ENVIRONMENTAL MANAGEMENT

Paper 0680/11

Paper 11

General Comments

All candidates seemed to find parts of some of the questions very challenging. The candidates found 1aiii, 1b, 2aii, 2b, 3aiii, 3bii, 5a, 5bii, 6aiii difficult and 1ai, 4aii, 5bi relatively easy. The candidates were spread across the mark range from 5 to 53 marks. There were no obvious misinterpretations of questions and very few of the scripts were difficult to read.

Question 1

(a) (i) This was one of the best answered questions on the paper and most candidates seem to understand the water cycle.

(ii) Again, this question was quite well answered with most getting two marks for a discussion of how contamination might lead to diseases. Examples of diseases or suitable contaminants gained the third mark.

(iii) This question was very badly done with most candidates settling for some simple suggestion such as 'dig a well' or 'install pipes'. This on its own, which it usually was, is not worth marks. Some discussion of how water is made safe, either naturally or by human intervention was needed.

(b) Again, this question was not at all well done with many completely failing to notice that they were supposed to be explaining as well as describing.

Question 2

(a) (i) This calculation proved to be within the capabilities of about three quarters of the candidates.

(ii) Performance was not as good on this question with the main problem being that candidates failed to notice the word 'modern' in the stem, and thus wrote about very ancient agricultural methods.

(iii) Most candidates were able to score here; the distinction between a cash crop and a subsistence crop is well understood.

(b) Similar questions to this have been asked before, so it was disappointing to see significantly fewer than half of the candidates able to gain marks. When they did, biofuels and textiles were the most commonly seen answers.

Question 3

(a) (i) This was quite well done, but since the chemical symbols are on the diagram, it should have been even better.

(ii) Again, a good number, but not as many as one might have expected, were able to extract this information from the picture.

(iii) Naming a natural source of a gas which causes acid rain proved beyond most candidates. They clearly did not understand what was wanted; indeed this question had the highest 'no response' rate on the whole paper.

(b) (i) Candidates should be helped to understand that these questions tell a story. Having established that human activities such as burning fossil fuels in power stations and vehicles cause the production of gases which go on to produce acid rain, they should be linking this with the fact that alternative sources of energy such as solar energy do not produce gases. Not many did this and as a result gained only one mark out of the three available.

(ii) Very few candidates wrote about the actions that ordinary people can take.

Question 4

(a) (i) This question was quite well done although significant numbers of candidates were confused and had glow worms feeding off fungus flies; the stem tells candidates that glow worms *are* the larvae of fungus flies and that they feed of 'other small flies'. Some candidates drew pyramids and of those that drew a food chain a good number had the arrows going the wrong way. Many took the word draw literally and drew glow worms and flies, and in some case giraffes!

(ii) Surprisingly, 25 % of candidates got this wrong.

(b) (i) About half were able to make sensible suggestions here.

(ii) Most candidates came up with the idea of having some sort of path with often a fence to keep visitors away from the worms, but they did not go on to suggest how the visitors might be encouraged to actually stay on the path.

Question 5

(a) This question was not at all well done with the misinterpretation of what constitutes a mineral particle being the main problem.

(b) (i) This was very pleasingly answered by nearly all candidates, the only consistent problem being that a significant number could not bring themselves to use organic twice, despite the instruction in the stem that they could.

(ii) Candidates did not always respond correctly to the instruction to list two causes and many just expanded on one. Credit is not awarded for suggestions that a potentially damaging activity should be stopped. For example, if a candidate suggested that ploughing the land may lead to erosion and then suggested that the solution is 'to not plough' they will not achieve marks for this impractical solution. We are always looking for ideas that suggest how to carry on doing things that humans need to do, but is a sustainable way.

Question 6

(a) (i) About two thirds of candidates got this right.

(ii) This was not so well done, the main problem being that many candidates thought it was good enough to say the fall in 1993 was 5.

(iii) As is so often the case with this 'describe and explain' type of question, most made no attempt to explain whatsoever, and so they could get no more than two marks, no matter how detailed their description. This general problem should be addressed as a priority.

(b) There was quite a good knowledge of the effects of UV rays, although many candidates are still muddled and confuse ozone depletion and global warming.

All candidates marked finished the paper and there were few blank sections.

ENVIRONMENTAL MANAGEMENT

Paper 0680/12

Paper 12

General Comments

All candidates seemed to find parts of some of the questions challenging. Candidates seemed to find questions 2b, 3ai, 3aii, 3c, 5ai, 5aiii the most difficult and questions 1biii, 2ai, 4ai, 6bii the easiest to answer. Candidates were spread across the mark range from 58 to 0. There were no obvious misinterpretations of questions and only a small number of scripts were difficult to read.

Question 1

(a) (i) Not as straightforward as it seemed. One of the four letters was often given wrongly and sometimes two.

(ii) Significantly less than half answered correctly, some candidates obtained one of the two marks but many got both parts wrong.

(b) (i) There were some good attempts at this question but some candidates misinterpreted the question and others wrote about long- term effects e.g. health, farming.

(ii) Some thoughtful answers but not always very clear.

(iii) Most candidates wrote about earthquake-resistant buildings.

Question 2

(a) (i) Many candidates misinterpreted the instruction and only wrote one letter for each pollutant source. It is important to remind candidates to read questions very carefully before they answer.

(ii) About half the candidates gave good answers but some confused the processes involved or focused on pollution in general.

(b) Answers were often vague and about not doing things. A list of rather unspecific points was often all that candidates could come up with, when what was needed was some detail. For example, a suggestion such as 'stop using fertilisers' is not going to gain marks, because it is just impractical. However, a discussion of restrictions such as application in dry weather, applying the correct amount, avoiding application near water courses etc. would be worth marks.

Question 3

(a) (i) This question was not well done and very few definitions gained two marks. A candidate who got one mark usually got it for saying that biodiversity reflects the number of species (not organisms) in an area. Few candidates went on to discuss genetic variety within the populations of these species or the variety of habitats or ecosystems within an area for the second mark.

(ii) There were some good answers which suggested taking genes for drought resistance from wild varieties and transferring them into cultivated strains, by breeding or genetic manipulation. Many wrote sentences using the words biodiversity and genetic resources which failed to answer the question.

(b) (i) Most candidates were able to gain two marks for stating two ways in which tourists damage habitats.

(ii) The ways in which ecotourism helped local people was answered better (jobs etc.) than the ways in which it helped the environment.

(c) There were some good answers here gaining two marks, but this question was not well done. A significant number just wanted to ban logging, having not really understood the idea of sustainability at all.

Question 4

(a) (i) Most candidates seemed to gain two marks. Very few scored zero marks because the suggestion that plants get water from the atmosphere was ignored; answers that gave minerals from soil and water and carbon dioxide from the atmosphere got one mark.

(ii) Most candidates understood the graph, described the trend and gained one mark for saying an increase in nitrate leads to an increase in mass. The second mark was much less commonly awarded. It could be gained either by talking about the levelling off at about 180 mg l^{-1}, or manipulation (not just quoting) of the figures to support what had been said.

(b) (i) This was pleasingly well done because candidates had to deal with quite a complex diagram; over three-quarters matched the letters correctly. Very few candidates scored zero marks.

(ii) Although many exceeded the demands of the question with detailed answers others wrote about not doing things. Marks could be gained for a range of suggested strategies or detailed descriptions of one or two.

Question 5

(a) (i) For what looks like a relatively simple question few gained two marks for precise answers. In questions like this we will be looking for general principles (here North of the equator and coastal) rather than geographical details about which countries the subject is near.

(ii) Some candidates exceeded the demands of the question, others wrote about the fishing industry, but most candidates were able to gain one mark for some comment that related to the high availability of food for fish in these regions, whether it is due to availability of light or nutrients.

(iii) Some showed a thorough understanding of upwelling for two marks, many gained one for nutrients.

(iv) Despite the fact that a large number of candidates did not mention upwelling in (a)(iii), they did go on here and ascribe fishery collapse to El Nino and its effects.

(b) Most candidates gained two marks.

Question 6

(a) Although many candidates gained four marks, the majority seemed to gain two marks. The most common mistake was that water vapour is used in photosynthesis. This echoes the error in question 4 (a)(i) and leniency was not shown this time; the water plants use in photosynthesis is taken up from the soil by the roots.

(b)(i) Some candidates wrote down the names of gases instead of answering the question but a wide range of possibilities was allowed and many were able to gain marks.

(ii) The vast majority gave the correct answer, carbon dioxide.

(c) There were some very good answers but many candidates only answered half the question, either writing about the ‘largest’ or the ‘least controversial’ wind turbines. This is an example of where candidates are not studying the question demands in detail. They were answering ‘why are wind farms offshore?’ and just gave one reason. There are always clues in the stem, in addition to which the two marks available should give a hint that more than one simple reason is needed.

All candidates marked finished the paper and there were few blank sections.

ENVIRONMENTAL MANAGEMENT

Paper 0680/21

Paper 21

General comments

Despite the many and varied patterns of performance between candidates, the general pattern on this year's paper was for the total mark for **Question 1** to be a few marks higher than that for **Question 2**. It is customary to try to place first the question which, from previous experience, covers the topic areas likely to be most familiar to the majority of candidates. **Question 2** was based upon content in the Lithosphere unit and some parts put a higher demand on knowledge, such as about extraction and use of fossil fuels and arguments for and against the use of nuclear power. The most common misconception was that the carbon dioxide released from the burning of coal led to the destruction of the ozone layer **2(d)(iv)**.

All candidates had sufficient time to complete the paper; however, for a majority of candidates, especially weaker ones, there was a noticeable decline in answer quality from part **(c)** onwards in **Question 2**. The final part of **Question 2(e)(ii)** was the individual question most likely to be left unattempted. Candidates who felt that they had more to write beyond the lines provided on the question paper were welcome to extend their answers on to the blank pages (either 15 or 16 in the booklet) and quite a number did. Those candidates who clearly indicated in the main question that they intended to continue their answers and accurately indicated question number where they did do so, made it easier for Examiners to find and reward their answers.

As in previous examinations, some candidates failed to distinguish between answers requiring description and explanation. Command words such as 'Describe' and 'State' are most commonly used in questions for which source materials (tables, graphs, diagrams, written passages) are provided. Candidates are expected to look at and select from the information provided in order to answer the question. Some candidates were reluctant to quote and use values to support their answers, notably in **1(b)(ii)** and **2(b)(iii)**. This is good practice in any question, and essential in all descriptive questions worth three or more marks. On the other hand, 'Explain' requires candidates to give reasons why. Some candidates were unable to switch in **1(b)** from describing and stating in parts **(i)** and **(ii)** to explaining in part **(iii)** and continued to describe temperature and precipitation in hot deserts. Similarly, some candidates added extra long labels to the diagram of desert vegetation in **1(c)(i)** because they went beyond the question demand to 'show ways' and extended into reasons why they had thorns instead of leaves, for example. Then the command word 'Why' was ignored in their next answer to **(c)(ii)**.

For the future, it is worth repeating to students the message that has been highlighted in previous years' reports about the majority of candidates equating filling all the lines with giving a full answer to the question. In this exam, most stopped answering once all the lines have been filled. Always remember that the lines left for answering are for guidance only, and cannot take into account the many variations in size of handwriting, precision of expression between individual candidates and likelihood of repeating the question before beginning an answer. What is essential is that candidates tailor the number of points made and the amount of elaboration to the number of marks available, even if it means extending the answer into the spaces below or on to a supplementary answer sheet.

Comments on individual questions

Question 1

For many part **(a)** proved to be the most challenging part of **Question 1**, instead of being the hoped for relatively straightforward starter. Despite a few answers of Asia, Africa was the majority answer in **(a)(i)**. However, only a few candidates were able to make a sensible suggestion about why deserts covered so much of Africa **(a)(ii)**; while references to the Tropic of Cancer were frequent, these were rarely stated in the context of land area width and size in desert latitudes. A slightly higher level of success was achieved in answers to part **(a)(iii)**, noticeably by those who referred to the currents flowing from the direction of the poles instead of making do with the over-vague answer of moving towards the Equator. The quality of answers to part **(a)(iv)** depended upon candidate knowledge of El Nino and how well they understood the reverse in ocean currents from cold to warm causing warm and wet onshore winds. While a good proportion of candidates had enough of an idea for one mark, it was a real minority who understood well enough to claim both marks. Around the tropics (or similar) was the frequent one mark response in **(a)(v)**; coastal locations were often recognised as well, but few answers specified along western coasts of continents, while some candidates confused west and east. Two or three mark answers out of seven were the norm for part **(a)**.

Question accessibility and candidate performance improved markedly in part **(b)**. Although the most conclusive evidence for desert climate was the low annual rainfall total, the majority of candidates included a reference to high temperatures as well in part **(i)**, which was also credited. While a few stated separately climate characteristics for Riyadh and Cairo in part **(ii)**, which did not meet question needs, most candidates gained at least two marks by referring to basic differences such as higher temperatures and more precipitation in Riyadh. Three mark answers were typically supported by the use of values, particularly significant values such as 81 and 29 mm for precipitation totals and 34 and 29ºC for maximum temperatures. The least successful answers to **(iii)** came from candidates who described the needs of plants for heat and water in general terms without applying their answers to desert areas. The strongest answers tended to come from those who began with low rainfall and used high temperatures leading to high rates of evaporation and transpiration in support of their basic answers about lack of water.

In part **(c)(i)**, although a few candidates over-concentrated on trying to use labels to explain instead of describe, the main factor controlling how well this part was answered appeared to be the willingness of the individual candidate to label sufficiently in line with the four marks available for the question. Adding one label such as 'long roots' or 'thorns instead of leaves' in two places was never going to be awarded more than a single mark. Some candidates labelled with real intensity and variety, and gave answers worth all four marks and more. A few avoided answering the question altogether, either due to non-familiarity with the technique of labelling diagrams, or to lack of knowledge. In part **(ii)** one mark answers were more common than two mark ones. Most candidates were unable to give both points needed. The command word 'why' was ignored by some who repeated what the diagram showed.

Parts **(d)(i) and (ii)** posed few problems; only answers that were too narrow restricted either or both answers to one mark only instead of two. Too many of the answers given to part **(iii)** relied upon quoting more information from the passage without any attempt to explain how it showed that the Bedouin's traditional way of living was sustainable. Most candidates seemed unable to explain how moving around over wide areas of the desert enabled recovery of pastures and water supply. One mark answers to this part were the most frequent. Likewise many answers to part (**iv)** skirted around the real question. Too many candidates seemed to react to the first sentence in the question, which was being used to set the scene, about how oil was changing Saudi Arabia, instead of answering the question about the effects on the Bedouin people. Only well focused answers reached three or four marks here.

If there were mixed fortunes between candidates in answering part **(d)**, the same was true in part **(e)**. Answers such as overgrazing, overcultivation or even deforestation were considered to be good answers to part **(i)**; unfortunately, many answers were less precise than any of these, some such as 'more food produced' following on too closely from 'higher demand for food' already in the flow diagram. Candidates who homed in on population growth and explained it, in terms of being the cause of the chain of events shown leading to desertification, quickly claimed the two marks available for **(d)(ii)**. Part **(iii)** covered a familiar topic. Inevitably some candidates made too limited a number of points for a question worth five marks, repeating just one or two points without worthwhile development. The superior answers came from candidates who made a range of valid points and showed in their explanation that they were aware of the regional theme of 'developing countries in Africa and elsewhere' by adding appropriate comment.

Question 1 was well answered in general. The majority of candidates had been well prepared to answer questions on the topics under examination. Weaknesses in answers to certain parts of the question exposed some candidates' unhappiness with interpreting from a world map, or their non-familiarity with labelling a diagram, or their inability to add comment directed at the main theme of the question. As usual, the key to achieving a high total mark was some consistency of performance between different parts of the question, based on good knowledge and understanding, as well as good examination technique by reading each question carefully and giving appropriate answers.

Question 2

In part **(a)(i)**, some candidates answered from the sketch alone which never led to anything better than one mark answers. At the other extreme candidates displayed their good knowledge of coal formation, some referring to intermediate stages like the formation of peat in their complete answers. Any references which included the decomposition of animal bodies suggested that the candidate could not fully separate out coal formation from that of oil and gas. Despite an over-reliance on the term ‘non-renewable’ in answers to part **(ii)**, few failed to claim at least one of the two marks for either length of time in formation or origin from dead plants. The most common answer that showed understanding in part **(iii)** went along the lines that carbon stored in the coal when burnt combined with oxygen in the atmosphere to release carbon dioxide. A few candidates began at the beginning and described how in life plants absorb carbon dioxide from the atmosphere as part of the process of photosynthesis. Poorer understanding was shown by the quite high number of candidates, mainly weaker ones, who believed that carbon dioxide was part of coal and simply released when burnt.

Entirely correct divided bar graphs were frequent in answers to part **(b)(i)**; partly correct plots were usually the result of candidates plotting incorrectly one of the two odd numbers, most often the 3.1 billion tonnes for coal, with knock-on effects for one or more of the other smaller divisions. Only those who tried to draw separate bars within or made one compound bar of four million tonnes for oil failed to show at least one of the divisions accurately. The key boxes were almost invariably filled in, although just occasionally the shading used for HEP and nuclear did not match between key and graph. Some candidates used ink for shading types in the key and pencil on the graph, which was far from satisfactory. It was easy enough for candidates to claim both marks to **(b)(ii)** provided that they used values from the graphs. A few, however, concentrated on trying to explain the increase instead of obeying the command word to 'describe' changes since 1987; some others continued to use the word 'changed' from the question without ever stating that there had been an increase, even when some correct values were stated. Many of the answers given to **(b)(iii)** were disappointing. Again there were those who concentrated on explaining, this time with reasons, the great importance of fossil fuels. These made up the zero mark answers. There were plenty of candidates who gave one mark answers by showing that they were able to recognise which of the five energy sources were the fossil fuels, but without making any further reference to the values for 2007. Only those who used the values, such as 9.7 out of 11 billion from fossil fuels and only about a 12% contribution from other sources, gave answers worth two or three marks. Many candidates, therefore, seemed to make a straightforward question seem difficult.

Even when candidates appeared to understand the advantages of oil over coal in part **(c)**, many struggled to describe with any clarity the differences between them. They became word-tied and kept re-using the same words such as liquid and solid without further detail for the particular question. For extraction, there was a widespread misunderstanding that coal was found much deeper underground than oil. There was a general shortage of references to actual methods of extraction, although there was a widespread recognition that less labour was needed for oil. Best answered was the part about transporting; least well answered was the last part on use. Overall there was a close relationship between the total mark for part **(c)** and the total mark for **Question 2**, with weaker than average candidates struggling to reach half marks.

Some candidates did not enter an answer on the line left for answering in **(d)(i)**. Of the other candidates, more than half gave the correct answer of 25%. However, there were many variations from those who tried to use values other than the 32 and 8 megawatts of energy a day. Two mark answers to part **(ii)** were common as a big majority of candidates made use of the basic statements about greater energy output and reliability of production from coal compared with wind. Only those who were able to develop these statements more fully, such as by references to size of land area, costs of construction and likely objections to bringing wind power output up to coal fired power station levels, worked towards claiming the remaining two marks available. When the question in part **(iii)** triggered an acid rain response from candidates, including the name of one of the gases responsible such as nitrogen oxides or the type of damage caused, it was an easy two mark response. Unfortunately, the majority of answers were dominated by carbon dioxide, to the exclusion of almost anything else, except even more unfortunately ozone layer damage. Starting from this base, most candidates totally ignored the local problem part of **(d)(iv)** and jumped straight into why

global warming and damage to the ozone layer were global problems. It was left to the minority, who continued with the acid rain theme, plus the occasional candidates who discovered acid rain in this part for the first time, to claim two or three marks in this part. At least one third of the candidates referred to ozone layer damage in this question. These ozone hole answers seem to be automatically triggered by any mention of air pollution in a question. Some other candidates over-concentrated on the effects on peoples' health, which did not match the environmental damage theme of the question.

Provided that candidates did more than merely write out selected parts of the table based on countries in **(e)(i)**, it was easy to accumulate quick marks for identifying the three continents represented and recognising the dominance of developed countries. The clarification in the brackets in the question led to plentiful references to continents which were not included, notably Africa. In some answers to part **(e)(ii)** it soon became clear that the candidate had no knowledge of nuclear power. This did not prevent some candidates from filling all or most of the lines by writing about renewability, expense and pollution, but without including anything which showed convincingly that the candidate was talking about nuclear power. At the other end of the scale there were some incredibly detailed answers, including references to the likes of Chernobyl, in which candidates put forward in a fluent manner strong arguments for and against the use of more nuclear power. In the best answers both sides of the argument were presented before the candidate expressed his or her own clear view. The full range of marks was in regular use for this final question. For able candidates it allowed a strong ending to a successful examination performance.

The total mark for **Question 2** was usually, but not always, below that for **Question 1**. For weaker candidates, a decline in performance set in from part **(c)** onwards. Able candidates on average answered the questions in parts **(d)(iii)** and **(iv)** less well than any of the others.

ENVIRONMENTAL MANAGEMENT

Paper 0680/22

Paper 22

General comments

Despite the many and varied patterns of performance between both individual candidates and Centres, the general pattern on this year's paper was for marks for **Question 1** to be a few marks higher than those for **Question 2**. It is customary to try to place first the question which, from previous experience, covers the topic areas likely to be most familiar to the majority of candidates and is likely to be the more accessible to candidates of all abilities. The content of **Question 1** covered well known topics within the Hydrosphere unit, while **Question 2** was more wide ranging in its coverage of the Biosphere unit. Not many gaps in knowledge were exposed on this paper, but where they were, they tended to be Centre specific and most often for Fair Trade and aid in **2(e)**.

Having sufficient time to complete the paper has never been an issue with this paper. However, there was evidence of answer quality tailing off from part **(d)(ii)** onwards in **Question 2,** particularly among candidates in the lower half of the ability range. While unanswered questions were rare throughout the paper, the last page for answering **2(e)** was the one most likely to be left blank. The single most ignored question was completion of the table in **2(a)(i)**. Weaker candidates, who had written shorter answers throughout, were the ones who seemed most likely to give up.

The main weakness exposed in this year's paper was study and use of world maps. Some candidates did not seem to know where to begin when they were asked to describe the distribution of high and very high birth rates in **2(b)(iii)**. The question was attempting to help them by making them concentrate on only two of the four types of shading on the map, and high birth rates were only present in limited areas of the world. Yet a significant number of candidates were not able to go further than the answer they had already given about Africa in **(b)(i)**. They were not expected to know the names of lots of different countries, but there was nothing to stop them spending a minute looking carefully at the map and noticing that every African country had a high birth rate above 25, and that birth rates were particularly high in certain parts of Africa that could be described. Average incomes per head marked on the world map in part **2(d)** were little used in answers to parts **(ii)** and **(iii),** even though candidates had needed to use them answering part **(i)**. Before answering part **2(d)(iv)** some sensible, thinking candidates drew in the course of the North-South dividing line on the map of birth rates, which really did help them to answer part **(iv)** successfully.

It is worth alerting future candidates to the good practice of beginning to answer the question straightaway without repeating the question. It remains an issue because the majority of candidates equate filling all the lines with giving a full answer to the question. Most stop answering once all the lines have been filled. Emphasise to future candidates that the lines left for answering are for guidance only, and cannot take into account the many variations in size of handwriting and precision of expression between individual candidates. What is essential is that candidates tailor the number of points made and the amount of development to the number of marks available, even if it means extending the answer into the spaces below or on to a supplementary answer sheet. When they do this, advise them to ensure that they clearly mark up any extra answers with the question number, since answers might be written some distance away from the main question.

Comments on individual questions

Question 1

The quickest way to the two starter marks in **(a)** was for a candidate to support the answers stating that there is a large amount of ocean and a tiny amount of fresh water with fractions or percentages, such as three quarters and 3%. Many did. The main construction problem for candidates in completing the pie graph in **(b)(i)** was showing the tiny total percentage for rivers and lakes. The most common reason for a candidate losing one of the marks was making their sector too wide; a reasonable tolerance was allowed, but some of the sectors drawn in were closer to ten rather than to one percent. In the weakest answers to **(b)(ii)** candidates merely repeated percentages without any comment and left too much work for Examiners to do on their behalf. Only a little explanation was needed about why large percentages of fresh water on Earth were out of human reach; comment about the tiny amount available in more accessible rivers and lakes was also rewarded, as well as comment about their lack of cleanliness. Most candidates described how a well works sufficiently fully for both marks in **(b)(iii)**. The most common advantage stated in **(b)(iv)** was clean / safe / non-polluted water, although 'fresh' by itself was not credited because it was part of the question. Stating the second advantage, often reliability of supply or its equivalent, was a good discriminator between able and weak candidates. Most of the available marks in part **(b)** were claimed with some regularity.

The most popular large dam choices in **(c)(i)** were the Aswan, Three Gorges and Hoover dams. Also it was good to see many candidates from Centres in South Asia using examples of dams in their own countries. Full marks for part **(c)(ii)** were only awarded if an acceptable dam had been named and if some information about advantages specific to it was included. Many full and good answers to part **(iii)** were seen. To their credit, the vast majority of candidates attempted to include at least one advantage for each of three factors specified in the question. Those writing answers worth four or five marks were the ones who elaborated further. Candidates who referred to an example, or who commented on the question's 'controversial' theme, were the ones most certain to claim all five marks.

One mark was separated out for making what was considered to be the best choice of two uses in part **(d)(i)**, namely waste disposal and navigation and shipping. However, failure to select these two uses did not bar the candidate from gaining all four marks provided that their explanations were sufficiently strong. For example, there were many strong answers relating to irrigation water for crops in relation to nitrate leaks leading to eutrophication. Only a shallow explanation or really poor choices such as recreation, stopped answers reaching at least half marks in this question. There was a sharp divide in answer quality in **(d)(ii)** between candidates who merely continued answers from the previous part about how the different river uses led to pollution and those who identified conflicts between different groups of river users. There was plenty of the latter, and many explained two or more conflicts to ensure that they claimed all three marks.

Candidates approached answering parts **(e)(i)** and **(ii)** in many different ways. In both parts, however, the one mark answers came mainly from those who compared two bars without further comment. The two mark answers came from those who either compared values more widely, often stating differences in size, or who supported their use of values with a strong general comment. An example of a strong general comment for part **(ii)** was 'access to rural areas is the lowest of all six values', a statement which was made by some more able candidates. The poorest answers to part **(ii)** came from those who merely compared the size of the two rural bars, which did not answer the question. Part **(iii)** was well answered by many; they were most likely to refer to poverty, less concentrated populations and lower levels of influence over politicians, although in fact these points were most often made the other way around in relation to urban areas. Poverty was the most common one mark answer.

Very few candidates failed to gain at least one mark from part **(f)**. Low levels of immunity was often the starting point for answers in **(f)(i)**. Economic consequences of spending time fetching water such as not undertaking productive work was the most frequently claimed mark in part **(ii)**. To be worth more than two marks, candidates needed to do more, and to bear in mind that the question was worth four marks. Looking for more explanation came up with points such as many infants under-nourished and children often play in and around water in the first part, and specifying types of work such as crop growing and craft occupations in the second part.

Question 1 was well answered throughout. Quite unusually there were no parts within the question in which candidates regularly under-performed compared with what had been expected. The higher the mark, the greater the consistency of performance across the questions, and the greater willingness of the candidate to give the amount needed for all the marks available.

Question 2

Somewhat unaccountably some candidates made no attempt to complete the table in **(a)(i)**. Of those who did, few made any numerical errors, although a few were careless in not including the plus signs. In **(ii)** it was not enough for the candidate to write words to the effect that Germany's death rate is higher than its birth rate; to be awarded the mark, they needed to go to the next stage and recognise the natural decrease in population.

While Africa was the almost universal answer to part **(b)(i)** (only the occasional answer of Asia broke the trend), Europe was quite regularly replaced by North America or Oceania in **(b)(ii)**. This probably reflects candidate failure to read the question carefully enough. Answers to **(b)(iii)** varied greatly in quality. Some merely repeated the mention of Africa without any more careful description from the map, such as the fact that every country in Africa was shown to have a birth rate above 25, or that very high birth rates above 40 were concentrated in countries in West and East Africa. One or two mark answers often included mention of the Middle East and parts of Asia. Three mark answers typically included some reference to the Americas reflecting a broader perspective on the world distribution. India and Indonesia were the two countries most likely to be wrongly identified as having high birth rates. The reasons for low birth rates in developed countries and in countries with a strict population policy such as China were well known in **(b)(iv)**. The total mark most closely reflected the breadth of points made and how well stated they were.

While some candidates shaded in more than one age group on each pyramid, and others shaded in age group 0-4 on the pyramid for Ethiopia only in part **(c)(i)**, the vast majority of candidates picked up the easy mark. They had to work harder to gain the mark in part **(ii)**; answers within the range 45 to 47 were the only ones accepted. There were many answers of 23%, worked out for either males or females, but not for the total population. The correct answer of 16% was far from being the most commonly circled answer in part **(iii)**. Some of those who did circle 16% had sufficient savvy to make use of this percentage when answering part **(v)**. Candidates experienced few problems answering part **(iv)** provided that they homed in on pyramid 'shape'. Many did, and often reached two marks despite problems trying to write about the shape of the UK's pyramid. Many did not, however, write about pyramid shape and these candidates frequently used a lot of percentages for different age groups to no avail. The weakest answers to part **(v)** were from those who stated that the largest age group in the UK was 35-39 and then said no more. The bulge in middle-aged groups was mark worthy only when it was placed in the context that it would soon lead to a swelling of the elderly age groups. One mark answers, showing a little understanding when they referred to the height of the UK pyramid going up to 90+, were common. Absolutely the full range of quality of responses was seen in part **(vi)**. Zero mark answers were normally those that did not answer the question, either by writing about reasons why Ethiopia has a young population and the UK does not, or by concentrating on general problems arising from great population growth in a developing country such as Ethiopia. Middle of the way two mark answers typically touched on one problem for the young (such as costs of education) and one problem for the old (such as costs of health care or pensions). In superior answers, the correct context was established and the explanation for both was fuller.

A few responses to part **(d)(i)** showed that even for the easiest of questions some candidates can do things wrong. Occasionally continents were not ranked by income; sometimes Latin America was marked as developed and Oceania as developing. The main weakness in answers to both parts **(ii)** and **(iii)** was that candidates failed to use, or obviously show that they had used, the income information on the world map. Without this, the case for extending the North-South dividing line southwards to encompass Oceania as part of the North was not made clear in **(ii)** and answers to **(iii)** relied on over-general comments. In fact, in part **(iii)**, many dealt better with the not so good element of the fit particularly when they referred to regions that they knew had high average incomes per head like the Middle East. There was not always a lot of evidence in the answers given to part **(d)(iv)** that candidates had looked back to the map of birth rates. In many answers there was nothing beyond a general statement about high birth rates in developing and low birth rates in developed countries. Answers written after another look at the world map of birth rates stood out as being of a different quality. Such candidates were more likely to notice that there were both low and moderate birth rates, not just low, in countries north of the line. A below 15 per 1000 population birth rate country like China stood out as an exception to the dominant high and very high birth rates of countries south of the line. Marks were not awarded unless there was definite evidence that the birth rate map had been re-studied in the light of this question.

From those candidates who were not familiar with Fair Trade there was frequent confusion with Free Trade in **(e)(i)**. Whilst most candidates, who did know what Fair Trade was, referred to a guaranteed minimum price to overcome the problem of widely fluctuating world market prices in primary goods, a few were also aware of its role in supporting the wider community. Many answers for advantages to **(e)(ii)** suffered from vagueness; there was much about helping with education, medical care, birth control, development and generally improving living standards, but little in the way of specific references to types of aid and the nature of help given. Over-dependency on aid was the disadvantage that was mentioned most. One common misconception was that aid led to people getting in debt and having to pay back all the money given. Answers to this question were probably more disappointing than for any other question on the paper. Three and four mark answers were the exception rather than the rule. To an extent there was a relationship between answer quality in part **(e)(iii)** and the strength of answers that had already been given to parts **(i)** and **(ii)**. However, by concentrating on the strategy with which they were more familiar, some candidates managed to claim both marks. Even so, most answers were narrower than this and worth only one mark. Choice mattered little here; knowledge and understanding mattered more.

For nearly all candidates the total mark for **Question 2** was below that for **Question 1**. Many candidates began to lose momentum from part **(d)(ii)** onwards. This general summary applied least to more able candidates, who could cope better with the study of the world maps and knew more about Fair Trade and aid.

ENVIRONMENTAL MANAGEMENT

Paper 0680/03

Coursework

General comments

The quality of work submitted continues to be good and shows the enthusiasm that is created through candidates carrying out investigations for themselves into their local environs.

There are the usual problems with some topics not involving a sustainable element and so losing Domain C marks. Centres work hard to allow their candidates to achieve a worthwhile project and the dedication of the Centre staff shows through especially with their comments.

Comments on specific questions

Domain A

Marks scored in Domain A continue to be good, illustrating the value of applying the theory to real examples of environmental concerns.

Domain B

The range of research skills was impressive with some excellent firsthand experimentation and some thorough review of the literature paired up with relevant research into the present state of the problem.

Domain C

To score well in Domain C there needs to be a thorough consideration of possible choices along with an evaluation of the consequences of each so that a plan of action can be formulated with a consideration of its impact. This depth of enquiry is not demonstrated by many candidates and it would be a wise idea for Centres to start teaching here and maybe work backwards with candidates, so that they can see the end point that is needed and then they can plan their investigation so as to acquire the relevant data to come to a plan for sustainability.

ENVIRONMENTAL MANAGEMENT

Paper 0680/41

Alternative to Coursework 41

General comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Costa Rica. Many candidates understood and made good use of the source material and their written responses were sufficiently clearly expressed that the Examiners could be confident that marks awarded were deserved. The mathematical and graphical questions did pose some difficulties for a minority of candidates.

Candidates had no problems completing the paper in the time available.

Overall the pattern of this paper is very similar to past papers and Centres should work through past papers to help candidates see how to make the best use of the information given for each question.

Comments on specific questions

Question 1

(a) Many candidates identified at least one reason why exports were not occurring, the idea that all the products were needed in the country was most often given credit.

(b) The vast majority of candidates gave at least one creditworthy point. However, vague statements about making more money or profit needed to be qualified as shown in the mark scheme to gain credit.

(c) Most candidates completed the three rows as requested on the planting plan. However, care was needed to keep the spacing even and the correct number of plants. Some candidates planted at the same density as the original or half the original density. In part **ii** the graphs were usually well plotted but sometimes labels were missing from axes. In part **iii** nearly all candidates correctly read a figure from the graph they had plotted. In part **iv** candidates usually identified that there was no increase in yield, surprisingly this was not always supported by a second reason for not planting at 80 thousand plants per hectare.

(d) The trends in soil erosion were usually well described and the second marking point was often made. In part **ii** the question was a little more demanding as candidates needed to consider their graph.

Planting at 70 thousand plants per hectare was not the best answer though many were drawn to state this. Answers between 50-60 thousand plants per hectare usually gained both marks for supporting reasons. In part **iii** soil erosion was sometimes described as wearing rock away rather than removal of topsoil. In part **iv** There were some very good descriptions of the process of soil erosion that gained maximum marks. Unfortunately some candidates went on to describe soil erosion due to mining which did not gain credit.

(e) Candidates realised that Plan One was inadequate but sometimes struggled to give clear answers that could be given credit. In part **ii** neat tables were often drawn; to gain the third mark there needed to be a clear indication that 25 items of data could be recorded. In part **iii** it was clear that candidates realised this was a better plan but sometimes their answers were too vague to gain credit. To just say more data is gathered was not regarded as a clear answer.

Question 2

(a) Most candidates gave the correct answer of 4000 dollars. In part **ii** weaker candidates just said 'because they need to be relocated'. However many realised that the government would still gain revenue in the longer term and it would help to prevent objections to the scheme.

(b) That the larger lake could generate more electricity was clearly stated by many candidates though few seemed to appreciate that power generation could be continuous or that the water for HEP would not run out.

(c) Candidates nearly all described the need to prevent overfishing and a reasonable number went on to suggest that the number of tourists could be controlled.

(d) There were many clearly expressed answers gaining maximum marks. When figures were used from the data table they successfully supported the answer given. In part **ii** a range of figures from the table was suggested and some suggested the average figures. However sample one nitrate was furthest from the general pattern of the data.

In part **iii** there were many correct references to reliability or the need to calculate an average.

(e) There were many candidates who gave clear concise answers and gained maximum marks. The Examiners were pleased to see that the details of eutrophication had been well understood.

(f) This question was the hardest on the paper. Candidates needed to look carefully at the pattern of movement of the pesticide and then describe the movement. Some data from the source helped some answers but most candidates used too many references to the letters rather than considering the rate of movement. However, in part **ii** candidates could gain a mark even if the previous section had proved to be demanding. In part **iii** most candidates realised that the pesticide was going to enter the lake although few appreciated that the consequence of this was unknown but the risk was not worth taking.

Question 3

(a) Most candidates understood the three parts to this question and gave appropriate answers in their own words having selected an appropriate statement.

(b) Many candidates gave answers that did not quite make the point that the process was using renewable energy or that it was non-polluting or that oxygen is not a greenhouse gas. Some candidates stated that carbon dioxide would be released although the source made no reference to this gas. There was an assumption by some candidates that any industrial process must be damaging the environment. In part **ii** most candidates gave thoughtful answers clearly outlining some arguments in favour and against the development. Most candidates gained three or four marks here and it was very rare to see answers that were not trying to balance the arguments.

ENVIRONMENTAL MANAGEMENT

Paper 0680/42

Alternative to Coursework 42

General comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Mexico. Many candidates understood and made good use of the source material and their written responses were sufficiently clearly expressed that the Examiners could be confident that marks awarded were deserved. The mathematical and graphical questions did pose some difficulties for a minority of candidates.

Candidates had no problems completing the paper in the time available.

Overall the pattern of this paper is very similar to past papers and Centres should work through past papers to help candidates see how to make the best use of the information given for each question.

Comments on specific questions

Question 1

(a) An encouraging number of candidates stated a specific reason for taking several samples. Unfortunately some answers were too vague to be given credit. A range of valid alternatives were given credit. In part **ii** the majority of candidates identified the overall trend successfully, sometimes the way it was described was difficult to interpret.

In part **iii** the three relevant years were identified by most candidates.

In part **iv** the correct answer required more thought and as a consequence only a minority gained credit here. There were only a few candidates who either did not give three years in their answer or transposed their answers for the two parts.

In part **v** a large number of candidates recognised that the grazing animals would trample on the pins but very few candidates considered that eroded soil would have to be deposited somewhere and this could have been around some of the pins leading to variation in readings.

(b) The descriptions of a survey method continue to disappoint the Examiners. Many answers were too vague to gain credit and were little more than the source material repeated. A question similar to this one might be expected in most Alternative to Coursework papers. Some candidates could describe how to place a quadrat in an unbiased manner i.e. by throwing it.

In part **ii** all the ideas stated in the mark scheme were seen though some candidates could not move beyond plants being eaten by animals.

(c) The vast majority of graphs were carefully plotted but some candidates omitted to label both the axes. In part **ii** the trends were often correctly described. Candidates do not need to quote numerical values to gain marks for this type of question. In part **iii** the question proved to be the most difficult of the paper with a minority of candidates correctly referring to plant extinctions and changes in soil composition.

(d) The detailed processes involved in soil erosion were well understood by some candidates and there were some excellent descriptions gaining maximum marks. The context of the 'uplands' was ignored by many candidates even though this allowed credit for references to slopes causing mudslides.

Question 2

(a) There was a wide variety of answers that did not focus on the biological aspect of the term. A reference to living organisms, enzymes or microbes was required and just referring to it being a natural process was not given credit.

In part **ii** the majority of calculations were correct, some candidates gave an inappropriate number of decimal places.

In part **iii** the trends in the data were described successfully by many candidates; some reference to data was often seen though not strictly required to answer the question. Only a small number of candidates tried to quote a large amount of data rather than describing the overall trends.

Part **iv** seemed to be a difficult question for the majority of candidates to answer though many different possible explanations for growth differences were given credit. Statements such as 'tube A is the control' were not answering the question.

(b) Most candidates realised that the animals would not have much food or would starve. They might also be poisoned and the meat might be toxic to humans. In part **ii** candidates often identified that the soil would have recovered (due to biodegradation of the oil) and the animals would be healthier. In part **iii** only a small number of candidates suggested that overgrazing was unlikely to occur or that it was a sustainable farming plan. The other marking points were given regularly. Candidates did not gain credit for suggestions involving growing crops

(c) Most candidates answered yes and described the reduction in growth caused by sulphur dioxide. In part **ii** approximately half the candidates stated that sulphuric acid would be formed. In part **iii** there was a reasonable number of detailed answers that gained maximum credit; some candidates just stated that plants die without any further detail and this was not considered a creditworthy answer.

Question 3

(a) The calculation was correctly worked by most candidates.

In part **ii** only a minority of candidates identified that the reduced catches were linked to lack of reproductive success. Very few suggested changes to migration patterns. In part **iii** candidates usually managed to identify one characteristic to be recorded; the number of fish was not regarded as a suitable characteristic. In part **iv** there were many examples of perfect tables neatly drawn that gained maximum marks.

(b) The candidates completed the questionnaire with a wide range of relevant questions and with suitable alternative answers. The Examiners did not give credit for a question involving fishing nets as the fishing method was described as line fishing.

(c) Many candidates thought about caged tuna not being able to reproduce rather than the fishermen having to supply food to the tuna as stated in the question. Caged fish often suffer from a range of diseases and the sardines are at risk of being overfished.

In part **ii** the Examiners were pleased to see a wide range of correctly described answers about the results of removing tuna from the food chain. Many candidates gained maximum marks.

(d) Many sensible suggestions were made to control sports fishing and fishing for food and these gained credit. Only references to nets were ignored in this case as the method of fishing in both cases was by lines. Very few candidates failed to gain any marks here.