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## Mark Scheme (Results)

January 2023

Pearson Edexcel International Advanced Level  
In Geography (WGE03)  
Unit 3 Contested Planet

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January 2023

Question Paper Log Number P71136

Publications Code WGE03\_01\_MS\_2301

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Using Figure 1, suggest reasons for the very different impacts of these three tropical cyclones.	Mark
1	<p style="text-align: center;"><b>AO1 (4 marks)/AO2 (6 marks)</b></p> <p><b>Marking instructions</b> Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p><b>Indicative content guidance</b> The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Tropical cyclones are seasonal weather systems bringing damaging winds, rain and storm surges to coastal areas and islands.</li> <li>• Countries affected in the Indian Ocean are developing / emerging and may have limited coping capacity in some cases; many people depend on farming.</li> <li>• Cyclones can have complex tracks than can move from source areas towards the coast, but dissipate over land quickly.</li> <li>• Impacts can be both economic and social, and partly depend on the magnitude of winds / storm surges which is determined by low air pressure.</li> <li>• Some might make the point that tropical cyclones are less common in East Africa compared to the Bay of Bengal so people / governments were less likely to be prepared.</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Vayu is the weakest system, with an air pressure of only 970mb and therefore low winds of 150kmh, which would be damaging but not destructive; Vayu's track is over the sea (does not make landfall) so impacts are small – a handful of deaths and low economic losses (\$140,000) probably caused by minor coastal flooding in areas to the immediate east.</li> <li>• In contrast Fani is a much deeper cyclonic system with wind speeds of 200 kmh+, approximating to Saffir-Simpson scale = 4, so has much more energy and potential for destruction, it makes landfall over India and tracks over Bangladesh;</li> </ul>	

	<p>the longer track allows for more energy and greater intensity.</p> <ul style="list-style-type: none"><li>• Fani affects 28 million and caused 89 deaths and \$8.1 billion in damage: hits densely populated areas, widespread flooding likely in low-lying Bangladesh; many people will be low-income farmers and therefore vulnerable; preparations may be ineffective in some areas.</li><li>• Fani passes over densely populated areas, including passing close to Kolkata and Dhaka, meaning large vulnerable (slums) populations could have been impacted.</li><li>• Idai is also a strong system, which 'doubles back' so parts of Mozambique could have been hit twice in a short time – this might explain the very high death toll (1303) compared to Fani, as might greater poverty in this part of Africa compared to the Bay of Bengal (but also the economic losses on 25% of Fani): Idai's complex track would have been hard to predict, so preparation was less good.</li></ul>	<p><b>(10)</b></p>
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Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> <li>• Demonstrates isolated or generic elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding to geographical information inconsistently. Connections/relationships between stimulus material and the question may be irrelevant. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited relevance and/or support. (AO2)</li> </ul>
Level 2	5-7	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding to geographical information to find some relevant connections/relationships between stimulus material and the question. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2)</li> </ul>
Level 3	8-10	<ul style="list-style-type: none"> <li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li> <li>• Applies knowledge and understanding to geographical information logically to find fully relevant connections/relationships between stimulus material and the question. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is relevant and supported by evidence. (AO2)</li> </ul>

Question number	Using Figure 2, suggest reasons for changes to forest area in these four global regions.	Mark
2 (a)	<p style="text-align: center;"><b>AO1 (4 marks) /AO2 (6 marks)</b></p> <p><b>Marking instructions</b> Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p><b>Indicative content guidance</b> The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• The global regions include developed (Europe / North America), emerging (South America) and developing (Africa) ones.</li> <li>• Deforestation occurs due to logging, farming (commercial cattle, soy and palm oil, subsistence), infrastructure, urbanisation and mining.</li> <li>• Afforestation is when areas are replanted, although with secondary forest (less biodiverse) and this includes commercial replanting for timber and forest crops.</li> <li>• Deforestation is generally seen as negative: impact on carbon cycle, water cycle and biodiversity.</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Europe is the only region with consistent afforestation, reaching 1 million+ hectares in the 2000-2009 period; this could reflect wider environmental concerns meaning trees are planted to restore former forest areas for leisure and landscape purposes; there is less pressure to exploit forests for resources (timber imports from other parts of the world) and more pressure to conserve biodiversity.</li> <li>• North and Central America have a mixed picture, but overall little change: could reflect the mix of countries (developed and emerging) with different priorities – some are very pro conservation such as Costa Rica (ecotourism) but others might exploit timber commercially (Canada) but also replant.</li> <li>• The largest losses are in South America with -5.3 million hectares lost 2000-2009; this includes Amazonia – widespread exploitation for timber and</li> </ul>	

	<p>cattle ranching; the issue of huge fires might be mentioned as land is cleared for farming – although the losses halve by 2010-2019 – and increased environmental awareness, programmes such as REDD+ and pressure from around the world to conserve could be reasons for the change.</p> <ul style="list-style-type: none"><li>• Losses are high in Africa, and unlike South America the rate of deforestation is still increasing – thus could be due to poverty and population growth, so people are forced to exploit forests for their timber and other resources, and to create new farmland – plus a weak system of protection.</li><li>• The environmental Kuznet’s curve could be used to explain some of the differences: changes in attitudes, awareness and economic sectors.</li><li>• The size of the remaining forest area may impact the figures, as they are in hectares i.e. the vastness of Amazonia.</li></ul>	<b>(10)</b>
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Level 2	5-7	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding to geographical information to find some relevant connections/relationships between stimulus material and the question. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2)</li> </ul>
Level 3	8-10	<ul style="list-style-type: none"> <li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li> <li>• Applies knowledge and understanding to geographical information logically to find fully relevant connections/relationships between stimulus material and the question. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is relevant and supported by evidence. (AO2)</li> </ul>

Question Number	Assess the value of ecosystem services at both local and global scales.	Mark
2 (b)	<p style="text-align: center;"><b>AO1 (5 marks)/AO2 (10 marks)</b></p> <p><b>Marking instructions</b> Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p><b>Indicative content guidance</b> The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Ecosystem services are categorised as supporting, regulating, and provisioning (sometimes called 'goods').</li> <li>• Services bring benefits to the earth's systems and human population; which can be quantified (sometimes in terms of monetary value).</li> <li>• Some ecosystems services are only locally important, whereas others such as regulating services are often seen as globally significant (carbon sequestration).</li> <li>• Ecosystem services are degraded or destroyed by processes such as deforestation and the impacts of global warming.</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Regulating services might be viewed as the most valuable due to ecosystems role in global carbon sequestration which keeps the atmosphere in balance – this is especially true in an era of global warming; the world's major forests play a key role as do peatlands / wetlands.</li> <li>• Equally ecosystems are important in terms of regulating the hydrological cycle, at a global scale in terms of atmospheric water vapour – but perhaps more so at a local scale in terms of reducing flood risk through infiltration and interception, where forests play a key role.</li> <li>• At a local scale provisioning services (goods) might be viewed as more important in terms of fuelwood, timber and foods that are obtained from ecosystems – although this might be seen as more important in</li> </ul>	

	<p>some places and for some groups i.e., people living at subsistence level who make direct use of resources.</p> <ul style="list-style-type: none"><li>• Cultural services might be seen as locally important (landscape aesthetics, religious significance) in spiritual and wellbeing terms, but also in economic terms (leisure, tourism).</li><li>• Supporting services (usually the least well understood) include soil health (nutrient cycling), pollination and others – these allow regulating services to operate so in that sense are crucial and both local and global scales.</li><li>• There should be an assessment of a number of different services which covers some aspects of both local and global scales.</li></ul>	<b>(15)</b>
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Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas, making limited and rarely logical connections/relationships, to produce an interpretation with limited relevance and/or support. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making some relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2)</li> </ul>
Level 4	13-15	<ul style="list-style-type: none"> <li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a full and</li> </ul>

		coherent interpretation that is relevant and supported by evidence. (AO2)
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Question Number	Evaluate the view that global warming is the most important factor increasing the risk of disasters caused by extreme weather.	Mark
3	<p style="text-align: center;"><b>AO1 (5 marks)/AO2 (10 marks)</b></p> <p><b>Marking instructions</b> Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p><b>Indicative content guidance</b> The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Weather disasters include depressions, tropical cyclones, floods and drought.</li> <li>• Global warming is the average increase in global temperature by approximately 1°C since 1900, and projected to increase in the future.</li> <li>• Risk represents the chance of harm being done to people and their property.</li> <li>• Risk is a function of hazard magnitude, vulnerability and capacity to cope (hazard risk equation).</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• The view that a warmer world becomes a more hazardous one is quite widespread e.g., stronger / more frequent tropical cyclones, more frequent and longer droughts, increased risk or flooding and stronger mid-latitude storms – so overall risk levels increase as there is more energy in the atmosphere.</li> <li>• However, risk is also a function of management and weather hazard risk can be reduced by flood protection, cyclone shelters, evacuation systems and many other methods – in many places, even low-income ones such as Bangladesh, management has reduced death tolls and losses significantly.</li> <li>• Some might argue that poverty and lack of development, perhaps tied to poor governance, is the more important risk factor i.e., lack of preparation and mitigation is the key underlying factor in risk meaning many people have a low coping capacity; this can be linked to rapidly rising population / density in some places.</li> </ul>	

- Some disasters, notably drought, have complex multivariate causes that include population pressure, poor land management, war and conflict – as well as long terms trends on rainfall so arguing that global warming is the main factor is simplistic.
- Some locations, such as Asia’s low-lying megadeltas are at very high risk especially when megacities and areas of high population density farmland are in the path of weather hazards – so population density (combined with deforestation; mangrove removal) might be seen as the most important factor in terms of risk, combined with the physical nature of the land people live on.
- It could be argued that some the worst natural disasters are not weather related, but tectonic i.e., earthquakes and tsunami – and these are not affected by global warming, so overall risk in some places may be a function of other factors.
- Some answers might take the view that the risk from global warming might be low today (i.e., it is not yet a major factor) but may become so in the future (2050, 2100) if widespread changes to climate zones and rainfall patterns occur. Mention might be made of some benefits from global warming, or reduced weather hazard risk in specific locations.
- The processes of globalisation and economic development could be considered as the fundamental cause, alongside increased affluence and population – combined with an unwillingness to act.

**(15)**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas, making limited and rarely logical connections/relationships, to produce an interpretation with limited relevance and/or support. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making some relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2)</li> </ul>
Level 4	13-15	<ul style="list-style-type: none"> <li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a full and</li> </ul>



		coherent interpretation that is relevant and supported by evidence. (AO2)
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Question Number	To what extent is the use of energy resources decided mainly by public perception and their economic cost?	Mark
4	<p style="text-align: center;"><b>AO1 (5 marks)/AO2 (15 marks)</b></p> <p style="text-align: center;"><b>Marking instructions</b></p> <p>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p>Responses that demonstrate <b>only</b> AO1 without any AO2 should be awarded marks as follows:</p> <ul style="list-style-type: none"> <li>• Level 1 AO1 performance: 1 mark</li> <li>• Level 2 AO1 performance: 2 marks</li> <li>• Level 3 AO1 performance: 3 marks</li> <li>• Level 4 AO1 performance: 4–5 marks</li> </ul> <p><b>Indicative content guidance</b></p> <p>The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited.</p> <p>Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Energy resources can be classified as renewable, recyclable and non-renewable and these form the energy mix of countries or areas.</li> <li>• Resources can also be sourced domestically or internationally.</li> <li>• There is variation in the cost of resources (e.g., oil and gas prices, set on international markets) and set-up costs (e.g., nuclear has high initial costs).</li> <li>• Public perception refers to how favourably or otherwise resources such as coal, nuclear or wind turbines are viewed by the public – which can influence energy mix policy.</li> <li>• Other factors such as geopolitics, geology / physical availability and environmental issues may also influence which energy resources are used.</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Economic cost is a key factor, which partly explains the widespread use of fossil fuels and its continuation despite environmental arguments against it; coal, gas and oil are cheap to use and the technology for use for electricity supply is available and low cost – supply is still abundant and reliability is high; emerging countries tend to rely on fossil fuels even when they need to be imported.</li> </ul>	

- Renewable sources (wind, solar) are widely used now but this has only happened on a large scale once their costs have come down and are competitive with fossil fuels – expect in some cases (Denmark) where environmental concerns led to early adoption.
- Cost is not the only concern: security of domestic supply could be seen as a reason for the widespread adoption of nuclear power in France and Japan despite high set-up costs (and safety / other risks); nuclear’s high costs and advanced technology partly explain why it has not been widely adopted in low-income countries.
- Public perception has turned against nuclear due to safety fears and to a lesser extent soaring costs, so it has been rejected in Italy and Germany and other countries have slowed their nuclear programmes; wind power was often initially opposed at a local level (NIMBY issues) but has gradually gained public acceptance especially as it has moved offshore.
- A general shift in public perception towards energy sources with lower carbon footprints means that coal is often perceived as dirty and polluting and its use has declined especially in developed countries (also impact of Kyoto, Paris targets) and renewable resources are more favoured.
- In some cases, energy resources are still extracted despite widely held perceptions that they are environmentally negative e.g., Canada’s tar sands where oil export revenues might be seen to ‘trump’ environmental concerns and negative public perception (perhaps more so from outside Canada).
- Overall, the use of energy resources is determined by many factors of which costs and perception are two important ones, but environmental concerns are increasingly important as are concerns over security of supply.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-5	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding of geographical ideas, making limited and rarely logical connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited coherence and support from evidence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)</li> </ul>
Level 2	6-10	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical ideas in order to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)</li> </ul>
Level 3	11-15	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and accurate. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas to find some logical and relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical ideas in order to produce a partial but coherent interpretation that is supported by some evidence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, largely supported by an argument that may be unbalanced or partially coherent. (AO2)</li> </ul>

Level 4	16-20	<ul style="list-style-type: none"><li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li><li>• Applies knowledge and understanding of geographical information/ideas to find fully logical and relevant connections/relationships. (AO2)</li><li>• Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is supported by evidence. (AO2)</li><li>• Applies knowledge and understanding of geographical information/ideas to come to a rational, substantiated conclusion, fully supported by a balanced argument that is drawn together coherently. (AO2)</li></ul>
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Question Number	To what extent is water insecurity caused mainly by climate and local geology?	Mark
5	<p style="text-align: center;"><b>AO1 (5 marks)/AO2 (15 marks)</b></p> <p><b>Marking instructions</b>  Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.  Responses that demonstrate <b>only</b> AO1 without any AO2 should be awarded marks as follows:</p> <ul style="list-style-type: none"> <li>• Level 1 AO1 performance: 1 mark</li> <li>• Level 2 AO1 performance: 2 marks</li> <li>• Level 3 AO1 performance: 3 marks</li> <li>• Level 4 AO1 performance: 4–5 marks</li> </ul> <p><b>Indicative content guidance</b>  The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited.  Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Water insecurity means a lack of safe, reliable water supply providing an acceptable volume of supply for all.</li> <li>• Water supply is fundamentally controlled by the hydrological cycle’s inputs, stores and outputs.</li> <li>• Precipitation – in the form of rain, snow etc – is a key part of the water cycle contributing to surface flows, stores and groundwater stores.</li> <li>• Geology influences infiltration and throughflow, as well as the presence of groundwater aquifers (permeable / porous rocks).</li> <li>• Other factors influence water insecurity, which can be economic in nature; water supply can be increased by many methods e.g., desalination even in areas with naturally very low availability.</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Water stress /scarcity is closely related to the global climate circulation and existence of low-pressure areas that bring rainfall (which can be seasonal – monsoon / ITCZ); areas with low security include the Sahel and large parts of the MENA; seasonal insecurity is common in Asia (India, Pakistan) where monsoons are heavily relied upon.</li> </ul>	

- Groundwater supply is very important in many areas (southern UK, American Midwest, Punjab) where wells provide drinking and irrigation water and these rely on porous / permeable aquifers (sandstone / limestone) being recharged by annual rainfall.
- However, even in areas of high equatorial rainfall there is often economic water scarcity; low-income people rely on buying water when they cannot access natural sources (rivers, lakes) especially in urban areas; equally water quantity may be high but quality low so water insecurity exists (River Ganges, polluted Chinese aquifers).
- In some places adequate water supply has been mismanaged leading to saltwater encroachment at the coast due to aquifer over-extraction (Chennai) or over-pumping leading to water tables falling in groundwater aquifers (Punjab) – so a once fairly secure situation no longer exists; high demand (farming, urbanisation, industrialisation, population growth) could be seen as the basic cause of increased water insecurity alongside lack of the development of alternative supplies for people.
- There are many examples of water insecure places becoming more secure because of the use of technology and water management – such as the widespread use of desalination in the MENA or Singapore’s attempts at water conservation and recycling – but these costly management strategies are not available in developing countries with limited financial resources.
- Overall, physical factors such as climate / rainfall and geology might be seen as important in determining basic water availability, but human factors around management (or lack of it) are important in determining how water secure places actually are.

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Level 1	1-5	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding of geographical ideas, making limited and rarely logical connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an interpretation with limited coherence and support from evidence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)</li> </ul>
Level 2	6-10	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical ideas in order to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)</li> </ul>
Level 3	11-15	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and accurate. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas to find some logical and relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical ideas in order to produce a partial but coherent interpretation that is supported by some evidence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, largely supported by an argument that may be unbalanced or partially coherent. (AO2)</li> </ul>



Level 4	16-20	<ul style="list-style-type: none"><li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li><li>• Applies knowledge and understanding of geographical information/ideas to find fully logical and relevant connections/relationships. (AO2)</li><li>• Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is supported by evidence. (AO2)</li><li>• Applies knowledge and understanding of geographical information/ideas to come to a rational, substantiated conclusion, fully supported by a balanced argument that is drawn together coherently. (AO2)</li></ul>
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Question Number	Using Figure 3, suggest environmental impacts of the projected changes to these middle-class numbers.	Mark
<b>6(a)</b>	<p style="text-align: center;"><b>AO1 (2 marks)/AO2 (3 marks)</b></p> <p>Award <b>1</b> mark (AO1) for each relevant point and further expansion marks for reasons/explanations linked to the data shown (AO2), up to a maximum of 5 marks.</p> <ul style="list-style-type: none"> <li>• Especially in Asia the huge increase of 2 billion + middle class people by 2030 (1) will mean a massive demand for resources (food, energy, water) and therefore significant environmental impacts (1).</li> <li>• In Europe, Middle class numbers barely increase at all because the majority already are/ population is not increasing (1) which could imply resource consumption is stable / or decreasing due to environmental awareness i.e. positive impact / greater conservation. (1).</li> <li>• Middle class numbers rise in all regions, more so on Asia-Pacific and SSA (1) so by 2030 many more people will enjoy a reasonable quality of life but with higher carbon / ecological footprints.</li> <li>• In some regions demand for land and energy (Asia) may contrast with demands for water (SSA) (1), so the impacts may not be the same in all places (1).</li> </ul>	<b>(5)</b>

Question Number	Using named examples, assess the strengths and weaknesses of emerging superpowers. (15)	Mark
6(b)	<p style="text-align: center;"><b>AO1 (5 marks)/AO2 (10 marks)</b></p> <p><b>Marking instructions</b> Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p><b>Indicative content guidance</b> The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Emerging superpowers include China and India, Brazil, Russia – and possibly others such as Indonesia, Mexico and the UAE.</li> <li>• These countries have had strong economic growth in the last 20 years, and increased regional and global significance.</li> <li>• Strengths and weaknesses can be thought of in terms of ‘pillars’: economic, cultural, military, demography and political.</li> <li>• Power is often viewed in terms of hard and soft (plus possibly smart and sharp)</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Economic growth, and growth potential, might be seen as a key strength for some emerging powers such as China, India and Indonesia: trade in goods, FDI inflows have increased GDP and personal wealth – and allowed other aspects of power such as military spending; but some emerging powers are weaker e.g., Brazil’s stop-start growth, Russia’s reliance on oil and lack of economic diversity.</li> <li>• Russia has high military strength, but it has been ageing in terms of technology (Putin has focussed on renewing this) and China has rapidly rising military capacity; nuclear weapons might be seen as a key global bargaining chip (China, Russia, India); other emerging powers have much less military capacity, so a weakness.</li> <li>• Politically Russia and China sit on the UNSC, and are often involved in global issues (G20) but often oppose Europe / North America; other emerging powers have</li> </ul>	

	<p>less influence globally and may be seen as ideologically unattractive at least to some (human rights, environmental issues).</p> <ul style="list-style-type: none"><li>• Culturally some emerging powers have global influence such as India (Bollywood, food, tourism) but others much less so – the cultural influence of Europe and the USA is arguably much stronger (TNCs, brands, film, media) and emerging powers are much more limited.</li><li>• Many emerging countries, notably India and Indonesia, have huge future demographic potential – but might be weakened by lack of physical resources (energy, water, land) whereas others face problems with ageing (Russia, China) and high future costs.</li><li>• An overall assessment might argue that most emerging powers have strengths in some areas, but weaknesses in others – with perhaps only China having close to the full range of strengths to rival the USA or Europe.</li></ul> <p>NB: Answers could be organised by country or by type of strength / weakness – but in either case an assessment is essential. The ‘pillars of power’ (eco/cult/mil/ res/geopol/ demo) could be used as a structure.</p> <p>The USA is not an emerging superpower, and neither is the EU: beyond this there is flexibility in terms of what constitutes an emerging power.</p>	<p><b>(15)</b></p>
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Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas, making limited and rarely logical connections/relationships, to produce an interpretation with limited relevance and/or support. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making some relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2)</li> </ul>
Level 4	13-15	<ul style="list-style-type: none"> <li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a full and</li> </ul>

		coherent interpretation that is relevant and supported by evidence. (AO2)
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Question Number	Using Figure 4, suggest the impacts on people of the changes to the numbers living in poverty.	Mark
<b>7(a)</b>	<p style="text-align: center;"><b>AO1 (2 marks)/AO2 (3 marks)</b></p> <p>Award <b>1</b> mark (AO1) for each relevant point and further expansion marks for reasons/explanations linked to the data shown (AO2), up to a maximum of 5 marks.</p> <ul style="list-style-type: none"> <li>• SSA shows an increase in numbers of people living in poverty which is bad news (1) in terms of quality of life and meeting basic needs (1); accept the argument that the relative number of poor may have gone down in these regions (1).</li> <li>• Poverty in East Asia has fallen dramatically, such that it has passed South Asia (1) suggesting millions of people now have better quality of life in terms of food, water and shelter (1)</li> <li>• There has been a large fall in South Asia, with numbers roughly halving (1) but there are still hundreds of millions living in poverty so much more work to be done (1).</li> </ul>	<b>(5)</b>

Question Number	Using named examples, assess the strengths and weaknesses of bottom-up development projects.	Mark
7(b)	<p style="text-align: center;"><b>AO1 (5 marks)/AO2 (10 marks)</b></p> <p><b>Marking instructions</b> Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p><b>Indicative content guidance</b> The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</p> <p>AO1:</p> <ul style="list-style-type: none"> <li>• Bottom-up development is managed / influenced by communities in need, often with the support of NGOs.</li> <li>• It has low cost, small-scale, intermediate technology characteristics and is often focussed on basic needs – frequently in rural areas (but not exclusively).</li> <li>• Contrasts with top-down development imposed from ‘above’ by governments and agencies (high cost, larger scale, hi-tech).</li> <li>• Development projects contrast in terms of donor motives and aims, and outcomes for different groups (women, children, minorities).</li> </ul> <p>AO2:</p> <ul style="list-style-type: none"> <li>• Bottom-up projects frequently focus on basic needs such as primary education, health care (vaccination, clinics, maternal care), water supply and farming technology for the poorest (less than \$1.90 per day) and can quickly improve quality of life – but their footprint may be quite small questioning the number of people actually helped.</li> <li>• Many projects have a self-help element where communities are supported by NGOs and other agencies to help improve their own lives using low / intermediate tech, low cost, low maintenance methods – but funding may be limited and intermittent (NGOs often rely on donations) and income improvements may be limited, so people quickly reach a ceiling of progress and struggle to move forward.</li> </ul>	



	<ul style="list-style-type: none"><li>• The focus of some projects on gender equality, female health and education, minority groups facing inequality or discrimination may help the most marginal in societies; help is often targeted at specific MDGs / SDGs.</li><li>• The small-scale nature of bottom-up projects, if funded by local or other NGOs, may struggle to help large numbers of people in need e.g., urban slum dwellers.</li><li>• Other projects – of a more top-down nature – may be better at creating opportunities for economic development e.g., electricity supply, large scale water supply, road and rail infrastructure as they promote trade and industrialisation rather than just meeting basic needs.</li><li>• On the other hand, top-down projects could be seen as creating debt (WB / IBRD lending) and being inherently unequal in terms of outcome, which is a criticism less often levelled at bottom-up projects.</li></ul>	<b>(15)</b>
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Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate or irrelevant. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas, making limited and rarely logical connections/relationships, to produce an interpretation with limited relevance and/or support. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce an unsupported or generic conclusion, drawn from an argument that is unbalanced or lacks coherence. (AO2)</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is occasionally relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas with limited but logical connections/relationships to produce a partial interpretation that is supported by some evidence but has limited coherence. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to come to a conclusion, partially supported by an unbalanced argument with limited coherence. (AO2)</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1)</li> <li>• Applies knowledge and understanding of geographical information/ideas logically, making some relevant connections/relationships. (AO2)</li> <li>• Applies knowledge and understanding of geographical information/ideas to produce a partial but coherent interpretation that is mostly relevant and supported by evidence. (AO2)</li> </ul>

Level 4	13-15	<ul style="list-style-type: none"><li>• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1)</li><li>• Applies knowledge and understanding of geographical information/ideas logically, making relevant connections/relationships. (AO2)</li><li>• Applies knowledge and understanding of geographical information/ideas to produce a full and coherent interpretation that is relevant and supported by evidence. (AO2)</li></ul>
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