GCSE Geography B

Paper 3: Preparing students for making geographical decisions

Pearson Edexcel

Aims and objectives

- Review the topics and exam structure in Paper 3 including question types, command words and mark scheme requirements.
- Focus on the skills needed for the resource booklet about a place based geographical issue.
- Explore strategies for preparing your students for the final 12 mark ‘Justify’ question.
- Reflect on marked scripts from the 2023 Geography GCSE B Paper 3 exam.

Getting to know you

- What are your key reasons for attending this training on Paper 3?
- What is the single most important thing you hope to take away from this training?

Answers in the Group Chat please.

(2 minutes)

Part 1: The topics and exam structure of Paper 3 (question types, command words and mark scheme requirements)

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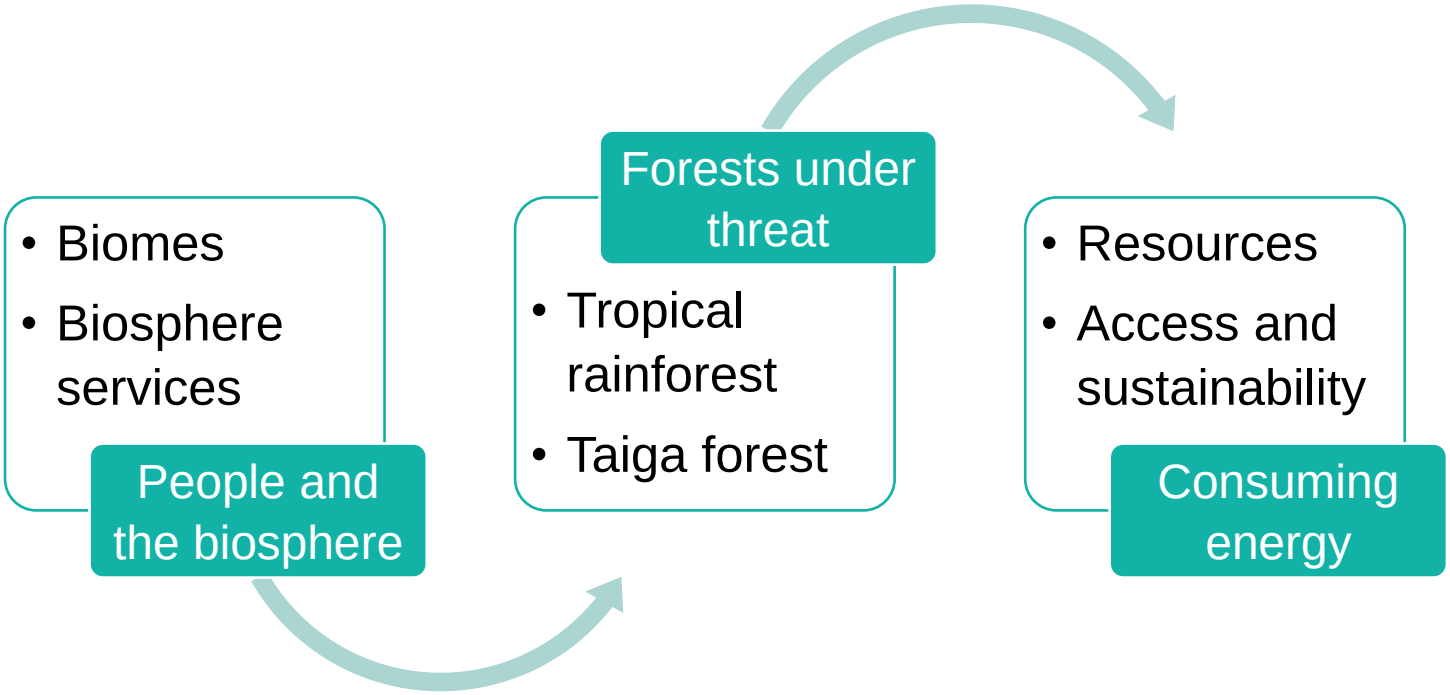
Paper 3 content (AO1–2)



The knowledge (AO1) and understanding (AO2) in short-answer questions is drawn from pages 32-34 of the specification (three interlinked themes, shown above).

Additionally, up to 4 marks of AO2 credit is awarded in the final 12-mark question for understandings drawn from Paper 3 and the rest of the specification.

Paper 3 Assessment Objectives

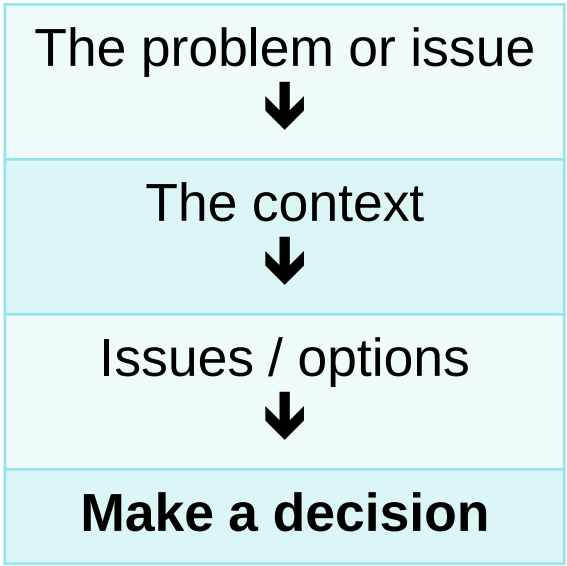
- **64 marks overall** (4 for marks for SPGT)
- **15 marks** for demonstrating knowledge and understanding of locations, places, processes, environments and their inter-relationships (AO1 and AO2).
- **29 marks** for applying knowledge and understanding to interpret, analyse and evaluate information and issues, and to make judgements (AO3).
- **16 marks** the selection, adaptation and use of skills (AO4).

Note the *very high proportion of AO3 marks available*. This gives Paper 3 a very different character from other Geography exam papers.

Papers 1 and 2 have a stronger focus on demonstrating AO1 and AO2 knowledge and understanding, but Paper 3's main focus is *accessing AO3 and AO4 marks*.

Paper 3 assessment

- Both SAMs and the 2023 paper provide guidance on the style and format of the assessment – *see the pack*.
- The paper is made up of several sections which always end with a Making Geographical Decisions task.
- The Resource Booklet will be 10-12 pages long and with approximately 800 words of text to read.
- The Resource Booklet can include maps, diagrams (charts, flow diagrams, speech bubbles), photographs and tables.



Take a quick look at the 2023 Resource booklet (Iceland)

Overview of Paper 3

1 hour 30 minutes examination

- All three Paper 3 themes are assessed each year.
- An unseen resource booklet is provided in the exam.
- The ‘problem’ (or issue) that is the focus of Paper 3 is always – broadly - ‘people and the environment’.
- However, the focus might be weighted a little more towards either human or environmental challenges from year-to-year (do not expect the 12-mark question will always ask about both).

Particular skills required of candidates are:

1. an ability to interpret resources,
2. knowledge and understanding of different stakeholder views (important preparation for the 8-mark questions),
3. an understanding that there isn’t always a ‘right’ answer (important for achievement in the 12-mark question).

Enquiry pathway – paper 3

1. **Read the resource booklet from cover-to-cover**

See '**the big picture**'.

See how the issues fit in with **prior learning** of the three taught themes.

2. **Complete the short answers**

Work through each question carefully.

Remember that most questions are asking for **analysis** of what's shown, not recalled knowledge.

3. **Longer answers**

Plan these carefully, making **full use of the resources.**

Know the command terms and AOs, and what they require you to do.

Summary

- There are significant differences between this and the other GCSE Geography papers:
- Candidates need to have skills to **interpret resources**
- Candidates need to **understand that the world is conflicted**
- Candidates need to understand that **there are no ‘right’ answers**
- Candidates need to be able to conduct a **debate** – the final question is not predictable *but its format is*.

Discussion Activity 1

1. What are the delivery challenges in your centre?
2. How are you supporting learners across the ability range to engage with ‘the big idea’ of Paper 3?

Part 2: Developing the skills (working with a resource booklet and a place-based geographical issue)

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Developing AO4 skills

1. Describing **distributions and trends** on:
    - Maps
    - Photographs
    - Graphs.
2. Performing **mathematical/statistical calculations**
    - Mean, median, mode, range, etc.
    - Calculate percentage increase.
3. Writing analytically about the resource booklet and **communicating** findings
    - Important for 8-mark and 12-mark questions
    - Making links between different resources.

Take a quick look at the specification skills list, page 37-38

Discussion Activity 2

1. How do you integrate skills into your curriculum?
2. Do students always bring their literacy and numeracy skills into the geography classroom in your school? If there are barriers to this, how can they be overcome?

Describing distributions

- General pattern/distribution – overview (is it even or uneven?).
- Does the pattern sub-divide in coherent areas/zones?
- Are there any anomalies in these subdivisions?
- If there are changes over time (as are shown here in Figure 3, 2018 paper), which are most worthy of mention?
- Try to manipulate or quantify data e.g. the area of forest has halved / reduced by about 50% in West Africa.

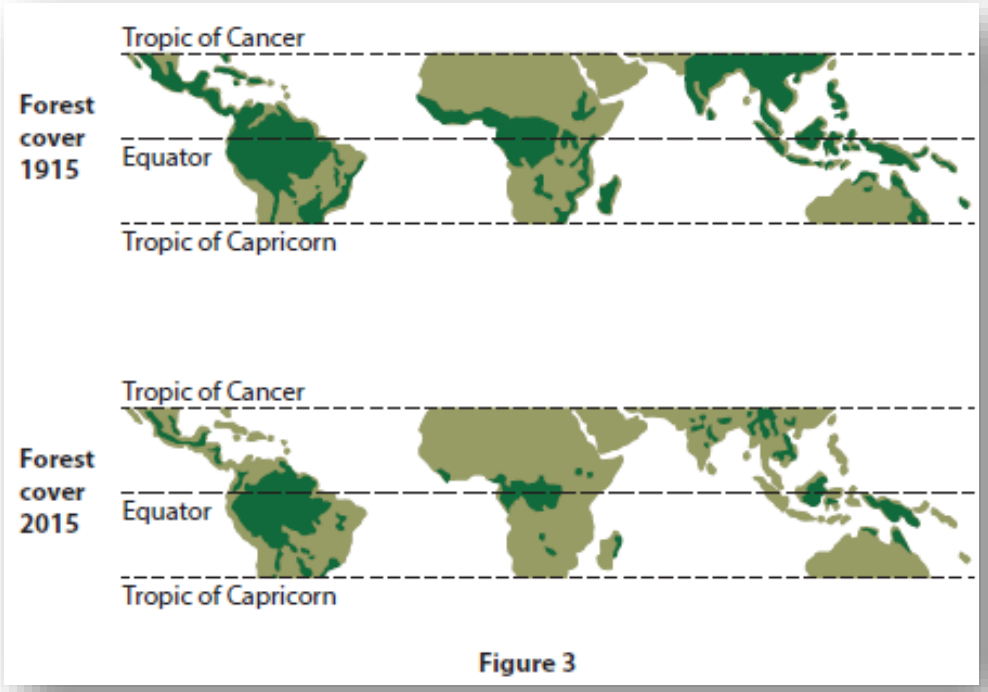
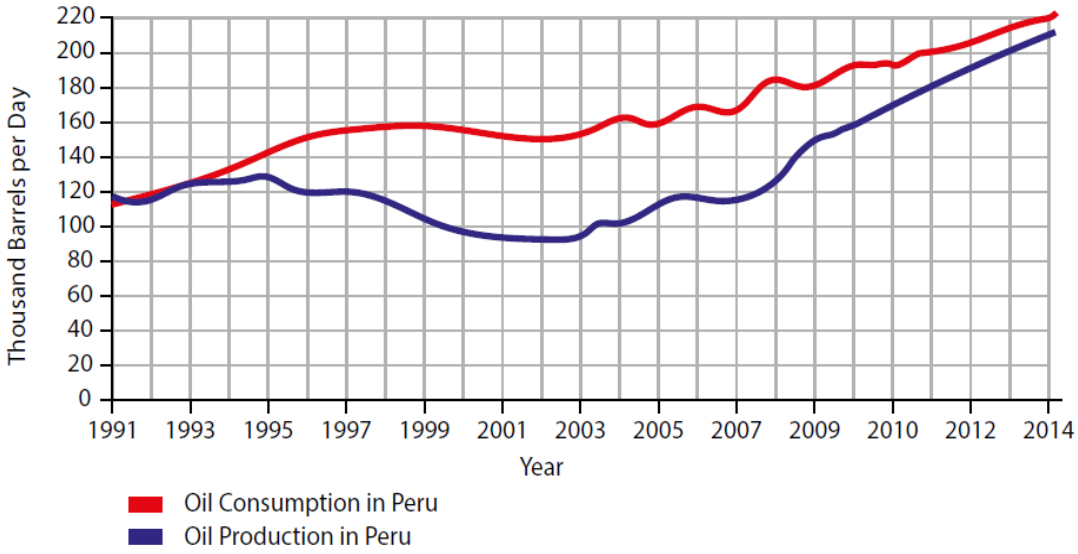


Figure 3

Pearson Edexcel GCSE Geography Paper 3 2018

Describing trends

- Firstly, make sure students understand what the word ‘trend’ means (also, ‘rate’ and ‘pattern’).
- Is it consistent or irregular?
- What are the starting & end points?
- Does it sub-divide into coherent periods?
- Any anomalies in these sub-divisions?
- Any data to use?
- Using precise terms:
  - consistent, irregular
  - up/down/constant
  - rate is faster/slower/constant
  - maximum, minimum.



Pearson Edexcel GCSE Geography Paper 3 SAMs

Making connections (AO3)

Using evidence from Figures 5 and 6, explain **two** reasons why the people of Iceland need a diverse energy mix.

(**4 marks**, 2023 exam)

Sector	% of Iceland's earnings	Characteristics of sector (2018 data)	Threats to sector
Fishing & food	27	• 5,000 people work on fishing vessels. • 20,000 people work in food processing or support roles like ship repairs.	• Marine ecosystem health is threatened by rising ocean temperatures. • Some species may vanish altogether.
Tourism	33	• 27,000 people work in air travel, hotels, coaches and visitor attractions. • 3 million tourists visited in 2018.	• Almost all tourists arrive by air. • Volcanic eruptions and major global events can a
Aluminium manufacturing	36	• 4,000 people work in aluminium metal production. • The factories are mainly owned by foreign TNCs.	• TNCs elsev Icela • Dem to gl grow

Figure 5

Information about Iceland's three main economic sectors and its capital city, Reykjavik

YEAR	% contribution to Iceland's energy mix			
	Hydroelectric power	Geothermal energy	Imported oil	Imported coal
2005	18	56	23	3
2010	19	66	X	2
2018	20	62	16	2

- A country's 'energy mix' is the range of different energy sources that are used.
- Fossil fuel use for making electricity has fallen as renewable energy sources have increased. However, oil is still needed for shipping, aeroplanes and road vehicles.
- Renewable energy was developed rapidly in the 1970s when Iceland could not afford to import the oil it needed because of a large global price increase.
- Hydroelectric power (HEP) was developed by building large dams and reservoirs.
- Geothermal energy was developed by drilling into rock and drawing up hot water. Electricity can be generated using steam from this water. 90% of Icelandic houses are now heated using geothermal energy.

Figure 6

An energy profile of Iceland

Pearson Edexcel GCSE Geography Paper 3 2023

An entirely **AO3-targeted** question. The 'story' students need to tell is **self-contained in Figures 5-6**. They will create analytical **links** & **connections** as part of their answer.

Comparing trends

- How are they alike?
- How are they different?
- Is there a pattern?
- Do the correspond – or is the relationship inverse?
- AO3-targetted questions may look for evidence of links and connections ***between two resources.***

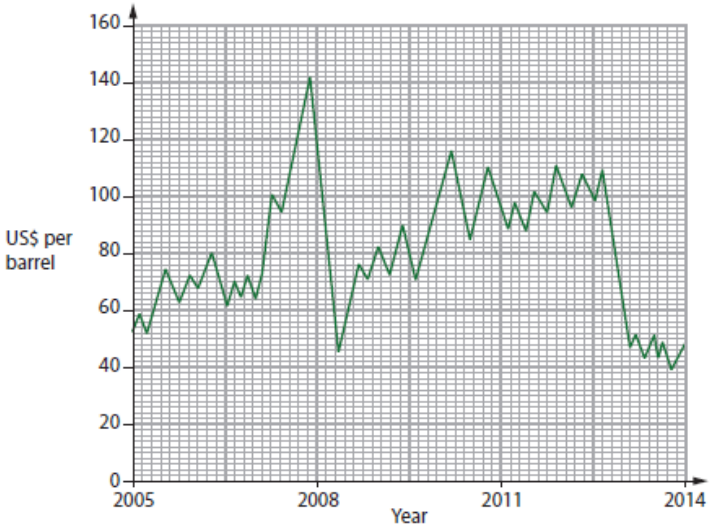


Figure 8a

Fossil fuel oil prices, 2005–2014

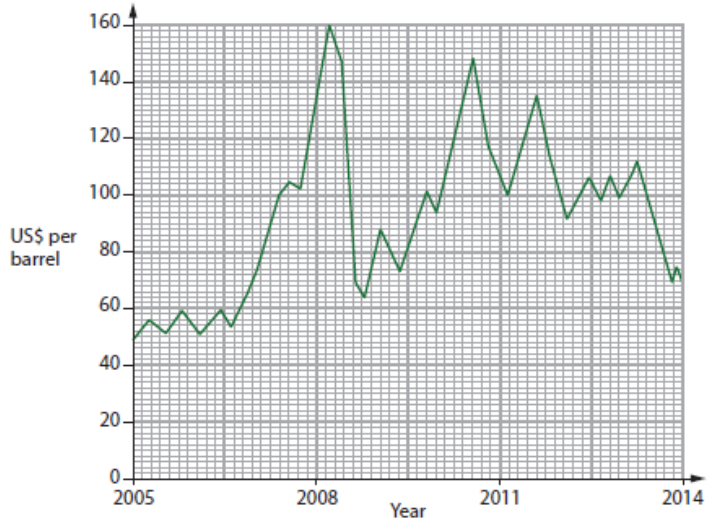


Figure 8b

Palm oil prices, 2005–2014

Pearson Edexcel GCSE Geography Paper 3 2018

Part 3: The 12-mark ‘Justify’ question (strategies for preparing your students)

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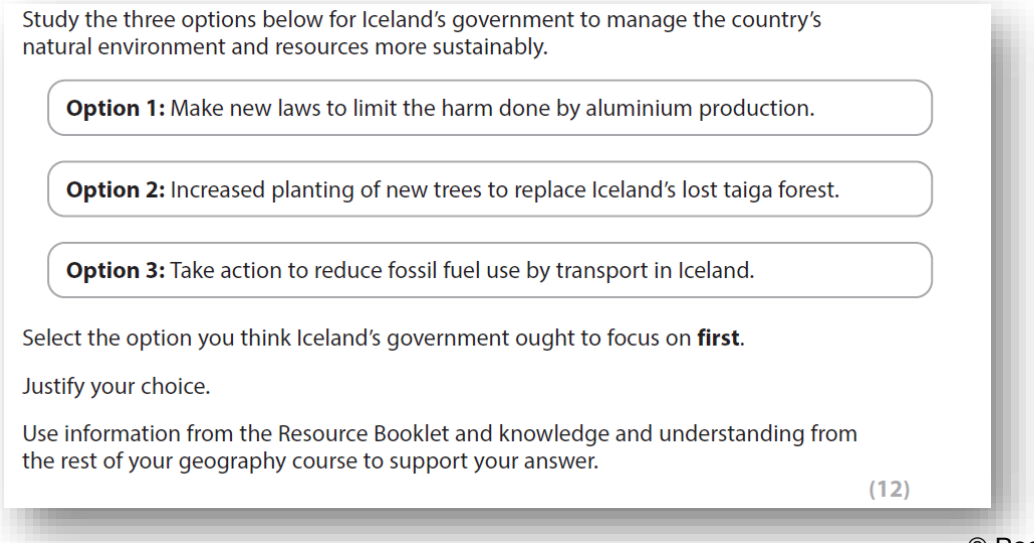
The 12-mark format

- The final question (Q4) will always be structured the same way, but the focus will vary.
- It will offer **three** options and ask students to **weigh** these options before **making a decision**.
- They must **support** their decision with **evidence**.
- In the 2023 exam, the focus was on sustainable management of Iceland's natural environment.



Study the three options below for Iceland's government to manage the country's natural environment and resources more sustainably.

Option 1: Make new laws to limit the harm done by aluminium production.

Option 2: Increased planting of new trees to replace Iceland's lost taiga forest.

Option 3: Take action to reduce fossil fuel use by transport in Iceland.

Select the option you think Iceland's government ought to focus on **first**.

Justify your choice.

Use information from the Resource Booklet and knowledge and understanding from the rest of your geography course to support your answer.

(12)

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The AOs and the 12-mark Q

AO1	Demonstrate knowledge of **locations, places, processes, environments** and different scales.
AO2	Demonstrate geographical understanding of: • **concepts** and how they are used in relation to places, environments and processes; • the **interrelationships** between places, environments and processes.
AO3	Apply knowledge and understanding to **interpret**, **analyse** and **evaluate** geographical information and issues and to **make judgements**.
AO4	**Select, adapt** and **use** a variety of skills and techniques to **investigate questions and issues** and communicate findings.

4 marks AO2
4 marks AO3
4 marks AO4

+4 marks SPAGT

Select the option you think Iceland's government ought to focus on **first**.

Justify your choice.

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‘People and the Environment'

People and the environment is the over-arching focus of paper 3

- The 12-mark question might ask about what is ‘best’ for ‘people’ and/or ‘the environment’; or what the ‘first priority’ or ‘key goal’ of a government should be over a particular time scale.
- It is vital that students can ‘unpack’ the question focus in order to structure their response.

What must be done **first**, and why?

How do we justify what should be done ‘first’…? How might this decision relate to Iceland’s different economic, social, environmental **issues** and **challenges**?

Who will the immediate **winners** and **losers** be for the action the government takes first? Which people and environments will be positively and negatively affected by the choice?

What could be left until **later**, and why?

Why might the other actions be left until later when the government is making **long-term** plans for the **future**?

The benefits of some of the options might take **longer** to materialise than others (regrowing forest, for example).

Discussion Activity 3

1. How do you integrate ‘thinking’ skills for the 12-mark question into your curriculum?
2. How frequently should students practice ‘unpacking’ and scaffolding a decision-making question? Starting in Year 10 or Year 11?

Decisions are complex

From the outset, 'The Issue' (resource book page 2) is shown as **complex / fraught**

This paper's people-biosphere-forest-energy 'nexus' will focus on a context and issue where it is always likely that:

- There will be **winners and losers** whatever happens next
- Governments must balance **short-term** and **longer-term** benefits and goals
- Local actions may have **direct** or **indirect** impacts, and consequences at **global** scales.

The issue: **a sustainable future for Iceland**.

- The European country of Iceland is a volcanic island in the North Atlantic Ocean. Large areas of Iceland are an uninhabited wilderness.
- In 2019, Iceland's 350,000 citizens had an average life expectancy of 84 and a very high Gross Domestic Product (GDP) per capita of 55,000 US$.
- Environmental impacts of Iceland's past economic growth include deforestation, soil erosion and pollution. The environment is now threatened by climate change.
- How can Iceland's government ensure a sustainable future not only for its people but also for Iceland's physical environment?

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The decision-making process

Identify the issue

↓

Understand why the issue exists

- What are its causes?
- How serious is it?
- Who does it affect (people)?
- Where does it affect (environments)?

↓

Identify possible solutions

There could be several options

↓

Weigh-up the solutions

- Use evidence to help identify advantages and disadvantages
- Consider costs and benefits of each option
- Think about who is affected by each option, and how

↓

Make a final decision and justify it

This can be done using past exam papers and SAMs, but in lessons it can be done through presentations, mock news reports / videos, posters, role play etc. that deal with other contexts, perhaps drawn from newspaper headlines

The final question

- The options may be complex or relatively simple.
- Some students will underline words which look important/interesting and will comment on them explicitly e.g. why should one option be delivered **first** – might it need **more time** to achieve? Is it less controversial and so easier to gain public support?
- No option is considered more or less ‘favourable’ in terms of the question and mark scheme design and intentions.

Option 1: Make new laws to limit the harm done by aluminium production.

Option 2: Increased planting of new trees to replace Iceland’s lost taiga forest.

Option 3: Take action to reduce fossil fuel use by transport in Iceland.

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The final question (2023: Q4)

Select the option you think Iceland's government ought to focus on **first**.

Justify your choice.

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Broadly, it was hoped candidates would:

- think about the costs and benefits of each option
- perhaps make a distinction between short-term and longer-term goals, and argue a good case
- recognise each choice has drawbacks - but the key thing is to identify one choice as being either especially **urgent** or a good **pragmatic** choice (perhaps because it is more likely to gain public support)
- say something about the rejected options and why they might be left until later, even if they have obvious merit too
- support the choice with some information and ideas borrowed and applied from the two-year GCSE course
- employ geographical terminology with confidence and accuracy, in order to help lend some authority to their choice.

We will look at examples of answers in the final session

Sustainability

- **Taking a view** is central to paper 3.
- Another useful teaching and learning approach to take is the **sustainability** model (right).
- This makes us think about the balance and tensions between possible economic, social and environmental goals.

Discussion Activity 4

1. How often do you practice decision-making (DM) 12-mark questions?
2. Other than the SAMs and recent papers, what DM resources and approaches are useful and might be shared?

Synoptic links (AO2 credit)

There are several different ways of demonstrating wider knowledge and understanding in the 12-mark answer. They are:

- reference a **parallel case study** (‘I studied a similar issue in Peru...’)
- mention a **model or theory** (‘as Boserup says...’) or named **concept** (biodiversity)
- show applied understanding of **processes** and **interrelations** between different causes and effects (‘this could lead to overland flow and even worse soil erosion impacts’).

Candidates should try to do some of these, but **keep it brief** (1 or 2 sentences).

Argument & evidence (AO3–4)

Useful evaluative (AO3) and connective phrases include the following:

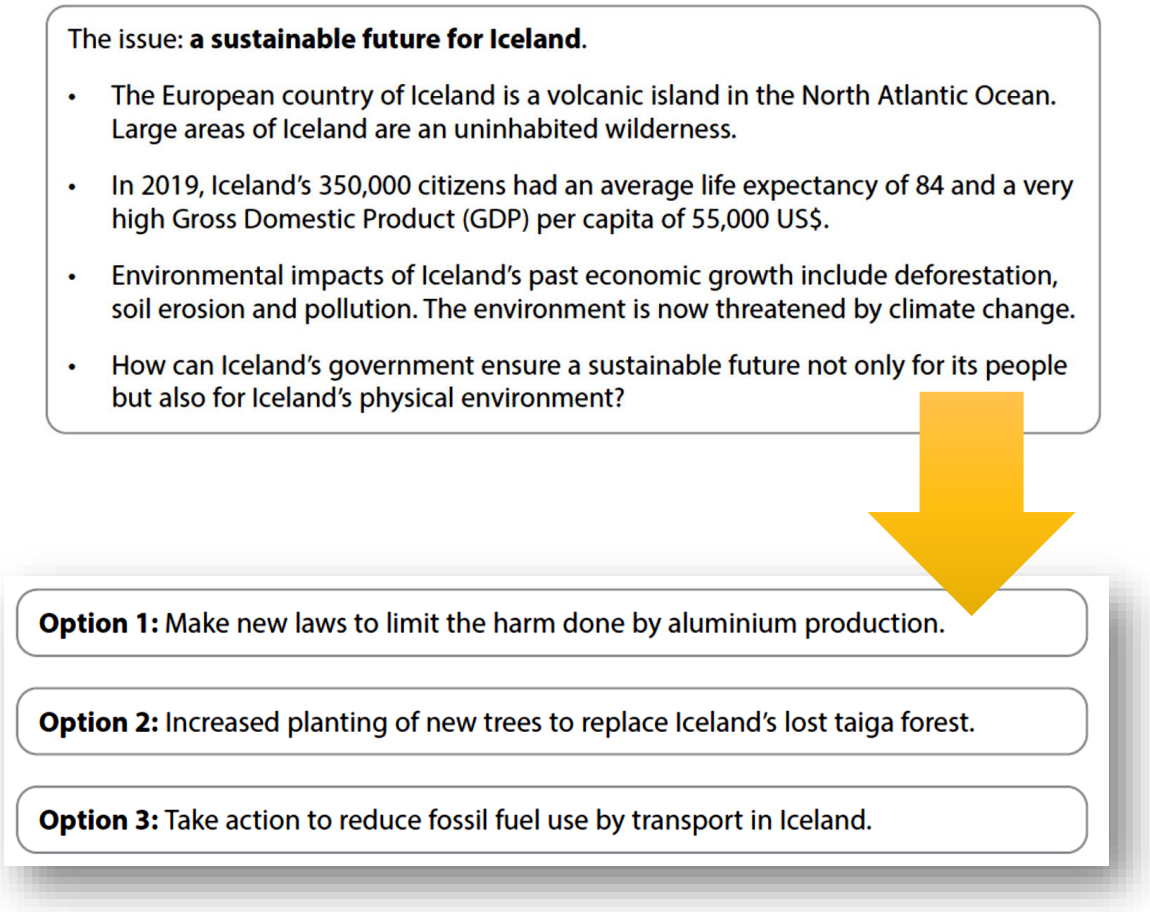
- This is probably the best choice overall…
- Although / whereas…
- However, despite…
- But there are disadvantages too…
- Not everyone will benefit though…
- Moreover, benefits may outweigh short term gains…

In summary…

- Arguments should be supported with sustained use of evidence (AO4):
- Figure 3 shows… And this is further supported by Figure 4…

Justifying a decision

- The final stage of the decision-making process is **justifying the decision.**
- At this stage, candidates could refer one last time to the issue they saw on the first page of the booklet.
- They will see a **strong link** between what they are expected to do in the last question, and the issue they began with.



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What gets marks?

Here is an abbreviated summary of the levels-based mark scheme

AO4 information	AO2 understanding	AO3 argument
RANGE Obtain a a range of accurate information from the booklet (‘Figure 7 shows... Figure 8 shows...Figure 9...’)	**DETAIL** Make extended explanations using process, place (case study) or other detail from the GCSE course	**BALANCE** Make a balanced argument that considers all options (may think about different perspectives or scales)
ANALYSIS Makes critically use of information in the booklet (‘However, Figure 3 shows some species are at a point of no return…’)	**RELATIONSHIPS** Recognise interrelationships between different geographical ideas and information	**JUSTIFY A VIEW** Make an overall judgment that is logically linked to the evidence that has been used.

Part 4: Reviewing marked scripts (from the 2023 Geography GCSE B Paper 3 exam)

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AO1+2 Targeted Question

(c) Using your own knowledge, explain **one** way in which trees in the taiga biome are adapted to the climate.

(2)

taiga forest trees are evergreen so they don't need leaves during the winter so they don't have to expend energy in the summer regrowing leaves and can focus on growth during the short growing season

A

(c) Using your own knowledge, explain **one** way in which trees in the taiga biome are adapted to the climate.

(2)

trees in taiga are coniferious so have leaves they dont have to keep regenerating leaves and the leaves don't fall off.

B

2 (c)	Award expla • Ev toc • Needle leaves (1) to limit tranpiration / water loss / respiration / save energy (1) • Sloping branches / cone shaped tree (1) allowing snow to slip off (1) • Shallow roots (1) linked with frozen soil conditions (1) • Small / thin branches (1) that allow snow to fall off (1) **Accept any other appropriate response.**

Making connections (AO3)

3 (c) Using evidence from Figures 5 and 6, explain **two** reasons why the people of Iceland need a diverse energy mix.

(**4 marks**, 2023 exam)

Sector	% of Iceland's earnings	Characteristics of sector (2018 data)	Threats to sector
Fishing & food	27	• 5,000 people work on fishing vessels. • 20,000 people work in food processing or support roles like ship repairs.	• Marine ecosystem health is threatened by rising ocean temperatures. • Some species may vanish altogether.
Tourism	33	• 27,000 people work in air travel, hotels, coaches and visitor attractions. • 3 million tourists visited in 2018.	• Almost all tourists arrive by air. • Volcanic eruptions and major global events can a
Aluminium manufacturing	36	• 4,000 people work in aluminium metal production. • The factories are mainly owned by foreign TNCs.	• TNCs elsev Icela • Dem to gl grow

Fishing vessels and cruise harbour in Reykjavik.

Many hotels in Reykjavik are heated using cheap geothermal energy.

Figure 5

Information about Iceland's three main economic sectors and its capital city, Reykjavik

YEAR	% contribution to Iceland's energy mix			
	Hydroelectric power	Geothermal energy	Imported oil	Imported coal
2005	18	56	23	3
2010	19	66	X	2
2018	20	62	16	2

- A country's 'energy mix' is the range of different energy sources that are used.
- Fossil fuel use for making electricity has fallen as renewable energy sources have increased. However, oil is still needed for shipping, aeroplanes and road vehicles.
- Renewable energy was developed rapidly in the 1970s when Iceland could not afford to import the oil it needed because of a large global price increase.
- Hydroelectric power (HEP) was developed by building large dams and reservoirs.
- Geothermal energy was developed by drilling into rock and drawing up hot water. Electricity can be generated using steam from this water. 90% of Icelandic houses are now heated using geothermal energy.

Figure 6

An energy profile of Iceland

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An entirely **AO3-targeted** question. The 'story' students need to tell is ***self-contained in Figures 5-6***. They will create analytical **links** & **connections** as part of their answer.

AO3-targeted question (3c)

A

B

(c) A country's 'energy mix' is the range of different energy sources used by its people and industries.

Using evidence from Figures 5 and 6, explain **two** reasons why the people of Iceland need a diverse energy mix.

1 People in iceland need a diverse
on different energy sources for different
less for making electricity however they ar
aeroplanes and road vehicles so there need

2 Many hotels in Reykjavik use geotherm
on a picte boundary and can supply th
increasing profits for businesses and ho

(c) A country's 'energy mix' is the range of different energy sources used by its people and industries.

Using evidence from Figures 5 and 6, explain **two** reasons why the people of Iceland need a diverse energy mix.

(4)

Some of the sources are non-renewable
So you couldnt rely on it forever.

Some different energy sources are used for different things for example Oil is needed for aeroplanes and Ships

Question Number		
3 (c)	In each case, award 1 mark for a re… **5 and 6**, and 1 mark for further exp… maximum of 4 marks. Explanation s…ould focus on why Iceland still needs a diverse energy mix / different energy sources. Possible reasons include: • Necessity of oil / fossil fuel / having oil in mix (1) as fishing fleets / aeroplanes need fossil fuel (1) • Using cheaper renewable energy for other things (1) e.g. heating homes (1) • Concerns with dependency on oil / volatile oil prices (1) so government strategy of developing renewables (1) • Not enough time has passed to phase out oil yet (1) because renewable energy are relatively new sources (1)	

AO2/3-targeted question

(b) Study Figure 4.

Using Figure 4 and your own knowledge, explain **one** possible impact of replanting forests on Iceland's economy.

(2)

Economic benefits	Environmental benefits	Social benefits
• Wood production • Forestry work	• Biodiversity gains • Soil protection • Carbon storage	• Recreation • Flood risk reduction

Iceland's government plans to replant half of Iceland's lost taiga forest by 2100. 3 million fast-growing pine trees are planted each year.

Not everyone supports forest replanting because it changes the landscape that international tourists want to see. New forest can create many benefits though.

Figure 4

This question is **AO2+AO3** targeted.

The students will apply prior understanding to a single resource.

Answer
Award 1 mark for a basic explanation of an economic benefit **based on Figure 4** and 1 mark for further explanation, up to a maximum of 2 marks: • Forestry and timber work provides jobs (1) which can boost national economy / GDP / stimulate local multiplier effects (1) • Pine trees ruin landscape for tourists (1) which reduces income / revenues / visits (1) • Wood / timber sales / profits (1) are increased by fast-growing trees (1)

AO2/3-targeted question

(b) Study Figure 4.

Using Figure 4 and your own knowledge, explain **one** possible impact of replanting forests on Iceland's economy.

(2)

One ~~fee~~ impact of replanting forests is wood prediction & and gorestry work, ~~es~~ which give people more jobs

A

(b) Study Figure 4.

Using Figure 4 and your own knowledge, explain **one** possible impact of replanting forests on Iceland's economy.

(2)

Increased amount of jobs and ~~g~~ jobs GDP, as as more in forestry would incread with the planting of the trees.

B

AO2/3-targeted question

(ii) Using Figure 3 and your own knowledge, explain **one human** reason and **one physical** reason why very little of Iceland's forest remains.

(4)

This question is **AO2+AO3** targeted. The students need to apply prior understanding to the task.

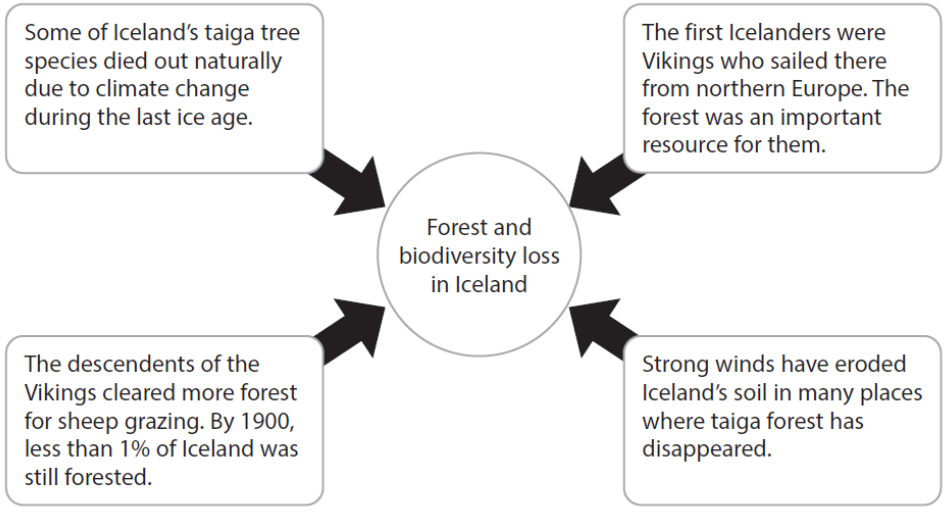

Figure 3

Causes of forest and biodiversity loss in Iceland

Answer

In each case, award 1 mark for a basic reason **based on Figure 3**, and 1 mark for further explanation / development of why forest has not survived, up to maximum of 4 marks.

Human reason

- Deforestation by people / Vikings cut the trees (1) for fuel / timber / crops / agriculture (1)
- People cleared forest for sheep (1) that require space / room for grazing / stopped trees from growing back / provide a food source (1)

Physical reason

- Strong winds / soil erosion (1) so tree roots lack soil / trees lack nutrients / fewer suitable habitats and so a reduced distribution (1)
- Species died after climate change / ice age (1) because of changing / colder temperatures / they weren't suited / adapted to new conditions (1)

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AO2/3-targeted question

(ii) Using Figure 3 and your own knowledge, explain **one human** reason and **one physical** reason why very little of Iceland's forest remains.

(4)

Human reason

Many parts of the forest were cleared for sheep grazing. Sheep need a lot of space and would be farmed for their meat and wool.

Physical reason

Strong winds have eroded the ~~forest~~ soil, making it harder for trees to get nutrients to be used in photosynthesis.

A

(ii) Using Figure 3 and your own knowledge, explain **one human** reason and **one physical** reason why very little of Iceland's forest remains.

(4)

Human reason

Descendents of the vikings cleared more forest for sheep grazing, climate change ~~ausonilies~~ of many taiga tree species

Physical reason

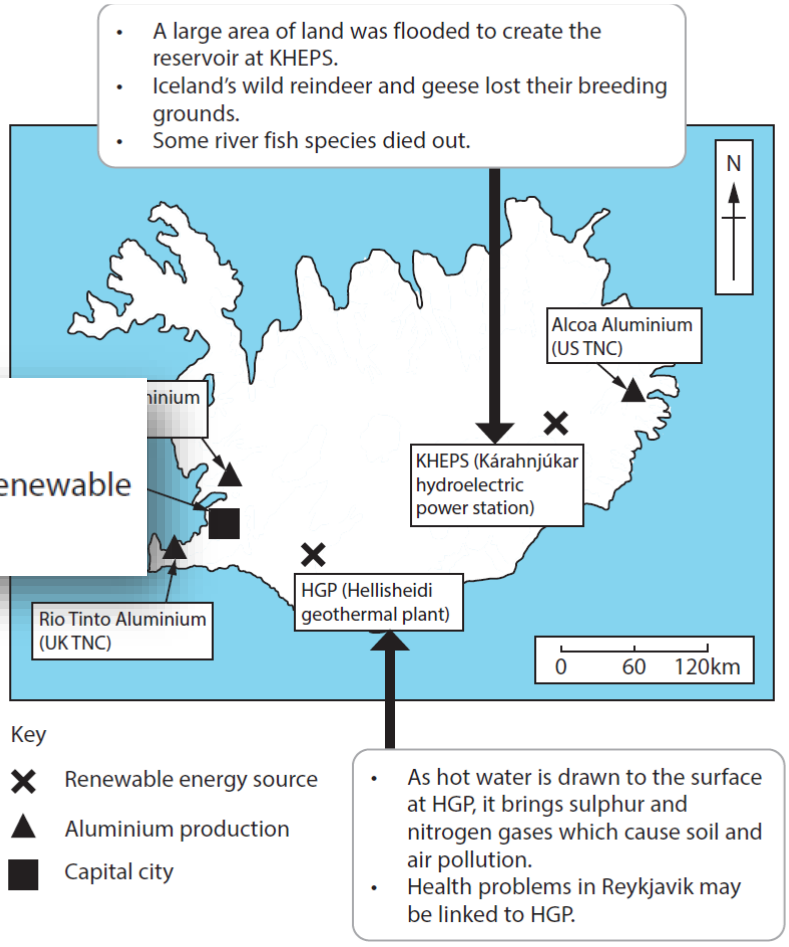
strong winds eroded soil in place taiga forest grew so many died.

B

8-mark ‘Assess…’

(f) Study Figure 8.

Using evidence from Figure 8, assess the **environmental** impacts of renewable energy use in Iceland.



- TNCs produce aluminium at coastal sites close to power stations. Rocks containing a mineral called bauxite are shipped to Iceland where they are processed to make aluminium. Three-quarters of all Iceland’s electricity is used in this process.
- Aluminium is Iceland’s most valuable export. It is used to make cars, aeroplanes and phones. Very few countries produce more aluminium than Iceland.
- The TNCs are attracted by low taxes and low energy prices set by Iceland’s government.

Figure 8

Information about renewable energy and aluminium production in Iceland

Pearson Edexcel GCSE Geography Paper 3 2023

8-mark ‘Assess…’ (3f)

3 (f)	**AO3 (4 marks)/AO4 (4 marks)** Answers should address environmental impacts profiled in Figure 8. The assessment may offer a view of which activity is most severe/concerning, and why. **AO4 (skilled use of information from Figure 8)** • Hot water at HGP brings sulphur and nitrogen gases to surface. • Breeding grounds lost for reindeer and geese, threatening biodiversity. • Some fish species have died out due to KHPS reservoir. • Health problems in Reykjavik can be traced back to HGP. • Three TNCs are producing aluminium at multiple sites thanks to renewable energy’s low costs. • Aluminium is using electricity on a massive scale, requiring 3/4 of all electricity used in Iceland. **A03 (making connections and /or arguments)** • The *most serious* local human impacts are health problems in the capital city linked with pollution associated with the geothermal energy at HGP. • The *most serious* local environmental impacts are linked directly with species loss due to the KHPS reservoir. • HEP generation has meant that large areas of land and plant communities have been *entirely sacrificed* so that energy can be produced. • HEP (at KHPS) could be viewed as having a *worse impact* than HGP (geothermal). • However, the renewable energy has *little or no negative impact* on the climate especially geothermal power. • But renewable energy is the reason why aluminium TNCs have come to Iceland, and so is *indirectly responsible* for any harm done by heavy industry.

Mark	Descriptor
0	No acceptable response
1–3	• Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements are supported by limited evidence. (AO3) • Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
4–6	• Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) • Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8 • Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

8-mark 'Assess…'

(f) Study Figure 8.

Using evidence from Figure 8, assess the **environmental** impacts of renewable energy use in Iceland.

PEEL — causes more pollution; loss of biodiversity; loss of habitats — (8)

Many renewable energy plants are in use in Iceland to combat pollution and global warming, but the effects of making the renewable energy is harming the planet even more.

At the geothermal plant HGP (Hellisheidi ~~geth~~ geothermal plant), during the process of creating the geothermal energy, when the water is drawn out of the rocks, it brings out sulphur and nitrogen gases with it, as stated in figure 8. This is only causing more harm to the planet, as these natural gases cause soil and air pollution. This is showing an environmental impact of of renewable energy.

Another way in which the use of renewable energy in Iceland is affecting the environment is at KHEPS (Kárahnjúkar hydroelectric power station), where hydroelectric power is formed and used. There, large reservoirs must be flooded to provide the correct environment for the power station, and because of this, wild reindeer and geese lost their breeding grounds, and some river fish species died out (as shown in figure 8).

This reduction of biodiversity and loss of habitats has an entirely negative effect on the environment, and completely counteracts the reason for the power stations in the first place, which was to make the country a more environmentally sustainable place.

Overall, the environment in Iceland is being negatively effected by Iceland trying to ~~achi~~ achieve the opposite, which shows how the environment is impacted by ~~vs~~ the manufacturing and usage of renewable energy resources.

12-mark ‘Justify…’

Making a Geographical Decision

Answer Question 4. Write your answers in the space provided.

In this question, up to four additional marks will be awarded for your spelling, punctuation, grammar and your use of specialist terminology.

4 Study the three options below for Iceland’s government to manage the country’s natural environment and resources more sustainably.

Option 1: Make new laws to limit the harm done by aluminium production.

Option 2: Increased planting of new trees to replace Iceland’s lost taiga forest.

Option 3: Take action to reduce fossil fuel use by transport in Iceland.

Select the option you think Iceland’s government ought to focus on **first**.

Justify your choice.

Use information from the Resource Booklet and knowledge and understanding from the rest of your geography course to support your answer.

(12)

Chosen option

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Mark	Descriptor
0	No rewardable material.
1-4	• Demonstrates isolated elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2) • Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3) • Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
5-8	• Demonstrates elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) • Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
9-12	• Demonstrates accurate understanding of concepts and the interrelationship between places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Marks	Descriptor
0	*No marks awarded* • Learners write nothing. • Learner's response does not relate to the question. • Learner's achievement in SPaG does not reach the threshold performance level, for example errors in spelling, punctuation and grammar severely hinder meaning.
1	*Threshold performance:* • Learners spell and punctuate with reasonable accuracy. • Learners use rules of grammar with some control of meaning and any errors do not significantly hinder meaning overall. • Learners use a limited range of specialist terms as appropriate.
2–3	*Intermediate performance* • Learners spell and punctuate with considerable accuracy. • Learners use rules of grammar with general control of meaning overall. • Learners use a good range of specialist terms as appropriate.
4	*High performance* • Learners spell and punctuate with consistent accuracy. • Learners use rules of grammar with effective control of meaning overall. • Learners use a wide range of specialist terms as appropriate.

Q	Indicative content
4	**AO2 (4 marks)/AO3 (4 marks)/AO4 (4 marks)** In order to fully justify a choice, the candidate must consider all three options and establish a clear argument. There is no preferred option. All options can be justified. Option 1 – Take action to reduce harmful impacts of aluminium production e.g. by imposing stricter controls and green taxes on polluting industries. Done first, this would bring clear immediate benefits to local areas where most damage has been done. However, deterring FDI might not be economically and socially sustainable. Option 2 – Increased replanting of trees to replace Iceland's lost taiga forest. This has local biodiversity benefits and a positive global dimension (mitigation) which ultimately helps everyone. Sustainability goals could also be met through limiting of soil erosion. Option 3 – Make new laws to remove fossil fuels from Iceland's energy mix. This helps protect the environment and provides new opportunities for renewable energy, and the investment and jobs it brings. However, some sectors will suffer if this is done. **A02 (applied understanding)** • Transnational corporations (TNCs) are footloose and may avoid contexts where costs increase (option 1) and profits are reduced. • Stricter environmental standards (option 1) help address both the environmental and social strands of sustainable development, but may adversely affect GDP. • Re-forestation / re-wilding (option 2) restores habitats and contributes towards local biodiversity. • Re-forestation (option 2) provides ecosystem services by protecting the soil from run-off and erosion as part of water cycle movement. • Electricity can be decarbonized more easily than transport sector, because fossil fuels (option 3) are needed for vehicles (cars, shipping, aircraft) • Climate change mitigation requires that fossil fuel use (option 3) is phased out sooner rather than later, in line with global agreements e.g. Paris Agreement. **A03 (use of argument)** • Sustainability has social, economic and environmental strands which complicates the evaluation of all three options. • Moreover, there are short-term and longer-term futures to consider. Removing fossil fuels could create short term economic and social hardship for fishing communities. • Stricter controls on industry could benefit the environment but at the cost of investment and jobs, making it a less sustainable pathway for Iceland's people. • Replanting trees may create forestry jobs, reduce soil erosion and hopefully tourism will not be significantly harmed by the changes – offering the best 'all-round' future. • Iceland is a physically isolated country whose economy might be threatened by reduced global business connections resulting from green taxes. • Any climate change mitigation by Iceland will have little impact at a global scale due to its relatively tiny population/size, so the best option will have clear local benefits. **AO4 (use of evidence)** • Forest re-growth may be impossible because so much soil has been lost (Figure 3). • Forest re-growth may threaten tourist industry by changing the landscape if around 3 million trees are planted (Figure 4). • 47,000 tourism and industry jobs need to be protected, e.g. in Reykjavik (Figure 5). • Fossil fuels are still vital for tourism and transport (Introduction and Figure 6). • Even if industry goes elsewhere, the damage is already done at KHPS (Figure 8). • Climate threats to Iceland's environment and economy (fishing industry) are too great to be ignored (Figures 9 and 10).

Option 2: Increased planting of new trees

I think that option 3 should be the option that Iceland's government ought to focus on last. Figure 6 shows that in 2018, most recently, Iceland's energy mix was only made up of 18% oil and coal, which are 2 types of fossil fuels. Compared to the 82% of renewable energy in the energy mix, this use of fossil fuels is not at a high level, and the dominant source of energy is renewable in Iceland. Furthermore, Figure 6 says that fossil fuel use has fallen as renewable energy sources have increased, showing that the fossil fuel usage is not the biggest problem for Iceland, as it is declining currently. Figure 7 further contributes to this - Iceland has a 82% share of renewable energy compared to the UK which has 12%. Even though both are developed countries, Iceland still maintains a very high % of renewable energy, and is "A model for the world" (Figure 7).

I think that option 1 ought to be the option Iceland's government focuses on second. The sector of Aluminium manufacturing in Iceland takes up 36% of Iceland's earnings and employs 4,000 people, ~~which shows that it is a crucial~~ (Figure 5), which highlights that it is an important part of Iceland's economy. By making laws to limit aluminium production, many jobs could be lost and the % of Iceland's earnings in ~~Iceland's~~ Aluminium manufacturing may decline. This could have a negative effect (negative multiplier effects) on the economy, as business may be required to stop production or manufacturing if they do not meet the new laws, resulting in loss of employment, generating less money for Iceland's economy. However, laws that limit the harm done by aluminium production would have a positive effect on the environment.

Figure 8 shows that TNC's produce aluminium at coastal sites near power stations. Waste from this production may end up in the water (located on coastal sites), which contributes to water pollution and could even result in a loss of bio-diversity, if animals such as fish ~~lose their habitats~~ experience a loss of habitat due to contaminated water. This would have a large impact on Iceland's environment.

I think that option 2 is the option that Iceland's government ought to focus on first. Figure 3 shows how much of Iceland's forests have been lost due to both human and physical factors, such as climate change from the last ice age and ~~strong winds eroding~~ vikings clearing land/ ~~It shows that~~ using the wood for resources. The Figure shows that the descendants of the Vikings cleared more forest for sheep grazing, and by 1900, less than 1% of Iceland was still forested. We can also see this in Figure 1, where the Taiga forest is located on the outskirts of Iceland. By replanting new trees to replace the lost Taiga forest, Iceland will be able to encourage biodiversity, as the trees provide a habitat for species of animals to live in. Also, CO_2

levels in ~~to~~ Iceland will decrease, as the trees use ~~of~~ up more CO_2 for photosynthesis. This aids Iceland in meeting their forestry and land use goal in their Climate Action Plan, as more trees store more carbon, and if enough are planted, will achieve the 500% carbon storage goal that Iceland has set (Figure 10). To add to this, by replanting trees, Iceland encourages the Boserup theory. Boserup believed that as population increases, humans will sustain the need/demand for resources, instead of declining (like Malthus expected). By planting new trees, Iceland can sustain the demand for resources, as those trees can be used to produce medicines and be a source of fuel, and then replanted again. Overall, this option has the most beneficial impacts, like increase in biodiversity and sustaining resource demand, so I believe it should be focused on first.

Key assessment messages

Questions stating ‘Study Figure X… Explain…’ require an answer which explicitly interprets and analyses information in the Figure(s).

- It is essential that the response focuses on the evidence presented in the relevant figure and makes some reference to it. The candidate’s own knowledge should also be applied when the focus is a SINGLE figure.

The 8-mark questions using the command word 'assess' require candidates to reflect critically on the information they write about.

- Candidates of all ability levels will benefit from frequent exam practice answering questions beginning with phrases such as 'Assess the importance...' , ''Assess the impacts...', 'Assess the benefits...', 'Assess the role...', etc.

Answers to the 12-mark question must try to balance the three AO-linked skill sets which examiners are looking to reward.

- Apply own knowledge; use the information; argue a case (see Slide 33).

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Thank you for attending!

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