

GCSE



Geography



Paper 1
Section B:
The Living World

Name:

Class:

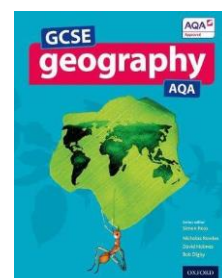
How to use this booklet

This booklet has been designed to cover every aspect of the AQA 8035 specification in some way. It is ordered in the same way as the specification. You may study the topics in a different order, which is okay.

If you complete all activities (and check with your teacher when you do not understand the activities), you will be well prepared for the exams.

The booklet has a combined approach: it includes some content information alongside lots of tasks to help you revise. All of the tasks will help you to revise the content and skills of the course. Some of the questions are in the style of the exam (and these are identified clearly as EXAM-STYLE QUESTIONS); other questions help you to practice the skills needed but do not exactly mirror the exam (e.g. the MINI ISSUE EVALUATION TASKS); others are purely designed to help you remember and revise content (e.g. brainstorms, tables and general questions).

You should remember that this is not a textbook, so it does not provide all of the content information. It should be used as an accompaniment to your lesson notes, teacher guidance revision guides, and text books.



At the start of the booklet you'll find some helpful resources. The CASE STUDIES AND EXAMPLES information will help you to take an organised approach to these important parts of Paper 1 and Paper 2. The COMMAND WORDS section tells you what each command term is asking you to do, and gives example answers to show you how.

The booklet is designed to be flexible. You may complete tasks in lessons or for homework- your teacher should guide you.

The best approach is to 'chip away' at the tasks over time rather than leaving it to a mad rush in April or May. That way you'll avoid overwhelming yourself too much.



Best of luck. Although you don't need luck, because deep down you know that if you use the booklet your confidence will go up and your grade will follow!

Course information

Your GCSE Geography course (AQA 8035) culminates in three exams. The basic information that you need to know is in dot points below. More detail is shown at the bottom.

Paper 1: Living with the physical environment

- The physical geography one!
- Worth 35%
- 1hr 30mins

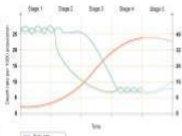
Physical stuff like this...



Paper 1: Challenges in the human environment

- The human/economic one!
- Worth 35%
- 1hr 30mins

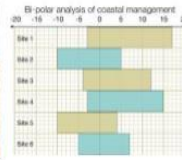
Human/economic stuff like this...



Paper 3: Geographical applications

- The skills one!
- Worth 30%
- 1hr 15mins

Skills stuff like this...



Paper 1: Living with the physical environment	+	Paper 2: Challenges in the human environment	+	Paper 3: Geographical applications
What's assessed 3.1.1 The challenge of natural hazards, 3.1.2 The living world, 3.1.3 Physical landscapes in the UK, 3.4 Geographical skills		What's assessed 3.2.1 Urban issues and challenges, 3.2.2 The changing economic world, 3.2.3 The challenge of resource management, 3.4 Geographical skills		What's assessed 3.3.1 Issue evaluation, 3.3.2 Fieldwork, 3.4 Geographical skills
How it's assessed <ul style="list-style-type: none"> • Written exam: 1 hour 30 minutes • 88 marks (including 3 marks for spelling, punctuation, grammar and specialist terminology (SPaG)) • 35 % of GCSE 		How it's assessed <ul style="list-style-type: none"> • Written exam: 1 hour 30 minutes • 88 marks (including 3 marks for SPaG) • 35 % of GCSE 		How it's assessed <ul style="list-style-type: none"> • Written exam: 1 hour 15 minutes • 76 marks (including 6 marks for SPaG) • 30 % of GCSE • Pre-release resources booklet made available 12 weeks before Paper 3 exam
Questions <ul style="list-style-type: none"> • Section A: answer all questions (33 marks) • Section B: answer all questions (25 marks) • Section C: answer any two questions from questions 3, 4 and 5 (30 marks) • Question types: multiple-choice, short answer, levels of response, extended prose 		Questions <ul style="list-style-type: none"> • Section A: answer all questions (33 marks) • Section B: answer all questions (30 marks) • Section C: answer question 3 and one from questions 4, 5 or 6 (25 marks) • Question types: multiple-choice, short answer, levels of response, extended prose 		Questions <ul style="list-style-type: none"> • Section A: answer all questions (37 marks) • Section B: answer all questions (39 marks) • Question types: multiple-choice, short answer, levels of response, extended prose

Case studies and examples

The specification sets out **14 examples** and **5 case studies** that you must learn for Paper 1 and Paper 2.

Examples are small scale. They will probably be taught within one lesson or less, and may take up about a page in an exercise book. Sometimes you must learn a **named example** which is usually regarding an event that happens regularly in a place so names are important to avoid confusion (e.g. Typhoon Haiyan 2013). Most of the time you will learn an **example** which is something that is more constant (e.g. a regeneration project in the UK).

Case studies are at a much larger scale. They include a lot of content and will need several lessons to cover the material concerned.

Paper 1 examples and case studies

1. Named **examples** of a tectonic hazard (in two areas of contrasting levels of wealth)
2. A named example of a tropical storm
3. An example of a recent extreme weather event in the UK
4. An example of a small scale UK ecosystem
5. A **case study** of a tropical rainforest
6. A **case study** of a hot desert OR a cold environment
7. An example of a section of coastline in the UK
8. An example of a coastal management scheme in the UK
9. An example of a river valley in the UK
10. An example of a flood management scheme in the UK
11. An example of an upland area in the UK affected by glaciation
12. An example of a glaciated upland area in the UK used for tourism

For UK landscapes, you will study TWO of Rivers, Coasts and Glacial landscapes. Consequently, you will only study the **four** relevant examples listed as numbers 7-12 here.

Paper 2 examples and case studies

13. A **case study** of a major city in an LIC or NEE
14. An example of urban planning (LIC or NEE)
15. A **case study** of a major city in the UK
16. An example of an urban regeneration project (UK)
17. An example of tourism reducing the development gap in an LIC or NEE
18. A **case study** of an LIC or NEE
19. An example of modern industrial development
20. An example of a large scale agricultural development
21. An example of a local food scheme in an LIC or NEE
22. An example of a large scale water transfer scheme
23. An example of a local water scheme in an LIC or NEE
24. An example of fossil fuel extraction
25. An example of a local renewable energy scheme in an LIC or NEE

You will study EITHER Food, Water or Energy so you will only study the **two** relevant examples listed as numbers 20-25 here.

Your teacher will choose which specific cases you study. For example, for **an example of tourism reducing the development gap in an LIC or NEE**, you might study safari tourism in Kenya. On the following page, you should write down which specific cases you will use.

My case studies and examples

	The specification requires...	My specific case...	Have I learnt it?
Paper 1	Named examples of a tectonic hazard (in two areas of contrasting levels of wealth)		
	A named example of a tropical storm		
	An example of a recent extreme weather event in the UK		
	An example of a small scale UK ecosystem		
	A case study of a tropical rainforest		
	A case study of a hot desert OR a cold environment		
	TWO OF... An example of a section of coastline in the UK An example of a river valley in the UK An example of an upland area in the UK affected by glaciation		
	TWO OF... An example of a coastal management scheme in the UK An example of a flood management scheme in the UK An example of a glaciated upland area in the UK used for tourism		
	A case study of a major city in an LIC or NEE		
	An example of urban planning (LIC or NEE)		
Paper 2	A case study of a major city in the UK		
	An example of an urban regeneration project (UK)		
	An example of tourism reducing the development gap in an LIC or NEE		
	A case study of an LIC or NEE		
	An example of modern industrial development		
	STUDY EITHER FOOD, WATER OR ENERGY... An example of a large scale agricultural development + An example of a local food scheme in an LIC or NEE OR An example of a large scale water transfer scheme + An example of a local water scheme in an LIC or NEE OR An example of fossil fuel extraction + An example of a local renewable energy scheme in an LIC or NEE		

Command words

When you read a question (in this booklet and in the exams), underline the command word/s (the ones that tell you what to do!).

Assess (or **Evaluate**): make a judgement about something

Tip: The higher mark questions on case studies and examples often have an assess/evaluate element, so it's smart to go back over your case studies/examples and figure out **what your opinions are**, and **why you have these opinions** (evidence). But remember- assess and evaluate questions can appear throughout all three papers.



Example question: 'The effects of and responses to tectonic hazards vary in areas of contrasting levels of wealth.'
Assess the extent to which this is true, referring to examples that you have studied. (9)

Example answer:

Tectonic hazard type: earthquake

Primary impacts mainly vary because of the types of buildings in HICs and LICs. For example, an earthquake in a HIC like the L'Aquila earthquake in Italy in 2009 destroys many expensive buildings, meaning that rebuilding is more expensive in HICs. In L'Aquila damages cost \$16 billion, compared to \$450 million in Nepal in 2015. Poorly constructed buildings also cause more deaths in LICs due to building collapse. In Nepal nearly 9000 were killed compared to 309 in L'Aquila.

The secondary effects vary even more than the primary. HICs have strong economies so they can rebuild and repair quickly. In Nepal, thousands of people still live in 'temporary' refugee camps two after the event. In L'Aquila, 65,000 people were made homeless compared to 3.5 million in Nepal, but far more people in Italy had insurance to minimise on-going impacts. Also, if a country has enough money to rebuild damaged ports, roads and airports, it can continue to trade. This reduces the economic impacts of an earthquake.

Responses to an earthquake are mainly determined by a country's level of wealth. Immediate and long-term responses are costly, and many LICs such as Nepal must rely on donations and aid. This is unreliable, and while large donations may be given soon after the quake, this may 'dry up' as hazards strike elsewhere. This can mean that immediate responses are prioritised, such as food and medical supplies, while rebuilding and creating employment opportunities may not occur for a long time in poorer regions.

Read through the model answer above. Circle the main judgement/claim that is made in each paragraph, then underline the evidence that is used to justify the judgement.

Define: you need to say what the term means

Tip: These are usually worth 1 or 2 marks, so don't over-complicate it! Keep it simple, but avoid simply re-stating the term as part of the definition. For example, if you're asked to **define 'development gap'**, don't say 'it's a gap in development'! A bit more detail is needed.



Example answers:

'Development gap' refers to the differences in levels of wealth and quality of life that exist across the world. (2)

'Development gap' refers to the disparity that exists both within and between nations, for example variations in GNI per head. (2)

Describe: write about what it is like

Tips: Describe questions will often (not always) require you to describe something from a figure (e.g. a map, table or photograph), so study the resource properly if this is the case.

Example question: Describe **two** environmental challenges caused by urban growth in an LIC or NEE. (2)

Example answer:

Challenge 1: Insufficient sanitation infrastructure can result in people dumping human waste into rivers.

Challenge 1: Increased emissions from traffic can add to air pollution.



Discuss: give both sides of an argument

Tip: You do not need to present a point of view here (unless asked directly to do so), but you do need to outline both views (and ideally, the reasons for those views). For example, if a question was '**TNCs bring more advantages than disadvantages to the LICs and NEEs in which they operate.**'

Discuss. (6 marks), you would need to outline the supporting view and the opposing view.

Example answer:



TNCs and host governments agree that TNCs bring more advantages than disadvantages to the LICs and NEEs in which they operate, primarily because TNCs pay taxes to the government and generate thousands of jobs. These jobs may raise incomes and quality of life, and lead to greater spending which strengthens local economies. However, environmentalists disagree because TNCs are often not forced to follow regulations that protect water, soil and air from pollution. Human rights activists may disagree as workers are often exploited by TNCs, e.g. in 'sweatshops'. Some economists disagree, arguing that the majority of profits go to the TNC rather than being spent in the LIC/NEE.

Can you see the two 'sides' that are discussed in this answer?

Explain: offer reason/s

Tip: Focus on 'why' something is the way it is! For example, if the question is **Explain why tropical storms form over warm water**, you need to offer reasons why!

Example answer:

Warm water leads to mass evaporation, where water vapour rises. When the vapour meets the cool air above, it condenses and forms cloud. The rising warm air creates a low-pressure system which attracts the winds that join smaller clouds together and move the storm cloud at high speed. As the cloud moves over warm water, more rising vapour condenses and joins the cloud, generating huge amounts of energy. Once the storm is moving at 74mph+ it is officially a tropical storm.



*Go through the answer above and identify the reasons that have been given!

Justify: give evidence for, or defend a decision

Tip: This command term tends to arise where you are asked to make a decision, so think about where that will happen in the exams! It is likely to appear in the case study or example questions in Papers 1 and 2. In Paper 3, you will need to justify your recommendation in the Issue Evaluation, and in the Fieldwork section you will often need to justify why you have chosen particular data collection or presentation techniques.

Example question: Justify **one** of your primary data collection techniques. (3)

Example answer:

Primary data collection technique: Perception analysis

Justification: Conducting perception analysis of residents and local business owners nearby to the business park enabled me to investigate the economic impacts of the business park on the local area because it helped me to gather data on locals' views on how job opportunities, wages and how the local economy had changed.

Example question: Justify the statistical techniques you used to analyse your data. (4)

Example answer: I used percentage increase and decrease to compare residents' and local business owners' views on how economic opportunities had changed as a result of the development of the business park. This was an appropriate technique because I had collected data from different numbers of residents and business owners, meaning that the raw data results were not easily comparable. Because percentages show proportion, I could reliably compare the data from the two groups of people to see whether there were differences in their views of the business park's impacts. From this I could infer where the benefits of the business park were felt.

Reminder: 'statistical techniques' refers to techniques including measures of average (e.g. mean, median, mode); measures of spread (e.g. range or interquartile range); line of best fit; percentage increase/decrease; calculating percentiles, etc. You won't be able to answer a question like this until you have conducted your fieldwork and presented the data you collect.



Outline: give the main points

Tip: Focus on giving the basic/central information. If you are asked to outline **one** thing (*example A below*), be sure to do that! (writing about more than one factor/issue when you've been asked to write about only one is a waste of time as you'll only be credited for one idea). You may be asked to outline **more than one** impacts/challenges (*example B below*). In that case, ensure that you make distinct (clearly different) points.



Example question A: Outline **one** change in UK farming practices since the 1960's. (2)

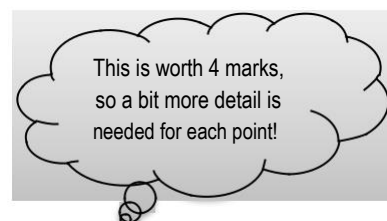
Example answer: Farming in the UK has undergone industrialisation since the 1960's (1 mark), meaning that farm sizes, chemical use and crop yields have increased (1 mark).

Example question B: Outline **two** environmental impacts of deforestation. (4)

Example answer:

Impact 1: Deforestation releases the carbon dioxide captured by trees into the atmosphere (1 mark), meaning that more of the sun's radiation becomes trapped which contributes to climate change (1 mark).

Impact 2: Deforestation causes habitat destruction (1 mark), which can threaten the survival of species, leaving them endangered or even causing extinction (1 mark).



Suggest: offer an idea. You may be asked to suggest a reason or to suggest what an effect may be.

Tips: Take clues from the resources provided, if there are any. If not, don't panic- you can make an educated guess. If the question is worth 2 marks, you should offer an idea and then add some detail. For example, if the question asks you to '**Suggest and explain one reason why the death rate decreases as a country develops**', you would need to say more than 'the country can afford better healthcare' (that'd only get you 1 mark).



Example answers:

As a country develops, the government can invest more money into healthcare (one reason has been suggested here). This means that more people can access medication needed to prevent sickness and death (and here is the added detail for the 2nd mark!).

As a country develops, people can afford better nutrition (1 mark). This means that fewer people die from preventable conditions such as malnutrition (1 mark).

An additional support resource is below. Geography exams almost always ask you to describe and/or explain **distribution**, but many students get confused about what they need to do so they lose unnecessary marks. This should help.

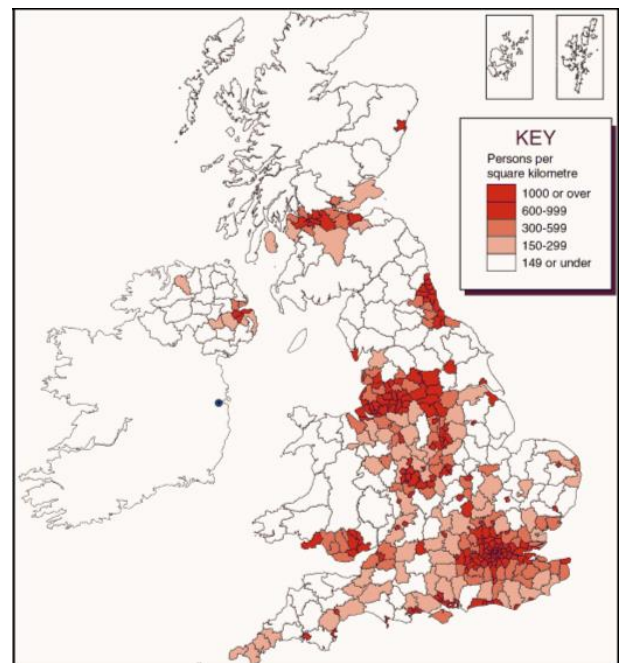
Distribution: where something exists or occurs/ how it is spread out across a place.

If you are asked to describe the distribution, you need to say **where** something is.

For example: **Using Figure 1, describe the distribution of the UK's population. (4)**

Example answer:

The UK's population is concentrated in England, especially the south-east in London and surrounding counties, where the population is generally 1000+ people per km². Dense populations also exist in S.Wales and SW.Scotland. Populations are sparse (less than 140 people per km²) in N.Scotland, central and N.Wales, central and western Northern Ireland and the north-west of England.



If you are asked to explain the distribution, you need to say **why** it is spread in that way.

Example question: Explain the distribution of the UK's population as shown in **Figure 1** (4).

Example answer:

London is the centre for financial and other key UK industries, meaning that it provides many opportunities and jobs which encourages people to live there. Historically, the centre and north of England had many industrial areas, which established cities such as Manchester and Birmingham. Cold and mountainous places (e.g. N.Scotland and N.Wales) are more difficult to inhabit than the flatter lowland areas (e.g. SE.England), making them sparsely populated.

Section B: The living world

- In this section, you **MUST** study Ecosystems and Tropical Rainforests
- You will also study either Hot deserts **OR** Cold Environments
- **Which optional topic do I study?** _____
- Go down and put a line through the topic that you do NOT study!

Ecosystems

Key idea: Ecosystems exist at a range of scales and involve the interaction between biotic and abiotic components.

1. Read the paragraphs below to help you revise ecosystems. Highlight or underline key terms and important information.

An **ecosystem** is a unit that includes all the **biotic** (living) parts (e.g. plants and animals) and the **abiotic** (non-living) parts (e.g. soil and climate) in an area. The organisms in an ecosystem can be classed as **producers**, **consumers** or **decomposers**.

A **producer** is an organism that uses sunlight energy to produce food (e.g. a banana tree). A **consumer** is an organism that gets its energy by eating other organisms (e.g. a monkey eats a banana). A **decomposer** is an organism that gets its energy from breaking down dead material, including dead producers, dead consumers or fallen leaves (e.g. bacteria and fungi break down dead monkeys or banana peels).

When dead material is decomposed, **nutrients** are released into the soil. The nutrients are then taken up from the soil into plants. The plants may be eaten by consumers. When the plants or consumers die, the nutrients return to the soil. This transfer of nutrients is called **nutrient cycling**.

2. Draw a food chain or food web in the space provided. Label each component as either **producer**, **consumer** or **decomposer**.

3. Using the information above and your own knowledge, explain how changing one component can impact an ecosystem. Try to include some of the **bolded terminology above** and some examples.

Which key terms should you highlight in this question?







The specification says that you need to know '**An example of a small scale UK ecosystem** to illustrate the concept of interrelationships within a natural system, an understanding of producers, consumers, decomposers, food chain, food web and nutrient cycling.'

Named example alert!

4. Complete the template below to help you learn and revise your example of a small scale UK ecosystem.

AN EXAMPLE OF A SMALL SCALE UK ECOSYSTEM	
My example: _____	
What is the ecosystem like? (Abiotic characteristics such as climate and soils, biotic features such as plant and animal types, location etc.)	Diagram or picture of the ecosystem
What are some of the producers, consumers and decomposers in the ecosystem?	Explain how nutrient cycling takes place in the ecosystem.
Diagram of a food chain or food web in the ecosystem	Explain how changes to one component impacts the ecosystem.

5. For each of the **major global ecosystems** below, complete summary notes in the empty boxes.

ECOSYSTEM	IMAGE	LOCATION/S	BIOTIC FEATURES	ABIOTIC FEATURES
Grassland				
Hot desert				
Temperate deciduous forest				
Tropical rainforest				
Tundra				
Polar				

Tropical rainforests

Key idea: Tropical rainforest ecosystems have a range of distinctive characteristics.

6. Create a brainstorm to show the **physical characteristics of a tropical rainforest**. You should refer to features such as the layers of TRFs, the climate (precipitation and temperature), locations around the world etc.

7. Explain how in tropical rainforest ecosystems, climate, water, soils, plants, animals and people are **interdependent**.

8. Plants and animals adapt to the physical conditions of tropical rainforests. **Identify** one plant and one animal below, and **describe** how each has adapted to live in the ecosystem.

Chosen plant: _____

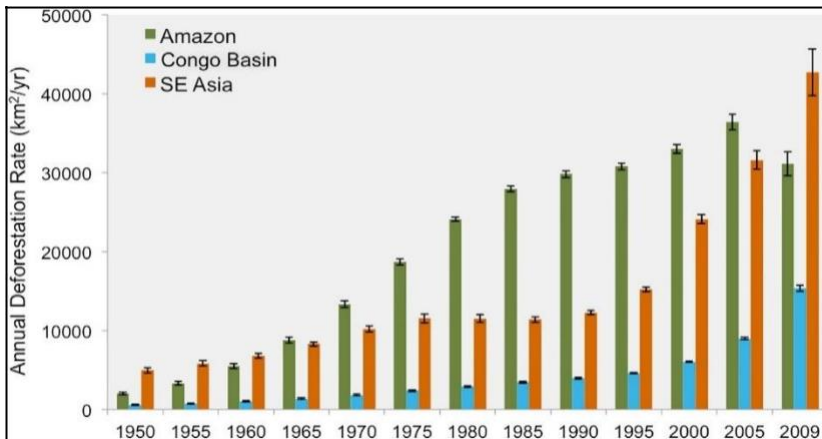
Chosen animal: _____

9. Define 'biodiversity'.

10. Explain how **human activities** have **reduced biodiversity** in tropical rainforests.



Key idea: Deforestation has economic and environmental impacts.



11. Describe the general pattern of deforestation rates between 1950-2009.

12. Compare rates of deforestation in the three regions shown.

Case study alert!

The specification says that you need to know '**A case study of a tropical rainforest**' to illustrate the causes and impacts of deforestation.

13. Add detail into each of the boxes below to help you revise your case study. Include data and reference to stakeholders.

A CASE STUDY OF DEFORESTATION IN A TROPICAL RAINFOREST			
My case study: _____			
CAUSES OF DEFORESTATION	Subsistence and commercial farming	IMPACTS OF DEFORESTATION	Economic development
	Logging		
	Road building		Soil erosion
	Mineral extraction		
	Energy development		Contribution to climate change
	Settlement		
	Population growth		Local livelihoods destroyed (e.g. rubber tapping)

Which of these **causes** and **impacts** do you consider to be the **most significant**? Highlight them in your table and think about WHY you consider them to be the most significant. **You may be asked to assess/evaluate this in the exam.**









Key idea: Tropical rainforests need to be managed to be sustainable.

14. Why do tropical rainforests need to be **managed**? Your answer should outline their **importance** to people and the environment.

15. **MINI ISSUE EVALUATION TASK**

15a. There are many strategies to **manage** the rainforest sustainably. To help you revise this topic and also to practice the ISSUE EVALUATION component of Paper 3, you need to decide which strategy you think should be prioritised. In each box below, **describe each strategy**, then **summarise key advantages** and **disadvantages**.

STRATEGIES	IMAGE	BRIEF DESCRIPTION	ADVANTAGES	DISADVANTAGES
Selective logging				
Replanting				
Conservation and education				
Ecotourism				
International hardwood agreements				
Debt reduction				

15b. Now that you know the advantages and disadvantages of a range of rainforest management strategies, select **one** strategy and **justify why it is the best option** to manage the rainforest sustainably.

Command words, p. 8

Chosen option: _____

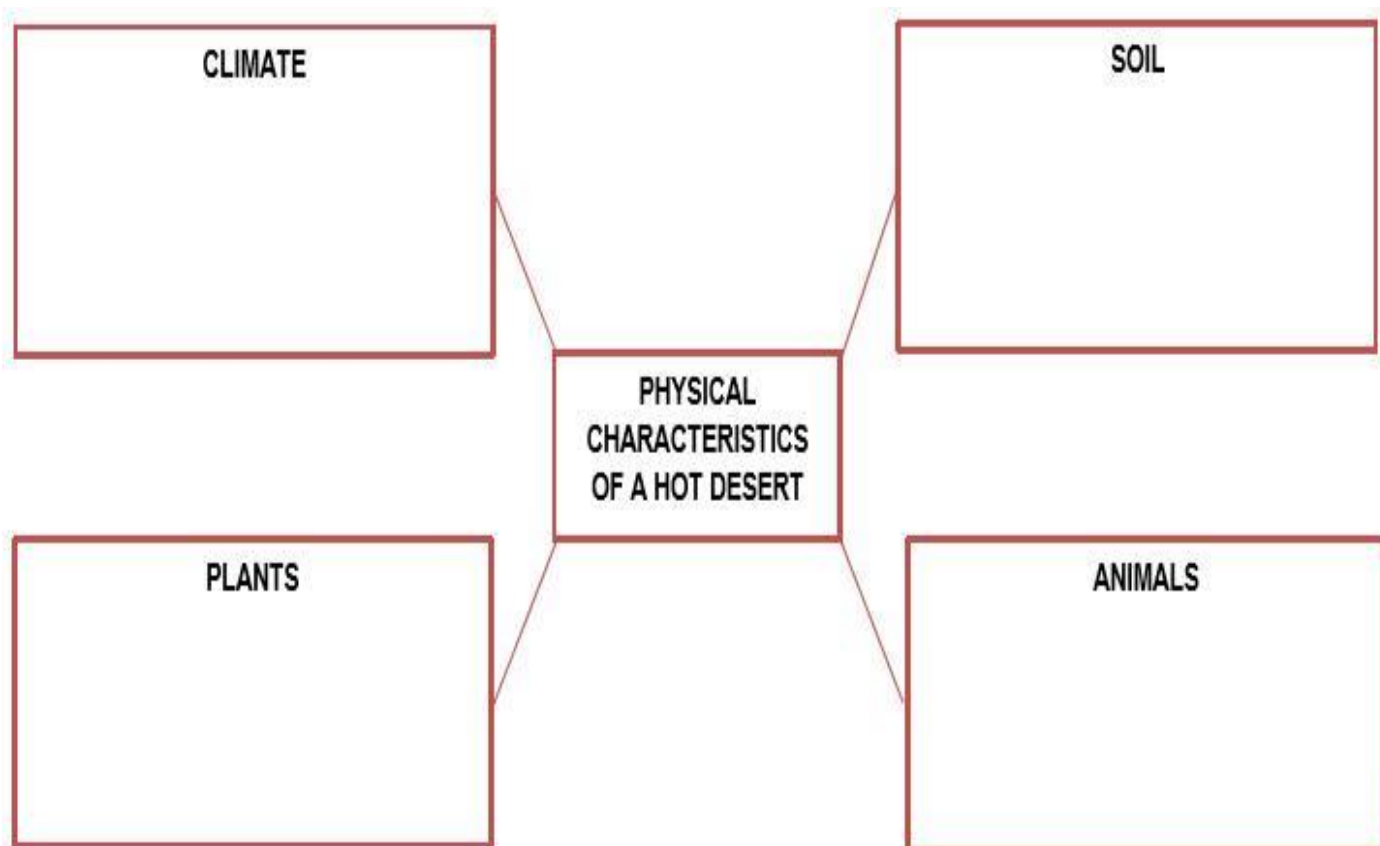
This is the best option to manage the rainforest because... _____

REMEMBER- You study ***EITHER*** Hot deserts ***OR*** Cold Environments!

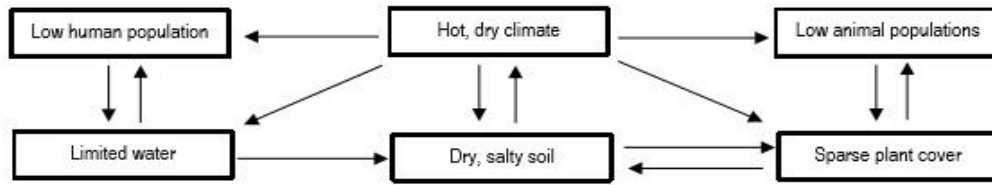
Hot deserts

Key idea: Hot desert ecosystems have a range of distinctive characteristics.

16. Complete the brainstorm below on the physical characteristics of a hot desert by adding brief notes to each box.



17. Using the **figure** below, **describe** and **explain** the interdependence of climate, water, soils, plants, animals and people in a hot desert.



18. Referring to **one** plant or animal species found in a hot desert, summarise how the species has adapted to the climate using dot points. Chosen species: _____

- _____
- _____

19. **EXAM-STYLE QUESTION:** Explain why biodiversity in hot deserts is particularly vulnerable to climate change. (4)



Key idea: Development of hot desert environments creates opportunities and challenges.

study alert!

The specification says that you need to know '**A case study of a hot desert**' to illustrate development opportunities and the challenges of developing in hot deserts.

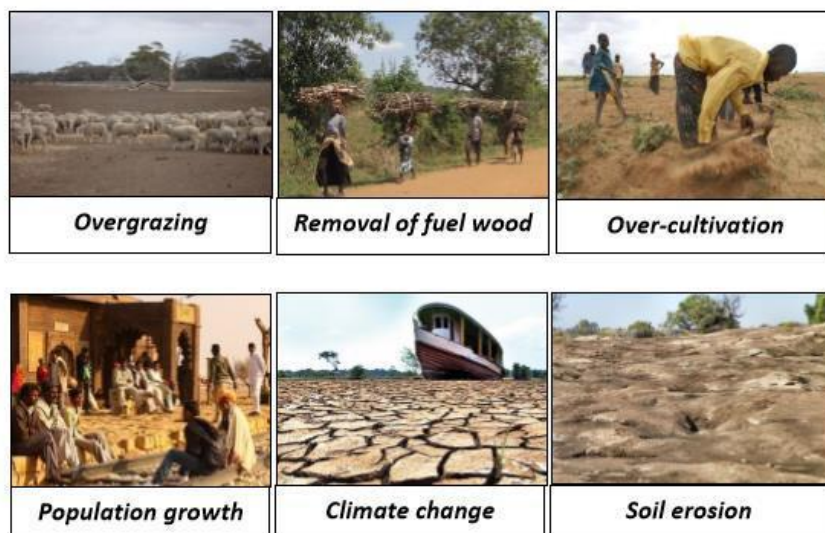
'**Development opportunities**' refers to the options that exist to improve income and quality of life. '**Challenges of developing**' refers to the difficulties that are encountered in trying to develop.

20. Complete the template below to help you learn and revise your case study of a hot desert.

A CASE STUDY OF A HOT DESERT			
My case study: _____			
DEVELOPMENT OPPORTUNITIES IN A HOT DESERT	Tourism	LOCATION	Draw or stick in a map showing the location of your chosen hot desert.
	Energy		
	Farming	CHALLENGES OF DEVELOPING IN A HOT DESERT	<p>Explain how the following challenges make development difficult. Link the challenges to the opportunities you've already mentioned.</p> <ul style="list-style-type: none"> • Extreme temperatures • Water supply • Inaccessibility
	Mineral extraction		

Key idea: Areas on the fringe of hot deserts are at risk of desertification.

21. **Annotate** each box with 1-2 sentences explaining how each factor causes desertification.



22. **MINI ISSUE EVALUATION TASK**

There are several strategies to **reduce the risk of desertification**. To help you to practice skills needed for the ISSUE EVALUATION component of Paper 3, complete the sentences below.

Water management involves): _____

It helps to reduce the risk of desertification by... _____

Its disadvantages/difficulties are... _____

Soil management involves): _____

It helps to reduce the risk of desertification by... _____

Its disadvantages/difficulties are... _____

Tree planting helps to reduce the risk of desertification by... _____

Its disadvantages/difficulties are... _____

Use of appropriate technologies is where... _____

It helps to reduce the risk of desertification by... _____

Its disadvantages/difficulties are... _____

Cold environments

Key idea: Cold environments (polar and tundra) have a range of distinctive characteristics.

16. Label the images below with the physical characteristics of tundra and polar environments.



Tundra environment

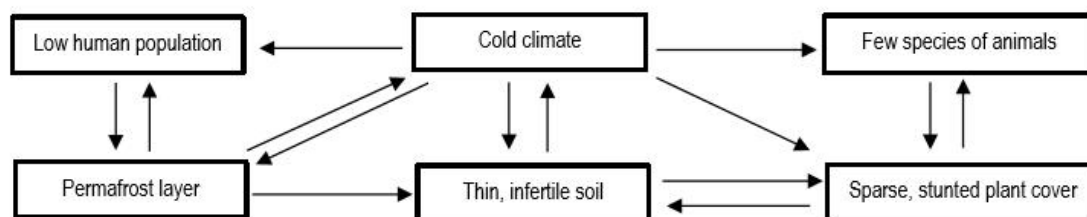


Polar environment

17. **EXAM-STYLE QUESTION:** Using **Figure 1**, describe the climate of this environment. (3)

Figure 1- climate of a tundra		
MONTH	AVERAGE TEMPERATURE (°C)	AVERAGE RAINFALL (mm)
Jan	-9	65
Feb	-8	59
Mar	-6	71
Apr	-2	57
May	3	81
Jun	7	78
Jul	9	74
Aug	8	84
Sept	4	158
Oct	2	143
Nov	-5	119
Dec	-7	82

18. Using the figure below and your own knowledge, describe how the climate can affect the number of animal species in a cold environment.



19. Complete the gaps in the paragraph below using the vocabulary provided. This will help you to revise the ways that plants and animals have adapted to survive in cold environments. **Vocabulary:** hibernate, battering, migrating, permafrost, Arctic foxes, plants, well-insulated, freezing, energy, cold, transpiration, seals, round-shaped, dormant, Antarctic.

Most plants are small, low to the ground and _____ to help them survive _____ winds. Leaves are generally small as this reduces the amount of moisture that is lost through _____. Most plants have shallow roots in order to avoid the _____ layer beneath the soil. Most plants become _____ (stop growing) to survive the _____, dark winters. Animals have also had to adapt. They are _____ against the cold, for example via a fatty layer (e.g. _____ and whales) or thick fur (e.g. _____ and polar bears). This reduces the amount of _____ they use keeping warm. Some animals _____ to conserve energy and survive the winter (e.g. Arctic ground squirrels hibernate for more than half the year and can even survive if their body temperature drops below _____). Those that do not hibernate adapt in other ways, for example by eating the _____ that are available in the winter (e.g. reindeer eat lichens) or by _____ to warmer areas (e.g. Arctic terns leave the Arctic winter and fly to the _____ for the southern summer).

20. Polar environments are **less biodiverse** than most other environments. Outline **two** reasons why this is the case.

Reason 1: _____

Reason 2: _____

21. Which of the following statements is **true**? Shade **one** oval only.

- a. Biodiversity is higher in the Arctic than in the Antarctic.
 b. Biodiversity is lower in tropical rainforests than in cold environments.
 c. Biodiversity increases as average temperature drops.



Key idea: Development of cold environments creates opportunities and challenges.

Case study alert!

The specification says that you need to know '**A case study of a cold environment**' to illustrate development opportunities and the challenges of developing cold environments.

'**Development opportunities**' refers to the options that exist to improve income and quality of life. '**Challenges of developing**' refers to the difficulties that are encountered in trying to develop.





22. Complete the template below to help you learn and revise your case study of a cold environment.

A CASE STUDY OF A COLD ENVIRONMENT		
My case study: _____		
DEVELOPMENT OPPORTUNITIES IN A COLD ENVIRONMENT	Tourism	<p>LOC ATIO n</p> <p>Draw or stick in a map showing the location of your chosen cold environment.</p>
	Fishing	<p>Explain how the following challenges make development difficult. Link the challenges to the opportunities you've already mentioned.</p> <ul style="list-style-type: none"> • Extreme temperatures • Inaccessibility • Provision of buildings • Infrastructure
	Mineral extraction	
	Energy	

Key idea: Cold environments are at risk from economic development.

23. Create a brainstorm to show a range of reasons why **cold environments are valuable as wilderness areas** and **why they should be protected**.

24. The key threat to cold environments is economic development, so **strategies are needed to balance economic development and conservation**. The table below outlines four strategies. In the blank column, you need to explain how each strategy can help to balance the two concerns.

STRATEGY	DESCRIPTION/ EXAMPLE	IMAGE	HOW CAN THE STRATEGY HELP TO BALANCE ECONOMIC DEVELOPMENT AND CONSERVATION?
Use of technology	Modern construction methods can minimise the environmental impacts of economic development. For example, <u>elevating buildings</u> or <u>building on gravel beds</u> can prevent permafrost melting.		
Conservation Groups	These groups put pressure on governments to protect wilderness areas and fragile cold environments (e.g. <u>Greenpeace</u>).		
International agreements	Agreements such as the <u>1959 Antarctic Treaty</u> limits visitors landing at one site to 100 at a time, and prohibits nuclear activities.		
Role of governments	Governments can make laws to protect fragile environments, such as the <u>1964 Wilderness Act</u> which protected wilderness areas from development.		

40. What is an ecosystem?
41. Give two biotic features of ecosystems.
42. What is a consumer?
43. Describe the role of producers in ecosystems.
44. Where are tundra ecosystems found?
45. Give four physical characteristics of tropical rainforests (TRFs).
46. Outline one interdependent relationship that soils have with another component of the TRF ecosystem.
47. Give one plant that has adapted to the TRF conditions, and say how it has adapted.
48. Define biodiversity.
49. Give two ways that TRF biodiversity is harmed by human activities.
- 50. Where is your TRF case study located?**
- 51. Give two causes of deforestation in your TRF case study.**
- 52. Describe the environmental impacts of deforestation in your TRF case study.**
53. Identify two ways that TRFs are valuable to people.
54. Identify two ways that TRFs are valuable to the environment.
55. Give one international agreement about the use of tropical hardwoods.
56. Explain how conservation and education can help in the sustainable management of TRFs.
57. Describe the climate in hot deserts.
58. Give an example of an interdependent relationship in the hot desert ecosystem.
59. Give one adaption of animals to hot deserts.
60. Describe one issue related to biodiversity in hot deserts.
- 61. What is your case study of a hot desert?**
- 62. Give two of the development opportunities that exist in your hot desert case study.**
- 63. Give two of the challenges of developing that exist in your hot desert case study.**
64. What is desertification?
65. Explain how water management can reduce the risk of desertification.
66. Give three physical characteristics of cold environments.
67. What is permafrost?
68. Give two adaptations of plants to cold environments.
- 69. What is your case study of a cold environment?**
- 70. Give two of the development opportunities that exist in your cold environment case study.**
- 71. Give two of the challenges of developing that exist in your cold environment case study.**
72. Give two of the ways that cold environments are at risk due to economic development.
73. Describe one strategy that can balance the needs of economic development and conservation in cold environments.
74. Why are wilderness areas worth protecting?