

Examiners' Report  
June 2012

GCE Geography 6GE03 01

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## Introduction

This summer's Unit 3 Contested Planet examination paper took Water Conflicts as the synoptic Section B topic for the first time. In previous examinations this topic has proved very popular in Section A so it was interesting to see how candidates approached their selection of Section A questions in the absence of Water Conflicts. All questions in Section A were attempted in good numbers. Biodiversity under Threat was somewhat more popular than in the past (16% in January 2012) but Energy Security and Superpower Geographies maintained their long-standing popularity. Question popularity, as a % of all responses in Section A, was approximately:

Question 1: Energy Security = 27%

Question 2: Biodiversity under Threat = 21%

Question 3: Superpower Geographies = 25%

Question 4: Bridging the Development Gap = 13%

Question 5: The Technological Fix? = 14%

Overall, the vast majority of candidates perform well on this examination paper. As in the past, timing issues were relatively uncommon. These tend to arise when candidates spend too much of their time on the Section A 10 mark '(a)' data stimulus questions and leave less time than they need for the 15 mark '(b)' parts. In addition, a very small number of candidates fail to fully complete Section B, especially Question 6(c). Candidates must begin their answer to their 1<sup>st</sup> choice of Section A question on page 4 of the answer booklet and then begin the answer to their 2<sup>nd</sup> choice on page 11.

# Section A

## **Specific comments on Section A**

As is always the case, there were some very high quality answers in Section A and the average quality of response was good. Many answers demonstrated a good command of physical, human and political geography and many candidates used contemporary events and changes to support their work, as well as well-known examples and case studies. There are some areas centres may wish to focus on when preparing for future assessments.

**Sustainability** is an important concept in Geography. Many candidates were able to accurately state the Brundtland definition from 1987:

*"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

Candidates need to be aware that this is a definition of sustainable development, not a definition of a 'sustainable energy future' or 'sustainable water supply'. Candidates need to be prepared to think about these specific topics in relation to sustainability, and adapt their focus accordingly.

'**Relative importance**' is a phrase that has been used in Unit 3 questions in the past. It is often poorly understood with candidates making statements such as 'all of the factors have relative importance' or 'economic power has relative importance and so does military power'. The phrase, in combination with the command words 'assess' or 'evaluate', indicates that candidates should judge which reasons or factors are the most, and which the least, important.

**Data stimulus skills** are assessed in the 10 mark '(a)' parts of questions. Too many candidates failed to base their answer on the data or information presented in the relevant Figure, and instead explained in very general terms and / or drifted into examples and case studies which were not present in the Figure they should have been referring to.

**Range** is important in all questions. Narrow answers scored poorly. In 10 mark data stimulus questions a range of data needs to be referred to e.g. 3 or 4 of the species on Figure 2, or 4 of the energy types on Figure 1. Basing an answer to Question 1(a) only on gas, or an answer to Question 2(a) only on coral, inevitably leads to a narrow answer. This is also the case in the 15 mark '(b)' parts where a focus on one idea or case study is rarely enough to fully answer the question.

Several points which have been raised in the past are worthy on mentioning again as they recur in each series:

- Some candidates **plan** their answers excessively. Planning is without doubt a good idea, but many plan each sub-question using as much as a page for each plan. This is more of an issue in the June series, especially if candidates have sat Unit 4 in January (and have been trained to use a full page plan for the Unit 4 Report).
- Much time is still wasted by a number of candidates on excessively long, **generalised introductions** to issues. This is most obvious in the 10 mark '(a)' parts where candidates would be better served by getting on with the task of answering the question, rather than providing a long-winded introductory discussion of 'development' or 'energy resources'.
- **Level 3 and Level 4** marks in the 15 mark questions are only accessible if candidates can show that they are assessing, examining or evaluating (depending on the command word). Failure to do this i.e. by only describing and explaining, limits marks to a maximum of 8 in most cases. The development of evaluation skills and evaluative writing style is thus crucial to candidates aiming for a high grade.
- Some candidates need to be clearer in their minds about the meaning of the key words **social, political, economic** and **physical**. There is inevitably overlap, but in some cases there is wholesale misunderstanding. Physical refers to natural processes, systems, and landforms. Social refers to people, their quality of life, living conditions, relationships and perhaps even culture. Economic refers to employment, trade, finance, investment and value whereas political concerns decision-making and governance.

## Question 1 Energy Security

**Question 1(a)** was generally understood by candidates. Many began their answers by focusing on what they understood by energy security and some made reference to the Energy Security Index. There was a reasonable appreciation that energy security depended on affordable, reliable energy resources and that renewable energy sources and domestic fossil fuels were often more secure than non-renewable imports.

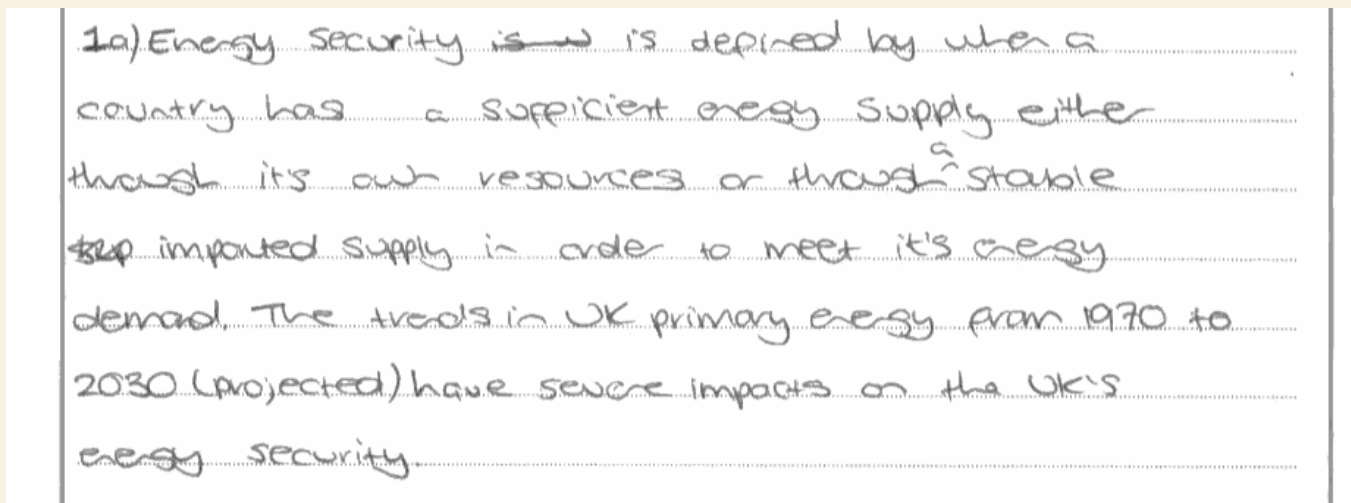
That said, a significant number of candidates seemed to view energy security as essentially an *environmental* concept, and argued that energy security was enhanced when sources emitted fewer greenhouse gases. Consequently their discussion was very narrow in focus and basically about environmental sustainability, not energy security. An understanding of energy security is vital to many Energy Security questions on Unit 3.

Weaker answers tended to focus very heavily on one or two energy sources from Figure 1, notably gas (the story of Russian gas and Gazprom). Many failed to spot some important aspects of the data shown in Figure 1, notably:

- that nuclear power in the UK is projected to fall by 2030 (significantly, compared to 1990)
- that renewable energy sources, even in 2030, are projected to contribute only a very small amount, despite significant growth.

There were also some misunderstandings about UK energy sources. UK domestic oil and gas production is falling, and has been since 1999 in the case of oil and 2000 for gas. The Severn Barrage has not yet been built and the Thames Barrage does not, and never has, generated HEP. It might surprise some students that the UK imports most natural gas from Norway and Qatar (as LNG), not Russia. The impacts of Russia-Ukraine gas disputes on the UK have mainly been in the form of rising prices, not actual declines in supply to consumers.

This is part of an answer to Question 1(a) on energy security issues facing the UK.



Although the UK's primary energy sourced from non-renewable energy declined from 1970 and 1990, overall from 1970 - 2030 it will increase by 10 million tonnes of oil equivalent, impacting greatly on the UK's energy security. The UK has to rely on importing oil and natural gas since the North sea reserves have been declining rapidly. The global consumption of oil and gas is also increasing therefore putting the UK in competition with other countries especially the rapidly industrialising BRICS.



### **ResultsPlus** Examiner Comments

This example of Question 1(a) begins with a definition of energy security – a good way to focus on the key theme of the question – and makes direct reference to Figure 1. It shows good understanding of the need to import fossil fuels and the global demand situation.



### **ResultsPlus** Examiner Tip

A very brief opening statement that focuses on the key words in the question is a good way to begin this type of question. Avoid long, generalised introductions however.

**Question 1(b)** focused on evaluating the contribution radical technologies and policies might make towards a sustainable energy focus. Successful answers tended to focus initially on the meaning of 'sustainable energy future' which was interpreted as meaning a low-carbon future and one relying less on non-renewable sources. The issues of affordability and reliability were less often seen.

In some cases the examples chosen were not well related to the question. This was especially the case with the potential for oil and gas in the Arctic; these are *conventional* fossil fuels which just happen to be in a harsh and / or protected environment. Unconventional fossil fuels such as Canadian tar sands were used to good effect and there was generally good knowledge and understanding of the economic and environmental costs and benefits of using these sources. Nuclear power was often seen, although as in the past it tends to be 'hijacked' by lurid descriptions of Chernobyl and Fukushima rather than consideration on, in some ways more pressing and unresolved issues, such as nuclear waste disposal. CCS was regularly covered and generally well understood.

Policies were perhaps less convincing in many cases. There was good knowledge of Kyoto, but this was often not related to energy policy, rather to general green issues and CO<sub>2</sub> reductions. Policies which had more focus on energy included VED on cars in the UK and other ways in which governments encourage people to use less energy. Many sound answers would have benefited from an overall summary which focused on which policies / technologies might contribute the most to a sustainable energy future.

The following is the last part of an answer to Question 1(b) on how radical energy technology and policy might help towards a more sustainable energy future.

Green taxes could be a policy that could enable a sustainable future. They have already been introduced in some countries such as the Vehicle Excise Duty in the UK. They could be very significant because they address one of the key obstacles to a sustainable future = ease increasing car ownership and emissions. They, then, as with the VED, people will feel inclined to buy cleaner and more efficient cars than 'gas-guzzling' vehicles. If this is very significant because such unsustainable cars as the Land Rover release 225 grams of carbon dioxide per km kilometre and so a tax of £460 in 2007 has been placed on it, which used to be £10 in 2006. Of course, not everyone will feel inclined to buy cleaner cars as <sup>some</sup> public opinion still revolves around the fact that such taxes are just government attempts to tax the public more but they do offer a sustainable future. However, they do not address the energy source, so do have limitations as the basic problem is that we need to move from fossil fuels. ~~offshore wind~~

On balance, if taken together all of these examples could lead to a greater sustainable future as green taxes would move people away from using inefficient sources of energy due to higher taxes for them and new technologies such as offshore wind farms are being collected and will generate electricity for our needs but they obviously all have limitations. ~~However, offshore wind~~ but offshore wind farms are probably <sup>offer</sup> the greatest ~~pro~~ chance as they are efficient and can be placed in most areas.



### ResultsPlus Examiner Comments

This section focuses on policy, specifically green taxes, and it does relate this to the need to move away from fossil fuel consumption in order to have a more sustainable energy future. The conclusion is clear and related to both policy and technology, with the judgement that offshore wind is a way forward.



### ResultsPlus Examiner Tip

Conclusions, like the example shown here, need only be 6-7 lines in length but they help answer the question and provide a final focus.



## Question 2 Biodiversity under Threat

**Question 2(a)** referred to Figure 2, a graph showing how the health of 4 groups of species has changed between 1980 and 2010. The keys to answering this question were:

- recognising that the trends for the 4 species groups were different, in terms of starting point and severity
- recognising that different reasons accounted for the changes.

Many answers were heavily focused on corals at the expense of other species. There was generally very good knowledge and understanding of the reasons why coral had declined so severely. Global temperature rise and bleaching (often spelled 'bleaching') were frequently outlined as well as the impacts of tourism, siltation and ocean acidification. Named locations were often referred to. The sensitive, sessile nature of corals was often referred to as a reason why they had declined so precipitously.

Better answers often pointed out that although amphibians had declined less steeply than corals, their starting point, and overall health, was much lower. This was often attributed to widespread destruction of tropical forests, wetlands and mangroves related to industry and urbanisation. Amphibians were sometimes claimed to be in the worst position as they were susceptible to both land and water pollution – a sensible point to make. On the other hand there was some confusion over what was an amphibian, as many examples given were actually reptiles. Many candidates claimed that mammals had fared better due to conservation efforts and used examples to support this reasoning i.e. iconic and 'cute and cuddly' mammals receiving conservation priorities. Migration / mobility was not unreasonably viewed as a reason for the shallow decline in bird health. Overall, there were many sound answers, perhaps of a slightly higher quality than other recent questions on this topic.

This is part of an answer to part (a) which asked candidates to explain the trends in the health of 4 groups of species.

Human factors in coral decline include urbanisation, and development. Areas like the Great Barrier reef are losing natural habitats such as wetlands, due to coastal development. More over industrialisation, has caused an increase in mud pollution by 800% and nitrogen by 3000%. These are serious threats to the coral ocean biodiversity. Tourism too, is severely impacting the health of coral reefs. In the Philippines 26km of coral was degraded due to excessive tourism.

Alongside human actions, climate change is posing

major threats to corals. They exist globally at the edge of their temperature tolerance levels, and a global temperature increase of 2% could see 60% of all corals bleach on an annual basis.

Similarly, birds and mammals are suffering decline, although smaller, it is still a serious threat to biodiversity.

Human action is causing the major issues for birds and mammals.

Action such as deforestation in the Amazon is causing catastrophic reduction in ~~one~~ mammal and bird populations.

The biodiversity of the Amazon is highly dense with over 4000 species of mammals and 1300 species of bird.

Its continued destruction will lead to greater reduction in animal populations.



## ResultsPlus

### Examiner Comments

This example focuses on the health of coral. It is supported by detailed factual and located examples that give the answer a certain 'weight'. It recognises that mammals and birds have less of a decline in health so differentiates between species.



## ResultsPlus

### Examiner Tip

There is no substitute for learning key facts and figures. They provide the depth and detail that examiners are looking for.

**Question 2(b)** asked candidates to examine the relationship between attitudes to conservation and levels of economic development. In some cases this question was interpreted as 'examine the relationship between attitudes to conservation and economic development'. This is a very different question and those that interpreted the question in this way tended to outline a range of case studies / examples that proved that economic development leads to ecosystem destruction or helps conserve it. What was really required was an examination of how the relationship between development and conservation changes over time. Many used a Kuznets curve style diagram as the basis for their examination and did so very successfully. In the best answers the general relationship was stated as well as anomalies / deviations from this. Many good case studies were used although some tended to be very descriptive e.g. Daintree, the Galapagos, St Lucia's SMMA – candidates in many cases needed to be more selective and focus more on the relationship and less on the ins and outs of conservation practice.

This example is the last part of an answer to Question 2(b) on the relationship between levels of economic development and attitudes to conservation.

In conclusion, it can be seen that levels of economic development do influence attitudes towards conservation to a certain extent, because a more economically developed country can afford to spend more of its wealth on conserving the natural environment, such as in Studland Bay, whereas in areas where the economy is not as developed, such as Kenya, attitudes to conservation are different, and essentially, they are (stuck in underdevelopment), exploiting natural resources to export and for use, and conservation measures are not as effective as money is being spent elsewhere. However, it should be noted that involving local people in conservation measures seems to be the way forward, both as an effective method of conservation – CAMPFIRE and Udzungwa National Park as examples, but also as a way to influence attitudes towards conservation in local people, so they are still

benefiting from the environment, but are sustaining it for future generations, with no costs to themselves, only benefits.



**ResultsPlus**

**Examiner Comments**

Very good answers tend to recognise the complex nature of geographical issues. This example conclusion states the general relationship between levels of economic development and attitudes to conservation, but also recognises the exceptions to the general rule.



**ResultsPlus**

**Examiner Tip**

When you are asked to consider a trend or relationship, try to look for exceptions and anomalies as well as the overall pattern.

### Question 3 Superpower Geographies

**Question 3(a)** was based on a Figure showing how economic dominance, measured by % of global GDP, had changed over the course of the 20<sup>th</sup> Century and is projected to change in the future. The question focused on reasons for the *changes* shown. Some candidates, often with good knowledge and understanding, explained the wealth of the UK, USA and other countries at set points in time rather than the reasons for the changing pattern of economic power. However, this question was answered successfully by many. There was often good understanding of the reasons for the decline in the UK's fortunes, the rise of US based TNCs and the collapse of communism and its implications for the USSR and Russia. There were examples of amazing 'economic histories of the world' on two sides of A4. The rise of the BRICs in the future was related clearly to FDI and specific examples like the Indian telecommunications industry. Reasons for the importance / growth of Germany and Japan were less often mentioned but overall understanding was good.

An example of an answer to Question 3(a) follows showing the candidate's plan and opening section.

Ⓐ Plan: 1913 - Britain first Country to industrialize

1950 - USA + USSR first Super-powers

1998 - USA Only Real Superpower - trade

2025 - Rising Economies China

- Britain used to dominate ~~global~~ trade - heavy debt after WW2

- America influence in trade excelled

- China's trade + Cheaper costs

The pattern of Economic power has changed over time due to several reasons. Firstly in 1913, the British Empire controlled 37% of the world's GDP. This is because Britain was the first country to industrialise, therefore in terms of trading, Britain was able to dominate trade, therefore resulting in vast amounts of GDP from exports being generated. However, Britain also had huge amounts of Economic power due to the size of its Empire, which at the time was the largest Empire in the world. As a result of this, Britain gained access



### ResultsPlus Examiner Comments

This example of the start of Question 3(a) shows the value of planning. The candidate has analysed Figure 3 first, picking out 4 key changes and then identifying 3 key reasons for the changes. The answer that follows is logical, concise and clear.



### ResultsPlus Examiner Tip

Brief plans are good, but very long plans can waste time that you don't really have. Try to strike the right balance.

**Question 3(b)** asked candidates to evaluate the relative importance of economic, military and cultural aspects of superpower status. It was important not to focus wholly on one country e.g. the USA, as some did. Equally some discussions focused on countries which lack superpower credentials today (such as the UK or Japan); this could work but needed to be carefully tied to the question to be convincing e.g. Japan's economic strength versus its lack of military influence are relatively minor global cultural influences. Many answers focused on the strengths of the USA and contrasted these with changing strengths of China in terms of lack of globally significant TNCs, but general economic influence, growing military prowess etc. To fully answer the question some judgement needed to be made as to the relative importance and many candidates did do this (although there is a difference between stating a rank order and a full evaluative discussion) and there were many well-argued cases for the importance of 'soft' power such as cultural influence. As in the past, candidates could go beyond the three aspects of power suggested in the question. IGOs and their influence were commonly included as was geographical influence or 'reach'. Some answers drifted heavily into descriptions of theory (Wallerstein especially) and often lost focus. Overall, a popular question yielding many interesting answers.

This is the conclusion section to an answer to Question 3(b) on the military, cultural and economic aspects of superpower status.

Culture is a factor which influences superpower status immensely but subtly. Cultural hegemony is cultural dominance and control in a manner in which it controls your life and is a part of it without you realising. TNCs such as McDonalds, Disney and Coca-Cola encourage this. In addition, music, food, media and film and fashion are all examples of cultural hegemony.

The USA is a master cultural superpower, and we can see it wherever we are in the world - all we have to do is look out of the window, or switch on our televisions.

To conclude, all factors are important in influencing superpower status, but the most important is the economic factor as it is the basis for all the other factors. If a superpower was no longer economically dominant, it would not stay a superpower for much longer.



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**Examiner Comments**

This final section to Question 3(b) focuses on culture as a form of power. It has good use of terminology such as 'hegemony' and some useful examples. The conclusion that follows is brief but clear.



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**Examiner Tip**

You can use diagrams in your answer. The example here is good, but it would have been better if it had been referred to in the written text.



## Question 4 Bridging the Development Gap

As in the past, the question was less popular than many of the others on this examination paper. Figure 4 took the Millennium Development Goals (MDG) as its starting point. This is an area of the specification which should be well known and most candidates who chose to answer this question demonstrated good knowledge and understanding of the MDG.

Figure 4 for **Question 4(a)** showed 4 global regions and 5 of the MDG targets. Candidates were not required to cover all regions and all targets, but answers did need to focus specifically on regions and targets. Some answers were overly generalised and focused on 'development' in general without reference to specific targets. Other answers focused too much on China and not the region shown (East Asia). There was confusion over which region India was in as it was sometimes included in East Asia, not South Asia. Many candidates were able to provide some reasons. These focused on issues such as poverty, debt, corruption and hazard / climate change in Africa and FDI, and TNCs and government investment in East Asia. A number of answers contrasted East Asia and Africa and were much less certain on South Asia and LAC. Candidates do need to be careful not to over-generalise about Africa.

The following extract is the opening section of an answer to Question 4(a) on progress towards the MDG.

The reasons behind such variable progress, in fact widely underachieving on the MDGs vary from region to region. The area with least concern and having met some goals already is the E. Asia region, where extreme poverty, hunger + maternal mortality are succeeding in improving quality of life. The vastly significant, though not only contributor to data for this region is China. China has seen rapid economic growth in the last 15 years, especially in manufacturing, and despite still having pockets of rural poverty, has a growing middle class with comfortable housing, food supplies etc. China's communist regime also ensures reasonably accessible education and healthcare for the majority of the population, whilst in

Sub-Saharan Africa & S. Asia these remain dominated by the private sector and available only to those who can pay.



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**Examiner Comments**

This is the start of an answer to Question 4(a) which focuses on the reasons why East Asia has made progress towards the MDG. It puts forward some good reasons for the progress in China and lack of progress in other areas.



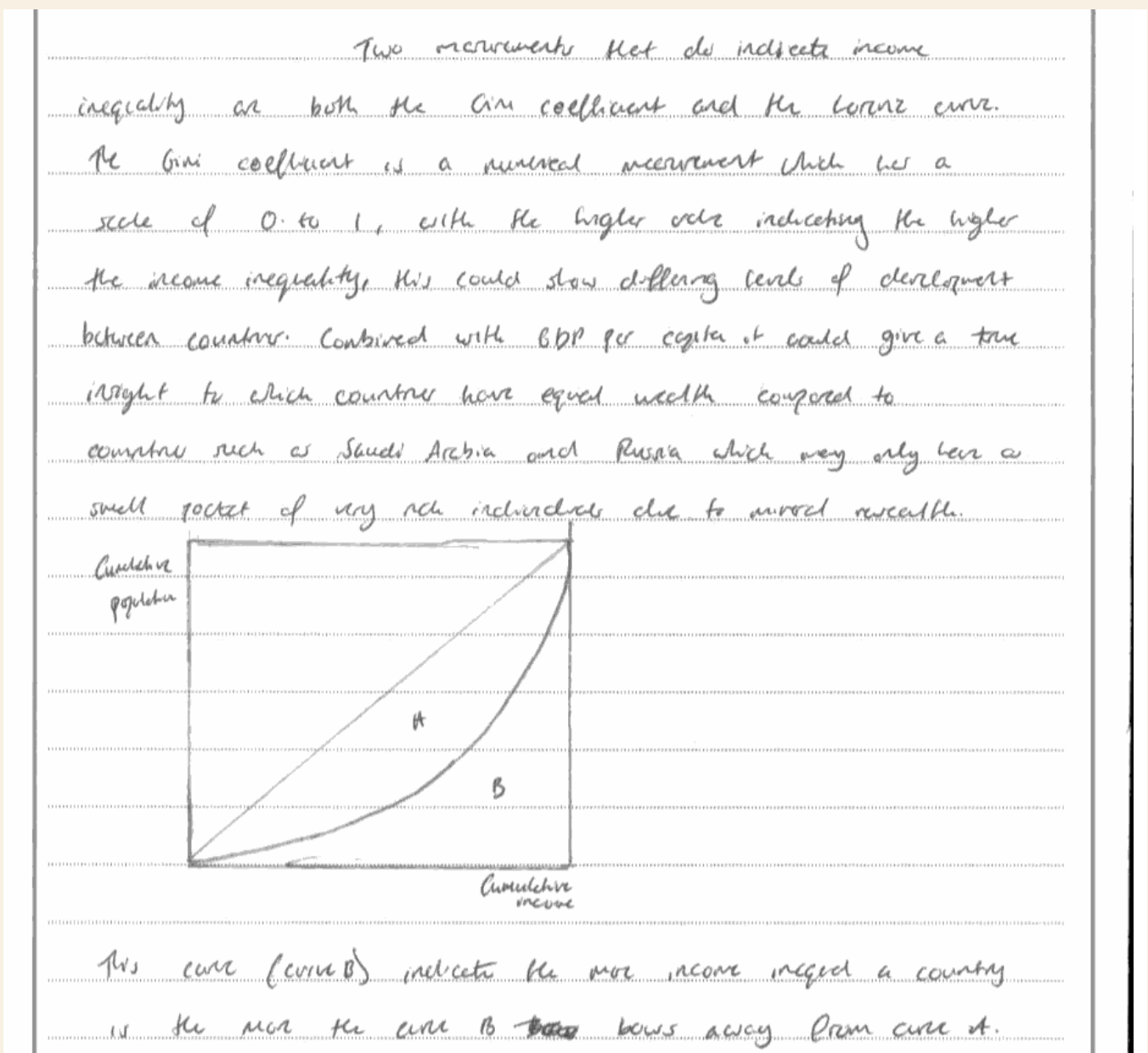
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**Examiner Tip**

You do need to know your world map. Some candidates who answered Question 4(a) were unsure which MDG region contained India and China which undermined their answer.

**Question 4(b)** was generally answered well. Most candidates were able to identify contrasting measures of development. A number focused too heavily on a number of very similar measures (GDP and GNI) and some were not clear if they were discussing national or per capita data. Better responses tended to contrast GDP per capita with measures such as GDP PPP per capita to draw out the problems with GDP. Many candidates recognised the spatial weaknesses of much data and the need to find a way to measure inequality and regional incomes. The Gini coefficient was frequently mentioned. HDI was understood well and often argued as being better in terms of a more holistic measure of development. Some candidates had detailed data support and referred to anomalous countries such as Cuba. A pleasing range of other measures was often seen such as GDI, PQLI and many more. Weaker answers tended to turn to the MDG and repeat elements of Figure 4. The MDG measure progress towards targets, not development level per se. They needed careful handling to work them into the context of this question. There were also frequent attempts to use models such as Rostow and the North-South Divide. These models describe a pattern of development rather than being a way of measuring it; to work them into the context of the question, these models needed to be linked to a measure / indicator.

This is the last part of an answer to Question 4(b), and it includes a useful diagram.



Other, individual measurements can be taken into account such as the proportion each sector (agricultural, services, manufacturing) is of an economy. This would suggest that a country with a large % of agricultural proportion of GDP would indicate a country that may not have industrialised, hence a less developed country.

Purchasing Power Parity (PPP) is a measurement that adjusts GDP per capita with the local currency exchange rate, hence giving a more accurate idea of what the average wealth would get an individual. This is sometimes preferred to GDP ~~per~~



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#### Examiner Comments

This example of Question 4(b) covers a range of ways to measure development (Gini coefficient, economic sectors, PPP GDP) but notice that it lacks a conclusion, which could have rounded off what is already a good answer.



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#### Examiner Tip

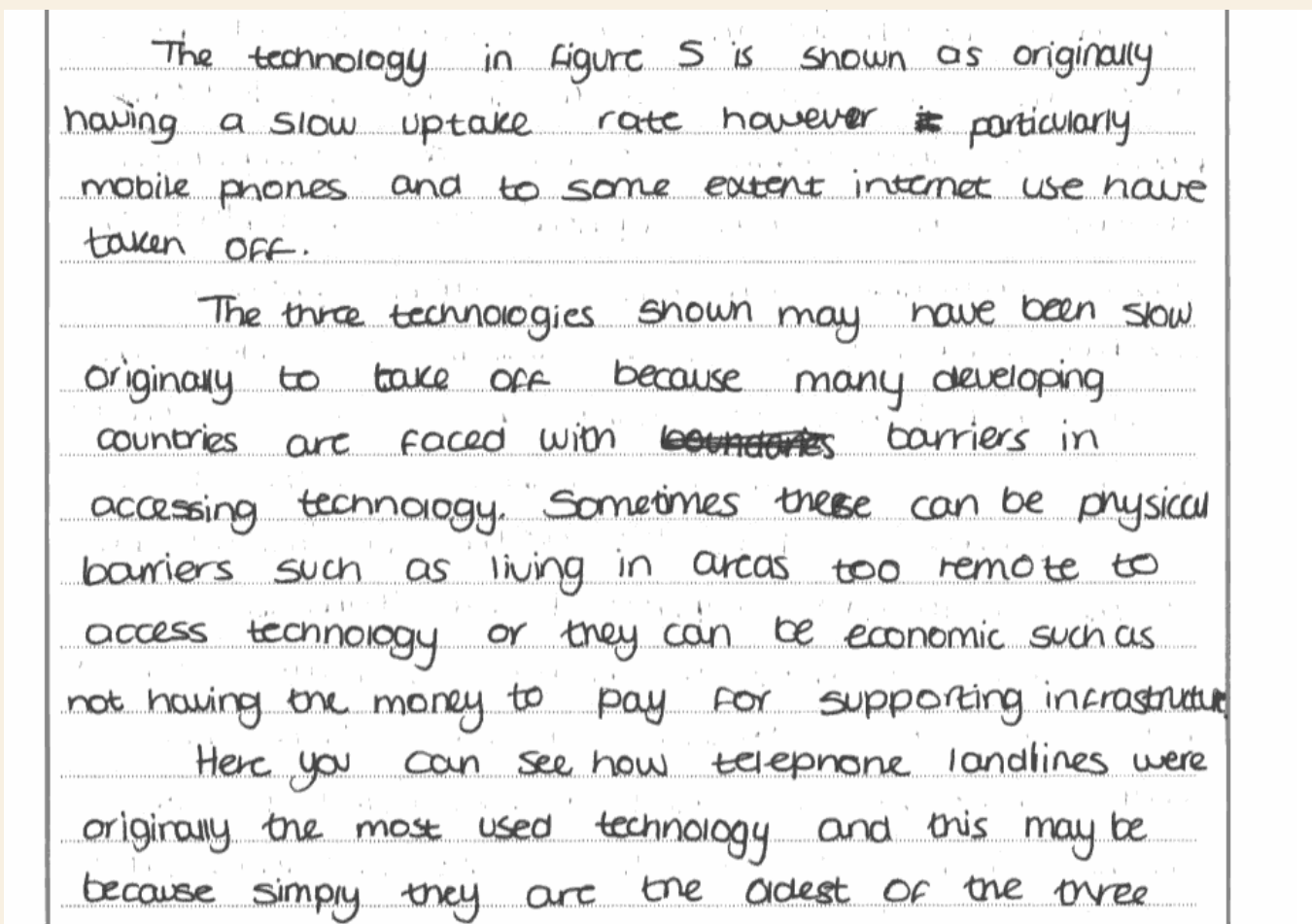
The candidate's use of a very simple diagram is good – quick to draw and clear. Notice that it is referred to in the text.

## Question 5 The Technological Fix?

As in the past, this question tended to be the most polarised in terms of performance. There were a number of rather weak answers which relied far too much on vague general knowledge rather than secure geographical understanding. A good indicator of this is the tendency for some candidates who answered this question to use Figure 5 in order to answer Question 5(a) **and** Question 5(b). This has happened in the past. It tends to lead to a repeated answer. Questions are designed so that the Figure cannot be of much utility when answering the '(b)' part. Candidates also used the Question 6 resource booklet in their answers, usually unsuccessfully.

**Question 5(a)** was often answered reasonably well. There was generally a focus on the developing world (as indicated on Figure 5) although some answers lacked this necessary focus. Candidates often explained that falling costs were a key reason for the rise in mobile use, although some did drift into descriptions of the benefits of using mobiles in the developing world. Other reasons were outlined such as the roll-out of mobile masts which was seen as quicker and cheaper to implement than landlines. Some good examples were used such as the physical difficulty of installing landlines in Afghanistan and the falling costs of mobiles in Kenya and internet costs in Uganda. Many recognised the limits of the internet in terms of the need for electricity, PCs, literacy and political freedom. The OLPC project was mentioned by some as reducing the cost of computers in some regions. Leapfrogging was often mentioned but not always convincingly explained. Overall, there was less focus on the trends in Figure 5 and more generality about the problems and advantages of the 3 technologies shown.

This is the opening part of an answer to part (a) of the question which is about trends in technology use in the developing world.



technologies. However soon mobile phones took over. This graph suggests that many countries 'leapfrogged' the landline phase and went straight on to as they run off nearby masts which ~~are~~ require far less infrastructure than building landlines. In India in the 1990s there were 23 landlines per 1000 people, compared with 756 in the UK. This therefore could show how landlines were impractical and too expensive to input. In developing nations such as India,



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Examiner Comments

The beginning of this answer to Question 5(a) gets on with explaining the trends early on and has a good range of reasons such as physical barriers, cost, age of technology, leapfrogging, lack of the need for infrastructure – all can be credited and they come in quick succession.



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Examiner Tip

Try to develop a concise writing style. This comes with practice and by looking back at the question frequently and asking yourself if you are still answering it, or have drifted off the subject.

Performance in **Question 5(b)** tended to depend on the starting point for the answer. Stronger answers tended to focus on defining technology first and separating out the meaning of social and environmental, followed by thoughtful selection of technologies to discuss. GM crops, the Green Revolution, DDT and nuclear power were examples that worked well in terms of identifying specific environmental impacts and social issues such as polarisation. Many answers struggled with the concept of costs and there was reference to 'positive costs' from some (benefits masquerading as costs). Others referred only to 'technology in China' which was really code for 'industrialisation in China' – the cost being global warming, but the technology was never identified. In other cases technologies were very generalised such as 'cars' and 'farming' and this tended to yield little in the way of specifics. Overall, 5(b) was not answered well and many failed to focus on costs and lacked meaningful evaluation.

This is an extract from part of an answer to part (b) on the environmental and social costs of new technology.

b.) New technologies can have both social costs (costs that affect the people) and costs to the environment. New technologies are the new inventions used by humans to manipulate the environment around us. Often, unforeseen consequences (Externalities) lead to dramatic costs.

For example, new technologies such as GM crops, new drugs, <sup>geoengineering projects</sup> and ~~new steroids~~ can have various costs.

GM crops are being adopted to solve food shortages, and Calgene and Monsanto are leading TNC's in the "Gene revolution". However GM crops

could have negative social and environmental externalities. The social costs could come as a result of eating GM crops, as currently the effects on the human body after extended exposure are unknown. Furthermore, GM crops could escape from facilities and into the wild. This may cause breeding between GM and standard crops which could create 'superweeds' and threaten biodiversity.



### ResultsPlus Examiner Comments

The start of this answer to Question 5(b) is a little long but focuses on the question and uses good terminology. The GM example used is good and there are interesting costs outlined. It is a little over the top at times but the 'superweed' point is well made.



### ResultsPlus Examiner Tip

The examples used in Technological Fix? questions need to be geographical ones rather than very generalised ones such as 'cars' and 'computers'. This is a common weakness in this question.



## Section B

### ***Specific comments on Section B Issues Analysis: Water Resources in the Himalaya***

Section B focused on water resources in the Himalaya region of Asia. This topic, and the region, seemed to be relatively familiar to many and there was generally good understanding of the resources candidates had been asked to study. Most candidates made reference to the full range of materials in the booklet and there was better use made of the 'Views' in the resource booklet than in the past.

A small number of answers did not focus on the resource booklet very much at all and instead answered the questions largely with reference to another region entirely – most often California. This extreme form of synopticity is not good exam practice as it cannot demonstrate an understanding of the material in the resource booklet which is one of the skills being assessed.

Overall, the quality of answers was good and most candidates separated the 3 linked questions and wrote different answers to each. There was evidence of detailed synoptic research and making wider links from a significant number of candidates. The vast majority wrote three full answers to 6(a), 6(b) and 6(c) and timing issues were rare. When candidates run out of time they may use bullets or try to complete a plan, both of which will be marked and some credit given for relevant, clear material. There are a number of ways centres can prepare for Unit 3 Section B:

- make sure candidates know the resource booklet well before they enter the exam; time should be spent in the exam looking for the right resources to refer to
- make sure candidates understand the sequence of the resource booklet; it is usually organised into sections either with sub-headings or by topic, and questions normally focus on one section (with links to others)
- prepare synoptic ideas by researching using the websites provided (and others), thinking about the relevance of models, concepts and theories, considering parallel and contrasting examples from other parts of the world, and linking to concepts and content in other AS and A2 units
- consider the wider geography of the region in terms of development, physical features, culture etc.

## **Question 6 (a)**

This question was similar to other 'opening questions' in Section B from previous examination papers in that it asked candidates to provide an overview of the physical and political reasons for water supply in the region being at risk. It was important that candidates recognised that this question focused on water supply *today*, rather than *future* threats (the focus of 6(b)).

The words political and physical were interpreted reasonably well on average. Political issues were perhaps more obvious and tended to be dealt with slightly better than physical risks. There were clearly areas of conflict / dispute in the regions between countries that have to share trans-boundary water courses. Many candidates were able to explain how these disputes might involve water 'rights'. Examples used most commonly were the situation between India and Bangladesh in relation to the Ganges. Some answers approached the question from the perspective of the rising geopolitical / regional influence of China (and India) as potentially destabilising in the region. Synoptic examples were seen, such as reference to water disputes in the Middle East and Central Asia.

There was a tendency from some candidates to drift into human demand issues which was not the focus of the question, unless it was related to the limited physical supply.

Physical factors proved more problematic. While many were able to discuss the trans-boundary nature of rivers, and possibly aquifers, most focused on the future threat of climate change and the situation of the glaciers in the region i.e. the threat of melting. Perhaps more relevant, but less often seen, was the current dependency on seasonal meltwater and the fact that much of the region's water is locked in ice in inaccessible mountain regions. Perhaps surprisingly, the extreme aridity of some areas and the highly seasonal monsoon rains were referred to less often. Many candidates considered annual rainfall variation, monsoon timing or even movements of the ITCZ to be only relevant in the context of global warming whereas this variability has been present in the past as periods of severe drought and flood. Stronger answers commented on the fact that the NW part of the region often suffered from physical shortage whereas the SE is much wetter and physical shortage is rare. This was, however, rarely seen in the responses to this question.

This example is part of a Level 1 answer to Question 6 (a).

a) In California, for example, its physical geography of being a natural desert is ~~putting~~ putting water at risk. It suffers physically from a lack of water because of the mountain range in the North of California that makes the South become an area at risk of a lack of water supply. The mountain range acts as a rain shadow therefore putting the supply of water to the 80% of the 37.7 million people that live in California at risk.



**ResultsPlus**  
Examiner Comments

This example of an answer to Question 6(a) begins on the wrong track by focusing not on the region in the resource booklet but on California instead. This Level 1 answer demonstrates very little understanding of the water issues in the Himalaya region.



**ResultsPlus**  
Examiner Tip

Whilst reference to other regions and examples is useful in order to 'be synoptic' what is needed are brief references not the extreme form of synopticity seen in this example.

This example is part of a Level 3 answer to Question 6 (a).

a) The Himalayas provides the 10 countries shown with their water needs, with huge river basins which are transboundary in nature. The physical factors that put it at risk is due to the fact 80% of their rain only occurs in 4 months, the Monsoon season, due to the ITCZ migration. This means in the North Hemisphere summer there is a low pressure over the Himalayas which brings in moist air off the Indian Ocean which results in precipitation. This large amount of rain occurs over a short period of time which could cause floods and therefore water contamination. These basins are a large majority of these basins are flat and low-lying this means due to the consequences of climate global warming and rising sea levels, the impact could be huge.



**ResultsPlus**  
Examiner Comments

This response to Question 6(a) gets on with the answer without any fuss, and makes reference to the trans-boundary nature of rivers as well the seasonality of rainfall, the 'ITCZ' (ITCZ) and the risk of flooding. A good range of physical factors.



**ResultsPlus**  
Examiner Tip

When a question has two key words such as 'political and physical' make sure you write a balanced answer that deals with both.

## Question 6 (b)

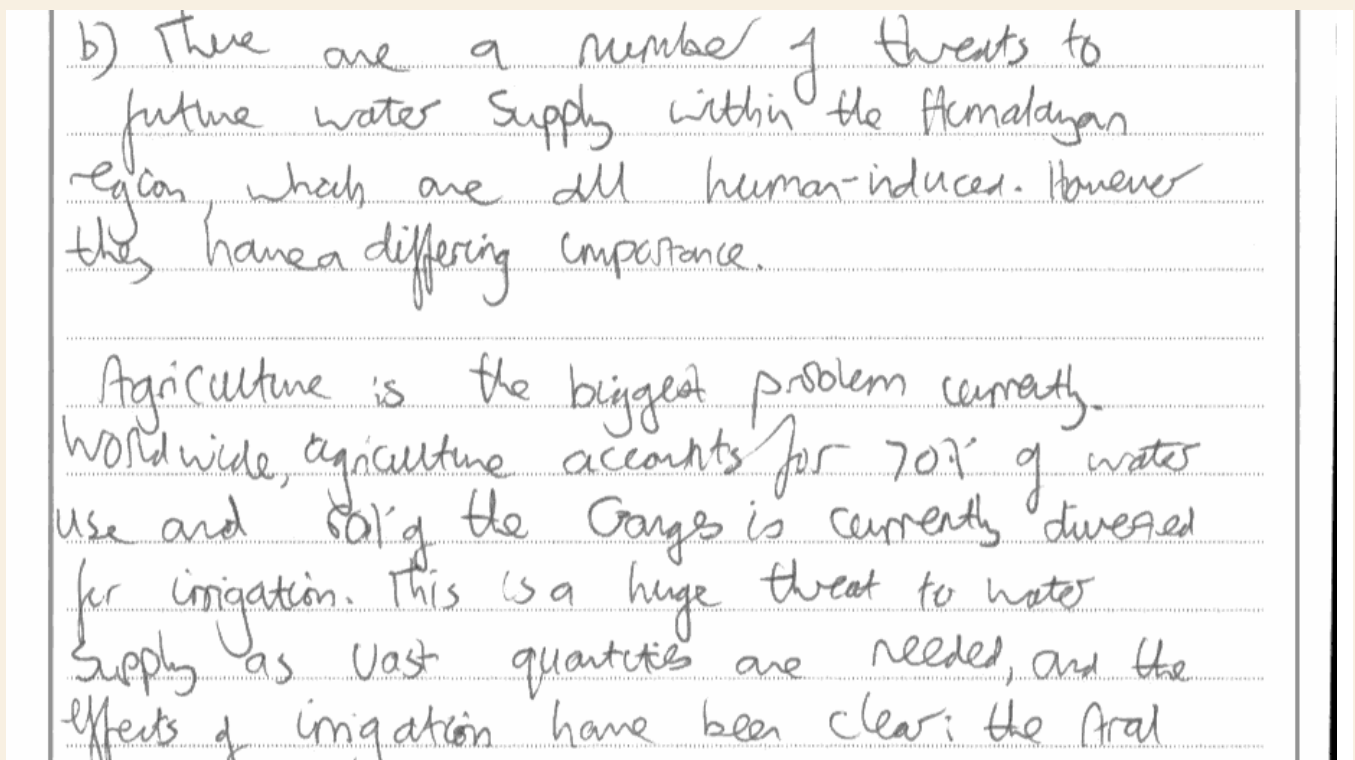
The second question in the sequence focused on future threats to water supply in the region. There were many good answers to this question. Most were able to identify a range of threats such as:

- high levels of population growth in some countries, increasing demand
- the industrialisation of some countries changing water demand and increasing it, often with impacts on water quality as well
- the changing lifestyles of consumers as development occurred; there was good knowledge of the nutrition transition and the water demands of diets becoming more western
- rapid urbanisation and the problems of supplying growing slums, factories and residential areas.

Better answers tended to recognise that different threats applied to different countries and that some countries could experience multiple threats and were therefore at greater risk. Climate change was usually considered and often in a reasonably balanced way. Synoptic examples were seen frequently with reference made to retreating glaciers in the Andes and rising demand in the American SW.

What was lacking in some answers was an evaluation of the *relative importance* of the threats. Most candidates presented a range of threats but many stopped at that point and failed to go on and discuss which threats were the most important for particular countries. In some cases candidates recognised that some of the threats were easier to manage than others and were therefore less important. Some recognised that climate change presented an uncertain, but possibly severe, threat because some of the countries in the region could have little influence over it. There was a general consensus that rapid urbanisation represented a severe threat to many areas. Weaker answers tended to rework the issues they had covered in 6(a) and therefore lacked a focus on the future and / or drifted into the solutions which formed the basis of 6(c). Separating the questions out in Section B is very important to overall success.

This is the introductory section to part of a Level 4 answer to Question 6(b).



Sea shrank by 50% due to cotton-farming, and has been called the biggest ecological disaster in the world. Many of the countries in the region depend on agriculture, such as Laos and Cambodia who have huge rice bowl developments. Indeed almost 100% of Cambodia's water use is for agriculture, showing how it is a huge threat to water supply.

However it is not such a threat for the future. The BRIC countries in the area (China and India) have changed their food demand to be less rice-based and more based on meat, as the middle classes increase in number. Animal feed is thus imported from places like South America, and there is less need for huge rice farms which are water-heavy. This may suggest a reduction in agriculture in the future. Despite this, other countries, especially in South East Asia are and will be heavily dependent on agriculture in the future as it is such a large part of their economies. ~~Therefore~~ Agriculture as a threat to water supply will vary spatially and temporally in the future.



### ResultsPlus Examiner Comments

This example of an answer to Question 6(b) has a brief introduction which shows an understanding of the question, followed by a section on agriculture and the synoptic example of the Aral Sea; in addition there is some evaluation of importance and an interesting perspective on changing agriculture in the region.



### ResultsPlus Examiner Tip

Some might question this candidate's argument about changing farming in the region, but the statements are explained and there is clear evaluation – which is what the question is asking for.

This example is the conclusion section to a Level 4 answer to Question 6 (b).

To summarise, it is evident that the most important threat to future water supply is climate change, as the effects of it will only get worse, and this one factor ~~causes~~ ~~will~~ contributes to multiple threats of glacial retreat, floods and droughts. The next most dominant threat is population growth, because although the population in the region is rocketing, there may be some means to control it in future, and also population growth contributes to other factors such as industrialisation and pollution, and these threats can be lessened by developing suitable solutions.



**ResultsPlus**  
Examiner Comments

This example answer to Question 6(b) is the conclusion. It makes a clear judgement about climate change and recognises that this brings further multiple threats. The importance of population growth is considered too, plus some threats are recognised as being manageable.



**ResultsPlus**  
Examiner Tip

When the question uses the command words 'assess' or 'evaluate', always try to include a final conclusion and make a judgement.

## Question 6 (c)

A key starting point for this question was to consider what might constitute a '*sustainable water future*' for the region. This is different from '*a sustainable environment*' or '*sustainable development*'. Many candidates would have provided more convincing answers if they had considered the focus for sustainability in the question. In many cases answers considered the pros and cons of the three projects / schemes but only in very general terms and without a clear link to the issues of water supply which they had identified in Question 6(a) and Question 6(b). In some cases very detailed accounts of the costs and benefits of synoptic examples, such as the Three Gorges Dam or Aswan Dam, were presented but often with very little consideration of how these projects had affected water supply.

The 3 options were generally understood well. There was a reasonably positive view of the Practical Action MUWS scheme and it was often considered to be '*sustainable*' at least in development terms. Better answers moved on from this and recognised the fickle nature of NGO funding, the small-scale nature of the scheme in relation to the water supply issues of the whole region and, crucially, the essentially rural / mountain based nature of the scheme – could it be applicable in the water insecure megacities of the region? Many argued convincingly that it could not. There were a number of parallel examples used from other NGOs as well as evidence that candidates had used the Practical Action website to further their research and add in additional details. This was pleasing to see.

There was a bit of an issue with some candidates spending far too long weighing up the pros and cons of MUWS and basically being forced to briefly describe the MRC and dam because they had mis-judged their timings.

The ins and outs of the MRC situation were generally understood well and most were able to make the point that without China's co-operation, what on paper appeared to be a good scheme, was unlikely to work. Some synoptic parallels were made with the Colorado River, Indus River and other agreements (the Nile was rarely seen) although these tended to be presented in a rather uncritical way as in '*another example of an international agreement is....*'. Occasionally somewhat more tenuous parallels were drawn with agreements such as Kyoto; which it was sometimes claimed '*China refused to sign*'.

The parts of answers that covered the dam tended to be the most descriptive and reliant on the resources. Further examples were introduced such as the Three Gorges but often these fell back on long descriptions of the social, economic and environmental costs and benefits of this approach to securing water supplies. Better answers related dams to the idea of a sustainable water future by considering the possible impact of future climate change on dams and their tendency to improve water supply for some, but not all.

Somewhat disappointingly many answers stopped at this point i.e. they considered each scheme but failed to make a decision about which was best. Examiners look forward to reading candidates' judgements and candidates should not fear to present them. Sitting on the fence e.g. '*all of the schemes can make some contribution*' is safe but not the end point of a genuine evaluation. Lastly, it was very unusual to see candidates come up with their own option (desalination, water conservation etc) even though they had been consuming the resource booklet for some time and had plenty of time to think of alternative ways to secure the water future of the region.



This example is the conclusion to a Level 4 answer to Question 6 (c).

In conclusion, none of these management schemes are perfectly sustainable for water future. The ~~B~~ bottom up intermediate technology is perhaps the most sustainable on a small scale in the long run and to promote development but it fails to address an energy need. Although dams are positive they can also have very negative impacts notably on geopolitics and 45000 dams currently can't withstand a rapidly advancing hydrological cycle which may question their sustainability. ~~It~~ International agreements would be a good approach to share the water equitably if every country involved was a signatory and abided by the rules, ~~however it doesn't necessarily~~ and it could regulate the use of dams in a positive way for a sustainable water future in the region for all countries not just the big ~~it~~ key players such as China.



**ResultsPlus**  
Examiner Comments

In this conclusion to Question 6(c) all 3 management options are referred to and the conclusion provides a final evaluation, although the candidate does rather 'sit on the fence'.



**ResultsPlus**  
Examiner Tip

Try not to rush your conclusion. Notice that in this example 'energy' is mentioned and the comment about the 'hydrological cycle' could be clearer which undermines what is a decent attempt to draw the answer to a close.

## Paper Summary

There were many good answers to the questions on this summer's Unit 3 Contested Planet paper in both Section A and B. Performance was similar to past series. Going forward, centres might want to consider the following points:

- It is very important that candidates, especially ones who struggle with timing anyway, do not become side-tracked by one of the 10 mark '(a)' questions in Section A. Some candidates write 5 or 6 sides as their answer to one of these questions – almost invariably they run out of time.
- Although not an issue in every series, 'last question syndrome' did afflict some who scanned the whole of Section A, didn't like what they saw and decided to just do Question 5 anyway. Many would have been better advised to look again at Questions 1 - 4. Just because many candidates are avid consumers of technology is not a good reason, on its own, to attempt the 'Technological Fix?' question.
- As has been said before, often a brief summative paragraph using evaluative language would be enough to lift some out of Level 2 and into Level 3 in the 15 mark '(b)' questions in Section A. Simply describing case studies will not lift candidates into Level 3 or 4.
- Planning needs to be considered carefully and a balance struck between too little and too much.
- Candidates should always try to recognise the different situations, problems and circumstances of the countries in the 'region' that forms the basis for Section B. Usually, one solution does not fit all and the same issues are not present in all countries.

## **Grade Boundaries**

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