



Ecosystems

WORLD ECOSYSTEMS

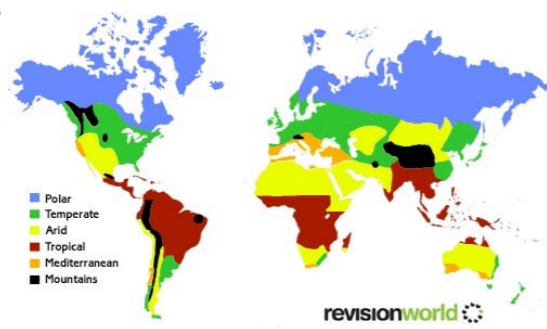
Tundra (e.g. Canada). Temperature below 0°C for most of year. Low levels of precipitation (less than 250mm). Very few plants except for mosses.

Deserts (e.g. Sahara). Very hot all year, above 30°C. Very low levels of precipitation (less than 250mm). Very few plants unless they have water-storing features

Temperate Grasslands (e.g. Argentina). Hot in the summer (25°C) and cold in winter (-40°C). Precipitation about 500-900mm each year. Mainly grasses are found with some shrubs and trees

Tropical Grassland (e.g. Kenya). Hot all year, around 25°C - 30°C. Precipitation about 500-1000mm each year, but always has a dry season tall grasses are here with trees and shrubs

Temperate Forests (e.g. UK). Warm summers, around 18°C and cool winters around 5°C. Precipitation all year (approx 1000mm). Deciduous trees found here



THE ROLE OF SOIL AND ALTITUDE IN THE DISTRIBUTION OF ECOSYSTEMS

Climate - Temperatures decrease with latitude. The equator receives the most heat as the sun's rays are concentrated here. Further away from the equator temperatures decrease.

The global circulation cells also dictate the areas that will receive heavy rainfall or drier zones

Soil - Different plants require different soils to grow. For example Boreal forests have acidic soils due to the leaves/needles falling to the ground.

Some soils are more permeable, so created well drained soils. Other areas will have more impermeable rock, so will create swamp style bog areas of soil. Both are suitable for different types of vegetation.

Altitude - The distribution of different ecosystems is largely caused by the climate of the area,

THE BIOSPHERE PROVIDES RESOURCES

Resource	
Fuel	Wood (from trees) is burned to generate energy. Also oil is extracted from the ground and burned to produce electricity.
Building material	Wood (from trees) is used as a building material and straw is often used for roofing and for insulation
Medicine	Poppies are used as the main source of the painkiller morphine. Also the periwinkle plant is used to treat Leukaemia
food	Fish and meat are produced for human consumption. Also fruits and berries are harvested for food.
Recreation	Nature trails and walks are developed through forest areas. Also zip wire activities are created in the upper forest layers

HOW IS THE BIOSPHERE EXPLOITED

Energy - Oil is extracted from the ground and used to power engines in cars and other forms of transportation. It is also used to provide electricity.

Water - Farmers use water to irrigate and water their crops. In the USA 37% of all water used is for irrigation.

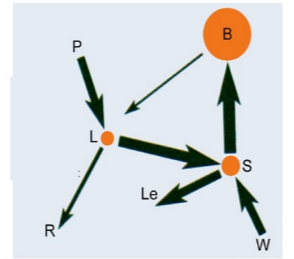
Mineral Resources - Nearly 40 different minerals are used in a car including iron, steel, copper

NUTRIENTS CYCLE OF TRF

The nutrient cycle is the movement of **nutrients** from the non-living environment, to the living environment and back again.

The **Biomass store** is **large** as most nutrients are held in the plants and vegetation, due to the very high biodiversity of plants in the rainforest. Also the lack of seasons means that the trees don't drop their leaves, so nutrients can't be lost in this way.

The **Litter store** is very **small** due to the litter being decomposed very quickly



DISTRIBUTION OF UK ECOSYSTEMS

Ecosystem's	Distribution	Characteristics
Moorlands	Usually found in the upland areas of the UK, such as the Scottish highlands.	Acidic and peaty soil, Only certain plants will survive, such as small shrubs like heather, Deer and foxes found here
Heaths	Usually found in lowland countryside areas, such as East Anglia.	Dry and sandy soils. Not very fertile. Only certain plants can survive, such as small shrubs like heather. Rabbits and hares found here
Woodlands	Found across the country with concentrations of woodland in South Scotland and South Wales.	Can be deciduous (broad leaved trees that lose their leaves in the autumn) or coniferous woodland (needle like leaves. They keep their leaves throughout the year). Deer and foxes.
Wetlands	Areas of low lying lands that is very wet and boggy (peat bogs and marshes). North Scotland.	Peaty, fertile soil that is periodically waterlogged. It is often drained to be used for farming. Otters and wading birds found here
Agricultural		
Urban		

MARINE ECOSYSTEMS

The marine environment provides vital goods and services estimated to be worth £46 billion. Some of these resources are as follows

Energy - oil and natural gas - The UK has oil reserves off the coast of the UK in the North Sea (approximately 24 billion barrels). This provides many jobs and an energy source for the UK

Energy - renewable energy - The UK uses the wind in the offshore environment to generate electricity/energy. The Liverpool has an offshore wind farm called Burbo Bank Wind Farm with 25 turbines

Tourism and recreation—250 million people visit the UK coasts each year for leisure and recreational activities. This brings about £3 billion into the UK economy.

Ports—The UK has ports across the country to import and export goods. 90% of the UKs imports and exports come through the coastal ports

Food - fishing—The UK uses the marine ecosystem for seafood. Employs 25 thousand people in the UK

HUMAN ACTIVITY DEGRADES UK MARINE ECOSYSTEMS

Over fishing As a result in 2011 there was a collapse in cod stocks around the UK.

Exploitation of oil reserves in the North sea means that there are now only 24 billion barrels of oil left in this area.

Construction of renewable energy The construction of the turbines requires them to be connected to the sea bed, affecting natural habitats here.

Coastal Management prevents coastal processes from taking place, such as longshore drift.

Eutrophication caused by fertilisers from farmland being washed into the sea. This then causes sea plant life to grow rapidly

ABIOTIC AND BIOTIC FACTORS THAT EFFECT TRF

Biotic characteristics (Living)	Abiotic characteristics
Plants - The rainforest has 4 distinct plant levels. Animals - The rainforest has a great variety of animals living in the rainforest. Humans - Human activity includes hunting, planting seeds through cutting down (deforestation).	Temperature - ranges between 27°C and 30°C. Rainfall - gets approximately 2,200mm /year Soil - Constant rainfall washes away nutrients. This process is called leaching.

ABIOTIC AND BIOTIC FACTORS THAT EFFECT DW

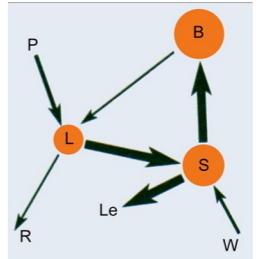
Biotic characteristics	Abiotic characteristics
Plants - The deciduous woodland has 4 distinct plant levels Animals - some animals have to hibernate. Other animals (birds) will migrate away Humans - Cutting down of the deciduous woodland. However, some deciduous woodlands are protected	Temperature - the temperature ranges between 4°C and 17°C. Rainfall - is greater in the winter months. However it does rain all year. It gets approx. 1,000mm/year Soil - . The autumn fall of leaves means there are plenty of nutrients in the soil and earthworms help to mix the nutrients together.

NUTRIENTS CYCLE OF DW

The nutrient cycle is the movement of **nutrients** from the non-living environment, to the living environment and back again.

The **Biomass store** is **large** (but not as large as in the tropical rainforest). This is due to the deciduous woodlands being fairly biodiverse, so most nutrients are held in the plants and vegetation,

The **Litter store** is **moderately large** due to the leaves from the trees falling annually in autumn because of the seasons. The constant rainfall throughout the year means that nutrients are still taken away by surface run-off. The decomposition rates are moderate, compared to the faster rates in the tropical rainforest.



PLANT AND ANIMAL ADAPTATION IN TRF

Drip tip leaves	To remove excess water off the leaves, in conditions of over 2000mm of annual rainfall.
Buttress roots	To stabilise the trees as they grow to a great height to gain as much sunlight as possible.
Suction cups	Many frogs have these to be able to grip onto the wet surfaces in the rainforest, and so to allow easy movement throughout.
Camouflage	The sloth, and many other animals like snakes, use this to hide and to make it difficult for predators to spot them.

GOODS AND SERVICES PROVIDED BY THE TRF

Bananas grow in the rainforests and are a US\$5 billion dollar industry. The hardwood ebony is used to make furniture around the world. Quinine which helps cure malaria is extracted from the bark of the cinchona tree. Large companies, like Shell, extract large amount of oil from the Amazon rainforest since

GOODS AND SERVICES PROVIDED BY DW

Air dried fuel wood is used in the UK for wood burning stoves and charcoal barbecues. Venison (deer meat), game birds (pheasant and partridge) are found within temperate forest areas. Go-ape is a company that uses the deciduous woodlands across the UK for zip wire and high wire activities.

DEFORESTATION TRF

Resources such as oil have been extracted. Large areas of forest have to be destroyed to access the oil and generate revenue (money) from selling it. Trees are cut down for fuel/ firewood. In many developing countries this may be the only source of fuel.

DEFORESTATION DW

The UK has a large and complex rail and road network. To put this in place, large areas of forest have had to be removed.

A rapidly growing population worldwide means that there is increasing demand for space, for housing and businesses — both of which lead to large scale deforestation.

CLIMATE CHANGE TRF

One prediction is that precipitation levels will vary (with some areas receiving 20% less rainfall than current levels by 2030). Forest vegetation and animals, that can not adapt to changing conditions, will die out or migrate away from that area.

As temperatures become drier and warmer new plant and animal species may begin to grow in population size. This could include the spread of pests and diseases that current species are not immune to.

CLIMATE CHANGE DW

Winters will get milder, killing animals and plants that can not adapt to this. Pests and diseases are often killed off during the winter due to the cold winter temperatures. If the winters are mild, then diseases may spread. Drier conditions could also lead to an increase in forest fires.

SUSTAINABILITY TRF

Ecotourism In 1983 an ecotourism project took place in Costa Rica called the Rara Avis project. This protect has helped to protect 485 hectares of rainforest; and employs all the working staff from the local village. The tourists eat locally sourced fruit and vegetables and conserve the environment by recycling all waste.

National parks In 1995 the Costa Rican government set up National Parks to protect areas of rainforest. These areas were protected by law and could not be cut down or damaged.

SUSTAINABILITY DW

New Forest, UK When coniferous trees (non native to the UK) are cut down for timber in the New Forest, they are replanted with native species of deciduous trees. This increases the percentage of deciduous trees in the New Forest.

In the New Forest there are restrictions as to where people can go, so that areas of the New Forest are not damaged by tourists. There are a lot of car parks in the New Forest so that people do not park on roadside verges, as this could erode away the land or disturb animals. Special cycle routes and paths have been set up through the Park, which guide visitors away from vulnerable areas. Also, fences and barriers are used to stop access to certain