- Many of them are found in South-East Asia and Australia.
- They need warm, shallow and clear water in order to survive and photosynthesise.

Case Study: The Great Barrier Reef, Australia

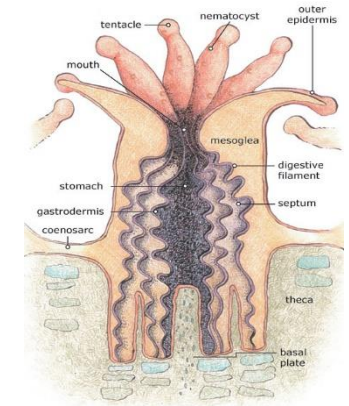
- The Great Barrier Reef is located in the Coral Sea off Australia's north-east coast
- It is found along the coastline of the state of Queensland
- It stretches from Cape York in the North all the way down to Bundaberg in the South



2,600 km long and can be seen from space


What are coral reefs made of and what do we find there?

Coral reefs are made of tiny living organisms called Polyps. As they are alive, they need food such as algae to survive. As they grow and eventually die, they form a hard limestone skeleton. More polyps then attach themselves to this and the coral reef continues to grow at the rate of 1 to 2 cm per year.




Hundreds of different species live on the reef, including clown fish, sharks, sea cucumbers, anemones, sponges, turtles and rays.

Revision Websites



Great Barrier Reef Foundation

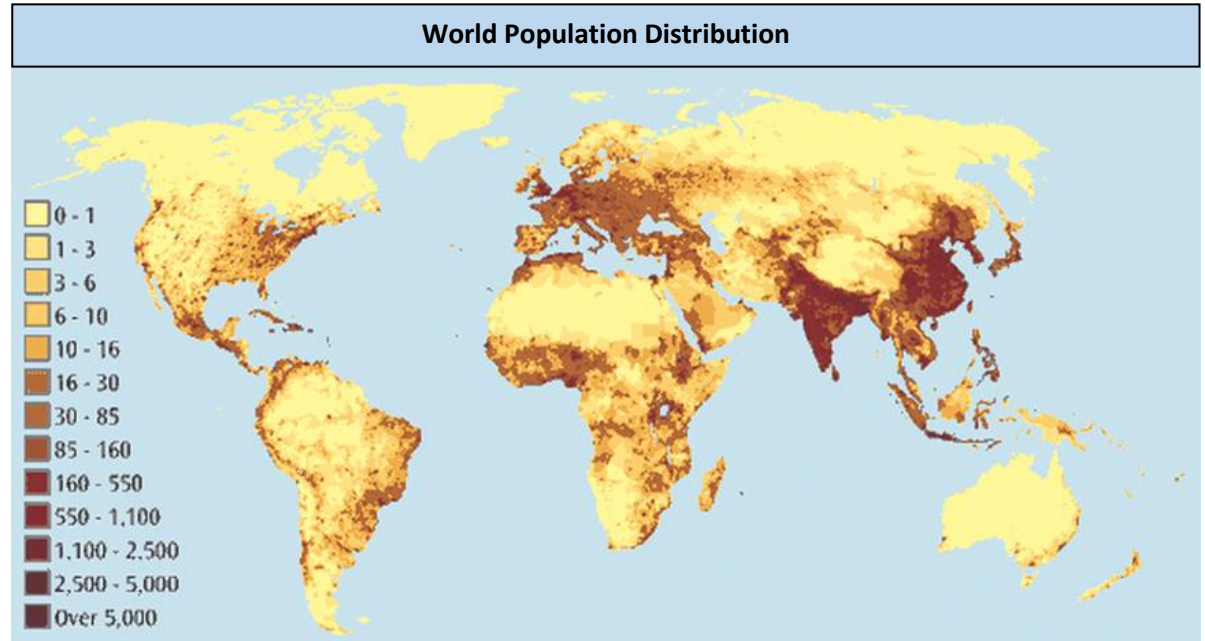


WWF



Population

Key Word	Definition
Birth rate	Number of live births per 1000 of the population.
Climate	What the weather in a place is usually like over the year.
Death rate	Number of deaths per 1000 of the population.
Densely populated	Lots of people living in an area
Emigration	The movement of people out of an area.
Immigration	The movement of people into an area.
Life expectancy	How many years a person can expect to live.
Migration	The movement of people from one area to another.
Overpopulation	Too many people for the resources available.
Population	How many people live in a place.
Population density	The average number of people living in a place per square kilometre
Population distribution	How people in a country are spread around.
Pull factors	Reasons why people want to move to a new place.
Push factors	Reasons why people want to move away from a place.
Relief	The height and shape of the land.
Resources	Things we need to live or use to earn a living; for example food, fuel, water.
Sparsely populated	Few people living in an area.



Physical Factors that affect population distribution.	Human Factors that affect population distribution
<p>Climate – large numbers of people live where the climate is hot and wet enough to grow crops.</p> <p>Relief – few people live in mountainous areas. More people live on flat land.</p> <p>Resources – areas rich in resources e.g. coal, wood, fishing etc. are densely populated.</p>	<p>Political – Countries with stable governments have high population density.</p> <p>Social – groups of people want to live close to each other.</p> <p>Economic – more job opportunities lead to high population density.</p>

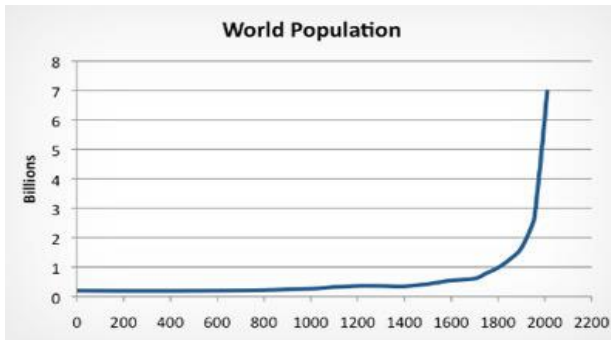
Skills:

- Be able to describe and interpret a number of different graphs, charts and maps.
- Apply knowledge of issues related to population to case studies.



Population

World population growth



When the birth rate is higher than the death rate the population will grow. The world's population has been growing rapidly since the 1900s. In 2012 it grew by 79 million people.

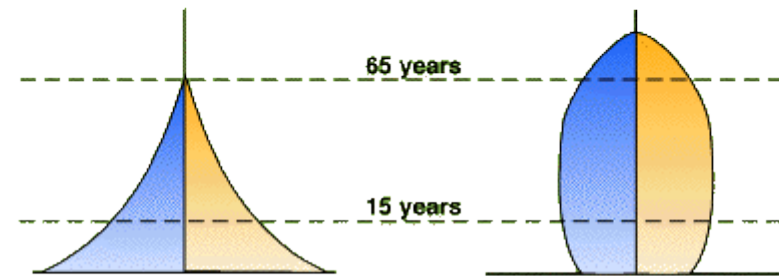
Population pyramids - show the population structure of a country.

Pyramid A

Typical of Developing Countries
High Death Rate
High Birth Rate
Low Life Expectancy

Pyramid B

Typical of Developed Countries
Low Death Rate
Lower Birth Rate
Longer Life Expectancy



Causes of migration

Push Factors



- few services
- lack of job opportunities
- unhappy life
- poor transport links
- natural disasters
- wars
- shortage of food

Pull Factors



- access to services
- better job opportunities
- more entertainment facilities
- better transport links
- improved living conditions
- hope for a better way of life
- family links

Problems created by overpopulation

- Global warming
- Over-fishing
- Starvation
- Lack of fresh water
- Deforestation
- Decrease in biodiversity
- Pressure on fuel sources
- Pressure on services (e.g. schools and hospitals)

Revision Websites:



BBC Bitesize



Development

Key Word	Definition
Adult literacy rate	The number of adults that can read and write.
Aid	Grants or cheap loans given to poor countries to help them to develop.
Development indicator	A piece of data that helps show how developed a country is.
Gross domestic product per person	The total amount that the population of a country earns in a year divided by the number of people who live there.
High income country (HIC)	A developed wealthy country.
Infant mortality	The number of children that die before the age of 5 years.
Life expectancy	The average age a person is expected to live to.
Low income country (LIC)	A poor developing country.
Microfinancing	Small loans given to people to help them set up businesses.
Non- government organisations (NGO)	Charities which help people and are independent from governments.
Poverty line	The minimum amount of money you need to obtain the basic essentials for living (enough food, fuel, etc.)

Features of Developed and Developing Countries	
<i>Developed (HIC)</i>	<i>Developing (LIC)</i>
<ul style="list-style-type: none"> • Access to clean water • Everyone goes to school • Access to medical care • Good transport links • Range of shops selling goods from around the world. • Entertainment • Government help if people can't support themselves. • Women can earn a living • Low percentage of population work in agriculture. 	<ul style="list-style-type: none"> • No access to safe, clean water • No access to electricity • Children have limited or no education • No government support • Not enough medical care • High birth rate • Poor roads and railways • Shops and markets sell limited goods • Women limited in education and work opportunities • High percentage of people work in agriculture

Reasons for the Development Gap
<ul style="list-style-type: none"> • Historical (e.g. colonialism) • Natural environment • Health and education • Lack of industry • Conflict and corruption • Reliance on a few exports.

The North-South Divide (Brandt Line)
<p>An imaginary division that has provided a rough way of dividing all of the countries in the world in to the rich north and poor south. Many countries in the poor south have become more developed since the 1980s and so many people now think that it is no longer useful.</p>

Revision Websites			
	<p>BBC Bitesize</p>		<p>Fairtrade Foundation</p>



Aiding Development: Top-down vs Bottom-up

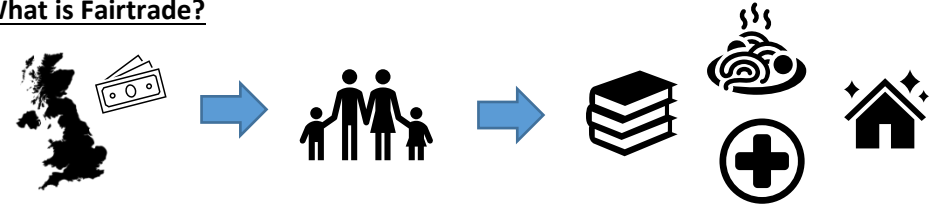
	Top-down approaches	Bottom-up approaches
Type of strategy	A government or large organisation makes decisions about how to increase development	Local people decide on ways to improve things for their own community and work with NGOs.
Scale and aims	Large projects to solve large scale problems and improve lives of lots of people	Small-scale to improve quality of life for the poorest and most vulnerable
Funding	<ul style="list-style-type: none"> • Very expensive • Funded by the government or TNCs • Aims to make a profit from the project to go back to the investor • The money often has to be paid back 	<ul style="list-style-type: none"> • Usually much cheaper • Most money comes from charity • Relies on donations from rich countries
Technology	<ul style="list-style-type: none"> • High-tech • Needs skilled workers to construct (often by people from developed countries rather than local people) 	<ul style="list-style-type: none"> • Low-tech • Local materials used • Local people used • Cheap and easy to maintain
Examples	<ul style="list-style-type: none"> • Dams • Redevelopment of housing • Improved road and rail links 	<ul style="list-style-type: none"> • Biogas • Wells • Farm machinery

Skills:

- Creating and interpreting a choropleth map
- Comparing countries using development indicators

Fairtrade

What is Fairtrade?



A fairtrade premium is added to the products we buy. This money goes back to producers in developing countries and gives them enough income to afford essentials such as nutritious food, education, healthcare and to help communities improve their facilities.

Fairtrade Foundation



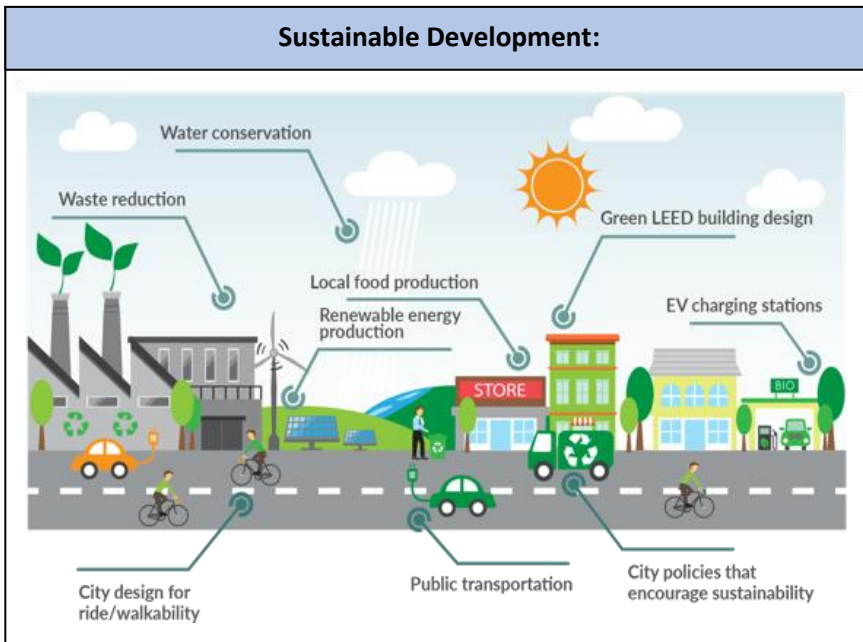
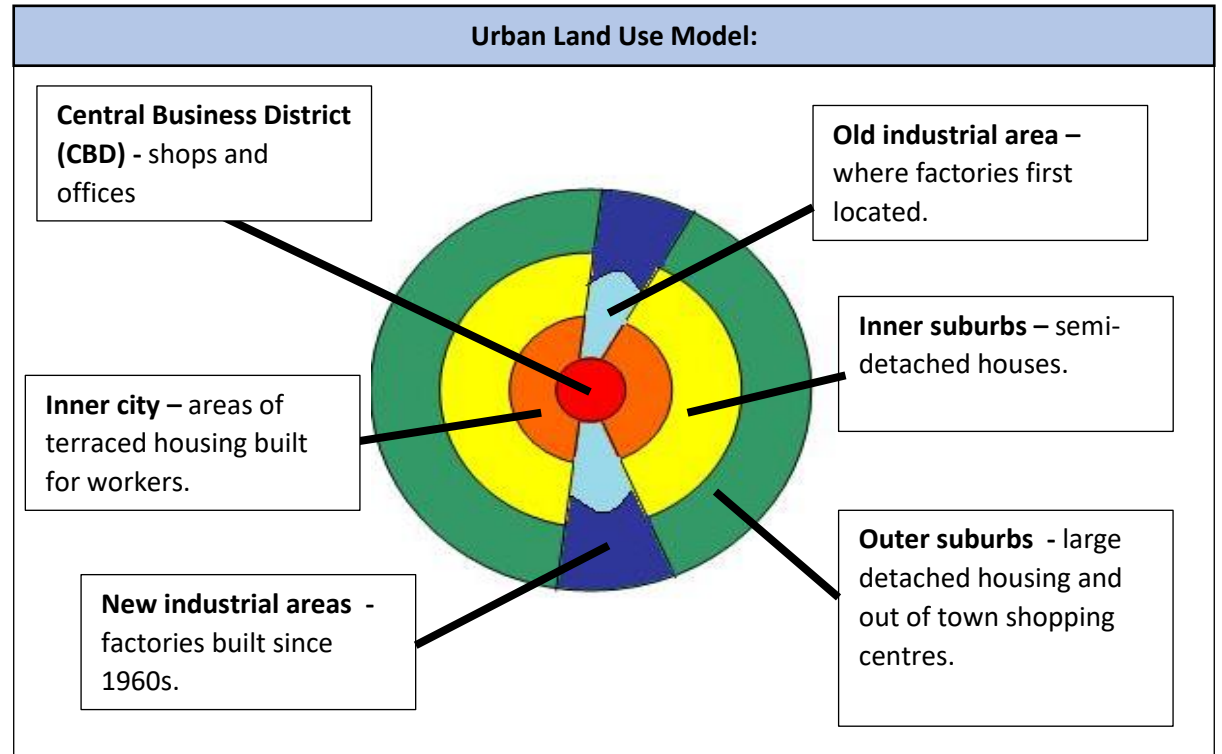
A charity based in the United Kingdom that works to empower disadvantaged producers in developing countries by tackling injustice in conventional trade, in particular by promoting and licensing the Fairtrade Mark, a guarantee that products retailed in the UK have been produced in accordance with internationally agreed Fairtrade standards.

Fairtrade sets social, economic and environmental standards for both companies and the farmers and workers who grow the food we love. For farmers and workers, the standards include protection of workers' rights and the environment, for companies they include the payment of the Fairtrade Minimum Price and an additional Fairtrade Premium to invest in business or community projects of the community's choice.



Settlement

Key Word	Definition
Function	The reason why a town was first built.
Land use	Models used to simplify the way land is used in urban areas.
Settlement	A place where people live. Could be a hamlet, village, town or city.
Site	The land a settlement is built on.
Sphere of influence	The area surrounding a settlement that is affected by the settlements activities.
Sustainable	Meeting the needs of people now without affecting the ability of future generations to meet their needs.



- Factors affecting the location of settlements:**
- Early settlers looked for certain criteria when selecting the location of their settlements:*
- **Water supply:** Rivers and natural springs
 - **Food:** Rivers/sea for fishing, farm land etc.
 - **Defence:** Hills for 'look-outs', river meanders for protection
 - **Building materials:** Strong stones, trees for wood etc.
 - **Fuel Source:** trees to provide fire for heating and cooking

Skills:

Annotation and interpretation of photographs and OS maps

Revision Websites:

S-Cool