

**OXFORD**

INTERNATIONAL  
AQA EXAMINATIONS

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# INTERNATIONAL AS GEOGRAPHY GG02

Paper 2: Human Geography 1

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Mark scheme

January 2022

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Version: 1.0 Final Mark Scheme

Mark schemes are prepared by the lead assessment writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same, correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from [aqa.org.uk](http://aqa.org.uk)

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# International AS Geography mark scheme

## How to mark

### Aims

When you are marking your allocation of scripts your main aims should be to:

- recognise and identify the achievements of students
- place students in the appropriate mark band and in the appropriate part of that mark band (high, low, middle) for **each** Assessment Objective
- record your judgements with brief notes, annotations and comments that are relevant to the mark scheme and make it clear to other examiners how you have arrived at the numerical mark awarded for each Assessment Objective
- ensure comparability of assessment for all students, regardless of question or examiner.

### Approach

It is important to be **open-minded** and **positive** when marking scripts.

The specification recognises the variety of experiences and knowledge that students will have. It encourages them to study geography in a way that is relevant to them. The questions have been designed to give them opportunities to discuss what they have found out about geography. It is important to assess the quality of **what the student offers**.

Do not mark scripts based on the answer **you** would have written. The mark schemes have been composed to assess **quality of response** and not to identify expected items of knowledge.

### Assessment Objectives

This component requires students to:

AO1	Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.
AO2	Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.
AO3	Use a variety of relevant quantitative, qualitative and fieldwork skills to: <ul style="list-style-type: none"> <li>• investigate geographical questions and issues</li> <li>• interpret, analyse and evaluate data and evidence</li> <li>• construct arguments and draw conclusions.</li> </ul>

### The marking grids

Do not think of levels equaling grade boundaries.

Depending on the part of the examination, the levels will have different mark ranges assigned to them. This will reflect the different weighting of Assessment Objectives in particular tasks and across the examination as a whole.

## Using the grids

Having familiarised yourself with the descriptors and indicative content, read through the answer and annotate it (as instructed below) to identify the qualities that are being looked for and that it shows. You can now check the levels and award a mark.

### Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptors for that level. The descriptors for the level indicate the different qualities that might be seen in the student's answer for that level. If it meets all the descriptors for the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptors and the answer. With practice and familiarity you will find that for better answers you will be able to skip through the lower levels of the mark scheme quickly.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best-fit approach for defining the level and then use the variability of the response to help decide the mark within the level.

### Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark.

It is often best to start in the middle of the level's mark range and then check and adjust. If there is a lot of indicative content fully identifiable in the work you need to give the highest mark in the level. If only some is identifiable or it is only partially fulfilled, then give the lower mark.

The exemplar materials used during standardisation will also help. There will be an answer in the standardising materials that will correspond with each level of the mark scheme. This answer will have been awarded a mark by the lead examiner. You can compare the student's answer with the example to determine if it is of the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the lead examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

In addition to the levels descriptors, question specific indicative content is provided as a guide for examiners. This is not intended to be exhaustive and you must credit other valid points.

An answer that contains nothing of relevance to the question must be awarded no marks.

## Annotating scripts

You should write a summative comment at the end for each Assessment Objective and indicate the marks for each Assessment Objective being tested at the end of the answer in the margin in sequence. It is vital that the way you arrive at a mark should be recorded on the script. This will help you with making accurate judgements and it will help any subsequent markers to identify how you are thinking. Please do not write negative comments about students' work or their alleged aptitudes.

**Section A – Global systems and governance**

**Total for this section: 20 marks**

Question	Part	Marking guidance	Total marks
01	1	<p><b>Which of the following is an example of a negative environmental effect caused by global interdependence?</b></p> <p>Key – D: Noise and air pollution linked to global transport.</p>	<p><b>1</b></p> <p><b>AO1=1</b></p>
01	2	<p><b>Which of the following are all physical factors that limit access to international trade?</b></p> <p>Key – A: Being landlocked; having an extreme climate; lack of natural resources</p>	<p><b>1</b></p> <p><b>AO1=1</b></p>
01	3	<p><b>Which of the following statements best describes the role of the International Maritime Organisation (IMO)?</b></p> <p>Key – C: It is a United Nations agency that regulates global shipping and its security.</p>	<p><b>1</b></p> <p><b>AO1=1</b></p>
01	4	<p><b>Which of the following are all considered to be threats to the world's oceans directly caused by climate change?</b></p> <p>Key – C: Changes to ocean currents; coral bleaching; ocean acidification</p>	<p><b>1</b></p> <p><b>AO1=1</b></p>
01	5	<p><b>Which of the following are all features of social interdependence?</b></p> <p>Key – B: Cultural exchanges; migration; Internet communication</p>	<p><b>1</b></p> <p><b>AO1=1</b></p>

Question	Part	Marking guidance	Total marks
02		Analyse the change in global data flows from 2008 to 2014 shown in Figure 1a and Figure 1b.	6 AO3=6

Level	Marks	Descriptor
2	4 – 6	<b>AO3</b> – Clear selection and analysis of the evidence that has been provided which makes appropriate use of data to support. Clear connections between different aspects of the data.
1	1 – 3	<b>AO3</b> – Some basic selection and analysis of the evidence that has been provided which makes limited use of data to support. Basic or limited connections between different aspects of the data.
0	0	No creditable content.

Indicative Content

This question requires analysis of global data and communication flows from 2008 to 2014. They should compare the two maps and identify key changes for higher marks. There should also be use of specific data to identify key locations and data manipulation.

**AO3**

- In 2008 there were 13 links between the regions and this increased by 3 to 16 in 2014.
- The key link changes are to Australasia which have increased from 2 to 5 regional links.
- There is a size increase in 7 of the links, more than half overall. 6 have remained the same. None have decreased.
- The biggest size increases are in links to Europe and North America, with the biggest overall growth shown in the link between these two regions, going from 2000 gigabits per second in 2008 to 25,000 in 2014. This is more than a 12-fold increase.
- There is a bigger range in 2014. In 2008 there was a range of up to 2000 gigabits per second between the different regions. In 2014 this was up to 25,000 gigabits per second, suggesting more potential inequality in data transfer.
- A new link between Africa and Australasia has developed, at under 1000 gigabits. The link between Africa and Europe has more than doubled and is now at 2000 gigabits.

Question	Part	Marking guidance	Total marks
03		<p><b>Evaluate the view that all people in all countries should be allowed to use the global commons.</b></p> <p><b>AO1</b> – Knowledge and understanding of the global commons, the rights of all to their benefits as well as their sustainable use and protection. Knowledge and understanding of the vulnerability of the global commons as well as their potential for exploitation.</p> <p><b>AO2</b> – Application of knowledge and understanding to evaluate the potential uses of the global commons. Application of knowledge and understanding to evaluate the potential advantages, disadvantages and impacts of all people in all countries using the global commons.</p>	<p><b>9</b></p> <p><b>AO1=4</b> <b>AO2=5</b></p>

Level	Marks	Descriptor
3	7 – 9	<p><b>AO1</b> – Demonstrates detailed knowledge and understanding of the importance of the global commons, their potential uses and protection required based on their vulnerability.</p> <p><b>AO2</b> – Applies knowledge and understanding to the novel situation, offering detailed analysis and evaluation, drawn appropriately from the context provided. Connections and relationships between different aspects of study are thorough and relevant.</p>
2	4 – 6	<p><b>AO1</b> – Demonstrates clear knowledge and understanding of the importance of the global commons, their potential uses and protection required based on their vulnerability.</p> <p><b>AO2</b> – Applies knowledge and understanding to the novel situation, offering clear analysis and evaluation, drawn appropriately from the context provided. Connections and relationships between different aspects of study are evident with and relevant.</p>
1	1 – 3	<p><b>AO1</b> – Demonstrates basic knowledge and understanding of the importance of the global commons, their potential uses and protection required based on their vulnerability.</p> <p><b>AO2</b> – Applies limited knowledge and understanding to the novel situation, offering some basic analysis and evaluation. Connections and relationships between different aspects of study are basic with limited relevance. Analysis and evaluation are basic and of limited relevance.</p>
0	0	No creditable content.

### Indicative Content

This question requires links to be made between different parts of the specification content on Global Systems and Governance, specifically the concept of the global commons, the rights of all to the benefits of the global commons and the need for sustainable use and protection of the global commons. A range of examples of global commons could be applied to help develop points made, but it is most likely that oceans will be referred to as there are specific references to them in the syllabus.

#### **AO1**

- Knowledge and understanding of the concept of the 'global commons'.
- Knowledge and understanding of the importance and fragility of the global commons.
- Knowledge and understanding of the rights of all to the benefits of the global commons.
- Knowledge and understanding of the vulnerability of global commons to external pressures.
- Knowledge and understanding of the need to sustainably manage and protect the global commons.
- Awareness of the possible impacts on the commons of the use by all people in all countries.
- Awareness of the potential conflicts between use, protection and sustainable management.
- Knowledge and understanding from other areas of the specification if accurate and relevant to the question.

#### **AO2**

- Evaluation of the importance of the global commons and why usage may need to be minimised; eg the importance as a habitat for ecosystems, the importance in climate regulation.
- Evaluation of the potential need for all people in all countries to use the global commons; eg the need for resource extraction, leisure and tourism, and other development opportunities.
- Evaluation of the potential impacts of this use linked to the vulnerability of the commons; eg overfishing and pollution impacting on ecosystems, tourism and transport impacting on the epipelagic zone and coral reefs.
- Evaluation of the conflicts of use with protection and sustainable use of the commons; eg pollution impacting on fisheries and tourism.
- Evaluation of the role that key organisations may need to play in managing the potential use of the global commons; eg differing roles of the IMO, UNCLOS and MSC in protecting the oceans.



Question	Part	Marking guidance	Total marks
04		<p><b>Critically evaluate the extent to which unequal flows (such as people, money and technology) can create inequalities for people and places.</b></p> <p><b>AO1</b> – Knowledge and understanding of dimensions of globalisation, in particular flows of capital, labour, products, services and information. Knowledge and understanding of unequal global flows, including types, their causes and their consequences. Knowledge and understanding of the impacts of unequal flows, such as inequality, conflict and injustice, but also stability, growth and development.</p> <p><b>AO2</b> – Application of knowledge and understanding to critically evaluate the extent to which unequal flows can create inequality, as opposed to stability, growth and development. Application of knowledge and understanding to draw conclusions on this issue.</p>	<p><b>20</b></p> <p><b>AO1=10</b> <b>AO2=10</b></p>

Level	Marks	Descriptor
4	16 – 20	<p><b>AO2</b> – Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question.</p> <p><b>AO2</b> – Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout.</p> <p><b>AO2</b> – Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p><b>AO1</b> – Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout.</p> <p><b>AO1</b> – Full and accurate knowledge and understanding of key concepts and processes throughout.</p> <p><b>AO1</b> – Detailed awareness of scale and temporal change which is well integrated where appropriate.</p>
3	11 – 15	<p><b>AO2</b> – Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question.</p> <p><b>AO2</b> – Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding.</p> <p><b>AO2</b> – Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p><b>AO1</b> – Generally clear and relevant knowledge and understanding of place(s) and environments.</p> <p><b>AO1</b> – Generally clear and accurate knowledge and understanding of key concepts and processes.</p>

		<b>AO1</b> – Generally clear awareness of scale and temporal change which is integrated where appropriate.
<b>2</b>	<b>6 – 10</b>	<p><b>AO2</b> – Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question.</p> <p><b>AO2</b> – Some partially relevant analysis and evaluation in the application of knowledge and understanding.</p> <p><b>AO2</b> – Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p><b>AO1</b> – Some relevant knowledge and understanding of place(s) and environments which is partially relevant.</p> <p><b>AO1</b> – Some knowledge and understanding of key concepts, processes and interactions and change.</p> <p><b>AO1</b> – Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies.</p>
<b>1</b>	<b>1 – 5</b>	<p><b>AO2</b> – Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question.</p> <p><b>AO2</b> – Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence.</p> <p><b>AO2</b> – Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p><b>AO1</b> – Very limited relevant knowledge and understanding of place(s) and environments.</p> <p><b>AO1</b> – Isolated knowledge and understanding of key concepts and processes.</p> <p><b>AO1</b> – Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies.</p>
<b>0</b>	<b>0</b>	No creditable content.

### Indicative Content

The question links different parts of the Global Systems and Governance part of the specification, specifically the global systems and unequal flows section. The question requires a conclusion to be made on the extent to which unequal flows can create inequality based on an informed discussion.

#### **AO1**

- Knowledge and understanding of key dimensions of globalisation: flows of capital, labour, products, services and information.
- Knowledge and understanding of unequal flows of people, money, ideas and technology within global systems.
- Knowledge and understanding of the causes of unequal flows, such as unequal global development, access to resources, transport and communication links.
- Knowledge and understanding of the benefits of unequal flows in creating stability, growth and development.
- Knowledge and understanding of the negative impacts of unequal flows, including inequality, conflict and injustice for people and places.
- Knowledge and understanding from other areas of the specification if accurate and relevant to the question.

#### **AO2**

- Evaluation of the unequal flows used – their causes and impacts; eg the fact that most of money transfers to developed countries, TNCs and the global elite, with 1% of the world's population owning more than 50% of global wealth. This has often been caused by offshore banking and tax breaks and has created class divide and inequality between and within countries.
- Evaluation of the importance of inequality as opposed to stability, growth and development; eg whether it is more of a problem of inequality that data transfer between Europe and North America is higher than anywhere else in the world, or whether this has the potential to trigger development which will help to improve the world as a whole.
- Evaluation of how inequality may also link to or trigger conflict and injustice; eg migration from Africa to Europe, currently being caused by climate change and political unrest which is causing migrant deaths in the Mediterranean and political issues in Europe.
- Critical evaluation of the overall extent to which unequal flows will create inequality.
- A conclusion may suggest that unequal flows do create inequalities but that the flows themselves are developed from unequal global development and resource access, although there are also a range of benefits due to this.

**Note:** Other unequal flows of resources that are not stated in the specification or question or other factors that create inequality to be credited.

**Section B – Resource security****Total for this section: 20 marks**

<b>Question</b>	<b>Part</b>	<b>Marking guidance</b>	<b>Total marks</b>
<b>05</b>	1	<b>What is resource exploitation?</b>  Key – D: The use of natural resources for economic growth, sometimes leading to environmental damage.	<b>1</b>  <b>AO1=1</b>
<b>05</b>	2	<b>Which of the following are all examples of sustainable water supply?</b>  Key – D: Groundwater management; water conservation; water recycling	<b>1</b>  <b>AO1=1</b>
<b>05</b>	3	<b>Which of the following all directly increase water demand?</b>  Key – D: An increase in population; construction of a thermal power station; improved urban water networks	<b>1</b>  <b>AO1=1</b>
<b>05</b>	4	<b>What is secondary energy?</b>  Key – C: The conversion of primary energy into a more convenient energy source.	<b>1</b>  <b>AO1=1</b>
<b>05</b>	5	<b>What is a resource frontier?</b>  Key – C: A remote area of a country or region being developed for resource extraction.	<b>1</b>  <b>AO1=1</b>

Question	Part	Marking guidance	Total marks
06		Analyse the global and regional distribution of oil reserves shown in Figure 2a and Figure 2b.	6 AO3=6

Level	Marks	Descriptor
2	4 – 6	AO3 – Clear selection and analysis of the evidence that has been provided which makes appropriate use of data to support. Clear connections between different aspects of the data.
1	1 – 3	AO3 – Some basic selection and analysis of the evidence that has been provided which makes limited use of data to support. Basic or limited connections between different aspects of the data.
0	0	No creditable content.

Indicative Content

This question requires analysis of the global and regional distribution of oil reserves in 2015. They should identify key locations, and regions, as well as the global and regional distributions. There should also be use of specific data to identify key locations and data manipulation.

**AO3**

- The highest amounts by country are over 200 thousand million barrels in both Venezuela and Saudi Arabia. Whilst Venezuela has at least 4x more than Brazil, the country with the second highest amounts in South America and the Caribbean, Saudi Arabia is not as distinct in the Middle East, as both Iran and Iraq have 100–199.9 thousand million barrels.
- Other countries with high amounts over 100 thousand million barrels include Russia and Canada. Russia has more than double the amounts of Kazakhstan, the country with the second highest amounts in Europe and Central Asia and is even more distinct as the majority of Europe has no data, suggesting no reserves. Canada has more than double the amounts of the USA, the country with the second highest amounts in North America.
- Nigeria and Libya have the highest amounts in Africa, both with 15–49.9 thousand million barrels. They are not drastically higher than Algeria and Angola with 5–14.9 thousand million barrels, but the majority of African countries have no data, suggesting no reserves like in the case of Europe.
- China stands out in Asia and the Pacific as the only country with more than 15 thousand million barrels, although most countries in this region have some reserves.
- The global distribution shows that OPEC countries stand out and the Middle East dominates reserves. Whilst there is a spread of countries with higher levels across different regions, Europe and Africa certainly have limited amounts with more than half of countries in these regions having no data.
- The bar chart supports the fact that the Middle East dominates, having almost 2.5x the second highest region of South America and the Caribbean, and more than 18x the amount of the lowest region which is Asia and the Pacific. The mean regional amount is 282.9 thousand million barrels, with only the Middle East and South America and the Caribbean above this figure, showing an uneven global distribution, especially when factoring in major human populations.

Question	Part	Marking guidance	Total marks
07		<p><b>Assess how the physical environment of a place you have studied affects the availability of either water or energy.</b></p> <p><b>AO1</b> – Knowledge and understanding of the relationship of water supply to key aspects of physical geography – climate, geology and drainage. Knowledge and understanding of the relationship of energy supply to key aspects of physical geography – climate, geology and drainage. Knowledge and understanding of a case study of a specified place to illustrate and analyse how aspects of its physical environment affects the availability of either water or energy.</p> <p><b>AO2</b> – Application of knowledge and understanding to assess how the physical environment of a location affects the availability of either water or energy.</p>	<p><b>9</b></p> <p><b>AO1=4</b> <b>AO2=5</b></p>

Level	Marks	Descriptor
3	7 – 9	<p><b>AO1</b> – Demonstrates detailed knowledge and understanding of the role that physical environment plays in affecting the availability of either water or energy in a location studied.</p> <p><b>AO2</b> – Applies knowledge and understanding to the novel situation, offering detailed analysis and assessment, drawn appropriately from the context provided. Connections and relationships between different aspects of study are thorough and relevant.</p>
2	4 – 6	<p><b>AO1</b> – Demonstrates clear knowledge and understanding of the role that physical environment plays in affecting the availability of either water or energy in a location studied.</p> <p><b>AO2</b> – Applies knowledge and understanding to the novel situation, offering clear analysis and assessment, drawn appropriately from the context provided. Connections and relationships between different aspects of study are evident and relevant.</p>
1	1 – 3	<p><b>AO1</b> – Demonstrates basic knowledge and understanding of the role that physical environment plays in affecting the availability of either water or energy in a location studied.</p> <p><b>AO2</b> – Applies limited knowledge and understanding to the novel situation, offering basic analysis and assessment, drawn appropriately from the context provided. Connections and relationships between different aspects of study are basic and of limited relevance.</p>
0	0	No creditable content.

Indicative Content

**AO1**

- Knowledge and understanding of the relationship of water supply to key aspects of physical geography – climate, geology and drainage.
- Knowledge and understanding of the relationship of energy supply to key aspects of physical geography – climate, geology and drainage.
- Knowledge and understanding of a case study of a specified place to illustrate and analyse how aspects of its physical environment affects the availability of either water or energy.
- Knowledge and understanding from other areas of the specification if accurate and relevant to the question.

**AO2**

- Assessment of the role of climate in water or energy supply; eg air pressure systems causing higher rainfall in the case of low pressure and low rainfall in the case of high pressure. Drier climate regions such as deserts having lower rainfall and therefore restricted water access, whereas wetter climates such as those on the tropics having a more constant supply of rainfall.
- Assessment of the role of climate in energy supply; eg different climates may provide opportunities to harness renewable energy, in particular solar and wind power.
- Assessment of the role of geology in water supply; eg impermeable surfaces such as clay acting as water shedding surfaces whereas permeable and porous rock such as chalk acting as aquifers. Alternating bands of soft and hard rock and associated geology can help to create water gathering synclines and artesian basins.
- Assessment of the role of geology in energy supply; eg fossil fuel formation is linked to certain rock types and historical geological conditions. Access to these fuels can depend on the surrounding geology with source depths and rock hardness requiring specific technology.
- Assessment of the role of drainage in water supply; eg topography and slope angles can help water gather in certain locations or drain too quickly creating associated water supply issues.
- Assessment of the role of drainage in energy supply; eg specific drainage, linked to associated topography and geology, can mean that an area can be harnessed for hydro-electric power.
- Application of a water case study location to assess the physical environment factors; eg in California the dry climate, combined with developing climate change and population growth, has led to water stress. The geology has helped to provide groundwater aquifers and the Sierra Nevada mountains have helped to create drainage basins for water source locations, but this also creates a spatial imbalance for water supply access locations within the area.
- Application of an energy case study location to assess the physical environment factors; eg the Arabian Gulf has folded anticlines of Jurassic and Cretaceous chinks and limestones near the surface which are covered by impermeable clay sediments that help to form ideal and accessible hydrocarbon trap structures. The lack of extreme climate, accessible coastlines and limited tectonic activity in the region means that the energy resources are safe easy to access. Therefore, in 2016 alone, proven reserves of Gulf oil were 47.3% of the world's total, and production reached record levels in Saudi Arabia, Iraq, the UAE and Oman.

**Note:** Other relevant physical factors not in the specification to be credited if linked to and developed within a case study location.

Question	Part	Marking guidance	Total marks
08		<p><b>‘Energy could be supplied more sustainably than water in the future.’</b></p> <p><b>To what extent do you agree with this statement?</b></p> <p><b>AO1</b> – Knowledge and understanding of energy and water resource futures. Knowledge and understanding of sustainability issues relating to water and energy production, transfer and consumption. Knowledge and understanding of future technological, economic, environmental and political developments affecting water and energy. Knowledge and understanding of the geopolitical issues linked to water and energy, including the potential for conflicts at a variety of scales.</p> <p><b>AO2</b> – Application of knowledge and understanding to compare the sustainability of water and energy in the future. Application of knowledge and understanding to evaluate which will be the most sustainable in the future.</p>	<p><b>20</b></p> <p><b>AO1=10</b> <b>AO2=10</b></p>

Level	Marks	Descriptor
4	16 – 20	<p><b>AO2</b> – Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question</p> <p><b>AO2</b> – Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout</p> <p><b>AO2</b> – Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts</p> <p><b>AO1</b> – Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout</p> <p><b>AO1</b> – Full and accurate knowledge and understanding of key concepts and processes throughout</p> <p><b>AO1</b> – Detailed awareness of scale and temporal change which is well integrated where appropriate</p>
3	11 – 15	<p><b>AO2</b> – Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question</p> <p><b>AO2</b> – Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding</p> <p><b>AO2</b> – Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts</p> <p><b>AO1</b> – Generally clear and relevant knowledge and understanding of place(s) and environments</p>



		<p><b>AO1</b> – Generally clear and accurate knowledge and understanding of key concepts and processes</p> <p><b>AO1</b> – Generally clear awareness of scale and temporal change which is integrated where appropriate</p>
<b>2</b>	<b>6 – 10</b>	<p><b>AO2</b> – Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question</p> <p><b>AO2</b> – Some partially relevant analysis and evaluation in the application of knowledge and understanding</p> <p><b>AO2</b> – Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts</p> <p><b>AO1</b> – Some relevant knowledge and understanding of place(s) and environments which is partially relevant</p> <p><b>AO1</b> – Some knowledge and understanding of key concepts, processes and interactions and change</p> <p><b>AO1</b> – Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies</p>
<b>1</b>	<b>1 – 5</b>	<p><b>AO2</b> – Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question</p> <p><b>AO2</b> – Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence</p> <p><b>AO2</b> – Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts</p> <p><b>AO1</b> – Very limited relevant knowledge and understanding of place(s) and environments</p> <p><b>AO1</b> – Isolated knowledge and understanding of key concepts and processes</p> <p><b>AO1</b> – Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies.</p>
<b>0</b>	<b>0</b>	No creditable content.

### Indicative Content

The question links different parts of the Resource Security part of the specification, specifically the water security, energy security and resource futures sections. The question requires a conclusion to be made on whether water or energy can be supplied more sustainably in the future based on an informed discussion.

#### **AO1**

- Knowledge and understanding of strategies to increase water supply.
- Knowledge and understanding of strategies to manage water consumption.
- Knowledge and understanding of sustainability issues associated with water management.
- Knowledge and understanding of water conflicts at a variety of scales.
- Knowledge and understanding of energy supplies in a globalising world.
- Knowledge and understanding of strategies to increase energy supplies.
- Knowledge and understanding of strategies to manage energy consumption.
- Knowledge and understanding of sustainability issues associated with energy consumption.
- Knowledge and understanding of alternative energy and water futures.
- Knowledge and understanding of case studies of water or energy resource issues and use.
- Knowledge and understanding from other areas of the specification if accurate and relevant to the question.

#### **AO2**

- Evaluation of water supply issues and whether the increase in supply and management of consumption can be sustainable in the future; eg there has been a five-fold increase in water extraction from the Murray-Darling Basin in Australia since the 1920s due to population increase. Some of this has come from aquifer extraction which is slow or difficult to replenish. Due to future population, land-use and climatic changes the supply and demand is likely to change, so extraction limits and management of sources will be important to ensure sustainability.
- Evaluation of sustainability issues associated with water management and whether these will allow for a sustainable future; eg in the Thames River basin, UK, over 9 million people require water daily. The aquifer under the city has been used for at least one third of water supply in the past. As water levels have dropped bore holes have had to go as deep as 200m, meaning that hydrostatic pressure cannot be used to power fountains suggesting probable sustainability issues in the future.
- Evaluation of the potential for water conflict at a variety of scales and the issues this will create for future sustainability; eg Ethiopia is currently constructing a dam on the Blue Nile which could drastically reduce future water supplies in Sudan and Egypt, two countries that depend on a reliable water source from the Nile. This is likely to cause regional conflict unless international agreements are put in place.
- Evaluation of water futures linked to development and the potential this provides for future sustainability; eg water desalination plants have been effective in the Middle East and could provide a more reliable water source in developing countries such as India in the future, but are costly and energy intensive.
- Evaluation of the geopolitical issues of energy supplies in a globalising world and whether these impact on future sustainability; eg Russia's control over gas to Europe and the use of gas for political control over Ukraine in particular. In 2004 Russia quadrupled gas prices to Ukraine and in 2006 cut off the supply. This would therefore be a concern for future energy security.

- Evaluation of energy supply issues and whether the increase in supply and management of consumption can be sustainable in the future; eg the Fracking trend in North America and Europe is helping to increase energy supplies and security, but at a potentially large social and environmental cost.
- Evaluation of sustainability issues associated with energy consumption and whether these will allow for a sustainable future; eg the global increase in emissions which leads to health issues, global warming and climate change, and whether responses such as emissions trading and carbon capture and storage can be effective.
- Evaluation of energy futures linked to development and the potential this provides for future sustainability; eg the development of renewable energy research and investment in countries such as China which is reducing prices and providing emission-free energy sources. However, until effective networks and battery storage can be developed these are only effective during sunlight hours.
- Overall evaluation of whether water or energy can be supplied more sustainably in the future, based on the preceding discussion.

**Assessment Objective grid**

	AO1	AO2	AO3	Total
<b>Section A</b>				
01.1	1			1
01.2	1			1
01.3	1			1
01.4	1			1
01.5	1			1
02			6	6
03	4	5		9
04	10	10		20
<b>Section B</b>				
05.1	1			1
05.2	1			1
05.3	1			1
05.4	1			1
05.5	1			1
06			6	6
07	4	5		9
08	10	10		20
Unit total	38	30	12	80