

GCE

Edexcel GCE

Geography B (8215/9215)

This Examiners' Report relates to Mark
Scheme Publication code: UG 017957

Summer 2006

Examiners' Report

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Summer 2006

Publications Code UG017957

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General Comments

In general this was marginally more accessible than the previous summer's paper, with a higher mean mark overall. The resources used did offer a good deal of variety including diagrams, two photographs, an OS map extract and (for the first time on this paper) a cartoon. Whilst maintaining the balance of assessment objectives, there was again some conscious effort to make skills and the application of knowledge and understanding more discrete in this paper. This led to some 'different' and hopefully more differentiating tasks, as seen in question 3(a) and 5(a). The essays in part (c) were perhaps not all of equal difficulty, but when these were related to their mark schemes and to other items, they produced five comparable questions.

The paper seemed to deliver a good range of performance with question 4 being most popular. Many candidates showed good understanding, whilst weaknesses were apparent in skills and knowledge. Some did not use the resources provided effectively, and lost marks in what were relatively straight forward data response tasks. In the essays, whilst many candidates were able to make appropriate choices regarding case studies, details of locations were at times vague or badly confused. This remains a problem at AS. There was some poor use and understanding of technical terms like *discharge*, *physical* (rather than human), *arable* and *ecosystem*. Additionally *risk assessment* and *sources of information* were problematic. The overall impression is that candidate performance is polarising. Whilst some centres continue to produce outstandingly good work, students at other centres seem increasingly less capable - in terms of examination technique, knowledge of material and QWC.

Question 1

1a) Study Figure 1 (a) in the resource booklet. It shows the upper course of a river in Snowdonia.

Describe the main features of the river bed and valley sides

Most candidates were able to describe some features of the river bed usually focussing on the large boulders, the stepped gradient and the shallow riffles and pools. Candidates were also able to describe the steep sided valley, loose rocks and mountain rock faces, with conifers growing lower down. However, others were confused about the river's location, despite being told this was the upper course.

Suggest reasons for the type of load found at this point in the river.

One of the main concerns with this question was that some candidates did not understand the term *load*. Some did not discuss the load with reference to the photograph, whilst others wanted to discuss the changes that would take place as the load progressed further downstream. Better candidates observed that '*the large angular boulders have not been in the stream bed long enough to be eroded by attrition as discharge is low, except when heavy rain fills up the channel and traction carries them downstream. In fact many will only recently have arrived from the valley sides as rockfall, another reason why they are angular in shape*'.

1b) Study figure 1 (b). It shows how river channel variables change downstream. Describe how channel characteristics and water velocity change downstream.

Many candidates were able to pick up full marks on this question, usually describing all 5 channel variables, even though discharge was not required nor credited.

Define the term discharge.

A majority of candidates was able to define *discharge* competently or include units or a related equation. Others only considered volume of water. Some do still confuse discharge with sediment load.

Suggest reasons for the downstream changes shown in velocity and discharge.

Most candidates were able to explain why velocity increases downstream with improved efficiency and channel smoothness. However, many described increased discharge as being due to the wider and deeper channel and not due to tributaries or the increase in effective catchment area. Two responses illustrate this difference in quality.

‘As you move downstream there are changes in velocity and discharge. Normally velocity is affected by the shape of the channel and the amount of water in it. More water means more speed. Discharge can be affected by the amount of tributaries and the precipitation in the drainage basin’.

In contrast this second response is more accurate and uses clearer explanation.

‘Velocity increases downstream because the bed of the stream gets smoother and there is less friction. This increases the channel’s Hydraulic Radius and it is more efficient. Less energy is also being used as the load is smaller. Discharge increases because there is more water in the channel because tributaries join the river and the area of the drainage basin collecting water is getting bigger.’

1c) With reference to named examples, explain how physical factors influence river discharge.

Most candidates were able to describe several factors affecting discharge such as precipitation, evaporation rates, and interception, or the effects of steep slopes and differing geology. Others discussed seasonality and river regimes. A variety of rivers were used, from international rivers like the Mississippi and Nile to British rivers like the Severn and Valency (Boscastle). The Rhone was considered an interesting case study. A few candidates were unfortunately distracted by sediment load, or the impacts of urbanisation and river management strategies, which were not relevant to this question.

This is an example has good range, as the candidate tries to link together facts and factors:

‘Relief is one important fact, as not only do high mountains cause more precipitation but they create steep slopes which lead to quick and increased surface runoff. Rivers with steep long profiles produce steep hydrographs. Impermeable Geology is another factor which leads to increased discharge. Many of these factors operate in areas like mid Wales where the rivers Severn and Wye begin. Not surprisingly parts of these systems such as at Shrewsbury, suffer high discharge and flooding events. These occur seasonally, perhaps when snow melts in the spring or continuous rain falls in winter. Previous ground conditions also matter as soil already saturated will increase surface flow and stream discharge. Discharge differs between the Severn and Wye because the Wye catchment has large stands of fir trees near its source. These intercept the rainwater unlike the moorlands of the Severn and so reduce the threat of flooding. Discharge increases dramatically at confluences where tributaries often cause flooding.
Rivers like the Rhone show how all of these factors showing the importance of mountains, snowfall and a long catchment. The way that discharge changes not only through the year, but also as you travel downstream, is called a river regime. Rivers like the Rhone and Nile show how physical factors influence the pattern of discharge.’

Question 2

2a) Study Figure 2 (a) in the resource booklet. The photograph looks across a river valley in the Pennines, after a period of heavy rainfall. Describe the landforms shown.

Most candidates were able to identify the meanders shown and make the assumption of an oxbow lake. The term floodplain was a surprising omission by many. Surface retention was also noted. More able candidates identified the levees and micro-features such as river cliffs and meander cores.

Choose one river landform shown in the photograph and explain how it has been formed.

Candidates commonly concentrated on meanders or oxbow lakes though the diagrams drawn to illustrate these answers were often not accurate or well annotated. Most were able to explain meandering in terms of changes in erosion, deposition and channel flow. Some incorrectly linked meandering to variations in hard and soft rock. Candidates understood how rivers cut off meanders to form oxbows and new straighter channel forms, but did not fully explain how deposition then closed off and abandoned the old channel. Levees and floodplains were also attempted but less successfully.

Suggest how land use in this valley may be influenced by repeated flooding.

Most candidates were able to describe how building would be limited due to repeated flooding. Many candidates also identified that the land could still be used for agriculture, perhaps aided by flooding which leaves fertile silt on the floodplain. The terms arable and pastoral were often confused in this situation though it was good to see links with wetland ecosystems and recreational land use.

2b) Study Figure 2 (b) in the resource booklet. The map shows the proposed site of a small dam and reservoir in the same valley as Figure 2 (a). Using both resources suggest why this site was chosen.

Many candidates described how the site would provide recreation and water supply for the surrounding settlements rather than focussing on the low population levels, the already flooded land and the physical characteristics of the site (flat bottom, valley sides, narrow site for small dam). There was some confusion over how a dam might help prevent flooding whilst a reservoir would itself flood the valley. The concepts of up and downstream again caused problems. An example of a typical sound response was:

‘This site was chosen because the valley itself provides natural walls that could hold a long narrow lake. The dam need not be large and this would save money. The land use is not of great importance and is mainly agriculture. There are few buildings and no villages in the way. The lake could bring recreation to Settle and other towns.’

Using evidence and your own ideas, suggest why the scheme was abandoned.

Many candidates performed well here and were able to identify how the reservoir would flood the transport links in the area and would be a threat to the sewage works, and at least one group of buildings. Loss of farmland would also lead to conflict with and between local people. Evidence from the OS map extract was used by most, but only referenced by more able candidates. Comparing two contrasting responses may help show how candidates gain or miss out on marks.

'Two roads will be flooded cutting off communication between villages and flooding the farmland.'

'The map shows that the railway line will have to be closed or moved and roads linking villages like Rathmell and Wigglesworth will be lost. Villages on the east side of the valley may lose the main A65 road as well. Landowners will need to be compensated for loss of land and farmers for their livestock. The costs of the scheme will be greater than the benefits.'

2c) Referring to named examples, examine how river floods can be managed without the use of dams and storage reservoirs.

Many candidates were able to identify a range of management strategies including both hard and soft engineering on a range of rivers. Although there was variable success with the question, there were no specific problems. In-channel engineering, sustainable management and catchment plans were all in evidence. There were some excellent Mississippi, Santa Clara and Rhine case studies along with accounts of the rivers Cole and Kissimmee. A good example of this follows:

'In Keswick, Cumbria, the flooding of the river Greta was a major problem and in 1985 significant damage to homes, businesses and vehicles occurred. A number of schemes were planned to manage future floods. One proposal was to divert the river and bypass the town, and build a weir to regulate the discharge, but these were later considered too expensive. Instead, it was decided to use zoning, which controlled the sort of building and land use in different areas along the river. New buildings were prohibited on the floodplain but residential properties already there would receive flood warnings. 1300 metres of embankments were also built at the most vulnerable places as this was considered value for money. Homes and a pencil factory were protected by these. In the river itself, the channel was excavated to increase its capacity and material is removed from the river every 18 months at a cost of £5000. The Environment Agency considers the scheme to be a success as flooding has not caused further damage since, and the scheme should cope with a 1 in 50 year event. At a much larger scale along the Mississippi river in the USA, this banking technique, called revetment, has been used to build up the natural levees. These are referred to as hard engineering and include diversionary spillways and meander cut-offs all designed to get water away quickly. Between 1973 and 1993 even these prevented major flooding along the river. However 1993 this changed and disastrous floods occurred in the upper river.'

Question 3

3a) Study Figure 3 (a) in the resource booklet. It shows a cartoon about taking water from the Colorado River.

Complete the table to show winners and losers.

Most candidates were able to complete the table successfully, identifying California and Arizona as the winners and Mexico as the loser. However, confusion did arise as some candidates thought that the Native Indians were winners ('*they get to control the water*'). 'Farmers' was too vague a response.

Suggest reasons why there are conflicts over water use in this example.

Most candidates were able to identify the international conflict between the US and Mexico, and the varied use of water (luxury versus necessity!). Differences in farming types and the plight of Native Americans were less common responses. Whilst many candidates clearly had some knowledge of the Colorado River, few were aware of any water and land rights issues. One sound response follows:

'There is political conflict here because the river flows through more than one country. Activities upstream are holding back water and having damaging impacts downstream. The difference between the extensive modern irrigation in Arizona and the meagre salt-ridden supplies for Mexican farmers in the Bajada is a serious matter. Even within the USA, the almost wasteful use of water in California is causing much anger in neighbouring states.'

Using the cartoon and your own ideas, explain why abstraction of water on such a large scale is not sustainable.

Candidates didn't necessarily cover the issues identified in the mark scheme but did explain that water use was unsustainable due to over-abstraction - it would run out - and that water provision was clearly not equal for all users. Some centres used the sustainability quadrant to frame excellent answers.

3b) Study Figure 3(b) in the Resource Booklet. The maps show changes along the Australian coast near Adelaide.

Describe the physical and human changes that have taken place

This question was answered well with candidates identifying many of the differences between the past and modern coastlines. The more able referred to the underlying pattern or process of change.

Explain two environmental issues that may have arisen as a result of these changes.

Again, this question was successfully answered by most candidates. Many were able to identify various environmental issues with some explanation of the problem. Pollution, loss of habitat, coastal management and land use pressures were all tackled well.

3c) With reference to either a river ecosystem or a coastal ecosystem, examine how human pressures can change natural environments.

Most candidates chose to discuss coral reefs or sand dunes for coastal ecosystems and Kissimmee was a common wetland ecosystem. Many described a range of human pressures and how they can damage the environment or reduce biodiversity. Salt marsh and wetland made a welcome appearance here. There were some impressive answers, though disappointingly some candidates discussed river or coastal management and failed to link this to an appropriate ecosystem. An excellent example follows:

'One coastal ecosystem where human pressures can cause serious change is coral reefs. Locally in places like the Maldives, increases in population and tourism lead to change. Building facilities and hotels means that forests are cut down, and this leads to greater soil erosion. Increased sediment passes out from river mouths and the resulting lack of sunlight in the water prevents corals from photosynthesising. Pollution may be another threat in such areas. Some of this may be caused by poor waste disposal but inshore fishing (using dynamite) and fish farming can also lead to ecological change. The activities of fishermen, scuba divers, souvenir traders and pleasure craft can all damage the coral. Off the coast of Tanzania, there are the same problems but in addition coral is mined for building use and there are gas fields being developed alongside them. In conclusion it is worth reminding us that the biggest threat to coral is from the increased rate of global warming. The increase in ocean depth and temperature caused by greenhouse gases is literally drowning and bleaching the coral to death.'

Question 4

4a) Study figure 4 (a). It shows coastal cliffs undergoing erosion.

Name the processes A, B, C.

Most candidates handled this question well with the most common responses being swash, longshore drift and slumping. A variety of options were written into the mark scheme. Some carelessly got the right answers in the wrong order.

Describe how physical processes combine to erode cliffs like those shown.

Candidates were able to describe some of the processes but did not properly link them together. Longshore drift was often not discussed. Most settled for an explanation of some marine and sub-aerial processes. A few candidates wrongly described how human activities were perhaps involved (this came next). One very competent answer follows:

'The scouring of beaches by destructive waves may remove the sand and allow the cliff foot to become worn into a notch. This may lead to overhangs where rockfall and subaerial processes will lead to cliff collapses. Heavy rainfall may saturate the cliffs and landslides and slumps may also occur locally. The material that falls may then be picked up and taken away by longshore drift.'

Suggest how the human activities shown may have accelerated coastal erosion.

Many candidates identified how buildings on the cliff top would increase the pressure (structural load) leading to mass movement. Others discussed undercutting by waves or how the groynes would increase coastal erosion down coast. Drainage pipes could also be a weakness whilst footpath erosion and increased run-off were also blamed. Some candidates seemed convinced that the weight of cars, picnicking and rubbish on the beach were somehow significant.

4b) Study figure 4 (b). It shows a scheme to protect a small village from coastal erosion. Describe how the scheme would work.

Most candidates were able to gain full marks on this question by describing how the different types of coastal defence were employed for a basic mark each. Others covered less features but went on to a better explanation. Some were confused about the role of the rock infill in stabilising the cliffs or how the ramp could provide access. Some strategies, not shown on the diagram, eg. gabions and revetments, were also discussed inappropriately.

Currently the scheme is not going ahead. Suggest reasons for this.

The likely cost-benefits of the scheme were referred to by all, many making the basic point that it would be too expensive given the land value and the small size of the village. Others discussed the down coast impacts or the likely views of local stakeholders. A typical response was:

'The rock groyne at the end of the beach may cause further erosion eastwards. The new traditional groynes will help trap sand from the longshore drift and protect the cliffs. The rip rap and concrete infill will prevent storm waves reaching the cliffs and help shore them up. The bottom line is that the scheme may be too expensive as the village is very small, and the main activity seems to be only farming.'

4c) Referring to one named example of coastal management, evaluate its success in dealing with either coastal erosion or coastal flooding.

Coastal erosion was the more popular choice for this question and most candidates were able to describe a coastal management scheme at an appropriate location eg. from Holderness, Dorset, or Norfolk. Some detailed work on Mableton, Hornsea, Barton, Sea Palling and Lyme Regis was seen. However, many answers were descriptions and failed to *evaluate* the strategies as requested. Knowledge of case studies seems to be increasingly vague and often wrong in detail. Coastal flooding was attempted by some candidates citing Chiswell as a good example and Towyn less successfully.

A good example follows: notice how it has some detail and evaluates the success of the management.

'The Holderness coast has been managed against coastal erosion, selectively. Hornsea is a small holiday resort, which has built wooden groynes to hold onto its beach. Without these sands it would lose its traditional 'bucket and spade' customers. The village of Mappleton has rock groynes used to protect the small village from rapid erosion by longshore drift. This £2 million scheme has been effective, building up a sand beach. The coast road at Mappleton, the real concern for planners, is now safe, but the car park and nearby farmland are not. There are signs that the cliffs further south are being eroded more rapidly at Great Cowden, where Sue Earle's farm has fallen into the sea. At the Victorian resort of Withernsea the construction of a rip rap defence and a wave return wall has cost £6 million. The wall sends the waves back seawards while the large rocks prevent the waves from scouring the foundations of the wall. Again this may have helped Withernsea, but could have made matters worse at Easington where more rip rap has been needed to protect the cliffs there, which are the site of a gas terminal. The plant may be safe now but the adjoining village has not been protected.'

Question 5

5a) Study figure 5. It shows a surveyor's checklist. It is used to help house buyers assess the risks from coastal erosion when buying shoreline property in the Caribbean. What evidence does the photograph provide about the risk of erosion at this location?

Many candidates were able to gain full marks on parts of this question. The closeness of property to the sea and the damage to vegetation were the most common responses to this first item.

Circle the three missing scores in the checklist using the photograph.

Most candidates completed this question successfully.

Explain why the following are included in this risk assessment of coastal erosion.

Many candidates identified the importance of a beach and coral reef in reducing wave energy, whilst others wanted to discuss how beaches and coral reefs needed to be protected. Most candidates were able to explain how the *fetch* affected the size and power of the waves and therefore the risk of erosion. A definition of this term drew some reward in the mark scheme. Many candidates identified the relevant information from figure 5 for the last item but did not fully explain why it should be included. On the whole most did well on this question gaining a majority of the marks available:

the beach and coral reef.....The size and gradient of the beach are important as this controls the rate of erosion. Gentle beaches absorb the power of the waves. Coral reefs also protect the shore acting as a sort of wave break.
wave fetch.....affects wave power. The larger the distance over which the wave has formed the greater the risk of erosion when it strikes the shore.
local information.....can tell you about past events that may have made erosion more or less likely, and let you know if there are plans to protect the shoreline in the future.'

Outline two sources of information that you could use as part of a coastal risk investigation.

Whilst many candidates were able to identify some further information that might be useful, eg weather reports, hurricane patterns, local geology or planning and land use, they did not respond to the request for '*sources*'. Libraries and the internet were somewhat unimaginative, but '*the NOAA Hurricane Warning centre for information on hurricane frequency*' and '*carry out a beach transect to calculate beach sediment characteristics and profiles*' showed the ingenuity of many to this more open task.

5b) How effective is beach nourishment as a means of coastal defence.

Candidates answered this question well identifying both the advantages and disadvantages of beach nourishment. The technique's natural look, its short and long term effectiveness and its sustainability were all mentioned. A minority of candidates were confused about what beach nourishment was and wrote about other forms of coastal management. An excellent answer is shown below:

'Beach nourishment has strengths and weaknesses. For holiday resorts in particular it is the best looking solution. Sand can be brought overland or even better pumped from at sea. Drawbacks include interfering with the natural processes and ecosystems both at the source site and where it is placed. It is also expensive to start and to maintain. Miami Beach famously spent \$60 million on a scheme in the 1980s. Over half of the sand was washed away quite quickly but then stabilized to leave a significant beach in place. This was worth the cost as the beach protects over \$6 billion of hotels and real estate.'

5c) Referring to named examples, examine the effects of rapid coastal erosion on people's lives.

This question produced the most extreme levels of response - some excellent: many poor. Successful candidates were able to identify a range of impacts on people including loss of homes and livelihood, as well as stress and impacts on coastal planning. Many answers covered Holderness, Christchurch Bay or West Africa. There was however more to the question than Sue Earle or Janet Foster, though the loss of jobs and homes was as far as some got. Social, economic, political even psychological pressures are all likely to be involved. Some candidates disappointingly, saw little difference between this essay and that in question 4. The example below shows one detailed and wide ranging answer:

'The Lyme Regis coast along the Devon/Dorset border is undergoing rapid erosion. Many local businesses are in jeopardy not just because they are being undermined by the sea, but because tourists do not want to visit beaches where there are large engineering works or worse still collapsed sea walls and landslips. Cliff falls threaten hotels, restaurants and homes making it impossible to insure or sell property. On the Yorkshire coast farms, homes and a gas terminal are being eroded just as quickly. Cowden Farm and Easington are on a clay coastline and the erosion by waves could take away many jobs, especially at the Centrica plant where a pipeline now brings gas ashore from Norway. Defences in resorts like Hornsea and Withernsea will hopefully prevent further decline. At Spurn Head there is no protection and storm waves threaten to break through the neck of the spit. This will mean that the coastguards, lifeboatmen and their families who live on the spit will have to move and may lose their jobs.

On a much larger scale the people of West Africa face the same sorts of problems as the city of Keta in Ghana is also being eroded by longshore drift. In neighbouring Togo, docks in the ports of Lome and Kpeme are being worn away and the holiday resort of Tropicana is losing its beach. In Benin the coastal oil wells are now at risk. All three of these LED countries cannot afford to lose their valuable export and tourism incomes.

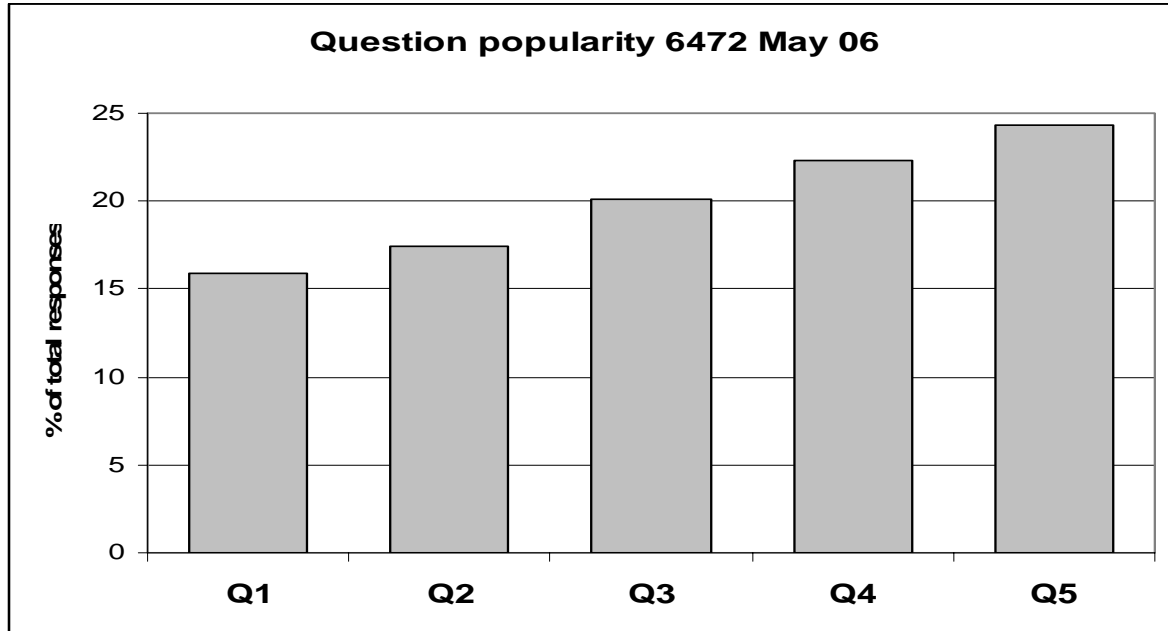
Recommendations for candidates

Some suggestions that might improve your (candidates') performance are listed below:

- ◆ Focus on what questions are about. One way to improve this on the day is to underline key words, especially the command words like '*evaluate*' or '*examine*'. At a simpler level it may well be that '*describe*' and '*explain*' appear in separate questions, and it is all too easy to waste time and marks not noticing this before writing your answer.
- ◆ Data response questions, though often quite short, can yield valuable marks. Look closely at the start of the question, the resource heading, or its key, so you do not miss out on what the question is about. Remember, you may see diagrams, maps, photographs and tables, even cartoons.
- ◆ Essay items carry one third of the marks at AS, so it is important to do well in these. First be sure you know what the essay wants. Next decide which case study or case studies would be appropriate. Try to link each point you make to evidence you know. Finally only use those parts of what you have learned that are relevant.
- ◆ In preparing for the examination you should consider some of the following strategies:
 - Know your way around the exam paper. Questions 1 and 2 are rivers, 4 and 5 are coasts and 3 is a hybrid. Each question will have an (a), (b) and (c) format. Make sure you can do the essay as well as the data response items in the three questions you choose.
 - Collect a range of different resources and brainstorm what they show. Remember to cover landforms, processes, links with people, and management. This is a good skill to practice throughout your A level course. It will improve your skill and understanding.
 - Get together a list of previous examination essay titles and discuss with colleagues what the titles want you to do, the best case study to use and which topics come up most often.
 - Improve your knowledge by going through the facts of examples and case studies, by testing yourself on key terms, and by looking through the ideas listed in the specification.
 - Finally avoid showing your weaknesses. Try to use skills you have, ideas you understand and facts you have learnt. Making your answer easy to understand and read also helps. Your exam paper will probably be marked on-line so try to write in the spaces provided. Things may go wrong in part of the exam, or you may have to use extra pages - if so, make sure the examiner understands what you have done.

General Comments

This paper proved accessible to candidates of all abilities, and all questions were attempted in good measure as the graph shows. The urban questions (Q4 and Q5) proved the most popular:



Performance on the paper varied considerably, as is to be expected. However, some general points have emerged which should be addressed by centres wishing to improve overall performance:

- **Rural case studies** lack focus. Q1(c) asked students for a 'named rural area' in an LEDC. Many responses were very vague and not at an appropriate scale. LEDC rural area knowledge is often generalised and stereotypical, rather than place specific and sensitive to different cultures.
- The **use of language**, particularly the precision with which terminology is used, remains a barrier to success for many students.
- **Use of the resources** is often cursory. This was especially the case with Figures 3(a) and 4(b), where many candidates failed to observe carefully and be analytical.
- Many candidates penalise themselves by failing to address **command words**, especially where two appear in one question, as in Q5aii. Many failed to describe, and simply launched into an explanation.
- A minority of candidates '**prepare**' answers to expected questions. Whilst frequent use of past papers is a key element in success, over-preparation is dangerous. This was seen in candidates' descriptions of sustainable urban management in Curitiba in Q5(c), which did not meet the requirements of the question.
- An issue on several questions was confusion over **temporary and permanent population change**. Second homes / holiday homes do not contribute *directly* to permanent population change and are an inappropriate *direct* explanation for counter-urbanisation or rural decline.

Comments on individual questions

Question 1

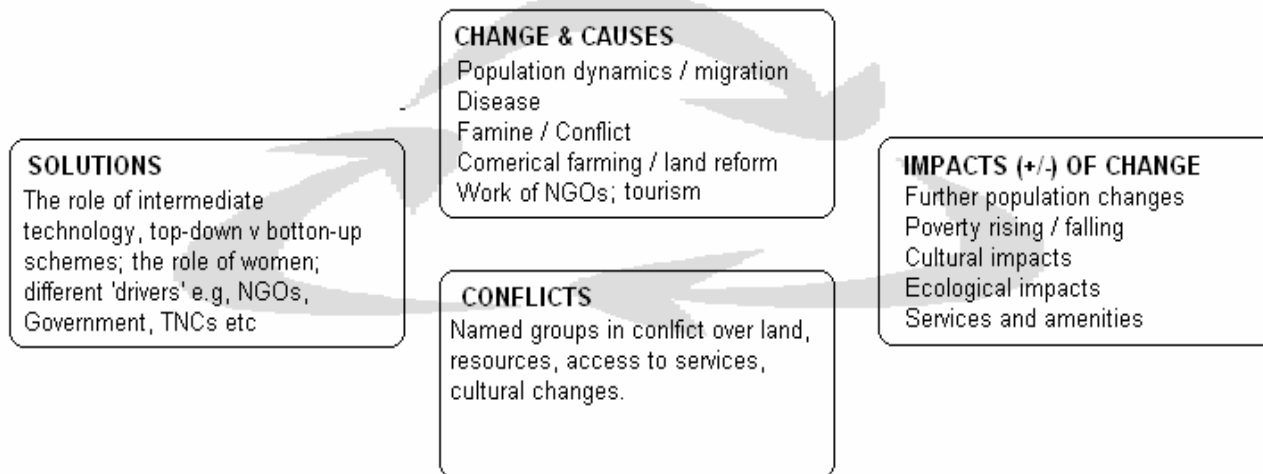
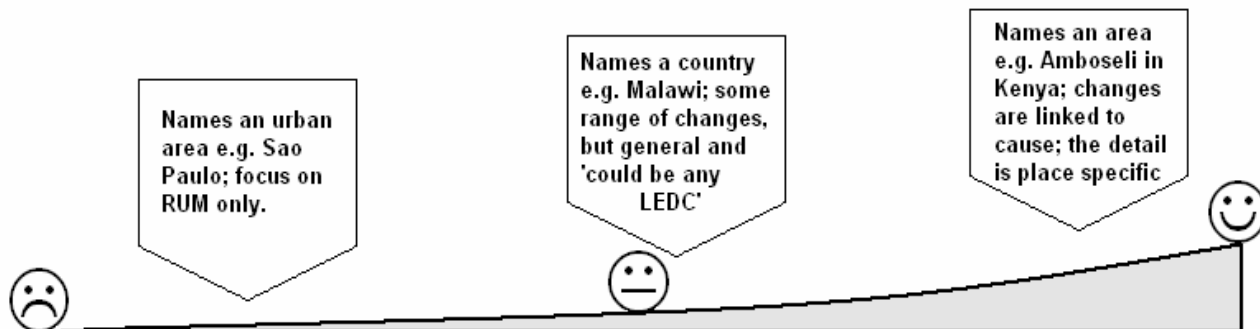
- (a) The vast majority of candidates could name two characteristics of a rural area, however many focussed on a population size definition such as *“an area containing fewer than 10,000 people”*. In fact this is the Countryside Agency definition of a rural settlement, whereas the question asked for a characteristic of a rural area. Many candidates could pick up easy marks by sharpening up their response to very short questions like this, by moving away from responses such as *‘green areas’* and *‘little population’* towards *‘an area with a low population density’* or *‘an area with a high proportion of employment in the primary sector’*.

Most candidates could suggest reasons for population change in rural Scotland. The best focussed on the isolation of the Western Isles: the lack of investment and opportunities, and changes to population structure resulting from an ageing population and low birth rate. Realistic reasons for growth included counter-urbanisation of young families. A number of candidates simply reversed their response for decline and growth, which is necessarily generalised and not good practice. Some candidates explained urban growth, rather than rural growth as indicated in the resource and question.

- (b) This question differentiated fairly well, as some candidates linked their comments on the three schemes to reducing rural decline, whereas others just described the potential benefits. Most successful was the Hi-Wide broadband scheme which candidates explained in terms of tele-working, shopping and reducing decline by encouraging business start-ups and reducing the feeling of isolation. In bii, again, many did link their proposed data collection to rural decline, but many did not and simply listed a range of data types without further explanation. Many marks could have been gained by a more careful reading of the question in both parts.
- (c) This was the least well answered of the part ‘c’ questions on this paper. Two very common issues were the naming on an urban area (often a South American megacity) and the naming of a country. In the former, there was often some mention of rural urban migration but little else on the causes of rural change, and in the latter there was a range of general causes such as poverty, deforestation, HIV/Aids but little or no depth. The diagram below illustrates a range of typical responses from weak to very sound:

Good case studies of LEDC rural change can be hard to come by. A suggestion for centres wishing to take a different approach would be the Practical Action website (<http://www.itdg.org> - formerly the ITDG) especially the sections on Sudan and Nepal. Research using this website might follow the structure indicated below, to build up detailed case study material which would cover a wide range of LEDC rural questions: The diagram below illustrates a range of typical responses from weak to very sound:

The diagram below illustrates a range of typical responses from weak to very sound:



The response below is an example of one which identified a range of specific changes and causes:

1(c): Traditionally, rural life in the Kenyan Highlands has been of small tribal units living with a dependence on the land and its resources. The Masai tribe for example, have always been nomadic farmers, herding their livestock and moving around the highlands to live and hunt. However, rural changes in their homeland have included the invasion of TNCs (trans-national corporations) and excessive changes in climate causing droughts, combined with overgrazing and political pressure, which is threatening the nomadic way of life, forcing them to be confined to fewer areas, and eventually cease their way of life for good. Government sponsored game parks have been developing in the area, meaning that although wildlife is preserved, the Masai tribe have been forced to stop hunting for food. Their change in rural life has been so great, that they are now forced to learn to become sedentary farmers, living in shanty towns in the Kenyan valleys. Similarly, nearby the Highlands, close to Mount Kenya and Nairobi, areas of fertile volcanic soils and plenty of rainfall have allowed the Kikuyu tribal people to practice the traditional farming technique of 'bush fallowing'. However, the progressive demand for coffee, bananas and peas means that TNCs have taken the land and employ the tribes people to work for them, for long hours and low pay. This means that rural change has also dramatically affected their lives. Because of the desire of tourists and governments to use cheap labour and meet their demands to produce, the change in this rural area has been dramatic.

Question 2

- (a) Most students were able to identify the possible costs and benefits of the dam. There were some responses which focussed on the forest shown in Photograph B, and a few that lacked a rural focus. In (a)(ii) a range of reasons was often given for clearance of the land, but too many students failed to read the question carefully which did state that the land was 'cleared for farmland'. Many drifted into logging and urbanisation as

reasons for clearing the land. Q2(a)(iii) demanded short-term benefits and long-term costs, and most students provided this and there were many good answers. Technical details of loss of interception potential, sheetwash and gullying and the need to use artificial fertilisers were often seen in responses. Explicit assessment was more rare, but many gained full marks by implying that the costs would outweigh the benefits.

- b) Generally students were reasonably clear on what is meant by appropriate technology, and many were able to identify several characteristics of it (affordable, maintainable) and some gave an example. A number simply answered the question with the question, by stating that it was 'appropriate'. A more focussed answer here often led to students doing better in 2(b)(ii). This question did ask for the use of examples, and where these were used responses tended to score highly. Other responses were vague and imprecise, with often inappropriate schemes being offered as examples '*levees such as on the Mississippi*' or '*large wind farms*', which lacked an understanding of the terminology in the question. One candidate's specific suggestions are shown below:

2(b)(ii) In Bangladesh, the Forum for Water Supply worked with local people to build wells and rain collection tanks (this is assuming the dam was built for water conservation). In the same region, a less expensive way of coping with flooding has been developed, including houses built on stilts and land use zoning.

- (c) The most popular choice by far was recreation and tourism, with intensification of agriculture appearing with regularity, and mining and quarrying a rarity. Most examples came from the UK, especially Malham, the Lakes and other well-known locations. Generally, there has been an improvement in responses to this type of question, and locational detail is perhaps more common than in the past. 'Conflicts' is often a difficult word for candidates, and many outlined problems in depth. More candidates than in the past however did name groups of stakeholders who were in conflict and thus accessed the upper level of the mark scheme. Some centres still need to sharpen up their 'conflicts', as it is a concept which appears regularly. The best candidates examined more than one area, and identified conflicts throughout.



Question 3

- (a) The rural-urban continuum concept had been learnt well by many, and they correctly defined it as a gradual change in landuse; some gave an example of a characteristic, such as building density, that changes across the continuum. Too many saw it simply as the boundary zone between rural and urban i.e. the rural-urban fringe. The latter is a part of the rural-urban continuum, but not the whole part. Figure 3(a) was too often seen as either a generic continuum or and MEDC continuum, and this had an impact on responses to (a)(ii) and (a)(iii). In 3(a)(ii) the flows were generally explained well, although Flow 3 was often seen in MEDC terms and many answers alluded to counter-urbanisation. Some clearly saw the LEDC context as in the good example below:

Q3(a)(ii) Flow 3: People migrate to the urban area due to a number of push and pull factors. There is a higher quality of life and better employment opportunities combined with unemployment in rural areas due to mechanisation and decline of traditional industries. However, people also migrate back to rural areas to visit family members or because they have been discouraged from settling in urban areas e.g Curitiba. This may be due to government incentives or poor quality of life experiences.

Flow 2: Urban areas compared to rural areas have a huge demand for food and resources due to a rapidly growing population. Also, a larger profit can be made in urban areas for farmers, and due to this they sell their goods there. There is also a large concentration of industry in urban areas and a demand for raw materials. All this cannot be produced in the urban area due to lack of space, so it is produced in rural areas and transported to urban.

The majority of candidates gained 2 or 3 marks in (a)(iii) as they had a good grasp of quality of life differences. The best candidates pointed out that this was often a perception, not matched by the reality of the sceptic fringe of LEDC cities.

- (b) The cartoon, Figure (3)(b), yielded a number of perceptive responses. At the lower end, candidates listed the roles and did not address the term 'message'. The best interpreted the cartoon by observing it closely. Some candidates contextualised the cartoon and made reference to the possibility that men were working away from home, increasing the burden for women. Students seemed interested in the cartoon, and were prepared to engage with it.

Q3(b)(i) The cartoon seems to demonstrate that women in rural LEDCs have a very labour intensive life, full of jobs of varying types from parenting to agricultural production. The cartoon also suggests that all of these jobs must be performed by women (as she is on her own) and are a substantial burden (as her back is bent over by the weight of the sack) and..

The messages are that women in rural areas of LEDCs have a huge responsibility and burden on their shoulders, metaphorically. They have so many different roles which could lead them to neglect their children which should be most important for the future of the area. In our society, women are not required to do so much, and this workload puts a strain on young women

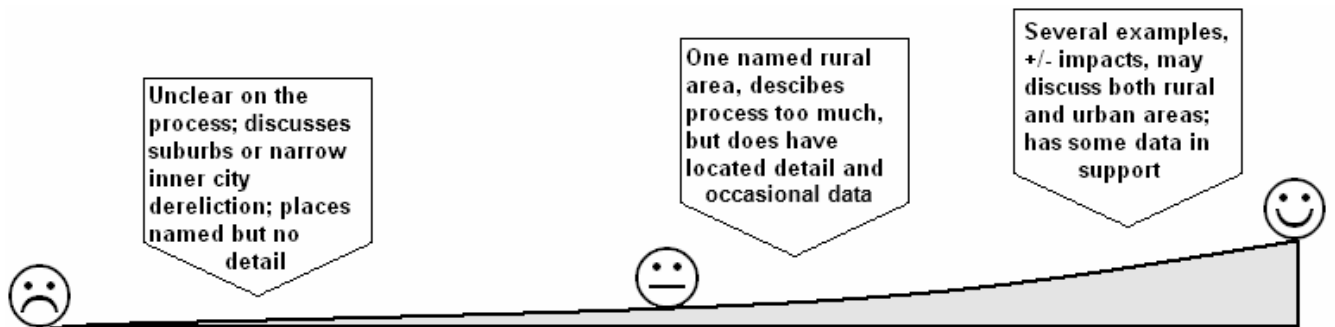
Responses to 3(b)(ii) varied considerably. The most common problem was not linking development projects to quality of life / improving the situation for women. It is clear from this question, plus Q2(b)(ii), that there is still some work to be done in centres to familiarise students with approaches to rural development in LEDCs. That said, a significant number of candidates had a range of schemes at hand which they could apply to the question:

3(b)(ii) WATER COLLECTING: By installing wells such as those in Kitunga in Uganda, which have a system of rocks built under the well to filter the water of unhealthy substances and impurities, so clean water is provided in the village itself. The women can access this without a lengthy walk and the source of water is more reliable.

FUEL WOOD COLLECTING: An alternative fuel source, HEP, can be provided by mini-hydros such as in Nepal. These not only reduce time spent cutting wood and collecting it, but reduce using up finite resources and releasing CO₂. Energy is provided right to the home and can be used in cooking and parenting by providing light and heat in which children can be educated.

- (c) This question generated some confusion as, whilst many were clear on what counter-urbanisation was, many were not. A number of responses discussed suburbanisation and more outlined the impact that second homes have on rural areas. The better responses tended to be of the Ashwell / Urchfont variety, as these generally had some data support such as population gains. Some answers focused solely on impacts within

urban areas, which were generally narrow and negative. The best answers examined both urban and rural impacts from a positive and negative perspective. Students often need practice handling the word 'impact'; those who set questions are aware that many students only see the negative side!



Question 4

- (a) It was a little disappointing that so few responses to Figure 4a focussed on the commercial and business aspects of CBDs in terms of attracting / repelling commercial activities. Most responses focussed on personal preferences and whilst this was acceptable under the mark scheme it may suggest candidates do not fully appreciate the commercial and business functions of city centres. More successful was (a)(ii), where students could relate the differing ages of residents to a 'typical' life cycle and many mentioned processes such as filtering, gentrification and suburbanisation. A common error on this question was to fail to link processes and reason to the stated average ages.
- (b) There were some good definitions of urban regeneration such as "*urban regeneration is a process funded by government and private investment whereby areas of a city in decline or with a poor urban environment are improved environmentally and economically in order to attract further investment*". As with many short questions on this paper, a weak definition was often 'saved' by the candidate using an example to illustrate their point. This can often make the difference between gaining 1 mark or 2 marks, and candidates should be coached to do this. A number of answers to this simple question were vague and simply re-arranged the question along the lines of "*it means regenerating a run down area*".

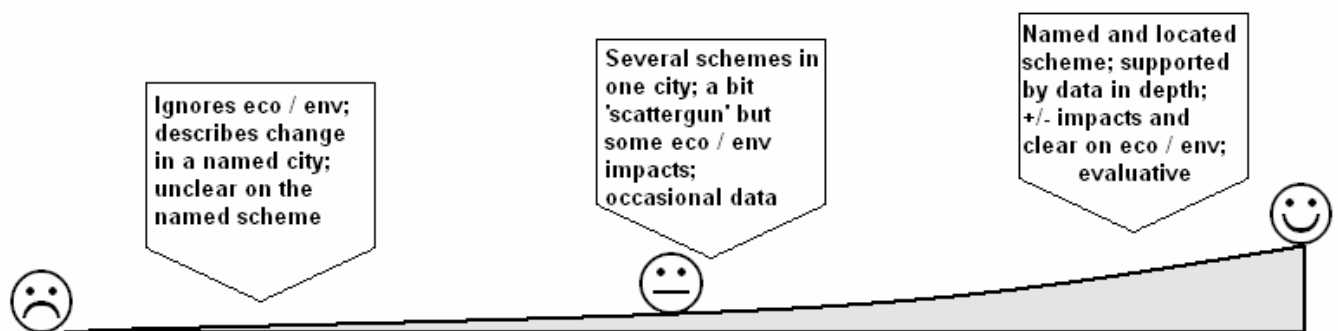
The graph Figure 4(b) was generally not analysed well. A significant number failed to use any data in their answer, and many were unsure on trends. A common mark was 2 out of 4. Students need to practice their analytical skills, and become used to looking for overall trends, as well as more subtle changes. A rule of thumb is that when the resource has hard data in it, students should quote the data in their response. Many responses read as if this was the first time the student had encountered terms such as UDC and SRB. This view was compounded by 4(b)(iii) which generated many verbose, descriptive, answers which offered very few realistic reasons for the changing priorities. Many candidates seemed to be short of real world knowledge of urban policy and its changing nature. That said, a minority did come to the exam armed with this real world knowledge and they tended to perform well across 4(b) and 4(c).

Q4(a)(ii) Between 1991 and 1997 the government decreased the amount of spending on urban development corporations i.e. reclaiming derelict land and improving transport. In 1991, they spent £820 million and in 1997 they spent only £180 million. From 1995 to 2002 the government spent an increasing amount on the single regeneration budget. Since 1991 the total amount of money spent has remained constant at around £1200 million, although 2001-02 was an anomaly as spending increased to around £1700 million. The amount of money spent on estates action has not varied as much as other schemes.

(c) There were answers to this question which were detailed and well focussed. Schemes were named and located, and many were evaluative in terms of the positive and negative impacts of their chosen scheme. The LDDC was often done in depth, and there were good examples using Manchester and Leeds. Many candidates did not get to grips with the question for various reasons:

- An 'all I know about urban change in Birmingham' was a common response; these tended to name buildings but not regeneration projects and thus lacked sufficient focus.
- Environmental schemes, such as recycling initiatives featured; these rarely contained a regeneration element.
- Transport initiatives were seen; these tended to be city-wide and questionable in terms of regeneration.
- Out-of-town shopping complexes: these could have worked but often drifted into the impacts on CBDs rather than the impacts in the regenerated area.

Overall, the question was done surprisingly poorly. The key element seems to have been the extent to which the student was able to state 'Salford Quays' or simply 'Manchester'. Poor locational knowledge was also a common failing. Many of these issues could be addressed by ½ a day's fieldwork in a nearby city, followed up by some focussed research using local newspapers, the internet (Census, RDA websites) and the glossy brochures commonly produced by 'successful' schemes!



Question 5

(a) Question 5(a)(ii) was done poorly by many candidates. The map was seen in very simplistic North-South terms, with few candidates recognising that there was a 'fair' category. Descriptions thus tended to be very cursory and of the 'above / below the Brandt line' variety. Most responses explained the pattern in terms of north-south development levels in a very general way, without reference to urban areas or cities. Worryingly, a number of candidates explained the differences in development they identified, in terms of climate i.e. hot/wet and hot/dry places lacked development. Cities such as Singapore, Dubai and Los Angeles might question this approach. Again, students' cursory use of the resource and reading of the question is having an impact on performance. L3 responses to this question were rare.

- (b) Candidates' explanations of a megacity were generally good, and a range of sizes were accepted as definitions vary on websites and in texts. A number of candidates did become confused with 'megacity', 'world city' and 'primate city', as well as with examples of megacities - Birmingham, Bangladesh and China were all suggested. The indicators from Figure 5(b) required an explanation in 5(b)(ii), which most candidates tackled well. Many linked their chosen indicator to the factors that might affect it such as linking high infant mortality to low levels of nutrition and healthcare. There were some response of the 'if it is high then QoL is low' variety, often the issue here is students not thinking about the mark allocation (3 x 2 marks) and realising they need to make an extended point. A sound answer to this question is shown below:

5(b)(ii) PERCENTAGE OF CHILDREN IN SECONDARY SCHOOL

A low % of secondary school students indicates a low quality of life, as it means basic services are not provided and people don't receive an education that would increase employability skills and income in later life.

TRAFFIC SPEED AT RUSH HOUR

High speeds show that public transport is being used effectively. Also, a low speed can cause congestion, which will increase air and noise pollution, which may lead to health problems, for instance high asthma rates.

PERCENTAGE OF HOMES WITH A WATER SUPPLY

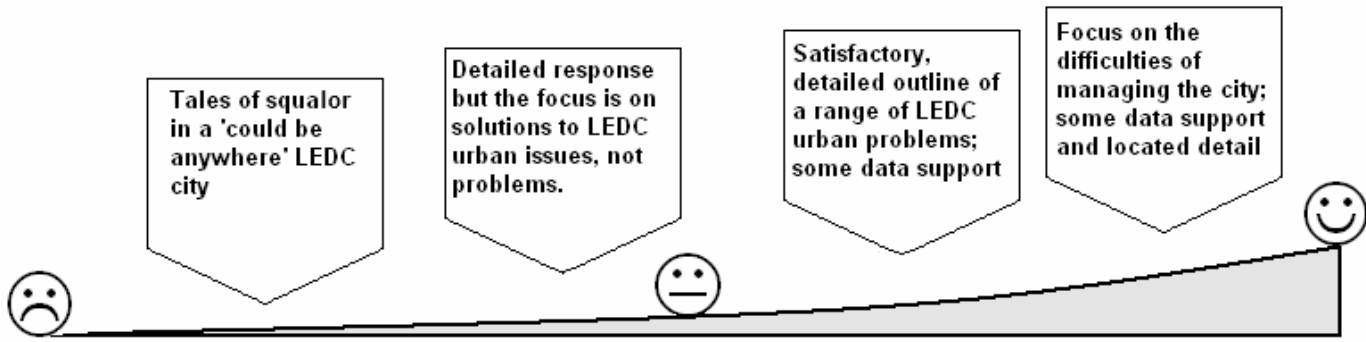
If homes have a clean water supply, it means that they are less likely to contract a water-borne disease. Disease could place them in a cycle of poverty as they can't work. A clean water supply ensures a higher quality of life.

Q5(b)(iii) and (iv) required the student first to identify a typical location of an area of poverty and deprivation in an LEDC city. Many did, but a number named a city (Rio, Mumbai) or a type of area (shanty town). Those who did this tended then to describe the characteristics of a shanty town in 5(b)(iv). A more successful answer is shown below:

5(b)(iii) Areas of dis-amenity such as steep hillsides.

5(b)(iv) Urban areas with high levels of deprivation in LEDCs are often squatter settlements which spring up in areas close to the CBD that have not been built on by others due to the harsh environment, such as steep hillsides prone to landslides. These areas have not been developed due to the dangers, but the poor will build here because it is easily accessible to the CBD, or close to industry where jobs are, so they do not have to travel.

c) This question differentiated fairly well, and was accessible to most. The key to a really successful answer was to focus on 'the challenges of managing'. This does not mean a list of problems, but rather the difficulty of controlling the problems. Many students did focus on problems, and as long as this was done in some depth a high L2 mark was possible. Some students had clearly revised Curitiba in depth, but did not attempt to 'fit' this case study to the question and consequently focussed in management solutions, which often did not work well. Students who used the 'trick' (which again, should be coached into students) of using the word 'challenge' in their answer often produced well focussed responses. In terms of case studies, Mexico City and Cairo often had supporting detail, whereas Sao Paulo and Rio were more generalised. Some case studies are becoming somewhat tired and centres may feel the need to branch out. Some 'factual knowledge' of LEDC cities is now incorrect, but appears repeatedly as if it was going to be true for all time. A case in point is the Zabaleen of Cairo and Alexandria, who have gradually been edged out of the Egyptian waste management business, which is now privatised, and has the involvement of some TNCs such as Onyx.



Moderators report that work seen is a similar standard to the January cycle and some indicate improvements have been made. Centres correctly assessed most investigations although some marks tend to be generous above 70 and a little harsh below 50. Accurate marking tends to be done by those centres highlighting key descriptor phrases or underlining on the assessment criteria form. Some centres can cause under-performance in their candidates due to the following: -

- Taking a question by question approach, which does not allow the candidate access to higher criteria marks for analysis and conclusions because the links between the data sets are rarely done.
- Allowing a lack of integration in data presentation and not encouraging more written analysis & description on graphs and charts that can help introduce more analytical techniques later in the investigation.
- Not using theory & models to underpin their ideas and explanations.
- Poor maps - particularly location maps with location dots or multi-map downloads with little, or often no, additions or explanations.
- Lack of statistical analysis or poorly applied statistical techniques e.g. no significance test with Spearman's or insufficient data.
- Teacher-led investigation with little or no variation in title/focus and very similar structure & use of techniques.
- Very brief methodology - no details of sampling procedures, pros and cons of data collection techniques. A weak table is insufficient to get a high mark in this section.
- Poor range of data representation & analytical techniques - some centres give very high marks for weak, purely descriptive analysis.
- Very brief conclusions - a few centres give high marks for $\frac{3}{4}$ of a page, which is unacceptable and may result in downgrading.

Areas of concern raised by the moderation team

Many of these issues were raised in previous years.

Administration

- Candidates should firmly attach the work together (no plastic wallets or A4 folders/wallets) and complete a cover sheet indicating: specification, candidate and centre names and numbers, data of exam cycle and title.
- Use new version of GB2 (AS) form and give all former marks for resit candidates. Check carefully for errors, especially in transcription from OPTEMS to GB2 forms.
- Teacher and candidate must sign the GB2 form and word limit should be given with reasonable accuracy.
- OPTEMS - must be signed by teacher and marks should be checked to avoid mistakes - it is the centre's responsibility to correct mistakes found by the moderator.
- Resit candidates must highlight new work and ideally produce an additional sheet with details of new work using page numbers.
- Centres must inform moderators/Edexcel of withdrawn candidates and not leave blank spaces on the OPTEMS.

Deadlines

- A small number of centres are disregarding these. All work and administration forms should arrive by the deadline.
- Not all centres are getting approval for new topics using GB1 (AS) approval forms. Some centres are choosing inappropriate titles because they are not seeking approval in advance and this practice must cease.

Word limit

- The word limit is 2500 with a 10% leeway, however, inappropriate and excessive boxing should be avoided. A few investigations abuse this regulation. Where candidates have exceeded the word limit the centre should limit QWC mark to a maximum of 6 to avoid moderator adjustment but do not penalise candidates unless it is a clear-cut case.

Title

- Must have an individual title
- Some are too large and candidates struggle.
- Should have links to unit 1 or 2 - a few are very tenuous.
- Large group, teacher-led investigations can lack variety in both focus and data collection. These can be penalising to able candidates who could be more successful with individual work.

Topics

- River based topics sometimes have as little as 3 to 4 sites when eight to ten might be better and also have limited opportunities for data collection because of a restricted title.
- Overseas topics can be very successful but suffer if insufficient data is collected, as they cannot be revisited. Need careful planning for data collection.
- Urban topics restricted to house price variation or investigating an urban model can also go wrong if insufficient data is collected. Weak candidates tend only to consider one factor or run out of ideas very quickly.
- Mainly secondary data based topics are often the least successful.

Marking

- Mark creep is a major problem above 70 - moderators will need to change marks more often if this trend persists.
- Some candidates below 50 are marked harshly.
- Major discrepancies occur when centres do not use the assessment criteria sheet properly.
- Marking one candidate at the top-end over-generously can put the whole centre at risk of a change in marks.

Improvements

- Use the mark criteria sheet more effectively in Data Collection, Analysis and Conclusion sections.
- More maps - annotated, overlays, choropleths, isolines, desire lines, located pie/bar charts. Mapping is a neglected area and maps should be used throughout the investigation, not just in the introduction. Data collection maps with annotated photographs to show fieldwork sites are one of many ways in which maps can be used.
- Better presentation - title pages, contents page, pagination, section pages, bibliography should all be in a good investigation.
- Better referencing of sources of information or diagrams.
- Simple, well-defined aims produce the best marks. Some titles are too broad or too vague.
- Sampling and sample size are neglected topics in the data collection section and more maps in this section are very useful.
- Wide range of data representation means more than just graphs and photos.
- Analysis often lacks detailed explanations.
- Answering Key Questions is vital in the conclusion. SWOT analysis can be useful but does not always work. Considering how something could be improved and before & after situations are very good ways to focus a conclusion in a satisfying way. These can also be illustrated in annotated maps.

In the near future it is hoped that a series of example materials will be available on-line for centres to use.

Introduction

Whilst most candidates produced competent performances there were a number of significant weaknesses which prevented many from maximising their potential.

- (1) The paper is a **data stimulus** paper and the resources are to guide the candidates' responses and provide a framework for their answer in the (a) part of the question. Many candidates lost marks, especially in Q5(a), by failing to write about **this** migration ie the issue of brain drain - brain gain of the teachers migrating to work in British schools. It is important that candidates really use the resource as a framework and then extend their answer by using their own ideas.
- (2) The paper requires a balance between conceptual understanding and knowledge of relevant case studies. In Q3 and 7 (ecosystems) many candidates failed to support their understanding with detailed case studies, or merely provided a series of descriptive case studies with no conceptual framework.
- (3) The paper requires candidates to write well structured well written answers with technical terms correctly spelt. Standards of quality of written communication were barely satisfactory for a significant minority of candidates and therefore marks were lost unnecessarily.

There were some strengths on which teachers should be congratulated.

- (1) Many candidates displayed a high level of world awareness, with some outstanding work on Globalisation, Q6, El Niño Management, Q2, and Bridging the Development Gap, Q8, all supported by topical case studies.
- (2) Many candidates showed good skills of resource analysis. In Q1(a) the synoptic chart analysis was frequently very competent, and in Q2(a) many candidates responded intelligently to an unusual and challenging graph. The two resources which really inspired candidates were the cartoon in Q6 and the three images in Q8 with some outstanding perceptive analysis.
- (3) Many candidates exercised care in obeying command words with some genuinely critical assessment and evaluation, for example in the Cross Unit Questions 7 and 9.

Section A

Question 1 - D Day landings and the importance of weather forecasts

- 1(a) The secret of success in this question was in linking the requirements for the D Day landing (firm ground for land movements, clear skies for airborne operations, and calm seas for waterborne invasions) with the state of the weather. Good candidates adopted a systems approach showing their technical knowledge of a depression for the period of uncertainty, and an anticyclone/ridge of high pressure for the window of opportunity/fair weather. This general overview of change, occlusion/depression decay, followed by anticyclonic spread needed to be supported by detailed evidence from the synoptic charts.
- (b) Most candidates showed good understanding in 1(a) but then were let down in (b) by a lack of knowledge of technological improvements in forecasting, and the subsequent improvement in reliability, combined with the increasing commercial value of

forecasting. Now, short term (5 day) and longer term forecasts are provided for an enormous variety of potential users. Astute candidates linked the increased reliability to this growing utility value.

The following information summarises the key factual requirements for Question 1(b).

1. Reliability has been improved by:

A. Better data collection and analysis

Over 10,000 **surface stations** collect data at 0000, 0600, 1200 and 1800 GMT. These include:

- weather ships and automatic buoys at sea
- manned and automated stations on land

In the **air**, radiosondes and aircraft collect data in the upper air while vertical wind profilers and radar (including improved radar for tracking small-scale systems such as tornadoes) monitor changes lower down.

In **space**, polar satellites (NOAA), geostationary satellites (meteosat), and geostationary and operational environment satellites (GOES) are able to measure and track systems.

The data are transmitted to weather centres, of which there is a global hierarchy. Information is collated, signals and satellite data decoded and the current data input into computer models. A **synopsis** is produced.

B. Forecasting the weather now uses more technology

- Numerical and statistical forecasting, using analogue methods that compare current trends with past records.
- Ensemble forecasting, using a variety of computer models with the input of slightly different starting conditions to predict the likelihood of, for example, snow.

2. Greater reliability leads to a wider range of users

The forecast is communicated to a variety of users. There are public forecasts, for example, by the BBC, commercial weather forecasts used by industry and commerce, and a subscription service for aviation.

The type of forecast needed depends on the user's requirements. Forecasts in decreasing order of accuracy can be:

- current – tornado watch, severe thunderstorms
- short-range – beach trip, road gritting
- medium-range – farmers for lambing management
- longer-range – retailers launching winter collections, organisers planning outdoor events, insurers.

4. Trends that lead to even more reliability and value in weather forecasting

The increasing interest in weather data interpretation by government and commercial organisations may be linked to concerns over increased unpredictability, greater occurrence of extreme weather events and the possible impact of short-term climate change.

Improved understanding of atmospheric processes and advances in technology for data collection and analysis contributes to increased reliability of weather forecasting. For example:

- new-generation satellites provide higher resolution pictures and can begin recording temperature or humidity. Remote sensing is essential for better coverage.
- new-generation radar includes upward-pointing Doppler units which provide almost continuous wind profiles from the ground to the upper troposphere. This gives greater detail on **jet streams**, which are an important influence on surface weather. This latest radar and new computer models can also track small-scale systems, such as tornadoes, providing accurate 'now' forecasts.
- new-generation computers allow speedier numerical analysis of analogue weather data and more sophisticated modelling, at economic cost.

The result is a high success rate for short-term forecasts, and the increasing utility of longer-term forecasts. Cost-benefit analyses are also increasing favourable.

Question 2 - Short term climate change

2(a) The key to success in this question was **planning**. Successful answers **described** the pattern of rainfall and temperature deviation in **both** winter and summer and then went on to suggest reasons which were similar for both. As the location was not stated all feasible suggestions for the pattern were accepted.

In terms of pattern, in short, the winters are warmer and wetter, and the summers warmer and drier, but more needed to be drawn out of the data, looking at the great variability of the winter pattern, and the noticeable trends of the summer pattern. The underlying cause for both is global warming resulting from the enhanced greenhouse effect, but individual anomalies could be linked to El Niño/La Niña teleconnexions, or oscillations such as the North Atlantic, and above all to weather systems. The extreme summer of 1976 could be linked to a blocking high, or the series of wet winters to the position of the Polar front, where depressions are generated. The more detailed the description, the more likely candidates were to attempt detailed explanations.

2(b) Whilst this was the question centres had been waiting for and there were some **excellent** accounts of El Niño complete with superb diagrams, many candidates failed to achieve the level 3 their knowledge deserved for two reasons. Firstly the question - required knowledge of the El Niño - La Niña cycle (note La Niña is an extreme version of the normal pattern) and secondly the question needed to focus on **management** not only in the Pacific but of wider teleconnexions. **Only** succinct summaries of actual causes were required, to allow time to give detail on management.

This is an example of a level 3 response.

El Niño – “the Christ child” is the reversal of the ocean currents and trade winds in the southern pacific ocean called the Walker Circulation. During El Niño years the east pacific is warmed rapidly as warm water from the western pacific flows easterly. During these years the area of sea experiencing +28°C is much larger than normal due to the high sea surface temperatures (SSTs) in the western pacific. An area of high pressure forms over Australia and an area of low pressure develops over Peru and Chile. The most dramatic El Niño in recent years was in 1997/98 but each time the El Niño appears many problems are caused.

Australia has to deal with the prospect of both drought in its already small green belt land which has meant yields have been 20% down in El Niño years such as 1992 and 1997. Also the risk of forest fires is up to 3 times higher during El Niño years.

In South America flash floods are a real hazard to occupants in high relief areas, especially in Peru at the core of the low pressure which can cause both mudslides and flooding. One of the main problems in South America is for the fishing industry. Usually large shoals of anchovies keep many people employed on the western coast of South America. However in El Niño years the fish usually move up to 100 miles further north into cooler waters causing both social and economic problems.

La Niña on the other hand is an intensification of the normal weather circulation. During La Niña years South America is likely to suffer from very dry conditions whilst Australia, which due to La Niña years usually following El Niño years, will have just experienced drought making the land barren and impermeable, will experience high levels of rain and therefore soil erosion depleting the level of nutrients in the soil which will affect future yields whilst South America will see crop failure.

The fact that new knowledge is now available through research on El Niño and La Niña will help management, for example which crops to grow in El Niño years, however many in South America will not benefit as those in the decidedly richer Australia will from advanced forecasting and so they will continue to fiend hardship in the El Niño La Niña circulation. It is also now becoming clear that El Niño and La Niña events are becoming both more frequent and more powerful due to atmospheric global warming which will of course make management much harder and if you consider the 1998 El Niño 1999 La Niña is estimated to have cost \$1.1 billion, this will be a future serious management problem.

Question 3 - The condition and value of ecosystems

Whilst this question was by far the most popular, it yielded a frequently mediocre performance especially for forests. Marine ecosystems, especially coral reefs provided some outstanding responses.

3(a) In general 3(a) was done much more successfully than 3(b) with some good knowledge of both factors and players (some candidates unfortunately did both, or a hybrid answer) well linked to ecosystem conditions. Successful answers (see below) supported their statements with examples, brief case studies, and precise data, for example on the impact of climate change and natural catastrophe on coral reefs. In this section examples could be taken from across the range of ecosystems, but it was important that both positive and negative impacts were considered.

3(b) In 3(b) many candidates performed less effectively for a number of reasons. Firstly answers were overlong for 3(a) and there were many instances of truncated 3(b) answers. Secondly the question required a global ecosystem and this is **not** Korup, or Souffrière reef in St Lucia. Thirdly candidates were very confused about the **value** of goods **and** services with some very weak statements such as that rain forests don't actually provide any/or many services!

An outstanding new source of information is provided by the Summary Report of **Ecosystems and Human Well Being: Synthesis Report** which develops the latest thinking on the condition and value of ecosystems ISBN 1-59726-040-1 publisher Island Press 2005. Accompanying website from Millennium Ecosystems Assessment

The crucial point in ecosystems is to provide sound conceptual frameworks supported by appropriate case studies of which there are a wide range. The following websites will yield these vital case studies:

www.wri.org (World Resources Institute);
www.panda.org (WWF)

A successful answer to 3(a) is on the next page

Many factors affect the condition of marine coral reef ecosystems. Corals are made of fragile polyps which live in symbiosis with algae and are therefore very susceptible to damage.

Natural conditions affect coral reefs as corals need very specific conditions for survival – warm water >20°C and shallow, clear, nutrient free water <30m deep. Global warming affects corals in three ways:

- increased temperatures cause coral to expel their zooxanthellae, causing bleaching and death
- eustatic sea level rise drowns corals and mangrove forests which offer protection to corals
- increased carbon dioxide concentration.

El Niño Southern Oscillation can have similar effects with the periodic increase in sea temperatures in some areas.

Corals are also susceptible to hurricane damage where large waves and high winds physically 'batter' corals and cause damage.

Social and economic conditions can affect coral condition – large populations require more coastal resources which may result in overfishing of coral reefs, damaging food chains. A larger population will also create more waste ie effluent and sewage which makes the sea water murky, making it difficult for coral algae to photosynthesis. Sewage can also lead to eutrophication. The amount of pollution also depends on economic activities and Science and Technology. Coastal industry may release large amounts of effluent. This is a particular problem along the reef on the east coast of Tanzania where an increase in industry but no pollution control due to lack of technology has resulted in pollution of the reef, particularly around Marsia Island.

Coastal developments, such as hotels in the enclaves of the Caribbean, also worsen the pollution problem twofold. Mangrove forests are cleared to allow for coastal developments. Mangroves naturally intercept pollutants and sediments which will make clear water murky. Runoff from roads is greater after mangrove deforestation, damaging coral ecosystems. The hotels also add pollutants and sewage causing major deterioration, especially after tropical storms lead to flash floods on deforested hillsides such as Tropical Storm Debbie in St Lucia.

Resource extraction from corals is coral mining, for construction and the tourist souvenir/aquarium trade. This activity is damaging the coral reefs and is a particular problem in Sri Lanka. Hydrocarbon extraction from corals is also a problem as they are used as an alternative fuel source.

Political stability influences coral condition as do illegal activities such as cyanide fishing and dynamite fishing damage the food chain and coral structure, a major problem in Dar-es-Salaam, Tanzania. Alternatively stable political situations can lead to the development of conservation programmes and investment in education (SNMA St Lucia).

Tourism is a major cause of coral damage. Anchor damage, litter, diving, selective fishing and boat pollution worsen water quality and damage corals, a particular problem in dive hot spots such as Molokai in Hawaii.

Where human activity has damaged corals they are more susceptible to predation by Crown of Thorn Starfish. It is believed that Crown of Thorn Starfish prosper in polluted water as they feed on corals – a major problem in the barrier reef.

Section B

One common mistake was not to pay due regard to the 10/15 weightings in guiding the length of their responses.

Question 4 - Global and national population change

Although this question was a very popular question it led again to many mediocre responses.

- 4(a) In part 4(a) it was vital that candidates analysed both the actual and **projected** trends. Most could explain the reasons for the **population explosion** and the demographic time bomb caused by it, using demographic terminology such as fertility rates, mortality rates, but only around 50% of candidates noted the **projected** deceleration in the rate of growth (see the scale along the bottom of the graph of years to complete a billion) as well as the deviation from the exponential trend, and could link this to the **birth dearth**. This results from the steady decline in fertility rates linked to economic development and the onset of the ageing society. Only a minority of candidates saw the key significance **numerically** of the power houses (cumulatively responsible for some 65% of the total population). The powerhouse data could also be used to reinforce the differential trends related to economic developments.

Many of the good answers also referred to and even drew a diagram of the Demographic Transition Model (DTM) including the concept of a Stage 5 which was so useful in explaining the decelerating growth. The skill was in trying to summarise all these ideas, in around 1½ sides, and within 15 minutes in order to allow sufficient time for 4(b) which had a higher tariff.

With the world total population now reaching over 6 billion people, the predictions are that the exponential growth will continue into the future, reaching a staggering 9 billion in 2050. The graph shows that exponential growth began after approximately 1959, when the population increased by a billion, from 3 billion to 4 billion, in just 15 years between 1959 and 1974. There are many reasons for this accelerated growth in the use in global population.

Medical advances are a major factor in the increase in world population. Since 1959 medicines and vaccinations are becoming more widely accessible throughout the globe as more cures are being discovered and more research is being carried out into diseases etc. This is leading to a higher life expectancy in many countries and people living longer. As people are continuing to have children and people are living longer, the population is increasing.

The total population has accelerated considerably since 1959. Technological advances have played a major part in this also. This has allowed food production to be more efficient and available, allowing more people to be fed and decreasing impacts of famine etc. However, the graph also shows that the population growth may start to level off slightly by 2048, taking 20 years to increase by a billion, when it took just 12 years 1987-1999. The Club of Rome, 1972 argue that at the rate the world is going, the resource availability of the world may be reached within the next 100 years, unless steps are taken to try and control the exponential growth. This may explain the slowing of the increase in population as more people may become aware of the dangers the world is facing and may take action to, for example, reduce fertility rates etc to try and ease the strain on the world's resources. These trends are very influenced by the power houses.

The table shows that China, at present, has a population of 1.3 billion people. India in May 2000, joined China as a nation of 1 billion people. The projected population shows that by 2050, India will have become the most populous nation in the world. This could be for many reasons. One of the reasons may be the failure of the Government to make their people aware of the implications and reduce fertility rates. Previous attempts have shown this to be the case eg in the 1980s, there were campaigns to reduce fertility. However, these failed, mainly because of the lack of co-ordination. India is split into 22 states and 9 territories and the government of each state is more concerned with their own welfare and status than the nation as a whole, meaning any campaigns were patchy. By the forecasted population increase, it suggests that such problems will continue.

It is also noticeable that Russia is the 7th most populous country in 2004, but will slip off the table by 2050. This is because Russia is at Stage 5 of the Demographic Transition Model and its population is in decline. Fertility rate is below the replacement level of 2.1 children per female, meaning the population is not replacing the generation before it. People are also migrating out of Russia in search of a better life and jobs etc, causing the population to fall further.

This is an example of a succinct yet detailed explanation for the trends shown.

- 4(b) In 4(b) a number of approaches were successful, but it was absolutely vital that a framework was established and sufficient structure developed for level 3. Far too many answers were **narrative** answers of two or three contrasting population policies including the ubiquitous China 1 child policy.

Successful structures included:

- (1) The DTM framework and the identification and explanation of countries at stage 1/2, 3, 4, 5.
- (2) The identification of key factors leading to differential growth rates such as demographic factors, socio-economic factors, political factors (population and migration policies), supported by key examples.

The powerhouse data yielded a good range for both of these structures.

Overall many answers were short for the allocated 15 mark and lacking in demographic detail.

Question 5 - Migration Patterns

Overall this question was not particularly well done, especially part (b).

- 5(a) In question 5(a) the implications for the source and host country of the migration of teachers largely from Commonwealth countries (cultural, linguistic and work permit issues) to the UK were quite well understood, but largely in general terms. This migration was of professional people and statistics were supplied for candidates to explore the **brain drain** of the expensive loss of highly trained teachers, for countries often with low HDI. The key issues were **differential** - for example the relative % losses, especially for LEDCs such as small Caribbean islands and the impact on LDC/LEDCs. Issues such as population loss, for the source, or overcrowding, or even benefit scrounging were scarcely relevant for the nature and size of the flow shown in Figure 5.

The Indian newspaper advert clearly showed the high perceived benefits to those individuals of teaching in the UK (potential remittances and educational development). The host country costs were frequently overemphasised, such as loss of jobs for British teachers, at the expense of enrichment and **brain gain** of pre trained workers.

Some city centre candidates were very well informed about the difficulties of recruitment of teachers for less fashionable schools and locations and there were even personal references to the huge popularity and competence of Ms X or Mr Y or the reverse with language and culture difficulties cited.

- 5(b) This question required candidates to take an overview of the global pattern of two contrasting migration flows. The first hurdle was to define the two types. Quite rightly sometimes candidates did comment on the overlap between the categories, or discuss how refugees could claim asylum.

Essentially **economic migration** is a response to pull factors although push may be significant with distinctive source and host areas. There are a number of problems based on lifestyle (A) [usually MEDC to MEDC] and economic opportunity (B) [frequently LEDC or less wealthy RIC/NIC to MEDC]. The flows account for 85% of all movements and are truly global. Useful examples of (A) include migrations from Europe to US, Australia, New Zealand for work, or UK to Spain/Southern France for retirement. In terms of (B) Mexicans to USA, Turks to Germany, or Eastern Europeans to old EU would be very useful case studies. Often there are cultural and linguistic links such as Algerians to France, or commonwealth citizens to UK.

Forced migration is above all a response to push factors such as war, famine, environmental crisis or political persecution. It is characterised by hotspots and much of the migration tends to be to seek a safe haven in a neighbouring country (Iraq to Syria and Iran or Afghanistan to Pakistan) for a temporary period until the problem subsides. Historically there are some different patterns such as Jews in Nazi Germany and the creation of Israel, and also the crises of Ugandan Asians and Vietnamese boat people, when the whole world took quotas. Refugees can also become asylum seekers and find their way longer distances to lands of perceived opportunity.

Many candidates had an inkling about contrasting patterns but could not support their ideas with detailed examples or alternatively they could supply detailed case studies but could not find the correct context. As this was an underperformed question teachers are strongly recommended to use maps to show the spatial pattern of migration.

Question 6 - The pros and cons of globalisation

- 6(a) Candidates responded very well to the structure suggested by the cartoon and there were some excellent evaluations as to why the various groups of protestors were concerned about globalisation. Good candidates did define the process of globalisation before beginning their answer as shown in the example below.

Globalisation is described as any change occurring at a global level that has worldwide effects and in less broader terms is the process by which it has become easier for businesses (notably Trans National Corporations) to move and set up in other countries.

Some of the views shown are a concern of such TNC activities and their roles within the global economy. Many people argue how the current north-south divide in development is only increasing as latest figures show how 18% of the world's population in the north take over 75% of the world's resources. The TNCs in particular are viewed by many as being ruthless in exploiting cheap labour supplies of less economically developed countries (LEDCs) and maximising their market share as capitalist enterprises. For example US firm Nike, as a TNC, subcontracts a great deal of its employment out to Far East nations such as Vietnam and Indonesia where it can remain incredibly footloose in operations and shift production chains to seek out the cheapest labour sources whilst avoiding such laws as minimum wages and health and safety eg a \$70 of Pegasus Nike trainers leaves just \$1.60 for 45 workers to share. This highlights the apparent "Americanisation" attitude that is quoted in the cartoon and lack of equity for the poor fuelled by the all dominating TNCs such as McDonalds or Nike.

Unfair trade is also seen as a negative aspect of globalisation in that the wealthier TNCs from the dominant north can change production lines and global locations very easily which often results in trade that is "strings attached" or very flexible in favour of the TNC. For example, Tesco only uses 4 farms worldwide that produce its mange tout peas – a worker receives 1p for every 150g of peas and at one of the farms in Zimbabwe, Tesco buys the peas for 68p yet markets up the price to 99p for selling to the customers.

Unfair trade is something that groups such as the World Trade Organisation and UBEP (Union of Banana Exporting Nations) is attempting to reduce for economic future sustainability. The idea of TNCs providing employment as a positive of globalisation can still be undermined by the fact that local, traditional industries are forced to close, labour forces are reduced, poor working conditions are exploited and locals tend to only get low skilled jobs at branch plants. This leaves the idea of there being more global integration between nations but a creation of a polarised world that doesn't appear to be changing – one of plenty dominated by the TNCs and those nations north of the Brandt Line, and one of need leaving the south to become locked in a cycle of deprivation and lack of industrialisation, too dependent on the north to survive.

Level 3 response

- 6(b) In this question it was vital to explain the link between globalisation and the global shift before looking at the pros of globalisation (such as worldwide corporation, global tourism, global technology and communications) and the global shift (the rise of NICs/RICs, the economic impact of TNCs, the advantages of outsourcing, or the impact of the rise of China and India and their contribution to the provision of lower cost consumer goods and services).

Whilst many answers were narrowly focused, for instance on manufacturing, the quality was there and many candidates achieved sound marks for 6(b).

It was pleasing to see how candidates used the framework to achieve a good balance of argument, supported by up-to-date and topical examples.

Section C - Cross Unit Questions

Overall there were some encouraging performances in all cross unit questions, with Question 8 and its user friendly resource being by far the most popular.

Question 7 - Eco footprints and biological capacity

- 7(a) Whilst nearly all candidates understood the linkage between the three strategies and diminishing the ecological footprint, only a minority could support their assertions with detailed and appropriate examples for all three. Controlling population inevitably led to discussions on China 1 child policy, and changing consumption patterns led to discussions on recycling and more sustainable energy use, transport use or cutting down on food miles. Fewer candidates could think of appropriate examples for improving production processes. Clear lean burn engines, organic farming or cutting down of waste to achieve greater efficiency were all useful examples, whereas GM technology or intensive hi-tech agriculture were more controversial as these did not necessarily improve the eco footprint.
- 7(b) In this question most candidates were able to evaluate the effectiveness of protecting and managing ecosystems but were short of examples of the very difficult and costly process of restoration. Reseeding open cast areas, re-forestation of the countryside (eg Forest of Mercia or Black Country Forest) and re-establishing of nearly extinct species such as the giant panda or red kite were all useful case studies. The role of ex-situ conservation in zoos and gene banks is vital and was not widely known.

The diagram below summarises the spectrum of conservation from total protection for scientific purposes through to sustainable management with useful examples shown. As the question required an assessment the better answers did evaluate the three ways, for example pointing out that management could be sustainable or consumptive and as in the case of many National Parks was very difficult to guarantee ecological success.

The spectrum of conservation strategies is summarised below:

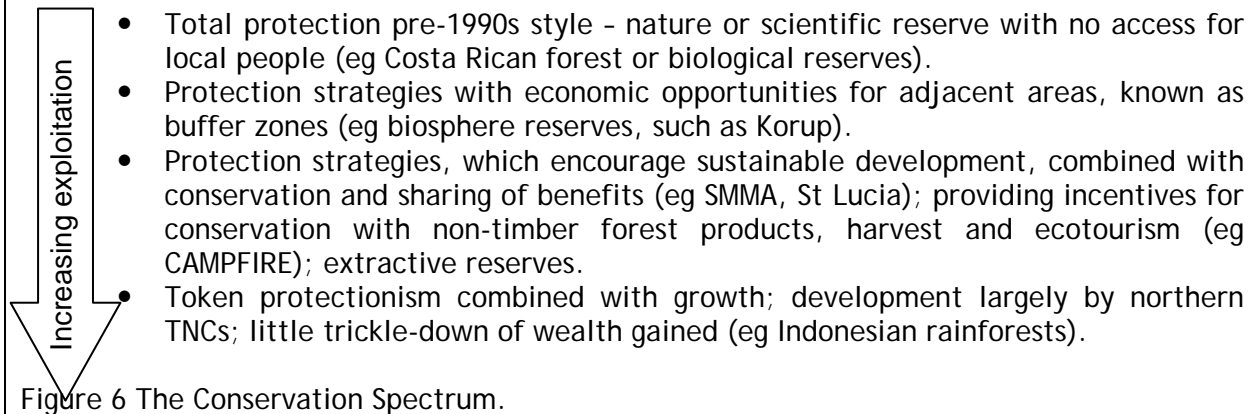


Figure 6 The Conservation Spectrum.

Question 8 - People and their possessions - the development gap

8(a) Many candidates were outstandingly observant when studying the images of people and their possessions with many pertinent points made. However to achieve level 3 it was vital that both the **people** and their possessions were commented on, and that the commentary went beyond description. Suitable frameworks included the economic development spectrum (some used the Rostow Model) and also the Demographic Transition Model. For example comments on the impact of take off in Vietnam, a fourth generation NIC, or on Mali's position as a subsistence agricultural economy with high fertility rates were all necessary. Some of the very best answers even looked at the impact of the semi arid environment on housing in Mali.

8(b) This question was relatively straightforward for knowledgeable candidates. The first hurdle was in identifying two **distinctive** strategies. The mark scheme was sympathetic here in that bottom-up versus top down aid strategies were acceptable, or any other two distinct types of aid. However some candidates wrote generally on how the development gap could be bridged leaving the examiner to sort out two from a multitude of strategies.

There were many conceptually sound answers on Fair trade, aid, debt relief, and health and education programmes but they did need supporting by case studies and examples. Conversely some candidates just described two case studies without putting them in a general context - for example tourism in Gambia, and export processing zones in Mauritius.

Some candidates were so keen to describe the images in 8(a) writing up to three sides, at the expense of a very brief answer to 8(b). Balance was the key to success in this question.

Question 9 - Sustainability

This question was the least popular cross unit question perhaps because the resource required close analysis, and also question 9(b) was a new slant on the familiar sustainability theme.

9(a) Most candidates understood the big picture of complete different results across the North-South divide in the two maps. Map (A) showed a direct relationship with development similar to various US indexes, or even the Egg of Wellbeing (June 2005). There were two reasons for this in that it measured capacity to be stable (based on capital, technology, political will, etc) and more over the 22 indices included both environmental and socio-economic measures.

Inevitably MEDCs with their high HDIs had the money to provide health care, welfare and education systems and thus score highly. In contrast Map B showed an inverse relationship with development similar to an eco-footprint (see June 2003 or the Living Planet Atlas downloadable from the WWF website), as this was based on environmental degradation. Many noted it was redesigned by the Friends of the Earth who were above all concerned with the environmental state of our Planet! Inevitably MEDCs and OPEC and rapidly industrialising countries such as China were bound to have maximum environmental degradation from energy use and industrialisation unless their Governments were fully committed to sustainable development.

Below is a level 3 response which not only discussed the general pattern but then went into detail to discuss various anomalies.

There is a pattern that emerges in terms of the capacity for sustainability (9a) that shows how nations north of the Brandt line – the MEDC nations – have the most environmentally friendly capacity eg the USA, Western Europe and Australia. However there is also an anomaly in that South America, south of the Brandt line, has a great capacity for being most environmentally friendly. Africa produces a mixture of all the choropleth groups by having nations such as South Africa with the capacity for environmentally friendly sustainability and other nations such as Niger with the least environmental friendliness capacity.

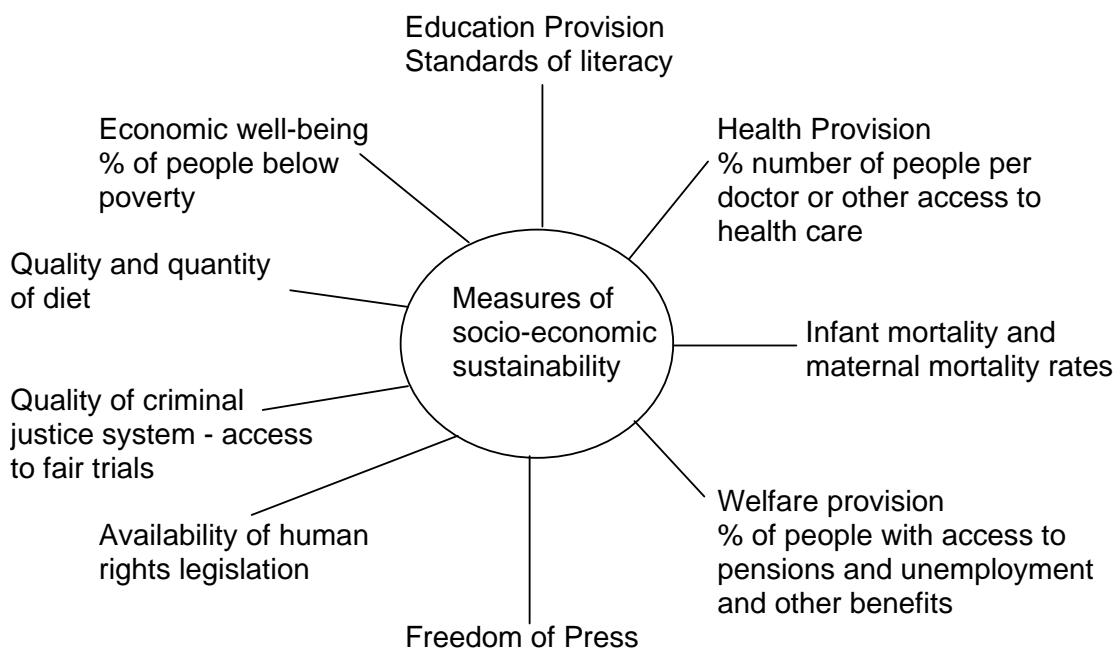
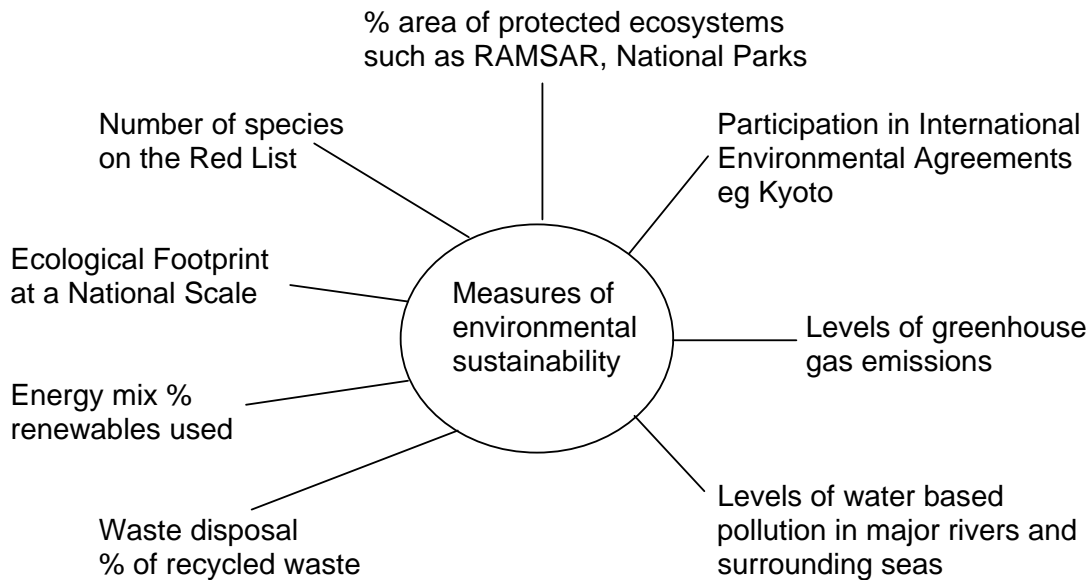
Comparing such data to 9(b), we see how the countries that had the most capacity for sustainability are actually not very environmentally friendly or even the least. Examples include the USA, China and SE Asia and Western Europe – the “global triad” of economically powerful nations. We also can see how the OPECs (Oil and Petroleum Exporting) countries of Saudi Arabia and Iran fall into the ‘least environmentally friendly’ category. A few nations such as Brazil, Argentina, Canada and some central areas of Africa have both the capacity for sustainability to the environment and are the most environmentally friendly.

Possible reasons for the patterns shown in the developed world could relate to how nations in the ‘global triad’ are the most industrialised nations and therefore pollute the world greatly with Co² from car exhausts, nitrogen oxides and hydrocarbons. The greater personal wealth in such nations also contributes to such environmental degradation with large ecological footprints. These countries have the most capacity for sustainability as they are the world’s wealthiest and therefore could invest more to protect the environment.

The OPECs such as Saudi Arabia are, in terms of the development pathway, far less developed. They have the capacity to influence global sustainability, yet their oil exploitations and combusting of fossil fuels adds to world pollution.

In China the sheer population size of the country means that in terms of natural resource consumption it will rank very highly as it requires more timber, more fuel etc to keep the standard of living sustained for the majority of its population. Finally, nations that have access to natural resources such as the Amazon rainforest (Brazil) or Canada (Boreal forests) and are relatively under populated in such regions, these nations can have a large impact on capacity for sustainability eg through forest management techniques, yet still have the opportunity to remain environmentally friendly by sustainable resource consumption eg FSC of Canada and Rio Earth Summit of 1992.

9(b) In this question many candidates struggled to find appropriate measures, with many looking at ideas such as monitoring rather than precise measures. The first table was to define what was meant by either environmental or socio-economic sustainability (the former was much more popular) and then to go on to write about a range of measures. Unsupported lists were sometimes submitted when four to five well defined measures supported by examples would have been appropriate. The two diagrams below show some of the possible ideas for developing a response. The Egg of Wellbeing (June 2005) shows a very sensible list.



General Comments

This report should be read with the Mark Scheme for 6475/01. The examiners' reports for Jan 2006 and June 2005 also provided helpful **tips** on the five key areas of the generic mark scheme along with tally charts for case study selection.

All the Questions required **several aspects** to be covered, especially in Hazards, the most popular option nationally, where specific impacts were required. Unfortunately many candidates took a simplistic view of the titles and often failed to link to the generalisation they were devised from, as for example in Wilderness where the aspect of environmental quality was often ignored. In Hazards, there was considerable confusion over 'multiple hazard zones' often, disconcertingly, by whole centres rather than individual candidates.

Despite advice given in January 2006, a few candidates unfortunately spent a long time sketching out a **world outline map** or a very basic local map, often simply to locate case studies without details on the precise Question set. Centres **should not** photocopy their own world map for candidates to use in the examination.

Research is key to this module: **individual** not just class based. Candidates who learn only two or three case studies and hope they will fit all aspects of the syllabus, as in the Wilderness option and to some extent the Resources option are disadvantaged. **Flexibility** is the key to success: knowing when to reject case studies can be as important as choosing them. The **pre released generalisation** is aimed at focusing studies on a particular aspect of a huge topic, but there is disconcerting evidence of lack of a conceptual overview, particularly in the case of the sustainability generalisation. A focus on case studies only will not generate high marks. Similarly, **International efforts** to control pollution, manage wilderness areas or research into and predict hazards is a concept needing more attention, and with internet links data is easily accessible to update older texts.

Some of the better answers used **models** to underpin their arguments, such as in wildernesses the Trudgill state of the system model or Parks model for hazard impact. Personalised models such as a continuum adapted for whether international agreements were effective or not or agreement/disagreement with a statement posed in the question were often effective in underpinning responses. (Fig 10)

General areas for improvement:

- (i) **Rubric errors** - a small but unfortunately increased number of candidates are still doing two essays - very rarely will a candidate achieve even a pass grade if two essays are attempted.
- (ii) Lack of time spent on **foundation studies** and the **specific generalisation** in hand.
- (iii) More underpinning of case studies with relevant **theory/ concepts and models**, is needed.
- (iv) **Planning** - is essential in dealing with the complexities of the questions - all questions in this examination had **several facets** which meant careful selection- and possibly rejection of case studies was required.
- (v) **Essay skill**: most students attempted a formal essay style, but their lack of set up in the **introduction** was particularly evident. This section has a relatively attainable 10 marks if a few simple rules are followed (see Fig 1 adapted from the January 2006 Report). Invariably students who set up their essay effectively in the introduction achieve higher marks throughout the essay. Some seemed to have timing issues at the end, for a short summative conclusion reduced overall achievement, despite ongoing evaluation. Nothing can replace practice timed essays and familiarisation with the mark scheme. Candidates should avoid the

simplistic 'I am going to write about...' (see June 2005 PE Report for 'Top Tips')
Knowledge of the mark scheme is critical for a student's success - see Fig 3.

- (vi) Correct use of geographical **terminology** needs more practice for example with 'sustainability' or even the correct spelling of 'tectonic'
- (vii) Practicing different ways of introducing, concluding and usage of the same case study for different generalisations would help reduce the number of generalised, underscoring, pre-learnt essay seen across all options particularly in resources and wilderness options.
- (viii) Ensuring **all** sub-headings of generalisation are studied once it is pre-released. Many concepts from **other generalisations and foundation** will help a more sophisticated knowledge and understanding of the generalisation in question - but keep **focussed** on the pre release generalisation!
- (ix) **Research** - should include a mix of books, articles and websites and cover topical material. Good quality **annotated maps and diagrams** showing detail, which do not simply restate the obvious are always credited - there is no need to learn a world map outline however! Advice in the past about **personally researching** a wide range of case studies was put to test in this exam, where several questions had restrictions: geomorphic, climate or tectonic in hazards and international in pollution. The use of a check such as a **tally grid/spread sheet** as suggested in the January 2006 and July 2005 PE Reports needs reinforcing, for students are still under achieving in the Research element of the essay for 'appropriate selection' and must practice the **rejection** of case studies as well as their inclusion to fit a specific title. Research also needs to be accurate and topical - for example some candidates were under the impression mass tourism had begun in Antarctica!

Fig 1 One 'Formula for success' in Introducing the essay, Italics in bold are taken directly from the **Generic mark scheme**- which should be freely available to candidates and interpreted by their teachers

PLAN FIRST - THEN WRITE INTRODUCTION! Spider/bullets.....now put numbers against ideas to help structure essay eg 1,2,3 etc against case studies- they should not be in random order but used to develop an argument .DO NOT CROSS OUT PLAN-IT MAY BE USED BY THE MARKER! Aim for max 1-2 sides total Introduction. Make the Introduction stand out from the main body of the essay but not by headings or labels of 'introduction'. An essay has flowing paragraphs!

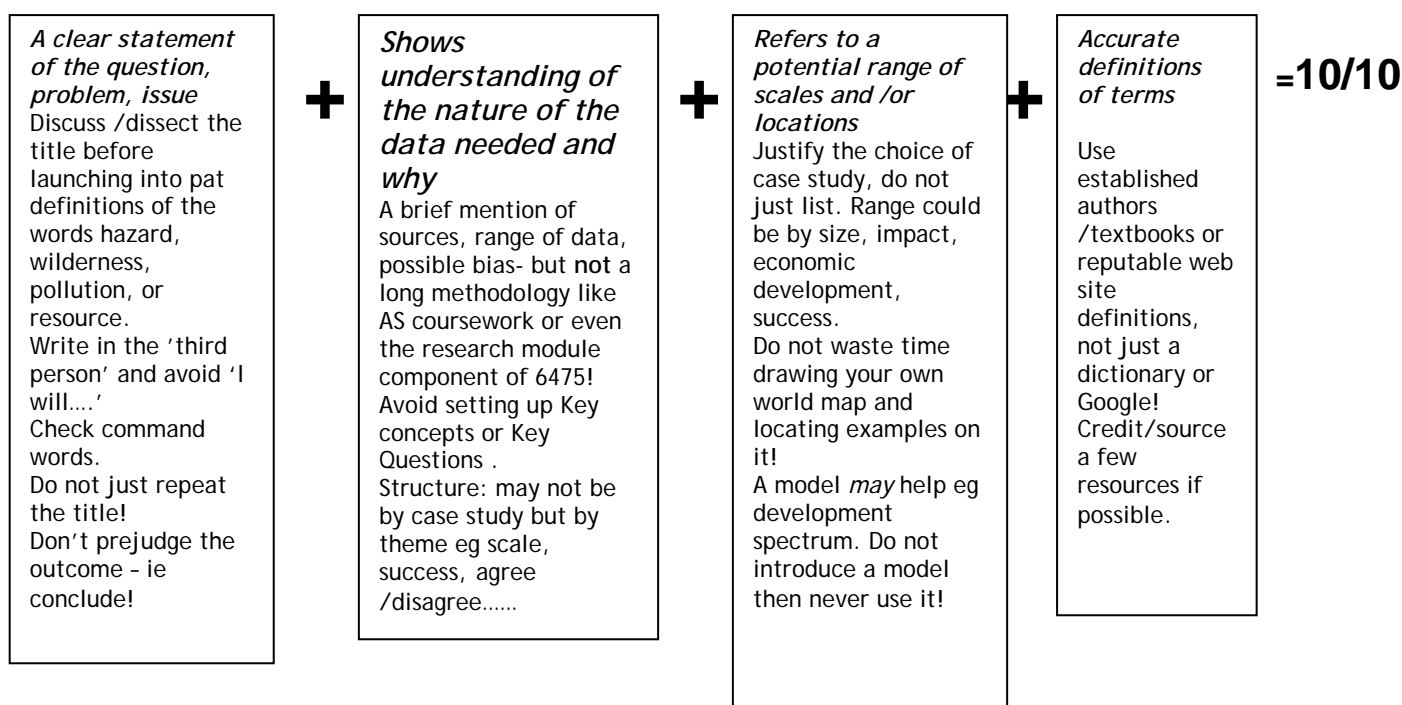


Fig 2 Continuum Model for adapting to any title. Particularly helpful in introduction to justify case studies chosen

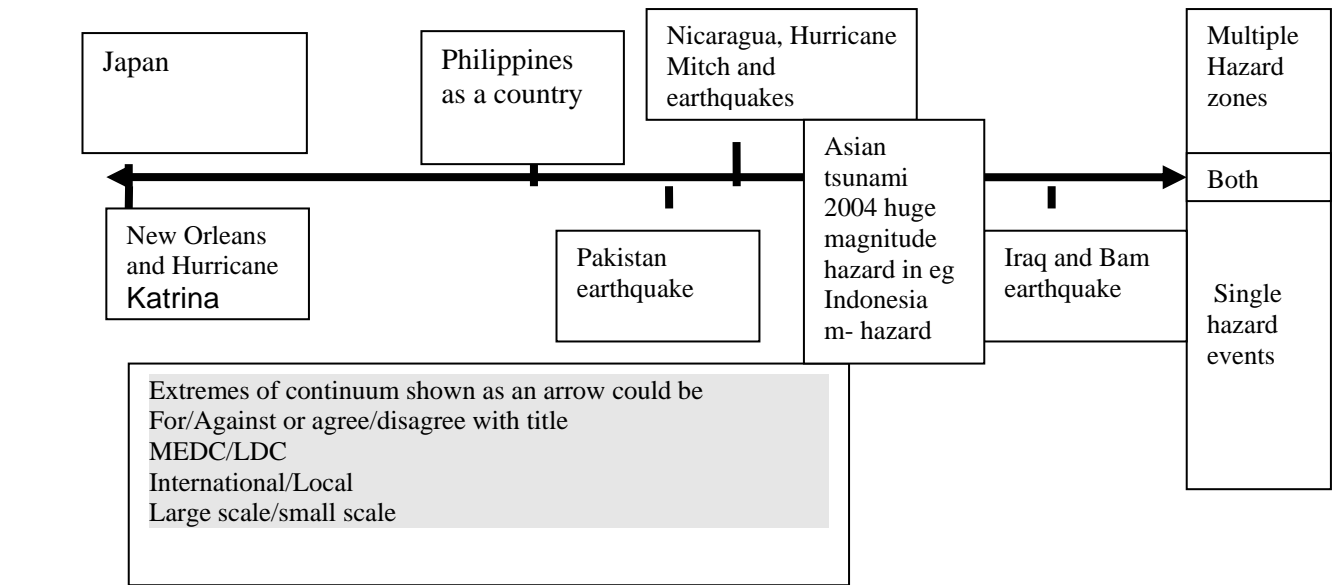


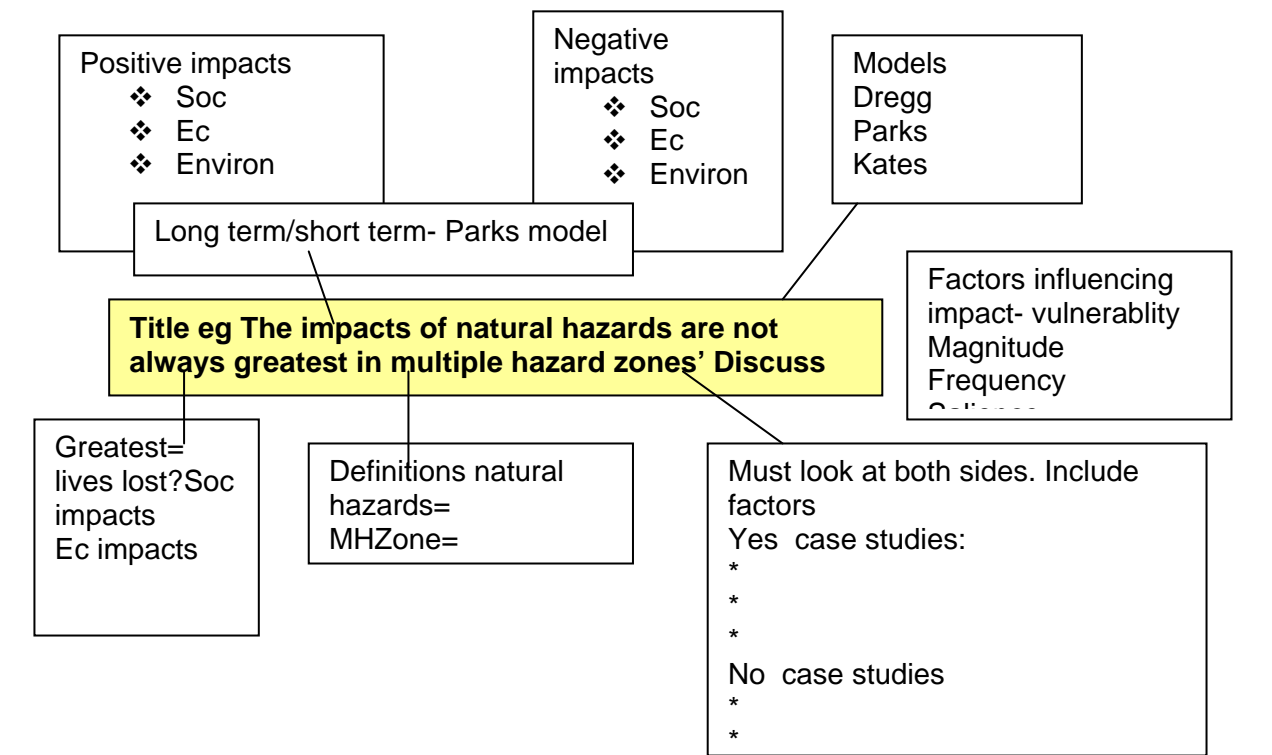
Fig 3 Being an Examiner

Get students to create a grid and to peer mark work using the generic mark scheme. This is an invaluable teaching strategy. You can help them by giving them a mark band. Get them to pick out key areas to put into each category of grid below.

<u>D</u>	Introducing, defining and describing the question, problem or issue, and identifying the data/information required to answer it.	10
<u>R</u>	Researching relevant sources, selecting appropriate case study material and using this knowledge in detail.	15
<u>U</u>	Understanding of general concepts, case studies, attitudes and values, and the application of data and information to the question, problem or issue.	15
<u>C</u>	Drawing appropriate conclusions on the basis of evidence, and on-going evaluation.	10
<u>Q</u>	Quality of Written communication including the communication of knowledge, ideas and conclusions in a clear and logical order, and the use of appropriate geographical vocabulary	10
	TOTAL	60

Fig 4 Being a student in an exam faced with a new question to answer

A simple brainstorming planning exercise, where the title is placed centrally on a page-even within the constraints of an examination answer booklet, then each aspect of the title is pulled apart with prompts to remind the candidate of which case studies are to be used and why and in which order can make a huge difference to the outcome of the response.



Option 5.1 Environments and Resources

Of the very small cohort which studied this option, the preferred choice was Question 2. Answers blending appropriate case studies with theory and terminology scored highest.

1. Examine the role of TNCs in the exploitation of mineral and energy resources

The essay focused on the role of TNCs in exploring for, extracting, processing, refining, transporting and possibly even using/burning mineral and energy resources i.e. All parts of the Resource Exploitation Cycle.

Exploration → Extraction → Processing → Burning/using → Exhaustion

It would also include their environmental management policies and actions

The role of TNCs may be positive as well as negative, and use of the multiplier model was also seen. Candidates identifying TNCs increasing role over time and then how some governments try to restrict this role scored highly. Some candidates discussed TNCs generally with fewer candidates identifying for example Shell or Rio Tinto Zinc. If only mineral or energy resources chosen this lowered the marks for selection in the Research part of the generic mark scheme. Most candidates chose oil, coal or copper with some range between MEDC and LEDC case studies. Some detailed sketch maps featured from some centres, but were not always annotated to support the precise title.

2. With reference to one named country or region, examine the economic impacts of the exploitation of mineral and energy resources

The Ruhr, South Wales and Zambia were popular case studies but rarely did candidates attempt to consider all parts of the mineral exploitation cycle e.g. prospecting/exploring, mining/extraction, processing (if required), transporting and even possible burning/usage e.g. coal fuel cycle. Not all focussed on economic impacts, but many identified both positive and negative impacts at a range of scales e.g. local - regional - national e.g. jobs, exports, multiplier effects etc. Some also considered changes over time, and looked at possible future impacts e.g. after rationalisation and exhaustion in places like S Wales and the Ruhr. If only an energy/or mineral resource was chosen fewer marks could be awarded for range and selection in the Research component of the mark scheme.

5.2 Living with hazardous environments

3. Examine the main factors that influence the social and economic impacts of either climatic or geomorphic or tectonic natural hazards.

Question 3 was the most popular option, especially the tectonic choice. Some candidates only focused on earthquakes or volcanoes which restricted potential marks awarded for range of research. Many decided to focus on a too simplistic division between MEDC and LEDC impacts, with Kobe compared with the 2005 Kashmir earthquake, or Mt St Helens compared with Mt Pinatubo. A descriptive approach did not score highly since evaluation of the factors influencing impacts is needed. Some candidates showed complexity in their answers by looking at positive impacts rather than just negative ones, such as Iceland and 'tectonic tourism'. Few candidates chose climatic and fewer geomorphic hazards.

Answers tended to be structured using one of three distinct patterns:

- ❖ Using mainly factors often with a dominance of a stereotyped MEDC/LEDC split, vague on impacts
- ❖ Using mainly impacts, with a few factors
- ❖ The optimum: Factors linked to impacts (differentiated into economic and social impacts) with an evaluation of the concept of 'main' factors, including:
 - Economic environment/poverty/stage of development: available resources, including technology and communications

- Experience and hazard salience
- Education/research e.g. understanding causes, frequency and magnitude-
- location- site, geology eg liquefaction or physical vulnerability
- Personal vulnerability factors e.g. age, sex, occupation, personality, local traditions and customs
- frequency and magnitude of event- see Figure 5 for use of a hazard profile diagram featured in some candidates essays

Candidates who were flexible and who did not use pre-prepared structures often did best: unlike those who were determined to write 'all they knew on Kobe' and the few other class research examples learnt. There were good responses from those who had researched more recent hazards like the Asian Tsunami, (useful reference - <http://www.tsunami-evaluation.org/Other+Evaluations+and+Reviews/Lessons+Learned.htm>) Katrina and most latterly Mt Merapi and Java. (useful start for research :http://en.wikipedia.org/wiki/Mount_Merapi)

Fig 5
A well annotated, Hazard profile model to show the role of differing factors influencing hazard impacts for two case studies to illustrate the complexity of factors- rather than just the economic status of a country/area:

High negative impacts						Low negative impacts
High Magnitude	X	Y				Low magnitude
High Frequency			Y		X	Low frequency
High vulnerability- poverty	X		Y			Low vulnerability
High density of people	Y	X				Low density
High value buildings/infrastructure not well protected/constructed		Y		X		Low value or well protected/constructed buildings
Low hazard salience		X	Y			High salience

X= ASIAN TSUNAMI 2004
Y= Kobe earthquake 1995

Another model successfully adapted was Dregg's 1992 model relationship between geophysical event, hazard and human vulnerability

4. 'The impacts of natural hazards are not always greatest in multiple hazard zones'
Discuss

Many candidates failed to focus on multiple hazard zones (MHZs) and their understanding of such zones was limited to vague references to the USA or Philippines. Answers were often polarized between those candidates with a firm grasp of MHZs and those who struggled to decide whether Bangladesh or the countries hit by the Asian tsunami were such zones. Some thought MHZs were areas suffering multiples of the same hazard such as just earthquakes or floods. Key to the question was the word 'not'. From recent research it is clear that although Japan, New Zealand Iceland and parts of California such as Los Angeles are areas experiencing a wide range of natural hazards, they are not those that are the most dangerous to live in, as their impacts are often well managed.

There is information readily available- not just from traditional textbooks but websites such as below:

- <http://www.oas.org/dsd/publications/unit/oea66e/ch00.htm#TopOfPage>
- <http://www.oas.org/dsd/publications/unit/oea66e/ch06.htm#TopOfPage>
- <http://www.ldeo.columbia.edu/chrr/pdf/hotspots/maps/table1.pdf>

'While the world has witnessed a drop in the number of deaths per year due to disasters over the past ten years, more people are being affected and economic costs are escalating more than ever'. <http://www.unisdr.org/>

Extract from a useful website on multiple hazards: with a report produced by researchers including Columbia University and the World Bank. 3.4 billion people, more than half the world's population, live in areas where at least one hazard could significantly impact them. Other key findings include: Approximately 20 percent of the Earth's land surface is exposed to at least one of the natural hazards evaluated; 160 countries have more than one quarter of their population in areas of high mortality risk from one or more hazards. <http://www.earthinstitute.columbia.edu/news/2005/story03-29-05.html>

5.3 The pollution of natural environments

Both questions prompted a range of responses, but there was a disconcerting lack of knowledge on the polluter pays principle and sustainability as a concept.

5. Assess the contribution of the 'polluter pays' principle towards reducing global pollution

Polluter Pays is a principle creating a penalty for sources, not an area suffering from the outcome of pollution as some candidates thought. Candidates often struggled to fit their information on Chernobyl, Bhopal, Aral Sea etc to global pollution, and were often confused about the role of the Kyoto Protocol. The title is suggesting there are other methods to reduce pollution globally than the polluter pays principle, so candidates who tackled changes in lifestyle and used the very basic but very useful source-pathway-sink model for pollution fared best.

6. Discuss the strengths and weaknesses of alternative sustainable strategies designed to reduce pollution

The strengths and weaknesses of Pollution reduction strategies are in question here but there was variable knowledge on the concept of sustainability, and few looked to the changes over the next 20-50 years and why urgent action is needed. Candidates who had an overview on the concept of sustainability - which after all is the focus of this generalisation, and then evaluated their case studies against these, achieved higher marks.

Fig 6 : One student's analysis for question 6:

To create sustainable strategies it useful to follow the **sustainability quadrant** shown below with case studies to be discussed in the essay indicated:

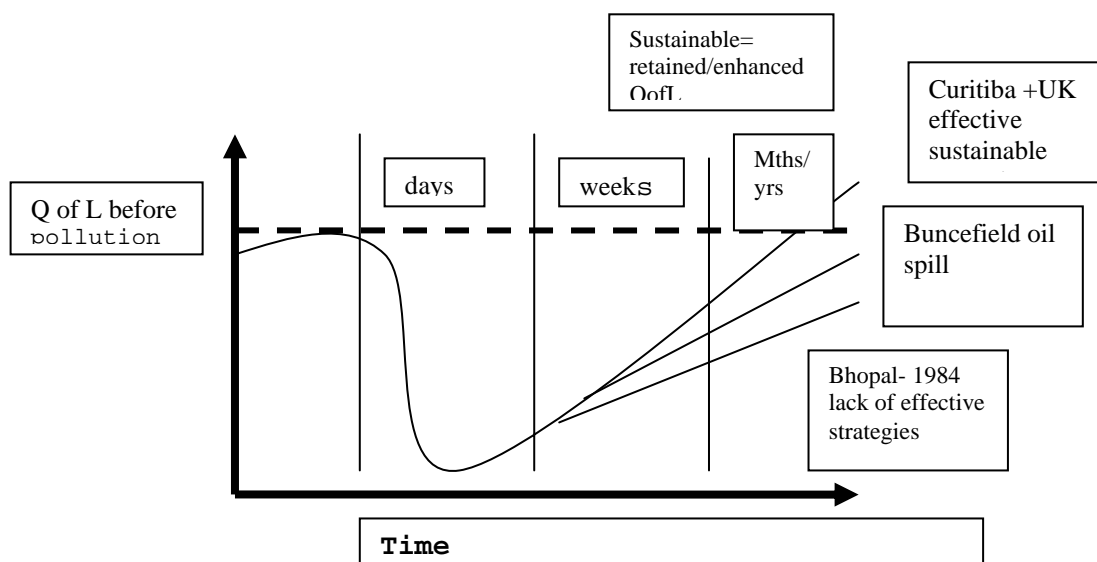
Futurity- the Brundtland principle of the 1980s , probably over 50-100 years. Takes into account economics of choices. May need international initiatives to achieve eg Montreal Protocol or Kyoto	Environment Stability in the environment whether at sea, land, air. Precautionary principle may need invoking. Eg urban parks to Kyoto climate protocol
Community involvement eg recycling schemes In Winchester	Social Justice/Equity eg Curitiba, reward poor with food if they recycle

This student went on to illustrate the shift from traditional strategies to newer, alternative strategies by a simple table, Fig 7, showing understanding of not just temporal changes but spatial elements in identifying policies targeted at source or sink.

Fig 7 A summary of traditional and alternative pollution management strategies:

Traditional strategies	Newer strategies including alternative - last 10-20 years
Source----->Sink Increased Polluter Pays But derisory fines eg by EA of UK Increased legislation eg Clean Air Act UK 1960s	Source----->sink Increased education (4Rs) Pollution prevention Proximity Sequestration (treat pollution at source if possible) Grants for solar heating, loft insulation etc Reduce consumption, bicycles Renewables, energy, electric cars
Dilution Burying waste	Reuse Recycle principle

This particular candidate used an adapted Parks model from hazards to evaluate some of the case studies in the conclusion: Fig 9.



Some useful web links for pollution

UK Govt fact sheet on Millennium Development goals-Goal 7 Environmental sustainability including pollution	http://www.dfid.gov.uk/mdg/environmentfactsheet.asp
UK Sustainable Development Commission	http://www.sd-commission.org.uk/index.php
UN on sustainability and international agreements	http://www.un.org/esa/sustdev/documents/agreed.htm
Definition Polluter Pays Principle	http://en.wikipedia.org/wiki/Polluter_pays_principle
EU policy on polluter pays	http://news.bbc.co.uk/1/hi/sci/tech/3027189.stm
Greenpeace and views on UK Budget and polluter pays	http://www.greenpeace.org.uk/climate/climate.cfm?ucidparam=20060404175614
Bhopal and polluter pays	http://www.bhopal.net/oldsite/icjb.html
BBC Ecotop 10 site- threats to environment	http://www.bbc.co.uk/nature/environment/conservationnow/global/

5.4 Wilderness Environments

A range of strengths and weaknesses on sustainable strategies at a range of scales was evident by some candidates, with weaker responses being descriptive and vague on the concept of sustainability. The use of models in sustainability (such as the quadrant model mentioned in pollution or 3 legged stool where the three strands of economic/social and environment have to be balanced) or the Trudgill model of state of the system and carrying capacity helped underpin some excellent answers

7. Evaluate the sustainable strategies that have been put in place to conserve the environmental quality of wilderness areas

This was a wide ranging essay focussing on the conservation of environmental quality. Candidates needed to carefully define the key terms eg. Sustainable strategies, environmental quality and wilderness areas

Evaluate meant to explain why and how eg. Key factors. It was a popular question and generated a wide range of wilderness case study material especially Korup, Kakadu, Antarctica and Alaska. However the focus on 'environmental quality' was often weaker, with general discussions on Biosphere Reserve status or the Antarctic Treaty.

8. 'Antarctica is the only example of a wilderness area where international agreements have enabled effective sustainable management' discuss

The essay focuses on the global scale, international agreements and sustainable management. The consensus view is that the statement is true, but other examples were required to explain why this is the case. Candidates who had carried out personal research and were up to date on Antarctica's management produced the most effective essays.

Fig 10 on the next page shows an introduction which scored 10/10.

Some recent or well known websites to help wilderness research

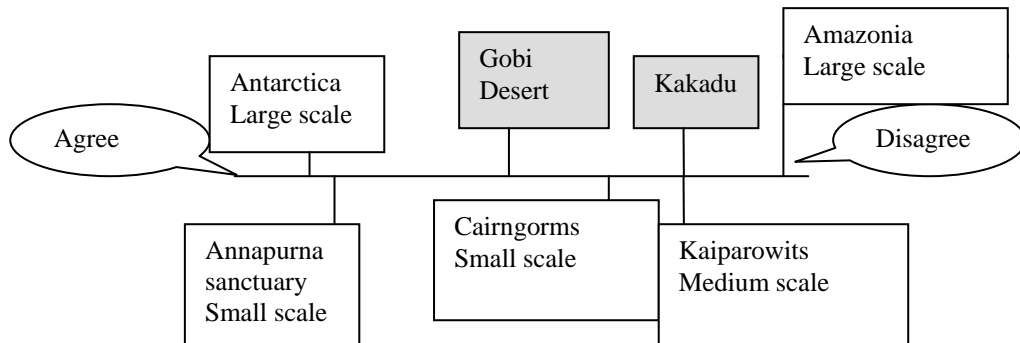
Lots of background and links via Wikipedia- USA focus	http://en.wikipedia.org/wiki/Wilderness
Interesting links to non standard wildernesses via BBC science/nature site	http://www.bbc.co.uk/nature/animals/features/285feature1.shtml
	http://www.bbc.co.uk/nature/environment/conservationnow/global/
UNEP Arctic net	http://arctic.unep.net/
UNESCO Biosphere Reserves	http://www.unesco.org/mab/BRs.shtml
Darwin initiative - promoting biodiversity conservation and the sustainable use of resources- case studies in Africa	http://www.darwin.gov.uk/
Wilderness exploitation- Belize	http://www.wisconsinenergy.com/performrpt/pdf/env/env_habitats.pdf
British Antarctic Survey	http://www.antarctica.ac.uk/About_Antarctica/Conservation/index.html : The five international agreements are: Agreed Measures for the Conservation of Antarctic Fauna and Flora (1964) Convention for the Conservation of Antarctic Seals (1972) Convention on the Conservation of Antarctic Marine Living Resources (1980) Convention on the Regulation of Antarctic Mineral Resource Activities (1988) Protocol on Environmental Protection to the Antarctic Treaty (1991)

Figure 10

Effective sustainable management is something which is essential for the long term survival of wilderness areas of all types. Given the definition by the 1964 Wilderness act(Chaffey 1996) that wilderness areas are ‘land which has been primarily affected by the forces of nature with the imprints of man’s works substantially unnoticeable’, it can be said that sustainable management entails limiting the threats of humans to an area and as a result the wilderness quality of that area will be sustained. The concept of sustainability(Brundlandt 1987)requires wilderness areas to meet the needs of the present without compromising the needs of future generations. This is often a difficult balance to strike and may require strategies involving ‘international co-operation and agreements.’ Antarctica is certainly one of those places because it is an area of global importance and there are many territorial claims upon it from many countries(eg Britain, France,New Zealand, Australia, Norway, Chile, Argentina).It can be debated, however whether Antarctica is the only example of a wilderness area where international agreements have enabled effective sustainable management(and indeed if sustainable management has really been achieved)International agreements in places such as Amazonia have gone some way towards effective sustainable management and were agreements to be made in Cairngorms and Kaiparowits wilderness areas, the same might be said. In Annapurna sanctuary effective sustainable management has been achieved without international agreements.

A continuum(Fig1) can be constructed to show to what extent the case studies agree or disagree with the statement

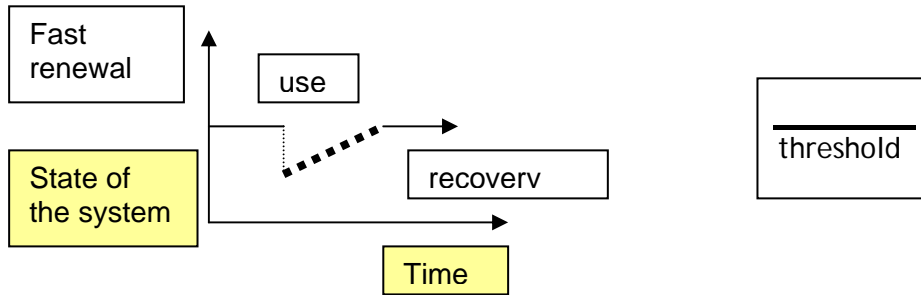
Fig1



Case studies shaded are less relevant and will not be used.

The candidate then went on to the main body of the essay to discuss all the case studies introduced helped by a model introduced in the essay

Fig 2 Trudgill 1992: Sustainable management is when the state of the system is preserved from going beyond the threshold(eg krill quotas Antarctica)



The reports received this time have maintained the very high standard seen in recent sessions. There are still ways in which centres can make further improvements. The most popular title this time suffered from a degree of misinterpretation. The generalisations in the specification are potentially helpful in avoiding this, since the titles are based on them. It is necessary for candidates to be aware of the generalisations if they are to have the very best chance of interpreting titles correctly and a very important part of candidates' preparation has to be brainstorming or becoming clear about the requirements of their chosen title before doing anything else.

General ways in which reports can be improved

The Examiner's Report for last June set out a number of guidelines for candidates and centres, which may well repay a second look. The following comments are in addition to the ones given last year.

- **Brainstorm** the titles in advance. Keep a copy of the generalisations to hand whilst doing so. Candidates attempting some very popular questions have sometimes not thought about important words such as 'community' or 'culture', and the correct interpretation of these words has a significant effect on the relevance of their reports.
- **Defining** the important words should feature right at the beginning of the report. Candidates would benefit from looking back at their definitions when writing the report, to make sure that the correct focus is maintained.
- Make sure all candidates use and are familiar with the **mark scheme**. In addition to acting as a guide to examiners it is also a guide to candidates.
- Summer Examiner's Reports contain the **indicative content** document that is given to examiners to help as part of the marking process. They are a useful guide as to how to tackle questions in each of the options. Check the reports for past summer sessions to gain some potentially useful insights.
- Look at some examples of good practice. Last year the **Edexcel website** contained several examples of good ideas, techniques and methods used in successful reports. There will be a new selection on the website to act as a supplement to this report. These ideas can be used to illustrate good practice to candidates.
- **Check everything** before submitting the report. Spelling mistakes in the title, or a wrongly worded title do not make for an auspicious start. The spell check and someone to read it through are both needed for every report.
- Stay within the **word limit**. Very long reports and those that have long appendices never gain full marks.

Comments specific to the titles

The mark scheme includes indicative content for each of the titles. It is included below, together with some comments on candidates' performance. There are other ways to answer the questions and these were credited where valid and relevant.

DEVELOPMENT AND DISPARITY

D1 Inequality in global trade is the root cause of the development gap. Discuss.

The report should begin with a definition of the Development Gap and then go on to examine the role of trade. Global trade is unequal because many LEDCs earn most of their export revenues from low priced primary commodities. They

must use that revenue to finance whatever goods they wish to import. The development of so-called Free Trade has led to inequalities partly due to the undemocratic nature of the WTO which allows MEDCs a stronger voice. It has exacerbated trading issues in bananas, cotton etc by favouring MEDCs at the expense of LEDCs. Possibly only international action to organise fair trade will reduce inequalities and the development gap. But are inequalities in global trade the root cause of the development gap or do they merely help to maintain it? Some may argue that initial advantages, which lead to colonialism, may have been at the root of the gap. Expect arguments that other causes are more important.

A good report should include detailed figures and case studies.

Comment

The most popular development and disparity title, there were some very perceptive reports with the best candidates addressing the idea of 'root cause'. Trading blocs were well researched and the undemocratic nature of the WTO was often reported. Case studies of bananas, coffee and cotton were often well used and many candidates argued that the Development Gap originated with colonialism.

D2 Evaluate the factors responsible for disparities within contrasting urban areas.

Definitions of disparity may include reference to exclusion, access to services, opportunities or social justice. Allow disparities within one city, if the report deals with contrasting areas, e.g. wards, output areas etc. For reports at this scale expect a map to show the pattern of disparities. Some may choose an LEDC / MEDC contrast, using a range of towns and cities.

Social, economic, political and environmental factors are all potentially relevant. Reports may include case studies and examples of projects that have achieved varying degrees of success. Good reports will evaluate the factors within the chosen urban areas, rather than just describing the pattern of disparity.

Comment

A less popular title and one that was addressed either by examining contrasting areas within a city or by examining contrasting cities. Using LEDC cities tended to produce less satisfactory and more generalised reports and at the most simple could just be that some LEDC cities have squatter settlements and well off areas. Quite often little was available on the factors that were responsible for disparities in LEDC cities. A more successful strategy was to use areas within a UK city for which data was easier to obtain.

D3 Aid is a short term measure, but investment is necessary for long term progress. Discuss.

Expect reference to various types of aid and possibly advantages / disadvantages of each. A distinction should be made between aid and investment. When famines occur it is hard to think what else to do other than provide short term aid. There should also be examples of aid that is not in response to emergencies. Aid is used to assist LEDCs for a variety of reasons, including 'being greedy' as well as 'doing good' and it can be offered on a long term basis by MEDC governments and global financial institutions. Borrowing has had long term

effects leading to the debt crisis.

Investment is usually carried out by the private sector, unless the country concerned has a centrally planned economy. Investors generally expect a profit, so any progress may be more beneficial to them than to anyone else. Investment may give an economy a boost in the short term, whilst some aid projects can take longer. Well chosen case studies illustrating both aid and investment in the short and long term will be the basis of a good report.

Comment

The second most popular development and disparity title. A problem was the lack of distinction made between aid and investment with the former being well defined and the latter ignored in some reports. Long and short term was addressed but not always clarified or defined. Quite a few chose to look at investment as being long term aid. Many didn't challenge the assumption in the title that aid can only be short term.

- D4 With reference to one country, examine the assertion that poverty will persist until there is a radical redistribution of wealth.**

Expect a definition of poverty. The poverty income threshold is defined as the income level below which a person or family is classified as being poor. The threshold used by the World Bank to measure poverty in LEDCs is US\$370 per person per year. A broader definition, presented by the Human Poverty Index (HPI), has been developed by the United Nations Development Program (UNDP). The HPI includes measures of low life expectancy, illiteracy, and lack of access to health services, drinking water, and adequate nutrition. All these are human conditions associated with poverty. Separate indices are used for LEDCs (HPI-1) and OECD countries (HPI-2).

Human poverty and income poverty sometimes coincide, but not always. Redistribution of wealth might have a more direct impact on income poverty than on human poverty.

Most countries have produced strategies intended to reduce poverty and they generally involve some form of income redistribution using a taxation and benefits system. Make Poverty History represents an attempt to begin a radical redistribution. Schemes at a global, national or local scale can be researched and applied to the chosen country. Reward a well supported examination of the assertion.

Comment

A less popular title, it presented the opportunity to make reference to some recent campaigns. Redistribution of wealth proved a difficult concept to research, except for some very able candidates who wrote thoughtful reports on this topic.

- D5 The ranking of a country in the development league table will depend on the criteria used. Examine this statement at a global scale.**

Expect a definition of development. Although traditionally economic, better candidates will recognise that it has a wide range of meanings and will link it to improvements in human welfare, quality of life, equity, technology etc and know that it can be measured in a variety of ways (GDP, GNP, GNI, HDI, HPI etc) Conservation and sustainability are now important considerations in all debates

about development. There are various sources of information that could be used to assess development, e.g. government statistics, CIA World Fact Book, World Bank, UNDP etc. Expect an acknowledgement of bias. Arguably the more complex the indices used the less transparent the outcome. Using a composite range of aggregate and weighted indicators can perhaps mask the truth. At the global scale the league position may not vary much by criteria, but there may be marked differences at a regional scale. Most MEDCs have all round development. Some Arab countries have poor HDI whilst Cuba has good HDI. Good reports will use a range of indicators and case studies.

Comment

Statistics and correlation coefficients were frequent in response to this title. The statistics were often evaluated well and used to support a line of thought. The less frequent approach, and one that worked extremely well was to look for the truth behind the league tables, which were then used to provide selected examples to illustrate an argument. This way needed less 'number crunching' and did produce some clear insight.

FEEDING THE WORLD'S PEOPLE

F6 To what extent has population pressure added to the difficulties of feeding the world's people?

Expect a critical analysis of the Malthusian model. Boserup suggested that increases in population stimulate improvements in agriculture. Technological development leads to higher or more efficient levels of resource exploitation that raise the carrying capacity and the numbers of people who can be supported. Overpopulation occurs when the number of people exceeds the supporting capacity of available resources (sustainable carrying capacity) and so is related to physical geography. Australia, for example, has very little arable land and is largely desert but has no difficulties in feeding its people because of its ability to trade and import food. On a global scale there is enough to feed the world's people. The main problem is in the distribution of food rather than food production. This means that the answer given may be different if viewed at the global or the regional scale. The relative importance of FAD (food availability decline) and FED (food entitlement decline) could be discussed.

Comment

Malthus and Boserup were often successfully used to give a theoretical framework. Some took population growth or population density to be the same as population pressure and did not make the link to the resource base - a clear indication of where 'brainstorming' would have helped at the outset. The better candidates gave some thought to what the difficulties were and this allowed them to show that distribution was an important problem.

F7 How far is it true to say that the causes of famine are political?

Famine is an extreme and protracted shortage of food, causing widespread and persistent hunger, emaciation of the affected population and a substantial increase in the death rate due to starvation and disease.

Political causes can lead both to FAD and FED. They include war and conflict (Somalia, Democratic Republic of Congo) and political instability (for example in Zimbabwe where it has been reported that food has been denied due to political

affiliation). Political doctrines in Stalinist USSR and Maoist China all led to famines. The recent famine in North Korea is arguably less likely to have occurred in a democracy. In the Sahel, no action appears to have been taken against the effects of famine in Niger. Steps were taken in Chad, but appear to have made the famine worse. Unfairness of the terms of trade and indebtedness, which result from political decisions, making it difficult for LDCs to import food in times of need could be said to be contributory causes of famines. However the causes of famine are not entirely political and the role of physical geography and accessibility will also be considered when assessing how far politics is the cause. Case studies should be chosen to illustrate the varying importance of political factors, which should be the main focus of the report.

Comment

A popular title with some well focused answers, occasionally tending to be as much historical as geographical. Mostly though there were some well researched recent case studies and evaluation was generally a strong feature. There could sometimes be a tendency to discuss other factors more than the political, but it was usually the case that candidates kept a clear focus on the title.

F8 Will the Gene Revolution be more successful than the Green Revolution?

The criteria for success should be established early on. Increased yields, ability to feed the world's growing population, or ability to feed the world's poorest would all be justifiable, as would environmental criteria.

Look out for possible confusion between GR and GM. There should be a clear distinction at the start of essay.

- GR involves the selective breeding of existing cereal plants to produce new strains (hybrids/HYVs/MVs) that yield more edible grain. The success of HYVs depends on higher levels of irrigation, fertiliser input, chemical pesticides, herbicides and fungicides than are required by traditional strains.
- GM involves techniques used to transfer the genes from one organism (plant or animal) to another. It is claimed that less pesticides and herbicides will be needed for GM crop plants. GM includes livestock as well as crops.

GR has had relative success in terms of total volume of food supply e.g. in India - but less in terms of distribution to the poor, impacts on the environment and failure to reach most African countries.

GM is highly controversial (jumping genes etc) and the bias of the sources must be recognised in a high quality report.

Comment

There were a few examples where candidates were unable to distinguish between the two revolutions or got them mixed up with something else. The Green Revolution is not organic farming and it took place in LEDCs, not MEDCs. There were good case studies for both GR and GM, although the GR ones had clearly been easier to find. The main area for improvement was that many candidates did not define the criteria for success. This affected the quality of their conclusions. This was the most popular of the Feeding the World's People titles.

F9 The commercialisation of agriculture is a major source of food insecurity in developing countries. Discuss.

Food insecurity should be defined e.g. limited or uncertain availability or access to nutritious, safe foods necessary to lead a healthy lifestyle. It is part of the process leading to malnutrition and mortality. Commercialisation implies globalization in this context. The agriculture need not be food production. Export crops such as cotton and flowers may result in the dispossession of local farmers.

'What is done in a commercial world is what is commercially possible to do; which is fine so long as that coincides with what needs to be done' (Tudge, C.) In East Africa, white growers contracted to British superstores were alleged to be using water allocated to poor and vulnerable people. The Ewasongiro River, on which the livelihood of many central Kenyans depends, ran dry as a result of this pumping. Food insecurity in central Kenya could be linked to commercial agriculture, producing mange tout for the UK market. Another side to the argument is that Kenya's export horticulture sector contributes to poverty alleviation by employing smallholders and pack-house workers. Schemes teaching farmers commercialised methods could help them to feed their own people. Natural disasters (Orissa cyclone) drought (Kenya) conflict, leading to refugee movements (Colombia) all contribute to food insecurity but the focus of a sound report will be the role of commercialisation of agriculture.

Comment

There were few examples of this title. Those with sound case study support were superior.

F10 To what extent could an increase in organic farming help to feed the world's people?

Expect a definition of organic farming - crop or stock farming where only natural fertilisers, pesticides and nutritional supplements are used. Hormones, GMOs and synthetic chemicals are not used at all. Its proponents believe that healthy soil, maintained without the use of man-made fertilizers and pesticides, and livestock raised without drugs, yields higher quality food than conventional, chemical-based agriculture and is therefore more sustainable. Many LEDCs practise organic farming already, if only due to the inability to afford chemical inputs. But can organic farming ever produce sufficient volumes of food? Many researchers argue that organic farming can feed the worlds population as small farms are more productive per unit area than their larger counterparts; size is an important part of the organic / sustainable equation. See:

http://www.cnr.berkeley.edu/~christos/articles/cv_organic_farming.html

Organic methods tend to mean higher costs for the rich in MEDCs. In China and Cuba they are seen as the way ahead. Tigre in Ethiopia has shown that organic methods can feed the local population.

Comment

These were not numerous but there were some interesting reports. The less focused ones tended to be for and against organic farming rather than looking at its potential contribution to feeding the world's people.

HEALTH AND WELFARE

H11 With reference to a small-scale area examine the relative usefulness of quantitative and qualitative indicators in the study of either health or welfare.

The small-scale area should be identified. It may be an output/super output area, ward, village, town etc. Several indicators could be used. Expect definition of differences in terms of qualitative and quantitative, although these may not always form discrete categories. Quantitative data may be produced from qualitative data. Key focus is the 'relative usefulness', so an evaluation of the types will be required and an overall assessment. Inevitably there will be some degree of overlap between health and welfare indicators but the report should focus on one or the other.

	Quantitative	Qualitative
Health	<ul style="list-style-type: none"> • Teenage pregnancy • IMR / rates stillborn • Obesity • Rates of depression • Hospital survival rates • Rates of child obesity • Levels of prescription 	<ul style="list-style-type: none"> • Oral histories of care with patients, patients' groups, doctors etc. • Interviews in schools / community areas • Maps showing locations of care (e.g. hospitals, surgeries etc) • Annotated photos of health care facilities
Welfare	<ul style="list-style-type: none"> • Levels of deprivation • % on income support • % on disability allowance • Incidence of poverty • Levels of employment • Rates of private medical insurance • Life expectancy 	<ul style="list-style-type: none"> • Oral histories of care with range of socio-economic groups from area. • Interviews in schools / community areas • Maps of environmental quality / vandalism (components of welfare) • Annotated photos to support findings

Expect some students to have undertaken a range of fieldwork tasks especially to collect the qualitative data.

Reports may develop the idea of either health or welfare risk, i.e. who are the more vulnerable (single parents, the elderly, unemployed etc) in relation to the two types of indicators. It may turn out that qualitative data is regarded as supporting the quantitative data.

Comment

The least popular of all the titles, there were too few to be able to make any general comments.

H12 Examine the link between the physical environment and the spread of one disease.

The disease can be human or animal and case studies of malaria and FMD will probably be frequent with cholera and typhoid likely to be represented. The physical environment should be defined and spread should be linked with disease transmission theories. Physical pathways allow spread, for instance sewage polluted rivers like the Vistula in Poland or West African rivers, which harbour blackfly, vector of river blindness. It may be found that the link between the physical environment and spread is sometimes indirect - people modify physical environments sometimes in ways that allow the spread of a disease. There is a debate about the extent to which global warming affects the spread of malaria. Some authorities link the recent spread of malaria to forest clearance and people cultivating land more prone to mosquitoes. In the case of FMD strong winds, hills, objects (including high buildings) and trees create turbulence and disperse the plume of airborne virus. In humid overcast weather with a steady light wind blowing over flat countryside infective virus may survive long enough to infect other herds up to 60km (36 miles) distant. Over water, given the same climatic conditions, infective virus has been shown to travel up to 300km (180 miles). There may be an assessment of factors other than physical. Be prepared for diseases with little or no link to the physical environment, which may well have some merit but are likely to be self penalising.

Comment

Candidates successfully used case studies of malaria and cholera. Use of HIV/AIDS was infrequent and self penalising. Many reports displayed excellent use of annotated maps. Theories of spread were not frequently used although sometimes referred to and then not used. An excellent website for theories of spread is www.makingthemodernworld.org.uk. The development of malaria was not required but the diagrams of the internal organs were still provided! This was the most popular Health and Welfare title.

H13 With reference to examples, examine the factors affecting access to healthcare.

This can be addressed at different scales, although LEDC/MEDC contrasts may be most frequent. Reports are likely to quote the inverse care law (J. Tudor Hart) which states that good medical care tends to vary inversely with the need for it in the population served. Factors that could be important include the affluence, or otherwise, of the local population, their ability to pay for services and physical access to services. In thinly populated rural areas the economic threshold for the provision of service will need a wide range. Other social factors relate to low quality urban areas, where homelessness and special needs may be mentioned. At the global scale, key factors will be the availability of capital to fund healthcare services and technology to provide them in LEDCs - including doctors, drugs and hospital provision. Special cases such as the CIS (former USSR), Cuba or variations in MEDCs such as France, UK and USA also provide interesting data. Students may use Field's model of health care types to draw out contrasts in supply.

Comment

Not a very popular title but there were some good examples, which looked at access at a variety of scales and in a range of countries.

H14 Discuss the view that 'emergent' diseases have different impacts on different countries.

In this context, emergent diseases could include those that are starting to occur in new or different locations, or in places that have been free from them for a number of years. For example, it could include: HIV/AIDS, methicillin-resistant/multiple antibiotic-resistant *Staphylococcus aureus* (MRSA), Tuberculosis (in MEDCs), the localised emergence of E. Coli outbreaks etc. There should be some clear idea as to what the impacts might be (social, economic and environmental) in different countries. Contrasts will probably be LEDC/MEDC. Expect HIV/AIDS to be frequently used - but the title has diseases in the plural, so there should be at least two in a sound report. In LEDCs most of those affected will come from impoverished settings where they are most likely to be malnourished and least likely to know about life-saving interventions or have access to health care. Impacts are likely to be greater in LEDCs due to lack of funds for drugs vaccination programmes and other treatment. SARS resulted in a recession in the Hong Kong economy and a reduction in the economy of China. Uganda has over one million orphans whose parents have died from AIDS. The rural economy is seriously weakened because HIV infection makes many unable to work. The table below is taken from *Scientific American* Sep 2005. It may prove useful.

Emerging Diseases	
1973	Rotavirus
1977	Ebola virus
1977	Legionnaire's disease
1981	Toxic shock syndrome
1982	Lyme disease
1983	HIV/AIDS
1991	Multidrug-resistant tuberculosis
1993	Cholera caused by strain 0139
1994	<i>Cryptosporidium</i> * (large outbreak in Wisconsin)
1998	Avian flu
1999	West Nile virus* (first US appearance)
2003	SARS (severe acute respiratory syndrome)
2004	Marburg virus* (largest outbreak in Angola)

Listed according to when the causative agent was reported. Those with* are when a notable re-emergence occurred.

Comment

There were some very good answers using AIDS, SARS, TB and avian flu. Weaker candidates relied on only one case study, usually AIDS, although the title has diseases in the plural - an instance where brainstorming the title at the start would have helped. Regrettably this title did trigger off outbreaks of Africa as a country.

H15

A major challenge for societies is the provision of adequate welfare for all. Discuss.

Welfare refers to well-being and can be measured using social economic and environmental indicators (e.g. economic standards of living, crime, environmental quality). Expect reference to future welfare problems, especially for MEDCs and some NICs with ageing populations. Planning for current and future welfare is politically complex as it often involves increasing personal taxation coupled with making people work longer. This is against a backdrop of falling fertility rates in much of western Europe leading to changes in dependency ratios and a declining 'pot' for welfare.

In any society there will be differential needs and an inevitable conflict of needs within limited budgets. The challenge may well be in tailoring budgets and needs to achieve an acceptable fit.

Comment

The second least popular title, there were not enough to be able to give an overview of quality.

THE GEOGRAPHY OF SPORT AND LEISURE

S16 Explore the reasons why some countries have been more successful than others in attracting major sporting events.

Expect a definition of major sporting event. A useful typology exists and for this report needs to be at the global scale. The USA has hosted both the Summer and Winter Olympics on four occasions. Criteria used by the IOC to select host cities include transport, accommodation, technology, security, natural disasters and favourable public opinion. Climate and topography clearly affect success in attracting Winter Sports events and until the late 1990s a willingness to offer incentives to IOC members seems to have helped (e.g. Salt Lake City scandal). Italy and France have both hosted the World Cup finals twice although Brazil has won the trophy five times. The Women's World Cup has been hosted twice by the USA. Formula One has organized a number of Grands Prix in new countries, Turkey in 2005, Mexico for 2006 and Russia and South Africa in the near future. The EU ban on tobacco advertising in 2005 provided an incentive for this heavily tobacco-sponsored sport to find venues outside of Europe.

Comment

The second most popular Sport and Leisure title. Many responses were city based. The weaker ones simply told the story of the London 2012 bid, although this was well used as part of more successful reports. There was also some well researched material on the success of Brazil in hosting the World Cup. PE A2 texts proved to be a useful source for criteria for choice. Events were successfully distinguished from developments and most made at least some attempt to define what was meant by a major sporting event.

S17 To what extent do levels of sporting achievement correlate with levels of development?

Case studies of countries could be chosen from those at different points from the primitive to the advanced stage along the development pathway (LDC; LEDC; FCC; RIC; OPEC; NIC; MEDC). Alternatively successful sportsmen and women could be linked to countries at various stages of development. Sporting achievement should be defined, probably in terms of elite performers. Disabled sporting achievement could be the focus of a successful report. Footballing countries do not need expensive investment in order to achieve success. Sports that require more expensive facilities and equipment could be expected to favour wealthier countries, although political decisions such as the input of finance by governments is a factor and may not exactly match GNI rankings. East European countries have tended to give sporting achievement high priority. China will want to be the top achiever at the Beijing Olympics. In both cases their levels of development are not the highest. Cultural reasons have made it difficult for some groups to achieve success (e.g. Muslim women and dress codes). Physical factors (climate, relief, altitude), physiological adaptations (e.g. Kenyan long-distance runners) all play a part. Successful reports will focus on the extent to which development influences the outcomes.

Comment

Better reports challenged the question by drawing out reasons for the Olympic success of countries such as China or Kenya and the relative success of the FCCs. Some looked at non economic, cultural aspects of development and came up with some interesting and valid arguments. There were many lists of medals and in more modest reports the answer tended to be that there was a correlation and it really was just due to money.

S18 Major sporting developments are a drain on local resources rather than an engine of growth. To what extent do you agree with this statement?

Whilst it is sometimes a major sporting event that results in infrastructural developments (e.g. new stadia) this title is about developments rather than events. Case studies of developments resulting from the Olympics (Snow domes, ski resorts etc.) and Commonwealth Games (e.g. City of Manchester Stadium) would be relevant as would large scale football (e.g. Wembley, the new Highbury, St. Mary's) golf and other sporting facilities. Sporting developments are perceived as being a way of bringing investment but Londoners will have tax increases to pay for potentially under-used stadia (c.f. the Athens disaster). Leicester City's new Walker's stadium could be cited as one of the reasons for the club's recent financial predicament since it required a loan of £28 million, however it has allowed increased receipts from higher attendances, the construction of new developments on land occupied by the old stadium and is a well used venue for events in addition to football matches with spin offs for local businesses. Contrasting case studies should be selected to show the extent to which developments act as a drain or an engine.

Comment

There were a few reports in which events were the focus rather than developments. Some candidates made very effective use of the concepts of the multiplier / demultiplier. London 2012 was used sometimes but it presented some difficulties due to the fact that it has yet to happen. The Manchester Commonwealth Games developments were used well, as were various Olympic developments.

S19 With reference to two leisure activities, examine the extent to which their growth has resulted in both exclusion and inclusion.

There should be a definition of leisure. Exclusion should be defined e.g. denial of access due to factors such as disposable income level, educational attainment, occupational status, long working hours, social class, alienation, perceptions, culture, ethnicity, gender, age and disability etc. Inclusion could be defined along the lines of ensuring that the marginalised and those living in poverty have greater participation allowing them to improve their overall well-being. Students may choose one leisure activity to illustrate inclusion and the other exclusion. Golf is a growing worldwide leisure activity largely for the affluent. Hunting and shooting tend to be upper class leisure pursuits. Rambling, cycling, bird watching and fishing tend to be more open across classes but with the last two having a marked gender bias. Wind surfing, surfing and mountain biking are more accessible to those with transport. Arab countries and women's football could also make useful case studies.

Comment

The least popular of the Sport and Leisure titles. Some concentrated on professional sport after having correctly defined leisure. There were some shopping lists of kit which poorer people couldn't afford in the less good reports. Better reports showed sound understanding of the concepts of inclusion and exclusion and were able to find interesting case studies, usually at the local or national scale.

S20 Using a range of examples, examine how tourism has had both positive and negative impacts on local culture.

There should be an attempt to define culture. The Department for Culture, Media and Sport describes it as being about:

- relationships - between individuals and groups
- shared memories, experience and identity
- diverse cultural, faith and historic backgrounds
- social standards, values and norms
- what we consider valuable to pass on to future generations.

'The distinctive customs, achievements, products, outlook, etc., of a society or group; the way of life of a society or group' is how the OED defines it.

About one in four Britons goes on a package holiday each year. More and more tourists increasingly seek exotic and unique cultural spectacles and experiences and are willing to pay a premium to do so, thus potentially helping local cultures. Some host communities find culture and traditions under threat from the purchasing power of the mass tourism industry producing a 'copycat' effect. Tourism is a globalising influence that can initiate irreversible changes within host cultures. The extent to which this happens may relate to the nature of the tourists, the culture and the tourism. The greater the disparity between the

culture of the tourists and the receiving areas the greater may be the impacts. Where local communities own the tourism there is likely to be less of an issue in terms of negative impacts (e.g. aborigines)

Community tourism values local culture and customs. It can revitalize cultural identity and heritage. Case studies that illustrate both sides of the argument are essential.

Comment

This title was the most frequently chosen and one that produced a very wide range of marks. Success or failure was often determined in the introduction. Candidates who defined culture and then kept to their definition generally went on to produce relevant reports that gained high marks. Those who did not define culture produced reports that contained at best marginal but often, irrelevant material. They generally appeared to have worked hard but without the right focus. Some introductions had definitions of culture, which were partly disregarded when it came to the main body of the report. When these reports returned to their correctly defined idea of culture they gained credit and they formed a middle category in terms of marks. This question did illustrate the critical importance of having clear definitions at the beginning so that the rest of the report was relevant to the title.

General impacts of tourism were researched by large numbers of candidates. Some of these did refer to impacts on local culture, but amongst many other impacts that were mainly environmental, pollution or economic.

There were some excellent reports with clear focus on the title. The proportion of good reports was higher than in January. There are some examples of good work on the Edexcel website.

Administration

Quite a few centres continue to use old versions of the **GB3 cover sheet**. The **new version** can be found on the Edexcel website. The advantage of using the new version is that examiners write their comments on the front. If centres wish to have candidates work returned for this part of 6475, all that is available is the front sheet, not the report itself. With the new cover sheets, centres and candidates are able to read the examiners comments, and this could be all that is needed to point the student in the right direction if they decide to retake. The old sheets just contain the breakdown of marks, which is less useful. Centres are reminded that both candidate and teacher must sign cover sheets. Also make sure that you keep copies of all candidates' reports (electronic where possible) for resit and other contingencies.

If candidates are retaking 6475 01 but wish to use the same 6475 02 work without making any changes their 6475 02 mark should be **transferred**. The work should not be submitted for marking again unless there have been changes made to it.

Centres are reminded that the date for despatch of completed reports is **one week before the 6475 01 essay** and that the examiners will not be the same. All reports need a signed GB3 attached to them and should be accompanied by an attendance register. **Thanks** to those centres who have allowed the use of their candidates work at the standardisation meetings. A wide range of centres is contacted so that examiners can see a variety of different approaches before beginning the marking and the co-operation of all these centres is very much appreciated.

Supplement to this report: examples of work

These are available by going to the Edexcel website (www.edexcel.org.uk). They are well worth a look and can be used to show candidates some useful ways of improving their work.

General Comments

Overall candidates found this an accessible paper and there were fewer really weak answers this year. It was evident that many centres had encouraged their candidates to familiarize themselves thoroughly with the advance information and this showed in the range of resource information used as evidence to support answers. Consequently few scripts scored lower than 30. However, only basic synopticity was evident, even in many top end answers, for example, 'as seen in Hawaii where.....' though a few Clarke-Fisher and 'multiplier effects' were included. A considerable minority still seemed to flag up the resource, (eg Fig 3), but not say what the evidence was. At the top end this limited the number of scripts scoring more than 60.

Most candidates completed the four questions, and in order, although a significant minority had some timing issues on 3b, often as a result of extended answers to either Question 1 or 3a. Generally there was an accurate interpretation of command words, but this is not yet universal. Some candidates had difficulty distinguishing between questions 1 and 3(a), possibly through not reading the entire question paper first. In a minority of answers contemporary case studies were used to good effect. It is also evident that the grasp of sustainability, the implications of changing global patterns of economic activity and economic development issues continues to deepen.

Question 1

Most candidates managed a reasonable attempt at this question, considering human factors, (infrastructure, attractions, available work force, ethnic conflict), and physical factors, (erosion, biodiversity, climate/monsoon influence, beaches). Most included some evidence, and most also made some links to the decision of TNCs. However, a few made no reference to Sri Lanka at all, writing in general terms about TNCs. A few wrote about the attractions of tourism in Sri Lanka rather than the factors that would affect TNC decision making. Opportunities and challenges were specifically mentioned by relatively few, but many others implied, (and were credited for), their views on how the factors would be seen by TNCs. Some answers seemed to translate this into a question about impacts, not factors behind a decision. The best candidates had a good grasp of synopticity, followed the advice given in the letter and were able to refer to wider issues and relate to case studies or examples.

A number of candidates wrote what had obviously been pre-prepared answers, perhaps pre-empting a different question. Such answers tended to miss the TNC dimension. With this in mind, any centre assistance in reviewing the pre-released materials must not prepare the candidates so much that they are not flexible enough to cope with whatever questions are set.

An example of a detailed answer to this question is on the next page:

“ There are a number of key issues which may influence decisions made by TNCs such as Page Hotels in Sri Lanka. Firstly, there are many physical aspects which give opportunities. One of the major positive physical factors is the high wind potential in the central highlands, (approximately 1500 – 2500 altitude at its highest). This would give cheap energy but also limit environmental damage associated with other energy sources and the need to rely on imported oil. Equally, the coastline offers a good range of beaches which will be attractive to tourists visiting the area, and there is high biodiversity such as shown in figure 10b), stating that it is among the top 25 biodiversity hotspots. In particular it would provide a good opportunity to develop services for those who wish to view wildlife. The climate must be seen as a potential benefit as shown in Fig 2 showing high year round temperatures (approx. 25°C at sea level. Again this would serve as a pull for potential tourists. Page hotels would need flat land in order to build their development and there are large areas of flat land on the coast, which is a valuable opportunity for development. Flat land also enables transport links to be built which is important for the accessibility of the hotel for both staff and customers.

There are however a number of negative physical factors. For example, Sri Lanka is an island and therefore costs of transportation are likely to be higher as no road transport to the island can be carried out. It may therefore be relatively expensive for tourists and for the running costs of a development. The highland area would make building a challenge in those areas. Other negative aspects are the monsoons of May-September in the South and November-January in the North East. This could cause severe damage to any development built. Equally, there is high erosion on the west and north east coast, (e.g. 304m near Ambalangoda) which would provide a challenge to development on the coast. However high biodiversity also produces a challenge as development may negatively impact upon this or lead to greater regulation of development in vulnerable areas. Equally, as the island is not large it may have a lack of the resources needed for construction.

There are also a number of positive human factors. For example, Sri Lanka is more developed than most South Asian countries, (e.g. life expectancy is 74 compared to 63). Equally there is also high service sector employment, e.g. 28.3% in Colombo which may mean that a skilled workforce is available. There is also relatively high unemployment averaging around 9.2% in 2002 and a population of 19.5 million meaning there is a readily available abundance workforce. The provision of a labour force which is cheap and skilled is vital to enable the TNC to maximize its profits. Sri Lanka is also relatively close to the markets of RICs such as India. There are also a number of historic / cultural sites as shown in fig 10b, such as the royal city of Kandy, which will attract tourists. Infrastructure is fairly well developed with a rail line running along the coast and to Kandy, and the new international airport gives the opportunity to expand flights even more. Another positive aspect is that there are many industries which could help with building materials, e.g. steelworks.

However, there are a number of negative human factors. In particular, political stability is a key TNC requirement and in Sri Lanka there is the challenge of managing the tensions between the diverse ethnic communities. Indeed civil wars may break out once more as has happened before, (pointed out by Aranda Perera of the Board of Investment). Equally, high unemployment and high poverty figures, (for example 27.8% in Hambantota), may mean that there is a high level of crime. Lastly, the area has already been substantially developed by tourism already. For example a representative from the tourist board states that some areas have “exceeded their social and physical capacity”. There may therefore be sufficient supply of tourist developments but also areas such as Negombo may be permanently damaged ”.

Question 2

Candidates generally answered this question well. The question was perhaps anticipated and had been well-researched and prepared by many candidates and there were many high quality responses, though the focus on the ‘south western area’ was interpreted in different ways. Some took it as a cue to write about Site 1; others included evidence from all three sites. Many wrote about the strengths and weaknesses of the region as anticipated. Some evaluated with reference to the aims in the resources, more compared south west to the north and/or east regions in Sri Lanka. Either of these produced reasonable answers. Some wrote entirely positive assessments, thereby penalising themselves, as balance was lacking.

The best answers were articulate and perceptive, and included wider references either within Sri Lanka or to synoptic ideas including core-periphery and regional disparity. They also displayed a good grasp of geographical terminology. Weaker candidates tended to produce lists with little analysis and had more variable use of evidence.

The following provides an example of an effective approach to answering question 2:

“ There are many reasons why Page Hotels decided to locate in the south western area of Sri Lanka. Economic reasons were probably of key concern. Because the south western area is already a core region with industries such as a petroleum refinery and much of the infrastructure, including an international airport, is already in place. This means that infrastructure will not have to be built, so reducing costs. However, it may also lead to congestion. There are also many other hotels in the region, so tourism is already established. Consequently profits will be high, since tourists are already aware of the region as a valuable destination. However, there are many other economic issues that Page Hotels have failed to consider. In deciding to focus its development in the core region, the peripheral region of the north and east will not experience economic development. This may lead to a downward spiral and a decrease in people’s quality of life. It also misses the opportunity for another city to expand instead of Colombo and take the pressure off resources there. This would also have fulfilled one of the aims of the Sri Lankan Tourist Board: to assist development in the rest of the country and prevent the deterioration of saturated areas. Unemployment in areas such as the Eastern region may increase as people rely on crops such as rice. Agriculture already employs 43.3% of the labour force here and because the costs of primary products fluctuates, the people are especially vulnerable to market changes and with no economic development they have no prospect for improved incomes.

Social issues will also have been considered by Page Hotels. Issues of labour are especially important. The SW area has a population density of over 200 people per km² around Colombo with several hotels so there is a large and fairly skilled workforce. However, there is likely to be competition from both industry and other hotels for labour. This may increase costs for Page Hotels. However, an important social benefit is the multiplier effect on the local economy, e.g. on local craft industries, which could bring increased incomes and standards of living. To locate in the SW will do nothing to address the disparities between the SW and NE areas of the island as the SW is quite affluent, (income of 3000 – 4000+ Rs per capita in the areas around Colombo). There are also political concerns. If the SW area was chosen, where most of the Sinhalese live, this may increase tensions between the two communities as the Tamils may feel that the government is not encouraging inward investment into their areas. However, to locate in the NE at the moment is a risky strategy for a TNC as conflict between the two groups discourages tourists from visiting the NE region.

The benefits to the environment include an increased awareness of the importance of conservation since there is a 100 metre buffer zone around the coastline preventing development. Development in the SW will also help to conserve the pristine east coast and so prevent extensive environmental damage there. However, there are several environmental problems with locating in the SW. The region has turtle nesting sites as well as valuable coral reefs and mangrove ecosystems plus Ramsar wetland sites. Development may threaten these valuable areas, a concern voiced by the coastal and turtle conservation experts. Degradation may occur as a result of vegetation clearance and pollution caused by the hotel development. As shown by the tsunami of 2004, mangroves and coral reefs provide vital protection for a coastal area with a high level of coastal erosion. Page Hotels may also have to consider building coastal defenses with such high erosion rates at certain sites especially to be able to cope with the impact of the monsoons. The demand for electricity is growing by 10% per year (fig 2) and an increase in tourists, encouraged by TNCs such as Page, could put pressure on resources even more. The SW area is a poor choice in terms of possible renewable energy sources since wind potential is highest in the highland areas. However, there is a greater density of transmission lines in the SW.”

Question 3(a)

This was a straight-forward question and gave candidates the chance to answer at their own level. However, Question 3(a) was the most variably answered of all questions. Though the question was perhaps anticipated by candidates, some only discussed their chosen site, attracting a max 9 score, despite a strong steer in the resource letter. Sometimes the choice made was not always clear. The best answers referred to a range of evidence and referred to all three sites and mentioned the reasons for the 'rejection' of two sites as well as consideration of the chosen site. In the more general accounts, evidence was more implied or sometimes cited inaccurately. The better candidates had a good sense of locational factors.

Most candidates used continuous prose, which is probably advisable here, though a significant minority used a DME-style grid / scoring approach. Some techniques were excellent, showing structure and understanding; others were more obscure. Some of these were clearly teacher/centre led and teachers need to be careful that such preparation does not encourage inappropriate use of such scoring techniques given the command word of the question. Prose answers tended to score more highly than table or grid-type approaches as it gave greater scope to justify their choice. This question was also where candidates realized that they were heading for timing problems, sometimes exaggerated by a tendency to 'do a table' and then repeat much of it in a further account.

The few who had already written about Site 1 in Q2 penalized themselves by not making much comment here. Synoptic references to Thailand, the Great Barrier Reef, Forest Edge (Sri Lanka), 'wellness' tourism and a growing interest in spirituality were made, enriching answers.

Question 3(b)

A small number, (perhaps around 5%), had timing problems here as they were running out of steam and wrote very little, and consequently scored overall in the range 5-6 marks. However, there were some excellent responses where candidates wrote concisely, with detailed and integrated approaches to the strategies with a range of credible suggestions. Many candidates understood the concepts and had spent some time analysing impacts and managing development. Some ideas were of questionable feasibility, (for example, the gym in which the machines were providing renewable power to run the hotel), but many wrote well about sustainability. Some used a scatter-gun approach, briefly listing numerous strategies. Most popular ideas were ecotourism, local employment/building materials, use of wind/solar energy and conservation ideas. Some answers repeated and developed ideas in the resources such as buffer zones, wind power/renewable energy, reusing existing buildings at site 2, and green belts around coast. This was the question where many candidates made synoptic links to other places they had studied. A few only gave one strategy, and too often strategies were too similar or part of the same strategy, e.g. ecotourism and guided tours. Ecosystems, local, sustainable and conservation were the umbrellas found. 7/8 was a common mark for this question, though even at this late stage on the paper, a significant number of good candidates were able to score in the top mark band (12 marks max). Low marks on this section were not correlated with low marks overall; often timing was the main issue.

An example follows of an effective answer highlighting a strategy to make the hotel development at their chosen site 2 more environmentally friendly:

“One aspect is to use materials and supplies native to Sri Lanka, as far as possible, in both the construction and in the hotels ongoing operations. This will reduce the number of airmiles used to import them. This could be linked to the use of local skills and artisans in the design and construction. Having compost heaps for the waste from the kitchens and restaurants is good to cut down on the rubbish. Also a recycling scheme can be put into place to cut down and re-use waste items. Recycling ‘grey’ water would help to reduce the water demand. Running the hotel on very little electricity is one idea by reducing lighting or having sensors in certain areas and reducing the number of electrical appliances. Restricting guest activities could also have to be put in place such as stopping barbecues and fires and having laws against dropping litter and fines if they do. Providing talks and leaflets about the local environments such as coral reefs, mangroves and turtles, and in particular farms and plantations at Site 2, could inform visitors and encourage them to protect and value them.

The hotel in general could make changes to be more sustainable, e.g. using light bulbs that are eco-friendly as they use less energy and last longer. The appliances, if used, could be energy efficient to reduce energy use. There is limited electrical supply to site 2 with only a 132 kv power line to Nuwera Eliya. One solution might be to use a wind turbine to generate its own renewable energy as the potential for this is good at Site 2. These can also be designed to look like windmills and blend in with the landscape. An alternative would be micro-hydros as additional rainfall at site 2 would swell local streams at certain times of year. If they generate enough power they could also support local villages thereby reducing the need for imported oil.”

Quality of written communication (QWC)

Most responses had a reasonable grasp of expression; some wrote quite detailed and well-structured reports. However, syntax was still a weakness in a significant minority of scripts. Marks for Quality of Written Communication were often 7 - 9. Many commonly-used words, (not just geographical ones), were misspelt on a significant minority of candidates, sometime in different ways on different pages by the same candidate!

Statistics

Mark Ranges and Award of Grades

Unit 6471 - Changing Landforms and their Management

	Max. Mark	A	B	C	D	E
Raw boundary mark	90	66	60	54	48	42
Uniform boundary mark	100	80	70	60	50	40

Unit 6472 - Managing Change in Human Environments

	Max. Mark	A	B	C	D	E
Raw boundary mark	90	61	56	51	46	41
Uniform boundary mark	100	80	70	60	50	40

Unit 6473 - Environmental Investigation

	Max. Mark	A	B	C	D	E
Raw boundary mark	100	78	70	63	56	49
Uniform boundary mark	100	80	70	60	50	40

Unit 6474 - Global Challenge

	Max. Mark	A	B	C	D	E
Raw boundary mark	80	54	50	46	42	38
Uniform boundary mark	90	72	63	54	45	36

Unit 6475 - Researching Global Futures

	Max. Mark	A	B	C	D	E
Raw boundary mark	120	94	86	78	70	62
Uniform boundary mark	90	72	63	54	45	36

Unit 6476 - Synoptic Unit

	Max. Mark	A	B	C	D	E
Raw boundary mark	70	55	51	47	44	41
Uniform boundary mark	120	96	84	72	60	48

Notes

Maximum Mark (Raw): the mark corresponding to the sum total of the marks shown on the mark scheme.

Boundary mark: the minimum mark required by a candidate to qualify for a given grade.

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Order Code UG 017957 June 2006

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