21 HUMAN INGLUENCES ON ECOSYSTEMS

YOUR NOTES

CONTENTS:

VIEW EXAM QUESTIONS

21.1 FOOD SUPPLY

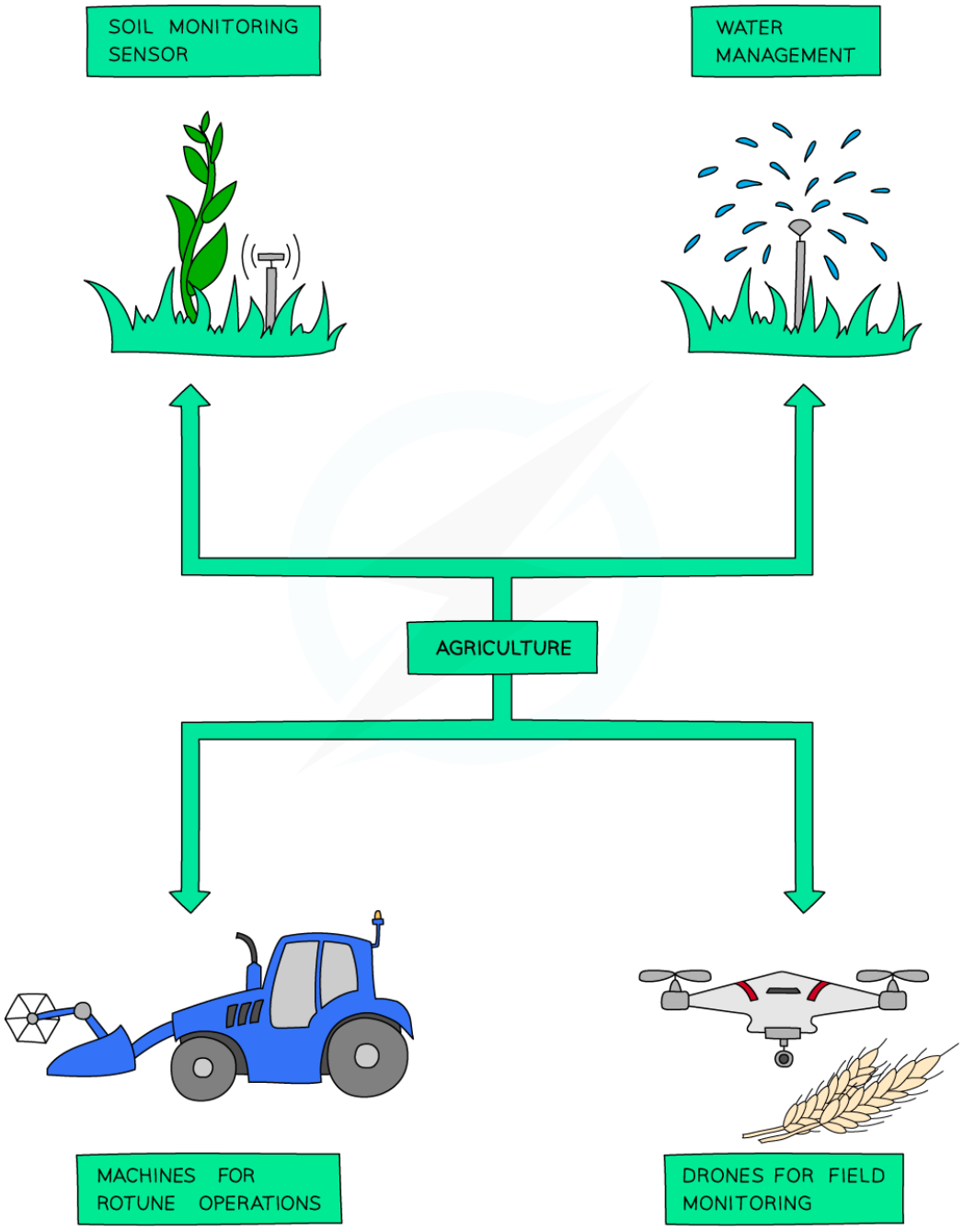
Improving Food Production

- Modern technology has increased food supply substantially in the following ways:
  - **Agricultural machinery** has replaced humans and **improved efficiency** due to the ability to farm **much larger areas** of land
  - **Chemical fertilisers improve yields** – fertilisers increase the amount of nutrients in the soil for plants, meaning that they can grow larger and produce more fruit
  - **Insecticides and herbicides** – these chemicals kill off unwanted insects and weed species, meaning that there is **less damage done** to plants and fruit lost to insects (insecticides), as well as **reducing competition** from other plant species (herbicides)
  - **Selective breeding** – animals and crop plants which produce a large yield are selectively bred to produce breeds that **reliably produce high yields**

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.1 FOOD SUPPLY cont...

YOUR NOTES



Modern agricultural processes allows for cultivation of much larger areas of land for crop plants

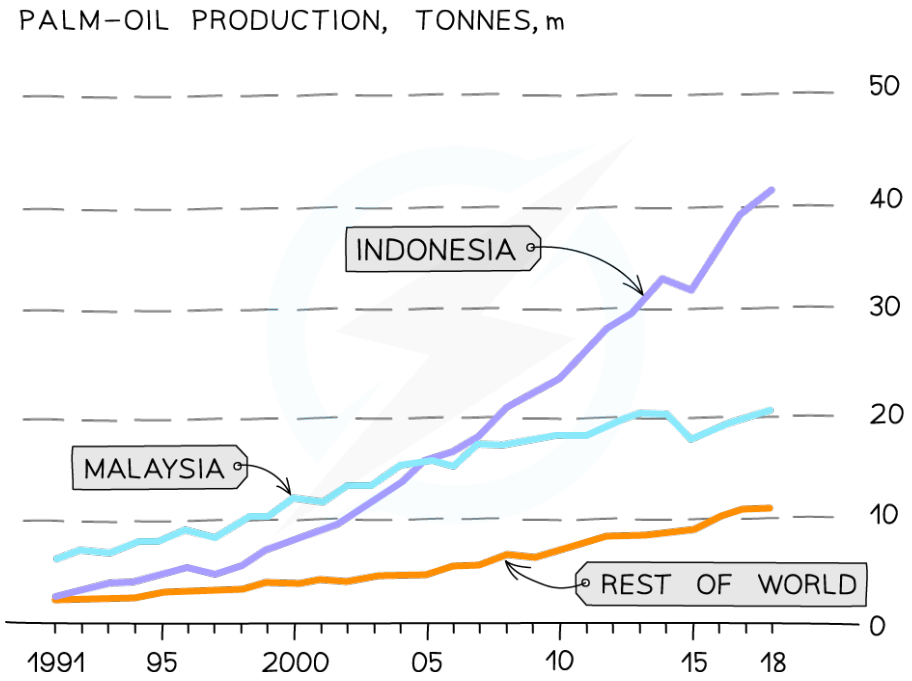
21 HUMAN INGLUENCES ON ECOSYSTEMS

21.1 FOOD SUPPLY cont...

YOUR NOTES

Monocultures

- Monoculture farming means that on a given area of agricultural land only **one type of crop is grown** (eg trees for palm oil grown in Indonesian rainforest)
- This large scale growth of a single variety of plant **does not happen naturally** in ecosystems, where there are **usually many different species of plants** growing which, in turn, **support many species of animals** (high biodiversity)
- In monocultures, **biodiversity is much lower**
- Another issue with monocultures is the **increase in pest populations** – if a particular pest feeds on a crop, farming it in large areas repeatedly means there is an ample supply of food for the pest, causing the population to increase
- Often farmers will spray **insecticides** onto crops in order to control the pests. This leads to:
  - harmless insects being killed as well
  - pollution by pesticides (which are often **persistent chemicals** which accumulate in food chains)
  - pests potentially becoming **resistant** to them, reducing their effectiveness



Palm oil production has increased rapidly over the last 30 years

21 HUMAN INGLUENCES ON ECOSYSTEMS

YOUR NOTES

21.1 FOOD SUPPLY cont...

Intensive Livestock Farming

- In developed countries, **large numbers of livestock** are often kept in an area that would **not normally be able to support more than a very small number**
- They are often fed **high energy foods**, regularly given medication such as **antibiotics** as a preventative measure against disease and kept in **artificially warm temperatures** and small spaces that **do not allow for much movement**
- Ecological issues with intensive farming include:
- **reduction in biodiversity** in areas where large amounts of land are used to graze cattle (as only grass is grown so in effect it becomes a monoculture)
- overgrazing can lead to **soil erosion**
- large numbers of cattle produce large amounts of **methane**, a greenhouse gas

Global Food Supply

- When people do not receive enough food, **famine** occurs
- This can be caused by a variety of factors, including **natural disasters, such as drought and flooding, increasing population, poverty**, and **unequal food distribution**
- As the global human population increases, food production must also be increased to support the increasing population
- This is a problem as **more land is required to grow crops and animals**, meaning that **deforestation** is happening at an increasing rate, and there is also an increasing amount of **greenhouse gases** emitted from animal production
- Greenhouse gases cause **global warming**, which is a worldwide issue that leads to increased natural disasters, such as **tropical storms and drought**, as well as **rising sea levels**, which floods homes and reduces the amount of habitable land

21.2 HABITAT DESTRUCTION

Reasons for Habitat Destruction

- The increasing human population of the planet is causing destruction of many habitats from rainforest to woodland to marine
- Many habitats are destroyed by humans **to make space for other economic activities**, or by **pollution** from these activities, and this **reduces the biodiversity** of these areas
- This **interrupts food chains and webs**, meaning that more species may die because their prey is gone
- The main reasons for habitat destruction include:

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.2 HABITAT DESTRUCTION cont...

YOUR NOTES

REASON	EXPLANATION
CLEARING LAND FOR FARMING AND HOUSING	– CROPS, LIVESTOCK AND HOMES ALL TAKE UP A LARGE AMOUNT OF SPACE – AS THERE IS AN INCREASING POPULATION AND DEMAND FOR FOOD, THE AMOUNT OF LAND AVAILABLE FOR THESE THINGS MUST BE INCREASED BY CLEARING HABITATS SUCH AS FORESTS (DEFORESTATION)
EXTRACTION OF NATURAL RESOURCES	– NATURAL RESOURCES SUCH AS WOOD, STONE AND METALS MUST BE GATHERED TO MAKE DIFFERENT PRODUCTS. – THEREFORE MANY TREES ARE CUT DOWN, DESTROYING FOREST HABITATS. IN ADDITION, SOME RESOURCE EXTRACTION TAKES UP A LARGE AMOUNT OF SPACE – FOR EXAMPLE: MINING, WHICH MEANS THAT THE LAND MUST BE CLEARED FIRST
MARINE POLLUTION	– HUMAN ACTIVITIES LEAD TO THE POLLUTION OF MARINE HABITATS – IN MANY PLACES, OIL SPILLS AND OTHER WASTE POLLUTES THE OCEANS, KILLING SEA LIFE – IN ADDITION, EUTROPHICATION CAN OCCUR WHEN FERTILISERS FROM INTENSIVELY FARMED FIELDS ENTERS WATERWAYS – THIS CAUSES A HUGE DECREASE IN BIODIVERSITY IN THESE AREAS AS MOST AQUATIC SPECIES LIVING IN THESE WATERWAYS DIE FROM LACK OF OXYGEN

Deforestation

- Deforestation is the **clearing of trees** (usually on a large scale)
- If trees are replaced by replanting it can be a **sustainable** practice
- Generally the trees are being cleared for the **land to be used in a different way** (for building, grazing for cattle, planting of monocultures such as palm oil plantations etc) and therefore it is not sustainable
- As the amount of the Earth's surface covered by trees decreases, it causes increasingly negative effects on the environment and is a **particularly severe example of habitat destruction**
- Undesirable effects of deforestation include:
  - **Extinction** of species
  - Loss of **soil**
  - **Flooding**
  - Increase of **carbon dioxide** in the atmosphere

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.2 HABITAT DESTRUCTION cont...

YOUR NOTES

EXTENDED ONLY

Consequences of Deforestation

EFFECT	CONSEQUENCE
EXTINCTION / LOSS OF BIODIVERSITY	– FOREST HABITATS, ESPECIALLY TROPICAL RAINFORESTS, HAVE A HUGE RANGE OF BIODIVERSITY AND AS HABITAT IS DESTROYED IT CAUSES THE LOSS OF LARGE NUMBERS OF PLANT AND ANIMAL SPECIES – MANY OF THESE SPECIES ARE ONLY FOUND IN THESE AREAS AND THEREFORE WILL BECOME EXTINCT
SOIL EROSION	– TREE ROOTS HELP TO STABILISE THE SOIL, PREVENTING IT FROM BEING ERODED BY RAIN – TREES WILL USUALLY TAKE UP NUTRIENTS AND MINERALS FROM THE SOIL THROUGH THEIR ROOTS – WITHOUT TREES, NUTRIENTS AND MINERALS WILL REMAIN UNUSED IN THE SOIL SO WILL BE WASHED AWAY INTO RIVERS AND LAKES BY RAIN (LEACHING) – THIS LOSS OF SOIL NUTRIENTS IS PERMANENT AND MAKES IT VERY DIFFICULT FOR FOREST TREES TO REGROW, EVEN IF THE LAND IS NOT CULTIVATED WITH CROP PLANTS OR GRASS FOR CATTLE
FLOODING	– WITHOUT TREES THE TOPSOIL WILL BE LOOSE AND UNSTABLE SO WILL BE EASILY WASHED AWAY BY RAIN, INCREASING THE RISK OF FLASH FLOODING AND LANDSLIDES
INCREASED CARBON DIOXIDE IN ATMOSPHERE	– TREES CARRY OUT PHOTOSYNTHESIS DURING WHICH THEY TAKE IN CARBON DIOXIDE AND RELEASE OXYGEN – THE REMOVAL OF SIGNIFICANT NUMBERS OF TREES MEANS LESS CARBON DIOXIDE IS BEING REMOVED FROM THE ATMOSPHERE (AND LESS OXYGEN RELEASED) – WHEN AREAS OF LAND IN FORESTS ARE CLEARED FOR LAND USE, THE TREES ARE OFTEN BURNED AS OPPOSED TO BEING CUT DOWN. THIS RELEASES CARBON DIOXIDE (IT IS AN EXAMPLE OF COMBUSTION), FURTHER INCREASING CARBON DIOXIDE LEVELS IN THE ATMOSPHERE AND CONTRIBUTING TO GLOBAL WARMING

21.3 LAND, WATER & AIR POLLUTION

Causes & Effects of Pollution

- Human activities have led to the pollution of land, water and air
- Pollution comes from a variety of sources, including **industry and manufacturing processes, waste and discarded rubbish, chemicals** from farming practices, **nuclear fall-out**, and **untreated sewage**

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.3 LAND, WATER & AIR POLLUTION cont...

YOUR NOTES

POLLUTANT	SOURCE / CAUSE	EFFECT
UNTREATED SEWAGE	LACK OF SEWAGE TREATMENT PLANTS IN INHABITED AREAS (DUE TO POOR INFRASTRUCTURE / LACK OF MONEY) MEANING SEWAGE RUNS / IS PUMPED INTO STREAMS OR RIVERS.	PROVIDES A GOOD SOURCE OF FOOD FOR BACTERIA WHICH INCREASE RAPIDLY, DEPLETING THE OXYGEN DISSOLVED IN THE WATER (AS THEY RESPIRE AEROBICALLY) AND CAUSING DEATH OF AQUATIC ORGANISMS SUCH AS FISH – KNOWN AS **EUTROPHICATION**
CHEMICAL WASTE	CHEMICALS SUCH AS HEAVY METALS LIKE MERCURY CAN BE RELEASED FROM FACTORIES INTO RIVERS AND OCEANS OR LEACH INTO LAND SURROUNDING THE FACTORIES	MANY HEAVY METALS AND OTHER CHEMICALS ARE PERSISTENT – THEY DO NOT BREAK DOWN AND SO CAN BUILD UP IN FOOD CHAINS (KNOWN AS BIOACCUMULATION), POISONING THE TOP CARNIVORES
DISCARDED RUBBISH	MUCH RUBBISH CONSISTS OF PLASTIC THAT IS EITHER DISCARDED OR BURIED IN LANDFILLS.	MUCH RUBBISH, SUCH AS THAT MADE FROM PLASTIC, IS NON–BIODEGRADABLE AND REMAINS IN THE ENVIRONMENT FOR HUNDREDS OF YEARS. ANIMALS ALSO EAT THE PLASTIC AS IT BREAKS INTO SMALLER PIECES (ESPECIALLY IN THE OCEAN) AND IT CAN GET INTO FOOD CHAINS THIS WAY
FERTILISERS	RUNOFF FROM AGRICULTURAL LAND IF APPLIED IN TOO HIGH A CONCENTRATION	CAUSES ALGAL BLOOMS WHICH THEN DIE AND PROVIDE A GOOD SOURCE OF FOOD FOR DECOMPOSING BACTERIA WHICH INCREASE RAPIDLY, DEPLETING THE OXYGEN DISSOLVED IN THE WATER (AS THEY RESPIRE AEROBICALLY) AND CAUSING DEATH OF AQUATIC ORGANISMS SUCH AS FISH –KNOWN AS EUTROPHICATION
INSECTICIDES & HERBICIDES	SPRAYED ON CROPS TO PREVENT DAMAGE BY INSECTS AND GROWTH OF WEEDS	BIOACCUMULATION, LOSS OF BIODIVERSITY, DAMAGE TO BENEFICIAL INSECTS, CAN BUILD UP IN SOIL TO TOXIC CONCENTRATIONS AND HARM OTHER ORGANISMS
NUCLEAR FALLOUT	RADIOACTIVE PARTICLES THAT GET INTO THE ENVIRONMENT FROM ACCIDENTAL LEAKAGE FROM NUCLEAR POWER PLANTS OR EXPLOSION OF A NUCLEAR BOMB	SOME RADIOACTIVE PARTICLES HAVE LONG HALF–LIVES AND CAN REMAIN IN THE ENVIRONMENT FOR MANY YEARS. THEY CAN CAUSE INCREASED RISKS OF CANCER AND SMALLER PARTICLES CAN BE CARRIED BY WINDS HUNDREDS OF MILES FROM THE ORIGINAL SITE OF EXPOSURE
METHANE	CATTLE FARMING, RICE FIELDS, LANDFILLS	METHANE IS A GREENHOUSE GAS WHICH CONTRIBUTES TO THE ENHANCED GREENHOUSE EFFECT THAT IS CAUSING CLIMATE CHANGE
CARBON DIOXIDE	PRODUCED WHEN FOSSIL FUELS ARE BURNT, ALSO RELEASED WHEN TREES ARE BURNT TO CLEAR LAND FOR HUMAN USE	CARBON DIOXIDE IS A GREENHOUSE GAS WHICH CONTRIBUTES TO THE ENHANCED GREENHOUSE EFFECT THAT IS CAUSING CLIMATE CHANGE

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.4 MORE SOURCES & EFFECTS OF POLLUTION

YOUR NOTES

EXTENDED ONLY

Plastic Pollution

- Plastics have a large negative impact on both land and water habitats due to their non-biodegradability
- In marine habitats:
- Animals often try to **eat plastic** or **become caught in it**, leading to injuries and death
- As the plastic breaks down it can **release toxins** that affect marine organisms
- Once it has broken down into **very small particles**, it is commonly ingested by animals and **enters the food chain**
- On land:
- Plastic is generally disposed of by **burying in landfills**
- As it breaks down, it releases **toxins** into the surrounding soil and as such the **land is no good for growing crops or grazing animals** and can only be used for building on several decades after burial

Female Hormones

- Female **contraceptive hormones** are excreted from the body in urine and then **make their way into the water supply**, as they are not filtered out by sewage treatment plants
- If they reach male aquatic organisms, such as fish and frogs, which are very sensitive to the hormones, it causes **feminisation**
- This is where male organisms begin to **produce eggs** and **lose the ability to reproduce**
- Consequently, a **smaller amount of offspring is produced** which can harm the species survival and also **disrupts food chains** for animals that usually feed off these organisms
- In addition, these hormones can **reduce the sperm count in human males**, which causes **fertility problems**

21 HUMAN INGLUENCES ON ECOSYSTEMS

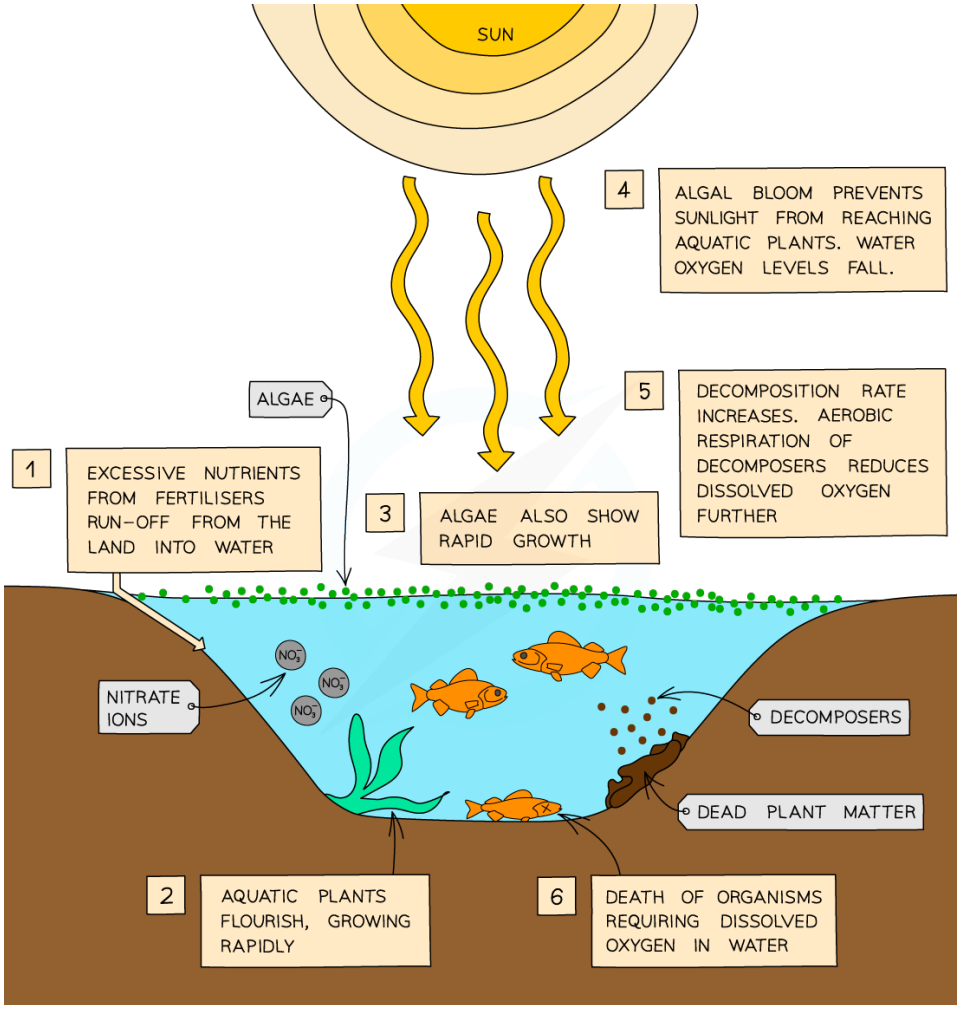
21.4 MORE SOURCES & EFFECTS OF POLLUTION cont...

YOUR NOTES

EXTENDED ONLY cont...

Eutrophication

- Runoff of fertiliser from farmland enters the water and causes **increased growth of algae** and water plants
- The resulting 'algal bloom' **blocks sunlight** so water plants on the bottom start to die, as does the algae when competition for nutrients becomes too intense
- As water plants and algae die in greater numbers, **decomposing bacteria increase in number** and **use up the dissolved oxygen** whilst respiring aerobically
- As a result there is less oxygen dissolved in water, so **aquatic organisms such as fish and insects may be unable to survive**



Sequence of events causing eutrophication in lakes and rivers

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.4 MORE SOURCES & EFFECTS OF POLLUTION

YOUR NOTES

EXTENDED ONLY cont...

Acid Rain

- **Combustion of fossil fuels** that contain sulfur impurities creates sulfur dioxide
- This is released into the atmosphere where it combines with oxygen to form sulfur trioxide
- Sulfur trioxide dissolves in water droplets in clouds and forms **acid rain**

CAUSES	SOURCES	EFFECTS	POSSIBLE SOLUTIONS
SULPHUR DIOXIDE, OXIDES OF NITROGEN	BURNING OF FOSSIL FUELS COMBUSTION OF PETROL IN CAR ENGINES	1. DAMAGE TO LEAVES, KILLING PLANTS; 2. ACIDIFICATION OF LAKES, KILLING ANIMALS; 3. INCREASED RISK OF ASTHMA ATTACKS AND BRONCHITIS IN HUMANS; 4. CORROSION OF STONEWORK ON BUILDINGS; 5. RELEASE OF ALUMINIUM FROM THE SOIL INTO LAKES THAT ARE TOXIC TO FISH.	1. CHANGING THE POWER STATIONS FROM COAL AND OIL TO RENEWABLE ENERGY SOURCES 2. USING 'SCRUBBERS' IN POWER STATION CHIMNEYS SULPHUR DIOXIDE 3. USING CATALYTIC CONVERTERS IN CAR EXHAUSTS TO CONVERT OXIDES OF NITROGEN TO HARMLESS NITROGEN

Climate Change

- A greenhouse gas is a gas that **absorbs infrared radiation from the Sun** so it remains trapped in the Earth's atmosphere
- This is important to ensure Earth is warm enough for life, however if levels of these gases in the atmosphere increase it leads to an increase in the greenhouse effect which causes the **Earth's average temperature to rise**
- There are many greenhouse gases, the most important are:
  - **Water vapour**
  - **Carbon dioxide**
  - **Methane**
  - **Nitrous oxides**
  - **CFCs**

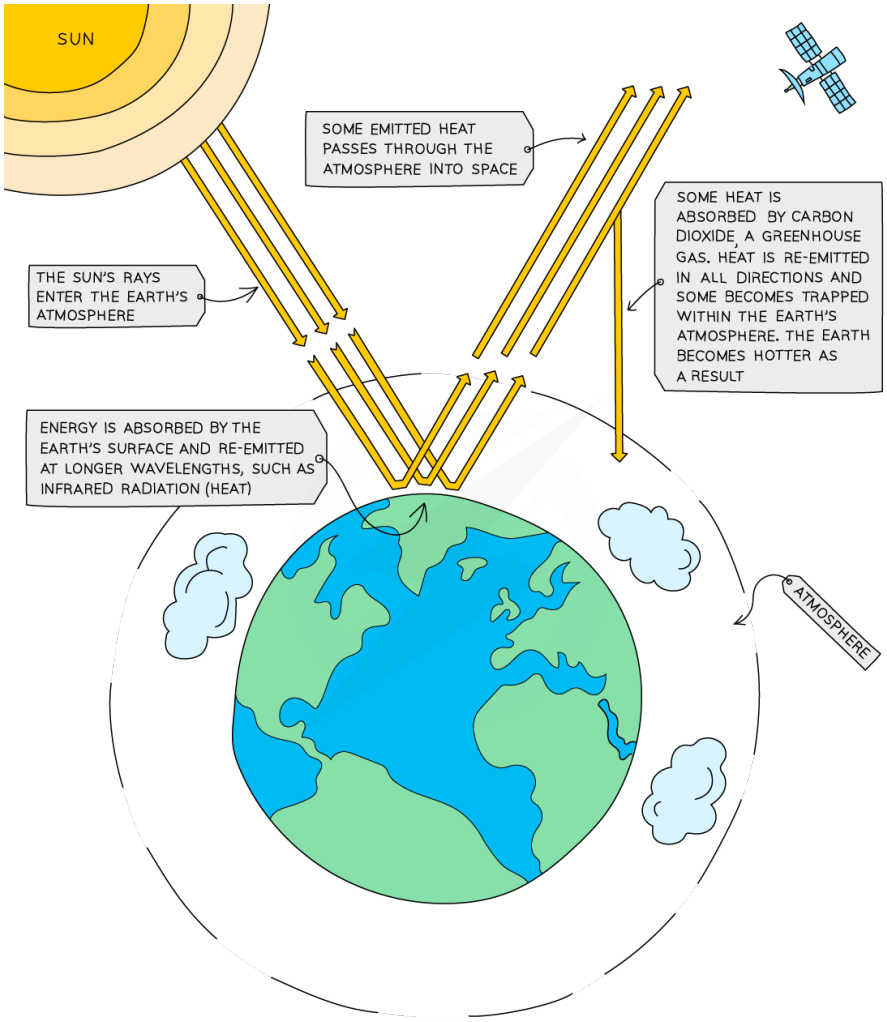
21 HUMAN INGLUENCES ON ECOSYSTEMS

21.4 MORE SOURCES & EFFECTS OF POLLUTION cont...

YOUR NOTES

EXTENDED ONLY cont...

- The greenhouse effect works in the following way:
  - The Sun emits rays that enter the Earth's atmosphere
  - The heat **bounces back** from the Earth's surface
  - Some heat is reflected back out into space
  - Some heat is **absorbed by greenhouse gases** and is trapped within the Earth's atmosphere – this is normal
  - However, as the levels of greenhouse gases in the atmosphere rise due to human activities the Earth's **average temperature rises beyond normal** (an **enhanced greenhouse effect**), causing **global warming** or **climate change**



How the greenhouse effect works

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.4 MORE SOURCES & EFFECTS OF POLLUTION

YOUR NOTES

EXTENDED ONLY cont...

Consequences of global warming due to an enhanced greenhouse effect:

- **Ocean temperatures increase** which causes melting of polar ice caps / rising sea levels / flooding / coral bleaching
- Increasing temperatures can cause **extreme weather** like super storms, flooding, droughts
- These extreme weather events can lead to **changes in or loss of habitats**
- This means that there will be a **decrease in biodiversity** as food chains are disrupted and extinction rates increase
- There could also be **increases in migration** of species to new places, increased **spread of pests and disease**

EXAM TIP

Water pollution from sewage and water pollution from fertiliser runoff have the same end result (increase in decomposing bacteria leading to a decrease in dissolved oxygen and death of aquatic organisms)

But they **do not arrive at this point in the same way** and you need to **learn both and be aware of the differences between them**

A common misconception is that sewage pollution also causes growth of water plants and algal blooms – this is very rarely the case, only runoff of fertiliser does this

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.5 CONSERVATION

YOUR NOTES

Sustainable Resources

- We use many resources from the Earth; some, such as food, water and wood, are **sustainable resources**
- A sustainable resource is one which is **produced as rapidly as it is removed from the environment so that it does not run out**
- Some resources, such as **fossil fuels** (coal, oil and natural gas), are non renewable because what we use cannot be replaced
- These resources, once used, cannot be produced any more and so they need to be **conserved** by **reducing the amount we use** and finding other, **sustainable resources to replace them**
- Fossil fuels are being used as an **energy source** in increasing amounts
- In addition, they are the **raw materials** for many other products we make – eg almost all **plastics** that are made start with oil as a raw material
- Some products, especially those made from **paper, plastic, glass or metal**, can be **reused and recycled** – this reduces waste in the environment and reduces the amounts of raw materials and energy needed to make new products
- Some resources, such as **forests and fish stocks**, can be maintained – enabling us to **harvest them sustainably** so that they will **not run out in the future**

EXTENDED ONLY

Sustainable Development

- Sustainable development is defined as **development providing for the needs of an increasing human population without harming the environment**
- When developing the way in which we use resources to manage them sustainably, we have to **balance conflicting demands** – eg:
  - the need for **local people** to be able to utilise the resources they have in their immediate environment with the needs of **large companies** to make money from resources such as forests and fish
  - the need for balancing the **needs of humans for resources** with the **needs of the animals and plants** that live in the areas the resources are taken from (preventing loss of habitat and extinction)
  - the need to balance what **current populations need** with what **future populations might need** – for example if we harvest all the fish we need to feed people now, this might lead to overfishing which would deplete stocks for future generations
- For development to occur sustainably, **people need to cooperate at local, national and international levels** in the planning and management of resources

21 HUMAN INGLUENCES ON ECOSYSTEMS

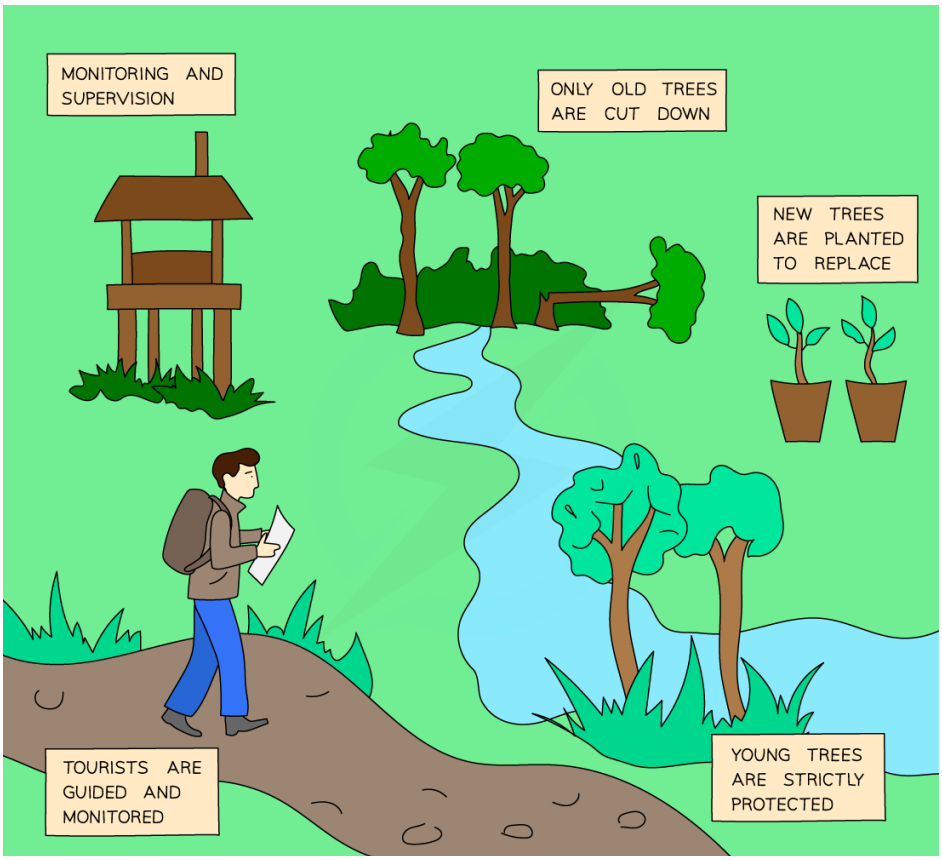
21.5 CONSERVATION cont...

YOUR NOTES

EXTENDED ONLY

Sustaining Forests

- Forests are needed to produce **paper products** and **provide wood for timber**
- Much of the world's paper is now produced from forests which **replant similar trees when mature trees are cut**, ensuring that there will be adequate supply in the future
- Tropical hardwoods such as teak and mahogany take many years to regrow but are highly desirable for furniture
- Using these types of wood has now been made more sustainable due to the **introduction of several schemes** designed to **monitor logging** companies and track the wood produced (eg the Forestry Stewardship Council)
- **Education** helps to ensure logging companies are aware of sustainable practices and consumers are aware of the importance of buying products made from sustainable sources



More efforts are being made to manage forests sustainably so consumers know they are not causing damage to forests

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.5 CONSERVATION cont...

YOUR NOTES

EXTENDED ONLY

Sustaining Fish Stocks

- Managing fish stocks sustainably includes:
- Controlling the **number of fish** caught each year (quotas)
- Controlling the **size of fish** caught (to ensure there are enough fish of a suitable age for breeding remaining)
- Controlling the **time of year** that certain fish can be caught (to prevent large scale depletion of stocks when fish come together in large numbers in certain areas to breed)
- **Restocking** (breeding and keeping offspring until they are large enough to survive in their natural habitat then releasing)
- **Educating fishermen** as to local and international laws and **consumers** so they are aware of types of fish which are not produced sustainably and can avoid them when buying fish

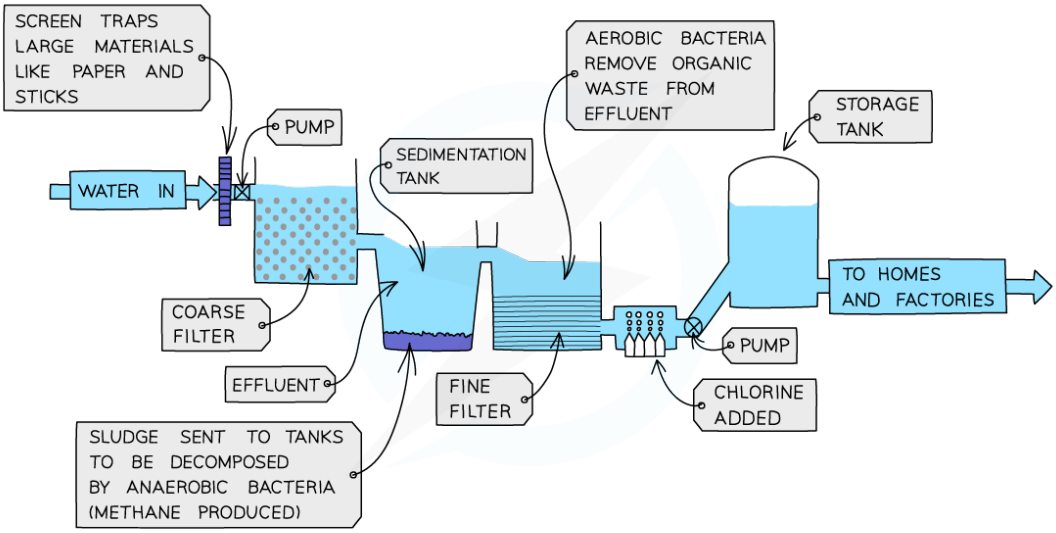
Sewage Treatment

- As human population grows, the need for fresh water increases
- A significant amount of water we consume is used to **flush away human waste** (sewage) into pipes
- The pipes carry the sewage and water to **treatment plants** where the **organic waste is removed and the water cleaned** so it can be returned to natural water sources without causing eutrophication
- Crude sewage flows through a **screen** in which **large materials like paper and sticks are trapped** so they can be removed and burned
- The sewage is passed slowly through channels where **grit and other heavy particles picked up along the way settle to the bottom** – the grit is later washed and returned to the land
- The channels lead into **sedimentation tanks** where the **solid material settles on the bottom as sludge** and the liquid part, called **effluent**, remains on top
- The **sludge** is removed by pumping it into tanks where **anaerobic bacteria** decompose it – often the bacteria produce **methane** which can be collected and used as an energy source for the plant
- The **effluent (liquid)** is treated with **aerobic bacteria** to remove any organic waste in it, before being treated with **chlorine** to kill the bacteria
- At this point it is clean enough to **return to natural water systems** or be passed on to a second treatment plant where it is **processed further** to make it pure enough to reuse as **drinking water**

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.5 CONSERVATION cont...

YOUR NOTES



Water containing sewage goes through several stages of treatment before being returned to natural water systems

Endangered Species

- An endangered species is at risk of becoming **extinct**
- There are several reasons why a species can become endangered – the **population of the species may fall below a critical level** due to
  - **hunting**
  - **climate change**
  - **pollution**
  - **loss of habitat**
  - **introduction of non-native species** that outcompete native species
- Endangered species can be helped by conservation measures such as:
  - **education** programmes
  - **captive breeding** programmes
  - **monitoring and legal protection** of the species and of their habitats
  - **seed banks** as a conservation measure for plants – seeds of endangered plant species are carefully stored so that new plants may be grown in the future

21 HUMAN INGLUENCES ON ECOSYSTEMS

21.5 CONSERVATION cont...

YOUR NOTES

EXTENDED ONLY

Endangered Species

- A species may be at risk of becoming extinct **if there is not enough genetic variation in the population** as random changes in the environment may quickly cause extinction because the **remaining organisms are all very similar and may not have the adaptations to survive such changes**
- There are moral, cultural and scientific reasons for conservation programmes, including:
  - **reducing extinction rates** of both plant and animal species
  - keeping damage to food chains and food webs to a minimum and **protecting vulnerable ecosystems** (eg the rainforests)
  - **protecting our future food supply** and **maintaining nutrient cycles and possible sources of future medical drugs and fuels**

> NOW TRY SOME EXAM QUESTIONS

21 HUMAN INGLUENCES ON ECOSYSTEMS

EXAM QUESTIONS

YOUR NOTES

QUESTION 1

Which of the following would be a negative feature of monoculture crops on an ecosystem?

A Monoculture crops produce more food.

B Monoculture crops produce less food.

C The genetic variation of organisms is reduced.

D Crops need harvesting at the same time.

QUESTION 2

Which of the following effects is least likely to be as a result of deforestation?

A A greater risk of flooding.

B An increase in biodiversity.

C An increase in soil erosion.

D An increase in the level of carbon dioxide in the atmosphere.

QUESTION 3

A large quantity of non-selective herbicide is spread over a field. However, some of the herbicide washes into a nearby stream.

What is the effect of the herbicide on the weeds in the field and on the plants in the stream?

	weeds in field	plants in stream
A	more growth	less growth
B	less growth	more growth
C	less growth	less growth
D	more growth	more growth

21 HUMAN INGLUENCES ON ECOSYSTEMS

EXAM QUESTIONS cont...

YOUR NOTES

QUESTION 4

Rapid growth of algae on the surface of the water can occur as a result of nitrates entering a reservoir of water. This causes the following changes in the reservoir:

1 An increase in aerobic respiration by decomposers.

2 A decrease in the concentration of dissolved oxygen in the water.

3 Fish and other aquatic animals die.

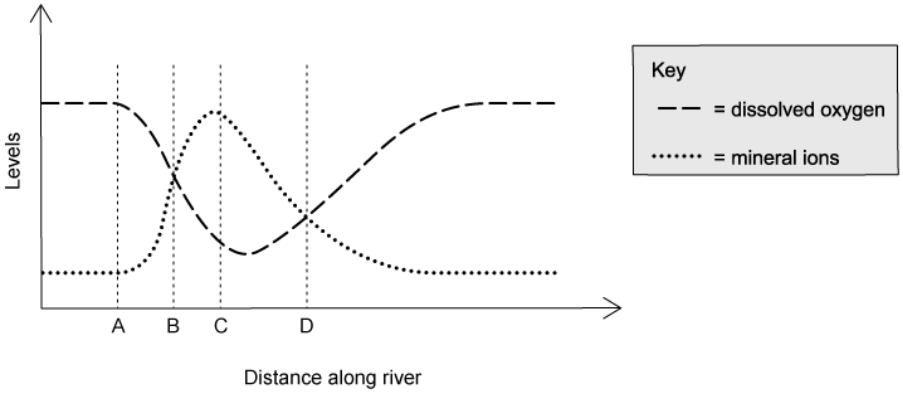
4 Producers die and decomposition increases.

In which order do these changes occur?

A 1 → 2 → 4 → 3 **B** 3 → 1 → 2 → 4 **C** 4 → 1 → 2 → 3 **D** 4 → 3 → 1 → 2

QUESTION 5

The levels of dissolved oxygen were measured in a river, the results were plotted on a graph, this is shown below.
At which point does raw sewage enter the river?



> CHECK YOUR ANSWERS AT SAVEMYEXAMS.CO.UK

Head to savemyexams.co.uk
for more questions and revision notes