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Population growth and resources over and under population

- Population distribution - Australia: IGCSE Population
- Anti-natalist policy - China's one child policy:
- Pro-natalist policy - Singapore
- Ageing and declining population - Japan:

Case study 1.0 Rapid Population Growth Niger

- A land locked LEDC in West Africa, with a hot dry climate including desert areas
- Its population has grown from 1.7 million in 1960 to 13 million in 2008
- This is a 2.9% growth rate, it’s expected to reach 56 million by 2050
- **There is the highest fertility rate:** 7.1 births per woman
- Nearly half the population is under 15
- Only 5% of the population uses birth control
- The life expectancy is 44.3
- 90% of people earn their living through agriculture

<table>
<thead>
<tr>
<th>Death rates are falling due to:</th>
<th>Problems faced include:</th>
</tr>
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<tbody>
<tr>
<td>vaccines,</td>
<td>lack of health care,</td>
</tr>
<tr>
<td>clean water, better diet,</td>
<td>lack of education,</td>
</tr>
<tr>
<td>better health care,</td>
<td>lack of jobs,</td>
</tr>
<tr>
<td>more education,</td>
<td>and lack of clean water</td>
</tr>
<tr>
<td>better living conditions</td>
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Case study 1.1 Overpopulation in Lagos, Nigeria

**OVERPOPULATION:** When there are more people that the resources available. Overpopulation might lead to unemployment, famine and homelessness.

- Nigeria’s population is 140 million .70% earn less than 1 dollar a day
- Nigeria occupies 3% of Africa but holds 15% of Africa’s population
- By 2010, more than 40% of the population was living in the urban centers
PROBLEMS OF OVERPOPULATION

- **Inadequate fresh water for drinking water** use as well as sewage treatment and effluent discharge. Lagos has the persistent problem of inadequate water supply which has lead to the unhealthy living conditions.
- **Increased levels of pollution**: air, water, noise, soil contamination.
- **Irreversible loss of arable land and increases in desertification**. Parts of the north in Nigeria are currently suffering from encroachment of desert from the Saharan desert.
- **High infant and child mortality**. Nigeria’s infant mortality rate is currently 100/1000 births. Comparing that figure with those of developed countries, it shows the growth of population has not created the chance for development of the health system.
- Increased chance of the emergence of new epidemics and pandemics. For many environmental and social reasons, including overcrowded living conditions, malnutrition and inadequate, inaccessible, or non-existent health care, the poor are more likely to be exposed to infectious diseases.
- **Starvation, malnutrition or poor diet** with ill health and diet-deficiency diseases (e.g. rickets). Famine is aggravated by poverty. About 70% of Nigerians live in rural areas and these regions are so underdeveloped that malnutrition has become a constant issue. With the pressure of population on the environment, there is a decline in both subsistence and export agriculture.

- **Elevated crime rate** due to drug cartels and increased theft by people stealing resources to survive. Regions with high rate of population are posed to threats of high crime rates. Lagos state for example in the past years has had an increase in crime rate. In Lagos 273 civilians and 84 policemen were killed during robberies and crime

**Case study 1.2 under population in Australia**

- Under population occurs when there are far more resources in an area eg. food, energy, and minerals than the people
- Australia's landmass of 7.6 million km2 and has a population of 22 million people. Australia is about the same size as the USA (300 million people) but much of its land is not used.
- Australia can export their surplus food, energy and mineral resources
- They have high incomes, good living conditions, and high levels of technology and immigration.
- Australia is the world's thirteenth largest economy and has the world's fifth-highest per capita income
- It is probable that standards of living would rise, through increased production and exploitation of resources, if population were to increase.

**Problems caused by under population:**

- Small workforce
More taxes
Ageing population
Not full use of natural resources

**Solutions:**
- Give benefits to those with children (increasing with number)
- Relaxing VISA rules
- More people move for job opportunities

**SAMPLE PAST QUESTIONS**
(a) The size of the population in a country may change as a result of natural growth. For a named country which you have studied, explain why the rate of natural population growth is high. [7]

(b) The size of the population in an area may change as a result of natural increase. For an area which you have studied, explain why the rate of natural population growth is high. [7]

(c) Explain why the governments of some countries may be concerned by a rapid growth of population. You may refer to examples which you have studied. [7]

(d) For a named country which you have studied, describe the problems caused by overpopulation. [7]

(e) Overpopulation occurs when there are too many people living in an area for the resources which are available. What problems are caused by overpopulation? You should refer to a country or area which you have studied. [7]

(f) For a country which you have studied, explain why the rate of natural population growth is low. [7]

(g) For a named country which you have studied, describe the problems caused by underpopulation. [7]

(h) For a named country which you have studied, explain why the rate of natural population growth is low. [7]

(i) For a country which you have studied, explain why the rate of natural population growth is low. [7]

(j) For a named country which you have studied, explain why the birth rate is high. [7]

(k) For a country which you have studied, explain why the government is worried about its rapid population growth. [7]
Population control policies

Pro and Anti Natalist Birth Policies

Anti-natalist policy: A policy that attempts to reduce birth rates.

China - One Child Policy

After China were invaded and occupied by Japan in the World War II, they wanted to strengthen their military so that it never happened again. To do this they encouraged citizens to have more children, because a bigger population potentially meant a stronger army. This policy would have been fine if China had the resources and technology to match. However, they did not and coupled with the crippling policies of the Cultural Revolution, mass famines ensued. It is estimated that up to 30 million died during the 1960's and 1970's. This was not a sustainable policy, so the Chinese government was forced to introduce an anti-natalist policy.

The policy China decided to introduce was extremely strict and probably not possible in a non-communist country.

- The government stated that from 1979 all couples were only allowed to have one child.
- They also increased the marriageable age of men to 22.
- To get married and to have a child, citizens had to apply to the government.
- If you applied by these rules you were entitled to free education, healthcare, housing and given a job.
- If you did not follow the rules, then benefits would be removed and females who were found to be pregnant were given forced abortions and even sterilised.

To enforce the policy

- the government relied on community enforcement. Often elderly residents who were trusted within the community were asked to inform, elderly female informants were nicknamed 'granny police'.

There were a number of exceptions to the rules.

- if you had twins or triplets this was fine,
- if your first child had a physical or mental disability you could have a second,
- Families in rural areas (farming areas) were often allowed a second, ethnic minorities were allowed a second and often couples who bribed officials could have a second.

SUCCESS

The policy has been relatively successful, birth rates have fallen from a peak of 44 in the 1950's down to just 12. China's population is also expected to peak in the next 20 years and then slowly start to decrease. Because of its success there have been further relaxations including:

PROBLEMS
The strict enforcement of the policy led to a problem of female infanticide. This is the killing of female babies, because couples favoured male children. Males ensured the family name was maintained and were able to work manual jobs, whereas females would be lost after marriage (females normally went to live with their husband’s family).

- China is still overpopulated, there are over 1.3 billion Chinese
- There is a male female imbalance in the population
- People are demanding greater freedom and choice
- China will slowly get an ageing population.
- There are large numbers of abandoned children

**Pro and Anti Natalist Birth Policies**

Pro-natalist Policy: **A policy that encourages couples to have more children. You cannot force people to have more children so you have to offer incentives instead e.g. free childcare or even money.**

**Singapore’s Pro-natalist Policy**

Singapore is a developed country in SE Asia with a population of about 5 million people. For many years the Singaporean government has believed that Singapore is underpopulated and has tried to increase its population. Singapore has one of the lowest total fertility rates in the world, standing at 1.1, which is well below the replacement rate of 2.1. Already 36% of the Singapore population is made up of foreign nationals and in some sectors like industry, 80% of the workers are foreign.

To overcome worker shortages, the Singapore government has encouraged immigration, but it is also trying to increase the population through raising birth rates. The government is doing this in a number of ways.

- It has increased maternity leave by 50% to 12 weeks and it will cover the cost of maternity leave (the cost to the parents employers) for the first four babies.
- The Singapore government is also increasing child benefits paid to families. The government will pay money into a special bank account of up to nearly $1000 for six years.
- The Singapore government has also sponsored dating organisations to encourage people to get married earlier and start having children.

If Singapore’s policies are not successful it will become increasingly dependent on foreign workers, gradually see an increase in the dependency ratio and ultimately economic decline.

**Population policy in Italy**
• Low fertility rates of 1.23 children per family
• Ageing population
• Some women feel that they cannot work and cope with raising a family too
• Some men not doing sufficient household chores
• Poor service provision for childcare in preschool years
• Childless no longer bears a stigma
• Social pressure to marry and have children is less
• Even though head of the catholic church is in itlay – contraception use is high
• Yuppiedom – preference for luxury goods delays marriage and babies
• Less than 1/3 mothers have children before 28 years
• Young people live at home with parents longer to save rent etc which delays relationships and births Solutions
• 10,000 euro bonus for births in a village in Mezzogiornio as mayor concerned that young people will not enter village otherwise

SAMPLE PAST QUESTIONS

(c) What policies can be used by governments to influence rates of natural population growth? You should refer to at least one example which you have studied.

(c) The size and structure of the population in a country may change as a result of government policies. For a named country which you have studied, describe the policies which have been used by the government to influence rates of natural population growth. [7]

(c) The size and structure of the population in a country may change as a result of government policies. For a named country which you have studied, describe the policies which have been used by the government to influence rates of natural population growth. [7]

(c) For a named example of a country which you have studied, describe the policies used by the government to reduce natural population growth rates. [7]

(c) For a named example of a country you have studied, describe the policy or policies used by the government to reduce birth rates. [7]

(c) For a named country, state a policy which has been used to influence rates of population growth. Describe the impacts of this policy. [7]
Population structure Age/sex pyramids at different stages of economic development

Japan’s Ageing Population

Japan has an ageing population because the birth rates have fallen and it has one of the world’s highest life expectancy. In fact the islands of Okinawa off Japan’s south coast have the highest life expectancy and the greatest percentage of centenarians.

Japan has the highest proportion of old dependents (about 23%) and the lowest proportion of young dependents (about 13%) in the world. It has a total fertility rate of only 1.25. This is well below the replacement rate of 2.1.

Even though the Japanese are working longer, it may have to look outside its borders to prevent future population decline and economic decline. Japan is traditionally a very insular (closed) country so allowing large scale immigration would involve huge social and cultural changes.

Centenarian: Someone over the age of 100.

Youthful population and high growth

- 27.7 million people in Uganda
- Expected to double by 2025
- It could be the world’s 12th most populous country by then
- Half population is under 15
- Average fertility per woman is seven children – low status of women
- Lack of education and access to contraception – in most parts of Uganda clinic do not exist
- President Museveni even believes that Uganda is under populated - he thinks that more people will boost the internal market and workforce to increase the economy!!! (Very questionable!!!!)

Young Population: When talking about a young population, you are usually referring to young dependents (those under the age of 16). You might refer to a young population if there are too many or too few. Both can present advantages and disadvantages.

Problems of Young Population (too many)

Child care has to be provided so that parents can return to work.

Solutions of Young Population (too many)

An anti-natalist policy might be introduced like China’s one child
Governments need to pay so that young people can go to school
Young people get sick so the government has to pay for healthcare
An increase in the dependency ratio
Creation of teaching and nursing jobs.

<table>
<thead>
<tr>
<th>Problems of Young Population (too few)</th>
<th>Problems of Young Population (too few)</th>
</tr>
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<tbody>
<tr>
<td>Closure of child related services and loss of jobs e.g. schools and nurseries</td>
<td>A pro-natalist policy to increase birth rates.</td>
</tr>
<tr>
<td>Less consumers and taxpayers in the future</td>
<td>Subsidised childcare and education to encourage more families to have more children.</td>
</tr>
<tr>
<td>An increase in the age of the population</td>
<td></td>
</tr>
<tr>
<td>Birth rates fall below replacement rate cause the population decline. Also in the future there will be less people in the reproductive age range causing further declines.</td>
<td></td>
</tr>
</tbody>
</table>

**SAMPLE PAST QUESTIONS**

(c) For a named country which you have studied, describe the problems caused by an increase in the percentage of the population over the age of 65. [7]

(c) For a country which you have studied, explain why the government is concerned by an ageing population. [7]

(c) For a named country which you have studied, describe the problems caused by an increase in the percentage of people over the age of 65. [7]

(c) For a named country which you have studied, describe the problems caused by an ageing population. [7]

**POPULATION DENSITY / POPULATION DISTRIBUTION**

**Namibia - Low population density**

- There is a low population density of just 2.5/km² (one of the most sparsely populated in the world)
- It's in Southern Africa along the Atlantic Coast
- It has a hot, dry climate with lots of land occupied by desert. There is little rainfall
- It's GDP per person is 5200 US dollars and the country’s economy is dependent on the extraction and processing of minerals for export
- Mining employs 3% of the population whilst half of the population relies on subsistence agriculture
Japan - High population density

Japan is one of the most densely populated countries in the world - 339/km² - mostly in urban areas

- The coasts of Honshu Island are the most densely populated because:
- Flat land makes it easy to build upon
- There are many harbours for imports and exports
- There is a growing fishing industry
- The three main areas are: Tokyo, Nagoya and Osaka
- Outside of urban areas there are high density rural areas. People live there due to the fertile soil, flat land, warm climate and good transport links
- Over 2/3 of central Japan is mountainous. Few people live here due to steep slopes, acidic soils, isolated communities, little work and extreme climate

(c) For a named country which you have studied, describe the distribution of its population and draw a labelled sketch map to show this distribution. [7]

(c) For a named country which you have studied, describe and explain the distribution of its population. [7]

(c) For a country or area which you have studied, describe and explain variations in the population density. [7]

(c) For a named area which you have studied, explain why it has a low population density. [7]
Population migration

Poland - Immigration to the UK

- Nearly 600,000 migrants chose to work in the UK in 2004 from the A8, 62% of these were Polish
- The migrants were happy to take unskilled work in the UK such as factory work, kitchen assistants, farm workers and domestic work

- **Positives for UK:**
  - Poles fill unwanted jobs
  - Can pay low wages
  - Can work long hours
  - Boosts the local economy

- **Negatives for UK**
  - Fewer jobs for unskilled workers
  - May move back once they have earned enough
  - Anti-immigration issues and racism
  - Schools and hospitals are unable to cope with increased numbers

- **Positives for Poles:**
  - Chance for a better paid job
  - Save money and return to improve life
  - Move out of their parents house

- **Negatives for Poles:**
  - May have to leave family
  - Encounter hostility in the UK due to language and culture
  - May struggle to obtain housing

Case study. Migration from USA to Mexico

- Mexicans make up 29.5% of all foreigners in the USA.
- Mexican immigrants account for about 20% of the legal immigrants living in the USA.
- Brain drain is occurring out of Mexico.
- e.g. An estimated 14,000 of the 19,000 Mexicans with doctorates live in the USA (International Organization for Migration)

  **Push factors from Mexico (Santa Ines) (2010)**
  - Poor medical facilities - 1800 per doctor
  - Low paid jobs - GDP per capita $14,406
GCSE Geography Case Studies

- Adult literacy rates 55% - poor education prospects
- Life expectancy 72 yrs
- 40% Unemployed
- Unhappy life – poor standard of living
- Shortage of food
- Poor farming conditions
- National average poverty level of 37 percent

Pull Factors – Reasons Mexicans are attracted to the USA (2010)
- Excellent medical facilities - 400 per doctor
- Well paid jobs - GDP per capita $46,860
- Adult literacy rates 99% - good education prospects
- Life expectancy 76 yrs
- Many jobs available for low paid workers such as Mexicans
- Better housing
- Family links
- Bright lights

Effects on USA
- Illegal migration costs the USA millions of dollars for border patrols and prisons
- Mexicans are seen as a drain on the USA economy
- Migrant workers keep wages low which affects Americans
- They cause problems in cities due cultural and racial issues
- Mexican migrants benefit the US economy by working for low wages
- Mexican culture has enriched the US border states with food, language and music
- The incidents of TB has been increasing greatly due to the increased migration

Effects on Mexico (Santa Ines)
- The Mexican countryside has a shortage of economically active people
- Many men emigrate leaving a majority of women
- Women may have trouble finding marriage partners
- Young people tend to migrate leaving the old and the very young
- Legal and illegal immigrants together send some $6 billion a year back to Mexico
- Certain villages such as Santa Ines have lost 2/3 of its inhabitants

Case study: Migration from Algeria to France
- Since world war two France has had migrant workers to rebuild their country after WW2
- As France became richer it became more popular with migrants from former colonies like Algeria
- Of France’s 58 million population 17% are now Algerians

Advantages for Algerians
- Reduces pressure on jobs and resources like food in Algeria
- Birth rate declines in Algerian as people of reproductive age working in France
Migrants learn new skills which they can use on return to Algeria
Money sent back to country of origin

Disadvantages for Algerians
- Loss of people of working age
- Loss of the most educated and skilled people
- High death rate as many elderly left behind
- Dependency on money sent home

Advantages for French (hosts)
- Overcomes labour shortage
- Algerians prepared to do unskilled job
- Algerians prepared to work long hours for less money
- North African restaurants and other culture added to France
- Some Algerian migrants are highly skilled

Disadvantages of French (hosts)
- Immigrants unemployed if the economy gets worse
- Algerian migrants may have to live in poor quality overcrowded housing – called Boonville’s
- Racial tension
- Migrants living in ghettos and not mixing with French
- Limited skills

Case study: Refugees in Rwanda
- In 1990 the Rwandan Patriotic Front (RPF), a rebel group, composed mostly of Tutsi refugees, invaded northern Rwanda from Uganda.
- The Rwandan Civil War was fought between the Hutu regime, with support from the French speaking African countries and the RPF, with support from Uganda.
- Hutu Power became an ideology that asserted that the Tutsi intended to enslave Hutus and thus must be resisted at all costs.
- The Hutu leader Habyarimana was assassinated in April 1994 which was the short term cause of the mass killings of Tutsis and pro-peace Hutus
- Extremist political groups organized the massacre. They encouraged young Hutus to carry machetes and they ‘recruited’ many child soldiers.
- Radio broadcasts significantly encouraged the violence.
- Many people could not escape the violence as roads and transport links were blocked.
- The slaughter ended when rebel forces of the Tutsi led Rwandese Patriotic Front (RPF) overthrew the genocidal government.
- Many refugees (mostly Hutus) fled from Rwanda to neighboring Zaire (~2 million), Tanzania (~480,000), Burundi (~200,000) and Uganda (~10,000).
- An estimated 300,000 people died on route to or in refugee camps due to starvation and cholera
- By late 1997 only 100,000 were thought to be still out of Rwanda, and they were thought to be the remnants of the defeated army and the civilian militias known as Interahamwe.
Rwanda is a very poor country with a market economy; over 90 percent of the population earns its living through subsistence agriculture. The principal export crops are coffee and tea. Gross National Product per capita is estimated at $210 per year. The massive genocide and war in 1994 resulted in the destruction of much of the country's economic infrastructure, including utilities, roads, and hospitals.

SAMPLE PAST QUESTIONS

(c) For an example of international migration which you have studied, explain why many people made the decision to migrate. You should name the countries between which people migrated and refer both to pull and to push factors. [7]

(c) Name an example of a city or country to which large numbers of people have migrated from other countries. Describe the effects of international migration on your chosen city or country. [7]

(c) The migration of people can be explained in terms of the pull and push factors which influenced their decision to migrate. Examples of types of migration include: international and internal migration, forced and voluntary migration, permanent and seasonal migration. Choose any example of migration and name the areas between which people moved. Explain why many people made the decision to migrate. You should refer both to pull and to push factors. [7]

(c) Choose an example of rural to urban migration in an LEDC which you have studied. Name the areas between which people moved and explain why many people migrated. You should refer both to pull and to push factors. [7]

(c) Name an example of a country which has attracted large numbers of international migrants. Explain the pull factors which have attracted people to your chosen country. [7]

(c) For an example of international migration which you have studied, name the countries between which people moved. Explain why many people made the decision to migrate. You should refer both to pull and to push factors. [7]

(c) The size and structure of the population in a country may change as a result of international migration. Choose any example of international migration which you have studied and name the countries between which people moved. Explain why many people made the decision to migrate. You should refer both to pull and to push factors. [7]
(c) The size of the population in a country may change as a result of natural increase and international migration. For a country which you have studied, explain why the rate of population growth is high. [7]

(c) Name an example of a rural area in an LEDC from which many people have migrated. Explain why many people have migrated from this area. [7]

(c) For an example of international migration which you have studied, explain why many people made the decision to migrate. You should name the countries between which people migrated and refer both to pull and to push factors. [7]

(c) For an example of international migration which you have studied, name the countries between which people moved. Refer both to pull and to push factors to explain the reasons for the migration between your chosen countries. [7]

(c) The population of a country can change as a result of migration. Choose an example of an international migration which you have studied and name the countries between which people moved. By reference to both pull and push factors, explain why many people made the decision to migrate. [7]

(c) Name an example of a city or country to which large numbers of people have migrated from other countries. Describe the effects of international migration on your chosen city or country. [7]

HIV/Aids in Botswana

- In 2005 an estimated 270,000 people living with HIV (total population below two million)
- 24.1% of people have HIV/Aids
- Life expectancy less than 40 years in 2000-2005, a figure about 28 years lower than it would have been without AIDS.
- An estimated 120,000 children have lost at least one parent to the epidemic.
- First case 1985

Policy

- (1987-89) the screening of blood to eliminate the risk of HIV transmission through blood transfusion.
- (1989-97) information, education and communication programmes - Botswana National Policy on AIDS.
- (1997 onwards) education, prevention and comprehensive care including the provision of antiretroviral treatment for 19,000 people.

HIV prevention programme:
• Public education & awareness –
  1. "ABC" of AIDS: Abstain, Be faithful and, if you have sex, Condomize.
  2. Safe-sex billboards and posters everywhere.
  3. Radio drama dealing with culturally specific HIV/AIDS-related issues and
couraging changes in sexual behavior.
  4. Workplace peer counseling.

• Education for young people –
  1. Youth Health Organisation (YOHO) has art festivals, dramas and group discussions.
  2. School-based learning plays and teachers are given special training.
  3. Talk show is broadcast twice weekly by Botswana Television.

• Condom distribution & education –
  1. Installation of 10,500 condom dispensers in traditional and non-traditional
outlets - condoms have been given out for free distribution.
  2. Targeting of highly mobile populations – especially migrant workers travelling
to other sub-Saharan African countries. Concentration on treatment of sexually
transmitted infections, condom promotion and prevention education.

• Improvement of safety for blood transfusions - the national supply of HIV-free blood
doubled by 2005 because of better screening of donors and counseling.
• Prevention of mother to child transmission of HIV - in 2005 35.4% of women
attending antenatal clinics in Botswana had HIV. Encouraging the use of
antiretroviral treatment and non-breast feeding practices.
• Voluntary testing - same day results so more people are aware of their status.
• National antiretroviral therapy for 19,000 people

SAMPLE PAST QUESTIONS
(c) The size and structure of the population in a country may change as a result of
HIV/AIDS. For a country which you have studied, describe the impacts of HIV/AIDS on
the population and economy. [7]
SETTLEMENTS AND SERVICE PROVISION

Mumbai – a rapidly growing urban area

- Mumbai is a mega city on the west coast of India
- It’s is the capital of India and is the biggest city with 12,350,000 people
- In 1947 Mumbai’s population was 4 million
- An increase of more than 8 million people have occurred due to internal migration - more than half of that increase occurring between 1960-1970

Causes of urban growth...

- A rapid amount of people are drawn in from the countryside due to work being so varied from highly skilled jobs to practical work and people believe they will have better life chances in the city
- Travellers from Europe used the ports that became known as “The gateway to India”. The area around the port became industrialised as a result and became used for importing and exporting goods.
- A variety of services grew around the port and this led the city to grow during British rule, and even more rapidly when British rule had left in 1947.
- Banking, finance and insurance that were associated with the ports allowed Mumbai to become a major source of finance. This enabled Mumbai’s economy to grow and is allowing it to become a world city

Problems caused by urban growth

- Problems with health occur due to pollution from within the shanty towns and heavy industry causes air pollution that also contributes to poor health
- Widespread poverty and unemployment due to so many moving to the area and the high birth-rate means there isn’t enough employment
- Poor education leads to people being unemployed as they haven’t the skills and knowledge needed and too many people mean that schools and public services can’t deal with the amount of people
- Land value in Mumbai is expensive due to there being little land so it makes it impossible for those living in shanty towns to afford homes. This results with people living in illegal shanty towns that increase the health problems due to them being so cramped
Asia’s second largest slum is Dharavi and is home to 800,000 people which has cheap, poorly made housing

Poor transport links as they are so busy and cramped with commuters as there are so many living within the city

Pollution increases due to those living in the shanty towns

**Solutions**

In 1970 a plan was introduced to move the port, markets and industrial functions out of the old city to Navy Bombay on the east. The idea was to also move workers too. The plan was partially successful but the problem in Dharavi had to be sorted.

More than 600,000 live in Dharavi (next to the CBD), and the idea was to move the housing and people will be re-housed into temporary accommodation.

The two storey homes will be replaced by seven storey so that it can house more people. Those who can prove they have been living in Dharavi since 1995 will receive free accommodation.

The new buildings will have to have infrastructure including roads, water, drainage, schools, industrial estate etc.

However, the project cannot go ahead unless the majority of the registered residents in the shanty town agree. However, the unregistered people will have their views ignored.

Governments and developers have used underhand tactics to make people sign the agreements.

There are fears amongst the people that the government won’t actually build alternative accommodation but instead will be replaced with higher value developments for businesses and companies to allow the city to continue to expand.

**Sample questions on rapid urban growth**

- (c) Many settlements have grown into large urban areas. For a named example of a large urban area which you have studied, explain the reasons for its growth. [7]
- (c) Many settlements have grown into large urban areas. For a named example of a large urban area which you have studied, explain the reasons for its growth. [7]
- (c) For a named urban area, describe the impacts of its growth on the environment. [7]
Case study. Function of Piraeus, Greece

Piraeus is the urban settlement next to Athens in Attica. It was the port of the ancient city of Athens and was chosen to serve as the modern port when Athens was re-founded in 1834. Piraeus remains a major shipping and industrial centre.

Reasons suitable as port function:

- It consists of a rocky promontory, containing three natural harbours
- The large port on the north-west is an important commercial harbour for the eastern Mediterranean Sea as it is very deep and allows large vessels to shelter there.
- Two smaller ports Zea and Mikrolimano also provide good shelter and are used for naval purposes.
- Piraeus location is able to link Athens with every island in the eastern portion of Greece, the island of Crete, the Cyclades, the Dodecanese, and much of the northern and the eastern Aegean.
- The land was vast when the port was constructed so it could be built with large areas for docking cargo. Much of that part of the harbour is in suburban Drapetsona and Keratsini.
- Close to oil refineries at Elefsina and other industrial production areas.
- Rail, bus, road and metro links for transporting either passengers or cargo.
- Workers available as the population of Piraeus is 175,000,697 (2001).

Piraeus now also has commercial, educational, administrative and residential functions too.

For a named example of a large settlement which you have studied, identify its main function and explain the reasons for its growth. [7]

TRAFFIC Congestion (London Case Study)

Probably one of the most common problems is congestion. The problem of congestion is caused by multiple factors, including:

- Increase in car ownership
- Limited amount of public transport or expensive public transport or overcrowded public transport
- Roads not designed for cars, but rather horses and people.
- Population growth and rural-urban migration
- The movement of freight (containers) onto lorries.
The problems caused by congestion can be divided into social, environmental and economic problems.

<table>
<thead>
<tr>
<th>SOCIAL PROBLEMS CAUSED BY CONGESTION</th>
<th>ENVIRONMENTAL PROBLEMS CAUSED BY CONGESTION</th>
<th>ECONOMIC PROBLEMS CAUSED BY CONGESTION</th>
</tr>
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<tbody>
<tr>
<td>1- As car ownership increases so does the amount of pollutants released by cars. This can lead increased chest problems e.g. asthma.</td>
<td>5- More vehicles on the roads increase the amount of air pollution, but also noise pollution.</td>
<td>8-Building new roads is very expensive, especially when private property is purchased, thus cost the government money.</td>
</tr>
<tr>
<td>2 - People travelling to work have to leave home earlier and arrive back later, therefore spending longer away from their families.</td>
<td>6- Increased car ownership has increased road building which often leads to the destruction of greenfield sites.</td>
<td>9-Late deliveries caused by traffic jams costs companies and the economy money.</td>
</tr>
<tr>
<td>3- More cars on the roads increases the frequency of accidents</td>
<td>7-The air pollution can contribute to acid rain and the greenhouse effect</td>
<td>10-Workers also arrive late to work because they are stuck in traffic.</td>
</tr>
<tr>
<td>4- More traffic jams can increase the frequency of road rage.</td>
<td></td>
<td>11-It creates a reliance on oil and more oil is used at slow speed than normal travelling speeds</td>
</tr>
</tbody>
</table>

Traffic pollution kills 5,000 a year in UK, says study - BBC article

London in the UK has tried a number of different things to reduce the problems of congestion. They include:

- **Congestion charge**: Drivers are now charged to drive into the centre of London. The charge is about $15 a day. The idea is to encourage people from cars and onto public transport.

- **Barclays bike hire and bike lanes and work showers**: There is now a bike hire scheme in London sponsored by the bank Barclays. People can now borrow bikes for a short period at minimal cost. Bike lanes are being create to make using a bike cheaper and workplaces have been encouraged to install showers, so people can cycle to work and wash when they get there.

- **Reintroduction of trams**: Trams which are like buses that run on train tracks in the road have been reintroduced to South London. Trams were an early form of public transport common in most British cities. Unfortunately most were removed as car ownership increased. They are environmentally good because they run on electricity and don't release greenhouse gases.

- **Extension of the underground**: New lines have been recently built or upgraded. The Jubilee Line was the latest extension which goes from Central London out to East London (near the site of the 2012 Olympic Games).

- **Pedestrianisation**: Some areas of London including the north side of Trafalgar Square, Leicester Square and much of Covent Garden have been pedestrianised to make it safer for people walking and to discourage car use. Pedestrianisation means removing cars from the roads and making them walking only areas.

- **Improved rail links (Crossrail and East London Overground and Docklands Light Railway)**: London is currently undertaking one of the biggest engineering projects in Europe by building a railway from east to west London under the city. This
railway will decrease travel times and is called Crossrail. London is also improving or extending railways in the East of London near the site of the Olympics.

- **Bus lanes and priority traffic lights**: The amount of buses have been increased and old ones renewed. Also, some bus lanes have been created to avoid the traffic lights and also bus lanes are given priority at lights. This should hopefully make buses quicker than cars and encourage more people to use public transport.

- **Car sharing (pooling) and car sharing lanes**: Websites have been created to encourage people to share cars who travel on similar routes. Also, road lanes have also been dedicated to people with more than one person in them.

- **Working from home and Flextime**: Improved technology has allowed more people to work from home and also flexitime has meant people can travel at different times reducing the traffic peaks. Flexitme is people have to work a set number of hours a week, but aren't given specific start and finish times. This allows people to start early or finish late, or do both and then earn days off.

- **Reurbanisation**: This means the movement of people back in the centre of urban areas (near the CBD). By encouraging people back into the centre then commuter times and traffic jams should decrease.

- **Increased car tax and petrol duty, Possible carbon tax and car park tax**: Already the government has increased petrol tax and increased car tax on big cars to encourage people to drive smaller cars. In the future it has been proposed to introduce further carbon taxes and possibly a tax on car parking spaces.

- **Park and ride**: This is not used widely at the moment but will be used a lot during the Olympics. Car parks will be built on the edge of London next to train stations and bus routes. People will then park their cars on the edge and transfer to public transport to reduce traffic.

**Sample traffic congestion question**

- (c) In many towns and cities there have been changes in shopping facilities in recent years. Describe one recent change in shopping facilities in a named town or city which you have studied. Describe the advantages and disadvantages of this change for the people who live in the town or city. [7]

- (c) Name an urban area which you have studied where there is traffic congestion in and around the Central Business District (CBD). Describe the attempts which have been made to solve the problem. [7]

**Squatter Settlement**

- **Characteristics of the squatter settlement and living conditions**
  - Homes are made of mud, plastered over boards, wood or corrugated iron sheeting.
  - The paths between the houses are irregular, narrow and often have a ditch running down the middle that has sewage in it.
  - Rubbish litters the area as it is not collected. The area smells of the charcoal used to provide fuel and of human waste.
A standpipe may supply water for up to 40 families: private operators run hosepipes into the area and charge double the going rate for water.

Case Study of a Squatter Settlement – Kibera Shanty Town in Nairobi, Kenya

Kibera is the largest slum in the whole of Africa and is situated on the outskirts of Nairobi, Kenya. It is home to around 1 million people, of which 100,000 are orphaned children under the age of 18. It lacks sewers and has poor levels of sanitation and disease is one of the main killers due to awful levels of dirt and filth. Some statistics. 60% of Nairobi lives in Slums and 30% of those live in Kibera.

- Although Kibera is above the average population density, it still only gives 2 metres squared of land per person.

- As a part of crime carjacking is the biggest problem because those people that manage to get a job in Nairobi have to travel there so they will steal a car to do that. Law enforcement is also close to nothing around Kibera which means that people can almost do as they please.

Characteristics of Kibera

- Over 100,000 children are believed to be orphans due to the high incidence of HIV/AIDS.
- The flying toilet idea is also against the basic needs of humans, you excrete into a carrier bag and chuck it out of your window to leave it to decompose.
- 1 in 5 people in Kibera do not have a toilet, shower, running water or electricity and even more only have 1 of those things.
- Crime is rife and vigilante groups offer protection – at a price. The police are reluctant to enter the slum

However, there is a community spirit: homes are kept clean and the residents welcome visitors.

What attempts have been made to improve Kibera?

- Practical Action, a British Charity, has been responsible for low cost roofing tiles made from sand and clay and adding lime and natural fibre to soil to create blocks used for building that are cheaper than concrete. These allow self help schemes to progress.
- The United Nations’ Human Settlement Programme (UN Habitat) has provided affordable electricity to some parts of the slum at 300 Kenyan shillings per shack.
- There are two main water pipes – one provided by the council and the other by the World Bank – at a cost of 3 Kenyan Shillings per 20 litres.
Improving sanitation is more difficult and progress is slow. Charities such as the Red Cross are supporting the improvements. Gap year students are encouraged to go to Kibera to oversee the spending and to help coordinate efforts.

On a larger scale...

A 15 year project that began in 2003 plans to re-house thousands of residents of Kibera. In the 1st year of this project, run by the government and UN Habitat, 700 families were re-housed in new blocks of flats with running water, toilets, showers and electricity. Residents have been involved in plans and funding of 650 million Kenyan shillings had been set aside for the first year. Funding is now provided by charities and cheap World Bank loans.

Parts of Kibera, one of the largest shanty towns in Africa, were demolished by the Kenyan government recently (The Guardian, 20 April 2004). Bulldozers tore through the slums surrounding Nairobi in preparation for the construction of a new road. Plans for the area were not unknown but land is now in such short supply - population density reaches 80,000 per square kilometre in parts of Kibera - that shanty dwellings had been built there. While Kenya, like Brazil, has given legitimacy to some of its slums, the government must also press on with plans to develop national infrastructure and modernise. Unfortunately, large parts of Kibera are now a physical obstacle to this plan. This reminds us of the fundamental difference between poor areas of housing in MEDCs and in LEDC shanty towns – the latter are usually illegal. Housing is constructed on land that is not being used. However, rights of ownership do not pass to the slum dwellers. Their homes remain vulnerable should the true owner make claim to the land.

Sample questions on squatter settlement

(c) In all large urban areas attempts have been made to solve the problems faced by the people who live there. These include problems such as: Traffic congestion, Squatter settlements, Housing shortages, Urban sprawl.

Choose either one of these problems or any other problem faced by people who live in urban areas. For a named urban area, describe the attempts which have been made to solve the problem which you have chosen. [7]

(c) Another urban problem is the growth of squatter settlements.

Name a city in an LEDC and describe what has been done to improve the quality of life for the people who live in squatter settlements there. [7]

(c) In many LEDCs squatter settlements have grown up.

For a named example of an LEDC city, describe the main features of one of its squatter settlements. [7]
(c) Name a city and describe what has been done to improve living conditions in the slums found there. [7]

(c) Describe what has been done to improve the quality of life in squatter settlements in developing countries? You may refer to examples which you have studied to illustrate your answer. [7]

(c) Name an urban area in an LEDC where there are squatter settlements. Describe what has been done to improve the quality of life for the people who live in these settlements. [7]

(c) For a named town or city in an LEDC, describe what has been done to improve the quality of life for the people who live in squatter settlements. [7]

(c) In many urban areas there are places where people are living in poor quality housing. Name an urban area which you have studied where people are living in poor quality housing. Describe the attempts which have been made to solve this problem. [7]

URBAN Sprawl CASE STUDY.

The area where the town and city ends and green field begin is known as the rural -urban fringe. Here as the town expands and sprawls outwards the Greenfield sites are in great demand for housing, industry, shopping and recreation as well as public utilities such as reservoirs and sewage works. There is often conflict between the original 'locals' and the 'newcomers'.

One reason for the movement from the city to the urban fringe is the dissatisfaction with urban life. Reasons include:

- housing is old, congested and relatively expensive
- environmental pollution is a real problem
- Businesses find land expensive and limited in area.

The attractions of the rural urban fringe are:

- land is cheaper so houses can be bigger
- factories have more space
- easy access to main roads
- New developments are cheaper and exist in a more pleasant environment.

Atlanta – Urban Sprawl

- Atlanta is the largest metropolitan area in the Southeast of USA.
- Atlanta's urban land area expanded 47 percent between 1990 and 1996. These trends are likely to continue. Some experts believe that the region's population could double by 2050.
- Fastest growing metropolitan city in USA
- Population increase from 1.4m to over 5m in 36 years – results in urban sprawl (expanding into rural areas – RURAL-URBAN FRINGE)
Problems Created

- Air + noise pollution is the 4th worst in the US – 90% of residents drive to work respiratory illnesses are common (bronchitis, asthma etc.)
- Suburbs along Chattahoochee river increase run-off and contaminate drinking water septic tanks are necessary
- Farmland has been bought up and replaced with shopping malls etc. – farmers’ livelihoods taken
- 125 hectares of trees are lost per day by deforestation in the city
- Concrete and asphalt mean that surface water cannot drain away – FLASH FLOODS + CONTAMINATION
- Hotlanta: concrete and removal of trees leads to a heating effect – 10ºC higher than in the countryside

Solutions

Steps are being taken in response to the environmental problems created by rapid growth in the state. For example,

- the Georgia General Assembly established the Georgia Regional Transportation Authority in 1999 to oversee transportation and land use in the metropolitan Atlanta region.
- Georgia's Community Green Space Program is designed ultimately to protect 20 percent of Georgia's land as greenspace.
- Atlanta has begun to promote "smart growth" projects in which homes and businesses would be within walking distance of one another.
- In addition, residents are starting to move back inside the city limits. The 2000 census shows that population densities are rising, and the actual city of Atlanta reversed its long population decline by adding 22,000 people during the 1990s.
- Effective remedies against the environmental problems created by sprawl will require growth management strategies that protect the quality of Georgia’s water and air and the high quality of life enjoyed by its citizens.

Sample questions on urban sprawl

(a) Many towns and cities are growing rapidly. With reference to a named urban area which you have studied; describe the problems in its rural-urban fringe which are being caused by its growth. [7]

(b) The building of new housing, roads and services often results in urban sprawl. Name an example of a town or city which you have studied where urban sprawl has taken place. Describe its effects on people and the natural environment. [7]

(c) For a named example of a town or city in an MEDC which you have studied, describe the problems which occur in the rural-urban fringe as a result of urban sprawl. [7]

(d) The area surrounding towns and cities is known as the rural-urban fringe. What problems are likely to occur in the rural-urban fringe as a result of the growth of towns and cities? You should refer to an example which you have studied. [7]
(c) For a named urban area, describe the impacts of its growth on the environment. [7]
(c) For a named town or city where urban sprawl has occurred, describe how the land-use has changed in the area surrounding the city. [7]
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(c) For a named town or city where urban sprawl has occurred, describe how the land-use has changed in the area surrounding the city. [7]

**Metro Centre (Gateshead) Case Study**

The Metro Centre is a large shopping centre on the A1 (large road) on the edge of Gateshead (near Newcastle). Metro Centre has about 1.3 million people living within about 30 minutes. It was built by the businessman Sir John Hall and opened in 1986. He later sold it to Capital Shopping Centre in 1995 for about $500 million.

The site of the shopping centre was chosen because it was relatively cheap (previously it was marshland), fairly flat, had room for future expansion and was a designated enterprise zone. This meant that planning controls were more relaxed and it was exempt from property tax.

Metro Centre has very good transport links. Most people arrive via car on the A1 and use any of the 10,000 car parking spaces. However, it is also possible to reach the shopping centre via bus and metro.

The shopping centre has over 300 shops and 40 restaurants. Other facilities include a 12 screen cinema, 18 lane bowling alley and 150 room hotel.

Although the Metro Centre has created numerous jobs and provided facilities for local people it has also be blamed for increased traffic, pollution and the decline of Newcastle CBD. Later we will look at how Newcastle is fighting back.
(c) In many towns and cities there have been changes in shopping facilities in recent years. Describe one recent change in shopping facilities in a named town or city which you have studied. Describe the advantages and disadvantages of this change for the people who live in the town or city. [7]

(c) In all large urban areas there have been changes in land use in recent years. These include the development of:
- Road networks,
- Residential areas,
- Industrial areas,
- Leisure and shopping facilities.
For a named urban area, identify a recent change in land use.
(c) In all towns and cities there have been changes in land use in recent years. These include the development of transport, areas of housing, industries, leisure and shopping facilities. Briefly describe one recent change in land use in or close to a town or city which you have studied. Describe the advantages and disadvantages of this change in land use for the people who live in the town or city. [7]

Describe the advantages and disadvantages of this development for people who live in the urban area which you have named. [7]

(c) For a named urban area which you have studied, describe the main features of its Central Business District (CBD). [7]

(c) For a named urban area which you have studied, describe the main features of its Central Business District (CBD). [7]

(c) Describe the hierarchy of settlements in a named country or area which you have studied. [7]
IGCSE GEOGRAPHY CASE STUDIES

(c) For a named urban area which you have studied describe the main features of one of the following land use zones: Inner city; Outer suburbs; Rural-urban fringe.

Name two settlements of different population size which you have studied. Compare the shops and services provided in the two settlements which you have named.

(c) State one function of a large urban area which you have studied. Explain why the urban area has this function.

Case Study Urban Problems in Rio, Brazil

- Rio was formerly the capital of Brazil until the government decided to locate the capital inland in Brasilia.
- Approximately 10 million people live in and around Rio.
- It is a city of contrasts with rich people living in luxury around Copacabana beach and the vast majority living in poor conditions around the edge of the city.
- Problems in the city include housing, crime, traffic and pollution.

Housing

- An estimated 0.5 million are homeless.
- Approximately 1 million live in favelas (informal shanty settlements). Two examples are Morro de Alemao and Rocinha. (YOU MUST KNOW THESE NAMES!!)
- Another million live in poor quality government housing in the periferia.
- The favela housing lacks basic services like running water, sewerage or electricity.
- The houses are constructed from wood, corrugated iron, broken bricks and tiles or other materials found lying around.
- Favelas are often found on land that is steep, by the side of roads, railways etc and flash floods can destroy such houses and take people’s lives.
- At first the government tried to bulldoze such communities but now they remain because of the community spirit, samba music and football etc.

Crime

- Favelas are thought to be associated with drugs, violence etc. Tourists to Rio are warned not to enter favela areas or take valuables to beaches etc.
- Some wealthy are moving to new towns to avoid crime.

Traffic and Pollution
Mountains around the city keep the fumes in the city and make the vehicles use a limited number of routes. This results in congestion and noise.

A vast amount of rubbish is produced and in favelas this is not collected. Along with open sewerage drains it results in the spread of diseases.

**SOLUTIONS TO THESE PROBLEMS**

1. **SELF HELP HOUSING ROCINHA**
   - Most of old temporary wooden houses replaced by brick and tile and extended to use every square centimetre of land.
   - Many residents have set up their own shops and small industries in the informal sector.
   - Governments have added electricity, paving, lighting, water pipes but the steep hills still restrict.

2. **FAVELA BAIRRO PROJECT**
   - 1990s government chose 16 favelas to improve using 250 million euros.
   - Replaced wood buildings with brick and gave each house a yard.
   - Widened the streets so that the emergency services and waste collectors could get access.
   - Improved sanitation, health facilities and sports facilities.
   - Used residents for labour to develop their skills and in return residents paid taxes.

3. **NEW TOWN BARRA DA TIJUCA**
   - Land outside to South of Rio was uninhabited until motorway was built in 1970s
   - Rich moved out of Rio to avoid problems of city
   - It has 5km of shops, schools, hospitals, offices, places of entertainment etc
   - Spacious and luxury accommodation in 10-30 floor high rise apartment blocks with security and facilities or detached houses.
   - Both adults in each family chose to work in high paid jobs tp pay for expensive life.
   - Families with own cars but also well connected with public transport.

These areas have own favelas as housekeepers, gardeners etc cannot afford accommodation.

(c) In many urban areas there are problems of housing shortages. 

Name an urban area which you have studied where there is a shortage of houses. 

Describe:

• The causes of this problem.
• Attempts which have been made to solve the problem. [7]
EARTHQUAKES AND VOLCANOES

Case Study – Japan Earthquake & Tsunami (medc)

- A massive 9.0-magnitude earthquake struck Japan, Friday afternoon, on 11 March 2011 @ 0546 GMT
- The quake was centred 130 kilometres to the east of the prefecture’s capital, Sendai.
- A tsunami was sent crashing into the country’s north-eastern coast.
- It was originally reported at a magnitude of 7.9, but later was upgraded to 8.9 and then to a 9.0.
- It lasted 6 minutes.
- That makes it the fifth largest recorded worldwide since 1900, according to the U.S. Geological Service, larger than the 7.9-magnitude Great Kanto Earthquake that devastated Tokyo in 1923 or the 6.8 magnitude quake that hit Kobe in 1995.
- It had 10,000 times more energy than the magnitude 6.3 earthquake in Christchurch, New Zealand, which struck 17 days earlier

The Cause

- Japan is located on the east edge of the Eurasian Plate.
- The oceanic Pacific Plate subducts (sinks under) the Eurasian Plate.
- This plate margin is “destructive” – it is not a smooth process, friction is present and the plates stick.
- When the plates stick, tension builds up.
- When this pressure builds up and is released, it causes a rapid shift in the plates and a lot of energy to be released, in this case about the same as the annual energy output of the UK.
Impact

- Japan was largely prepared for the earthquake and many buildings remained standing afterwards, but it was not prepared for the subsequent Tsunami.
- A tsunami warning extended to at least 50 nations and territories, as far away as South America.
- Damage was caused in Tokyo and many injuries in the north where the quake was centred.
- The yen fell sharply but recouped most of its decline several hours later. Tokyo stocks fell.
- Local television showed smoke rising from a Tokyo port building, fire in the capital’s waterfront Odaiba district and an oil refinery ablaze in Ichihara, near Tokyo.
- A tsunami measured at anywhere from one meter to 7.3 meters hit at various places along the coast, while a 10-meter tsunami was seen at the port in Sendai, near the epicentre.
- Aftershocks were continuing, with one hitting magnitude 7.1, according to the USGS. Tall buildings swayed violently in central Tokyo as the aftershocks hit.
- Immediate power outages in Tokyo and eight other prefectures reportedly affected some 4 million homes.
- In Iwate Prefecture a bridge collapsed and a building was washed away, with boats and cars swirling around in the rising waters.
- In Tokyo, hundreds of concerned office workers tried in vain to make calls on jammed cellphone networks, some wearing hard hats and other protective headgear. Many of them streamed out of buildings in the business district, gathering in open areas. The crowd appeared spooked by the sound of glass windows rattling in tall buildings.
- Traders said most of the selling was offshore as Tokyo traders evacuated. The yen could be in for further declines as the scale of the damage becomes known.
• Tokyo’s major airports halted flights, though Haneda Airport was later reported to have reopened several runways. All Tokyo area trains were halted, while the shinkansen bullet train service was suspended.

• Water could be seen rising over cars and pouring into warehouses at Onahama port in Fukushima Prefecture, with five deaths reported in Fukushima.

• Two nuclear plants on the Pacific coast in Fukushima were automatically shut down.

• At Fukushima the subsequent tsunami disabled emergency generators required to cool the reactors.

• Over the following three weeks there was evidence of a partial nuclear meltdown in units 1, 2 and 3; visible explosions, suspected to be caused by hydrogen gas, in units 1 and 3; a suspected explosion in unit 2, that may have damaged the primary containment vessel; and a possible uncovering of the units 1, 3 and 4 spent fuel pools.

• Radiation releases caused large evacuations, concern over food and water supplies, and treatment of nuclear workers.

• The IAEA has rated the events at level 7, the same as Chenobyl, and the highest on the scale – meaning that there is a major release of radioactive material with widespread health and environmental effects.

• The situation has been further compounded by numerous aftershocks.

• 2,000 people confirmed dead

• 10,000 more people expected to be confirmed dead

• 2,000 people injured

• 530,000 people displaced, staying in 2,500 evacuation centres, such as schools and public halls

• 24,000 people still completely isolated and cannot be reached

• 1.2 million homes without power

• 1.4 million homes without water

• 4,700 destroyed houses

• 50,000 damaged houses

• 582 roads cut off

• 32 bridges destroyed
Response

- A Tsunami warning was issued 3 minutes after the earthquake.
- Prime Minister Naoto Kan, who convened an emergency Cabinet meeting, urged the nation to be calm and said the government will do its utmost to minimize damage from the quake. He told a news conference a large amount of damage had occurred in the northern Tohoku region.
- A Meteorological Agency official appeared on TV urging those affected by the quake not to return home because of possible tsunamis.
  “In some areas we have issued a warning of tsunamis of higher than 10 meters and we expect these areas will experience the high water levels soon,” said the official. “Please stay on high alert.”
- The governor of Miyagi Prefecture asked for Japanese military forces to be sent in to help.
- The Defence Ministry was sending eight fighter jets to check the damage, the agency said.
- The government set up a task force at the Prime Minister’s Office. The Bank of Japan set up a disaster control team, headed by BOJ Gov. Masaaki Shirakawa, to assess the impact of the earthquake on financial markets as well as on financial institutions’ business operations.
- In response, 91 countries have offered aid, from blankets and food to search dogs and military transport.
- The Japanese government is among the best prepared in the world for disasters and has so far only made specific requests for help, such as calling for search and rescue teams.
- Several charities, including Save the Children UK, British Red Cross and World Vision UK, are asking for donations.
- A British rescue team has arrived in Japan to join the search for survivors of the earthquake and tsunami.
- Fifty-nine search and rescue experts, four medics and two sniffer dogs flew out on a private charter plane with 11 tonnes of equipment on board.
- Modern innovations, such as Twitter were bringing updates on the situation far earlier than the media.
Case Study 14. Earthquake in Turkey 1999 (LEDCC)

Intro

- 17th August 1999 3AM
- 7.4 Richter scale
- Epicentre Izmit
- Eurasian and African plates

Human Effects

- 14,000 people dead
- 200,000 homeless
- Gölçuk 80% buildings destroyed burying bodies
- Adapazari 65,000 buildings destroyed or unusable
- Tens of thousands living in tents and makeshift centres

Environmental Effects

- Tupras oil refinery set alight – 700,000T oil
- UK based Oil Spill Response Company has booms, absorbent material and equipment to clear up
- Toxic waste dump at Petkim has cracks so risk of exposure
- Damage to PVC factory, waste treatment plant and incinerator
- Yalova chlorine works

Aid/Management

- American Red Cross 24 hr record for online disaster relief donations – 3 days later donations of $138,508
- Lincy Foundation donated $1 million
- American Red Cross 4 members of staff from International Emergency response unit
- American Red Cross 25,000 high protein biscuits and 25,000 comfort kits
- German and Norwegian Red Cross 2 field hospitals – 200 beds (in large tents) with field kitchens, mobile toilets etc
- 4000 Red Crescent tents total in and around Yalova
- Needed 10,000 more
- Diarrhoea

Contributing factors/what could be done better?

- Slow response as downed bridges, roads and telecoms
- Shoddy building construction – poor modern housing from mud brick
- Influx of people from Istanbul and Izmit
- Poor quality contractors
- Housing and Land mafia
SAMPLE EARTHQUAKE QUESTIONS

(c) Explain the causes of an earthquake which occurred in a named area which you have studied. [7]

(c) Many people live in areas where there are natural hazards such as:
- volcanic eruptions
- earthquakes
- tropical storms
- flooding
- drought
Name an area which you have studied and state the natural hazard(s) faced by the people who live there.
Explain why people live in the area. [7]

(c) Name an area which you have studied where there has been an earthquake. Describe the impacts of this earthquake. [7]

(c) An earthquake is an example of a natural hazard. Choose an example of one of the following:
a tropical storm, a drought.
For a named area, describe the causes and effects of your chosen hazard. [7]

(c) Name an area which you have studied where there has been an earthquake.
Describe the effects of this earthquake. [7]
You may refer to examples which you have studied. [7]

(c) In many parts of the world the natural environment presents hazards to people.
Choose an example of one of the following:
a volcanic eruption,
an earthquake,
a drought.
For a named area, describe the causes of the example which you have chosen and its impacts on the people living there. [7]

(c) Many people live in areas where earthquakes are likely to occur.
Explain why people still live in a named area which you have studied which experiences earthquakes. [7]
Volcano Case Study (Mt Merapi)

Location
Mount Merapi is located in South East Asia in the country of Indonesia. It is North of Yogyakarta and West of Solo on the island of Java. It is 1,700m high and has been erupting regularly since the 1500s.

Causes
The volcano and its eruptions were caused by the Indo-Australian Plate being subducted beneath the Eurasian Plate. The volcano is located on a destructive plate margin at a subduction zone and is part of the Pacific Ring of Fire.

Effects

<table>
<thead>
<tr>
<th>Primary (caused directly by the volcano)</th>
<th>Secondary (result from primary effects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volcanic bombs and hot gases of up to 800°C spread over 11km away</td>
<td>Vegetable prices increased because of the damage to crops</td>
</tr>
<tr>
<td>Pyroclastic flows spread 3km down the mountain</td>
<td>Emergency shelters had to be moved over 15km away</td>
</tr>
<tr>
<td>Ash fell up to 30km away and 5km into the sky. 15km away, villages were under 30cm of ash</td>
<td>Danger area extended to 20km from the mountain and 278,000 people living in this area had to flee their homes</td>
</tr>
<tr>
<td>Sulphur Dioxide was blown across Indonesia and as far South as Australia</td>
<td>Planes were grounded in Western Australia because of the risk of damage to aircraft from the ash cloud</td>
</tr>
<tr>
<td>Ash, rock and lava deposited on the sides of the volcano is still being washed down into towns by rainfall creating lahar (a mudflow that often flows along river valleys)</td>
<td></td>
</tr>
</tbody>
</table>

Impacts

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash from the volcano will eventually lead to more fertile soils in the area</td>
<td>273 people were killed and 577 people were injured</td>
</tr>
</tbody>
</table>
A conservation area has been set up around the volcano where it is unsafe to live

The evacuation centres were overcrowded leading to poor sanitation, no privacy and serious disease risk

People, particularly farmers, lost their homes and livelihoods

360,000 people were displaced from their homes

### Responses

<table>
<thead>
<tr>
<th>Short Term</th>
<th>Long Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>210 evacuation centres were set up either as tents, in schools, churches, stadiums or government offices</td>
<td>Formal evacuation centres were eventually set up because buildings, such as schools and government offices, were needed for their official uses</td>
</tr>
<tr>
<td>1,600 people, either volunteers or military, were part of the national aid response</td>
<td>2,682 people have had to be moved to new, safer houses permanently</td>
</tr>
<tr>
<td>-International aid was offered from organisations such as the Red Cross</td>
<td>The government is making money available to farmers to help replace their livestock</td>
</tr>
<tr>
<td></td>
<td>The government has set up a special task force to support people that have been affected by the volcano either by family issues, or because they have lost their jobs</td>
</tr>
</tbody>
</table>

### Why do people live near volcanoes?
At first it may seem odd that people would want to live close to a volcano. After all, volcanoes have a nasty habit of exploding, discharging liquid rock, ash, poisonous gasses, red hot clouds of embers, and generally doing things that kill people. Yet, throughout history, people have deliberately chosen to risk all those hazards and live near them, even on the slopes of active volcanoes that have erupted within living memory.

They chose to live close to volcanoes because they felt that the advantages outweighed the disadvantages. Most volcanoes are perfectly safe for long periods in between eruptions, and those that do erupt more frequently are usually thought of, by the people who live there, as being predictable.

Today, about 500 million people live on or close to volcanoes. We even have major cities close to active volcanoes. Popocatapetl (pronounced poh-poh-kah-teh-peh-til) is a volcanic mountain less than 50 miles from Mexico City in Mexico.

In short, the main things that attract people to live near active volcanoes are minerals, geothermal energy, fertile soils and tourism.

Let's look at each one...

**Minerals**

Magna rising from deep inside the earth contains a range of minerals. As the rock cools, minerals are precipitated out and, due to processes like the movement of superheated water and gasses through the rock, different minerals are precipitated at different locations. This means that minerals such as tin, silver, gold, copper and even diamonds can be found in volcanic rocks. Most of the metallic minerals mined around the world, particularly copper, gold, silver, lead and zinc are associated with rocks found deep below extinct volcanoes. This makes the areas ideal for both large scale commercial mining and smaller scale local activities by individuals and small groups of locals. Active and dormant volcanoes have the same mineralisation, so like extinct volcanoes, they are rich sources of minerals.

Hot gasses escaping through vents also bring minerals to the surface, notably sulphur, which collects around the vents as it condenses and solidifies. Locals collect the sulphur and sell it.

**Geothermal Energy**

Geothermal energy means heat energy from the earth. It's unusual to use the heat directly, by building your house on top of a steam vent for example, because it's unpredictable, dangerous and messy.
The heat from underground steam is used to drive turbines and produce electricity, or to heat water supplies that are then used to provide household heating and hot water. Where steam doesn't naturally occur it is possible to drill several deep holes into very hot rocks, pump cool water down one hole and extract steam from another hole close by.

The steam isn't used directly because it contains too many dissolved minerals that could precipitate out and clog pipes, corrode metal components and possibly poison the water supply.

Countries such as Iceland make extensive use of geothermal power, with approximately two thirds of Iceland's electricity coming from steam powered turbines. New Zealand and to a lesser extent, Japan, also make effective use of geothermal energy.

Fertile Soils

Volcanic rocks are rich in minerals, but when the rocks are fresh the minerals are not available to plants. The rocks need thousands of years to become weathered and broken down before they form rich soils. When they do become soils though, they form some of the richest ones on the planet. Places such as the African Rift Valley, Mt Elgon in Uganda, and the slopes of Vesuvius in Italy all have productive soils thanks to the breaking down of volcanic rocks and ash. The Naples area, which includes Mount Vesuvius, has such rich soils thanks to two large eruptions 35,000 and 12000 years ago. Both eruptions produced very thick deposits of ash and broken rocks which have weathered to rich soils. Today, the area is intensively cultivated and produces grapes, vegetables, orange and lemon trees, herbs, flowers and has become a major tomato growing region.

Tourism

Volcanoes attract millions of visitors every year, for different reasons. As an example of the wilder side of nature, there are few things that can beat seeing an erupting volcano blowing red hot ash and rock thousands of feet into the air. Even the less active ones that are just puffing out steam and smoke are impressive sights and attract tourists from around the world.

Around the volcano may be warm bathing lakes, hot springs, bubbling mud pools and steam vents. Geysers are always popular tourist attractions, such as Old Faithful in the Yellowstone National Park, USA. Old Faithful is such a popular tourist feature that it even has its own 24 hour Old Faithful webcam.
Iceland markets itself as a land of fire and ice, attracting tourists with a mix of volcanoes and glaciers, often both in the same place. The wild, raw and barren volcanic landscapes also attract tourists who want to see what the early planet may have looked like.

Tourism creates jobs in shops, restaurants, HOTELS AND tourist centres / national parks. Locals economies can profit from volcanism throughout the year, whereas skiing, for example, has only a limited winter season.

In Uganda, a country trying hard to increase its tourist industry, the volcanic region around Mt Elgon is being heavily promoted for it's landscape, huge waterfalls, wildlife, climbing and hiking and its remote 'get away from it all' location.

SAMPLE VOLCANIC QUESTIONS

(c) Explain the causes of an eruption of a named volcano which you have studied.
You may use labelled diagrams in your answer. [7]

(c) Volcanic eruptions are another natural hazard.
For a named example of a volcanic eruption which you have studied, describe its effects. [7]

(c) Many people live close to the volcanoes which are shown in Fig. 6B. Explain why people choose to live close to active volcanoes.

(c) For a named example which you have studied, explain why people live close to a volcano. [7]
Drainage basin (RIVERS)

Case Study 2. Flooding of the Mississippi River, USA (MEDC)

Mississippi is 3800km long
Flows through ten states
Has over 100 tributaries
Has a drainage basin covering 1/3 of the USA

Causes of 1993 flooding:
- Heavy rain in April 1993 saturated the upper Mississippi basin
- Thunderstorms in June caused flashfloods
- Mid July 180mm of rain in one day
- Levees in nearby towns collapsed

Effects of 1993 flooding:
- 43 deaths
- 50,000 people evacuated
- 26,000km of land flooded
- $2.46 billion crop losses
- River traffic stopped for several months
- $12 billion in damages
- Contents of and the buildings themselves destroyed
- Threat of disease from sewage
- Insurance claims high
- Stagnant water attracted mosquitoes and rats

Management:
- 6 huge dams and 105 reservoirs
- Afforestation to delay runoff
- Strengthening the levees with concrete mattresses 25mx8m
- Making the course shorter and straighter - from 530km to 300km by cutting through the neck of meanders to get the water passed towns more quickly to the sea
- Diversionary spillways – overflow channels 9km long
- Less construction on the floodplain eg St Louis.

Case Study 3. Flooding of the Brahmaputra and Ganges Rivers, Bangladesh (LEDC)

Causes of 1998 flooding:
- Monsoon season- 80% of rain falls June to September
- Deforestation in the Himalayas increases runoff below
- Urbanisation – building on floodplains
- 1998 both rivers peaked at the same time
- Silt had been deposited near the mouth blocking the main channel
- Global warming melting Himalayas
- Poorly maintained embankments
- Flat low lying land over 80% of Bangladesh

Effects in 1998:
- 70% of land in Bangladesh affected
- 2/3rds of people affected
- Dhaka 2ms deep in water
Management:
Since 1989 Bangladesh has been trying to:
Build 5000 flood shelters with stilts to save lives
Improve forecasting with satellite technology
Early warning system with megaphones
Build dams
Control water with sluice gates and water pumps
Heighten embankments on side of river to 7m- more than 7500km already in place

(c) Choose a named example of one of the following: an area of mountains, a fast flowing river, a flood plain. Describe the ways in which your chosen type of natural environment can provide opportunities for the people who live there. [7]

(c) For a named river you have studied, explain what has been done to reduce flooding. [7]

(c) Explain how an oxbow lake is formed. You should include fully labelled diagram(s). [7]

(c) Many people live and work on the flood plains of major rivers. Describe the advantages and difficulties for people of living on the flood plain of a river. You may refer to examples which you have studied. [7]

(c) For a named river which you have studied, explain the causes of flooding. [7]

(c) For a named river which you have studied, explain what has been done to reduce flooding. [7]

(c) For a named river which you have studied, describe the advantages and difficulties of living on its flood plain. [7]

(c) For a named area which you have studied, describe the impacts of river flooding. [7]
Mekong River Delta

The Mekong Delta is where the mighty Mekong river completes its 2,700 mile (4,300 km) journey from the Tibetan plateau and empties its riches into the South China Sea.

The Mekong Delta covers an area of approximately 15,000 square miles (40,000 square kilometers) to the west of Ho Chi Minh City. The Mekong is the world’s twelfth longest river.

**IMPORTANCE OF MAKONG DELTA**

The Mekong Delta plays an important role in the sustainable security of Vietnam, particularly as it relates to food security and the national economy. Facts of importance:

- 20% of Vietnam population live in the Mekong Delta
- 48% of staple foods for Vietnam are grown in the Mekong Delta
- 75% of Aquaculture production for Vietnam comes from the Mekong Delta
- 38% of marine fishery production for Vietnam comes from the Mekong Delta
- 40% of caught fisheries for Vietnam come from the Mekong Delta

**DIFFICULTIES**

*The flood in 2000:*

- 35 times bigger than that of flood year 1950, the most damaging floods in 70 years.
- 760,000 houses are submerged;
- 67,000 families have been evacuated;
- 319 people have been died, of which 236 were children.
- The net loss has been evaluated at 2,670 billion

*Formation of River Deltas*

The formation of a river delta is a slow process. As rivers flow toward their outlets from higher elevations they deposit particles of mud, silt, sand and gravel at their mouths because the flow of water slows as the river joins the larger body of water. Over time these particles (called sediment or alluvium) build up at the mouth and can extend into

*About 1,2 - 1,9 million of hectares of the Delta can be flooded where farming becomes impossible.*
the ocean or lake. As these areas continue to grow the water becomes more and more shallow and eventually landforms begin to rise above the surface of the water. Most deltas are only elevated to just above sea level though.

Once the rivers have dropped enough sediment to create these landforms or areas of raised elevation the remaining flowing water with the most power sometimes cuts across the land and forms different branches. These branches are called distributaries. After the deltas have formed they are typically made up of three parts. These parts are the upper delta plain, the lower delta plain and the subaqueous delta. The upper delta plain is the area nearest to the land. It is usually the area with the least water and highest elevation. The subaqueous delta is the portion of the delta that is closest to the sea or body of water into which the river flows. This area is usually past the shoreline and it is below water level. The lower delta plain is the middle of the delta. It is a transition zone between the dry upper delta and the wet subaqueous delta.

(c) Describe the advantages and difficulties for people of living on a river delta. You should refer to a delta which you have studied. [7]

(c) Explain how and why a delta is formed. You should refer to an example you have studied and include labelled diagrams. [7]

(c) Explain how and why a delta has formed in a named area which you have studied. You should use a labelled diagram or diagrams in your answer. [7]

(c) Describe the advantages and difficulties for people of living on a river delta. You should refer to a delta which you have studied. [7]

c) Most deltas are located on the coast. Describe the benefits and problems of living on a delta which you have studied. [7]

(c) Explain how and why a delta is formed. You should refer to an example you have studied and include labelled diagrams. [7]

(c) Describe the benefits and difficulties for people of living on a delta. You should refer to a named delta. [7]

(c) Underline one of the following types of natural environment and choose a named example:
IGCSE GEOGRAPHY CASE STUDIES

- a flood plain;
- a delta;
- a coastal area.

Describe the ways in which your chosen type of natural environment can provide opportunities for the people who live there. [7]

Changing coasts and waves

Coastal protection on the New Forest coastline of the South UK

- New Forest coastline in Hampshire has clay and sand cliffs of 30m which have retreated 60m since 1971 – now being protected by concrete sea wall and groynes
- Mudflows and landslips at Barton on Sea after heavy rains – working with nature by constructing rock revetments and groynes
- Hurst spit vulnerable to erosion – now deciding whether to leave it to nature or protect it
- Marshland with wildlife value from Keyhaven to Lymington – so nature reserve created and New Forest named as National Park

Spits - Hurst Castle - Hampshire

Background Information
A spit is a long and narrow ridge of sand or shingle, with one end attached to the land. The other end extends out into the river estuary and is hooked in shape. On the spit can be found areas covered by sand dunes and behind the spit an area covered by coastal salt marshes.

Formation
Prevailing south westerly winds blowing of the Atlantic Ocean push waves up the beach at an oblique angle.
The swash and backwash of these waves therefore, transports beach material by longshore drift along the coast of Hampshire in an easterly direction.
When the coast suddenly changes direction at the Solent the material been transported is deposited in the water sheltered by the headland. Overtime these deposits slowly build up in a narrow band to form a spit.
The spit becomes stable when vegetation such as Marram grass becomes established allowing sand dunes to develop.
Occasionally the wind changes direction coming from the south east forcing the waves to push some of the material at the east end of the spit inland. This forms the hooked shaped end of the spit.
CASE STUDY: SPURN HEAD spit

Spurn Head is 5.5km long, 270m wide at its widest point and extends into the Humber estuary at the rate of approximately 10cm per annum.

The spit is vegetated and this gives it some stability and a degree of permanence. The eastern side of the spit is exposed to incoming waves whereas the western side is sheltered and there is a salt marsh behind it.

Spurn Point is threatened by groynes to the North of it as they deprive it of sediment. The spit is also approaching the end of its cycle and, as can be seen in the aerial photo, the neck is very thin.

There are some old groynes on the spit, but it is no longer defended and has effectively been abandoned. The neck of the spit was so narrow that winter storms were washing over it and the spit was proving both expensive and impossible to defend.

It will be a loss if the spit is breached. Thousands of people visit it every year to appreciate its beauty and sense of isolation but also to bird-watch as it is an excellent place for ornithologists to observe migrating birds in spring and Autumn.

Sand dune coastal environment: Studland Bay

- Studland Bay is an area of sand dunes just to the north of Swanage on the east coast of the Isle of Purbeck in Dorset and is popular with tourists. It can be accessed by ferry from the desirable area of Sandbanks in Poole during the summer. It is only a few minutes’ drive from the resort of Swanage and most visitors arrive by car.

Formation of sand dune

1. To start with, sand accumulates on the sheltered side of an obstacle such as a rock or a piece of driftwood. These small deposits of sand join together and grow to form embryo dunes (see Figure 1). Plants that can tolerate the dry and salty conditions – such as sea rocket – begin to colonise these early dunes.

2. As the sand becomes more stable larger foredunes will be formed. Plants such as marram grass (Figure 2) start to colonise these dunes. Marram grass is extremely well suited to sand dunes. Its long roots seek fresh water deep below the surface and its tough stems help to bind the sand together. Marram grass is folded to reduce transpiration in windy areas. As sand buries it, it is actually stimulated to grow taller. In time, these dunes develop to form tall, steep-sided yellow dunes.
3 Gradually, the environmental conditions start to improve. Dead plants add nutrients to the soil and the environmental conditions become less extreme. New species of vegetation, such as gorse and brambles start to grow forming a range of habitats for butterflies and insects, birds (e.g. the ringed plover) and small animals (e.g. rabbits and stoats). The darker, richer soils with a higher organic content account for the name grey dunes. Almost completely covered by vegetation, these dunes are more stable and are sometimes called fixed dunes.

4 Strong winds and trampling by humans can cause hollows or depressions to form in places. These are called 'blowouts'. Occasionally the base of the hollow may reach the water table. A waterlogged area, called a dune slack, will form here with a completely different range of plants and animals, such as orchids and creeping willow. Semi-aquatic animals such as frogs may be found here.

5 After a few hundred years, shrubs and trees will become established on the sand dunes. At this point, the vegetation succession is said to have reached its climatic climax. In the UK typical trees would be oaks or pines.

Fact Sheet: Coastal Marshes – Keyhaven – Hampshire

Background Information
Coastal marshes are areas of periodically flooded low-lying coastal wetlands.

Keyhaven marsh is located to the north of Hurst castle spit and at the mouth of the river Avon

Formation
When the river Avon reaches the coast a reduction in its velocity means that it starts to deposit its load in the sheltered tidal waters inland of Hurst Castle spit. Extra sediment added by the river Lymington and the tides moving southwards down the Solent. Flocculation also causes sediments to bind together increasing the levels of deposition in the sheltered area inland of the Hurst Castle spit. This happens when fresh water from the river Avon meets sea water. As more deposition takes place the accumulations of sediment start to break the surface of sea and form mudflats. Pioneer plants such as Cordgrass a salt-tolerant plant soon start to colonise these mudflats. Its tangle of deep roots also helps to trap further sediment stabilising the mudflats. As the level of the mudflats rises, it is less frequently covered by sea water. The conditions become less
harsh as rainwater begins to wash out some of the salt and decomposing plant matter improves the fertility of the newly forming soil. These changes encourage new plant species such as sea asters to start colonising the area.

**Sample questions**

(c) Explain how one of the following has formed in a named area which you have studied: a spit; an area of coastal sand dunes.

(c) Explain how the natural features of headlands are formed as a result of wave processes. You may use labelled diagrams in your answer.

(c) Explain how and why coastal sand dunes have formed in a named area which you have studied. You may use a labelled diagram or diagrams in your answer. [7]

(c) Explain how one of the following has formed in a named area which you have studied:
- a spit;
- an area of coastal sand dunes.
You should use labelled diagrams in your answer. [7]

**Case study: The Great Barrier Reef, Australia**

Australia’s Great Barrier Reef (Figure 6.36) is the world’s largest coral reef system, stretching for more than 2000 km north to south, between 15 and 150 km off the coast of Queensland. Up to 65 km wide in parts, it covers 345 000 km². It was declared a UNESCO World Heritage Site in 1981, and is the world’s largest Marine Park.

**Tourism**

The marine tourism industry is the largest commercial activity in the Great Barrier Reef region, which is both a World Heritage Site and the world’s largest Marine Park. Visitors contribute more than Aus$5 billion to the Australian economy every year, and the industry provides jobs for more than 50 000 people. There are more than 800 operators and 1500 vessels operating along the reef, ranging from small sailing boats catering for 20 or fewer to luxury catamarans carrying 400 people. Some cruise ships also include it on their itinerary. More than 85 per cent of visitors go ashore in just 10 per cent of the park. Attractions include day, overnight and extended tours, snorkelling, scuba diving and fishing, aircraft or helicopter trips, sailing, cruising and glass-bottomed boat viewing.

**Problems**
Despite the high numbers of tourists, it is not visitors who pose the real threat to the reef. As is the case for most coral reefs, the main threat is global warming. Coral growth here has declined more in recent years that at any time over the past 400 years. If sea temperatures rise, bleaching could decimate the coral. Deposition of sediment and pollution from the run off of pesticides, fertilizers and detergents from the land are also causing problems. In terms of wildlife, two species in particular are causing concern. Loggerhead turtle numbers have fallen by 90 per cent in the past 50 years, many getting caught in fishing nets. Dugongs (a large marine mammal) have fared even worse, declining by 97 per cent over the same period, also the victim of fishing nets, but also through hunting or being hit by boats.

(c) For a named area of coral reef which you have studied, describe the conditions which led to its formation. [7]

(c) For an area you have studied, describe the benefits and problems of living near the coast. [7]

(c) Describe the ways in which coastal areas can provide opportunities for the people who live there. You should give examples from an area you have studied. [7]

(c) Describe the impacts of a natural hazard on a named coastal area which you have studied. [7]

Weather and climate
Hurricane Floyd, USA 1999 (MEDC)

Intro

• Formed in Atlantic Ocean off coast of Africa
• Began 2 September 1999
• Cat 4 hurricane (211-240 kph) in Bahamas by 13 and 14 September
• Weakened by time reached USA near Cape Fear, N Carolina
• Tropical storm by time reached New England

Effects

• 14 states (Florida to Maine) hit – N Carolina worse hit
• 79 deaths
47 people died from storm of 500mm rain and floods in N Carolina
4 million evacuated in N Carolina, Georgia and Florida
1 million had no electricity or water
4,000 Pennsylvanians homeless
25000 claimed insurance - $460 million
42973 homes damaged – 11779 destroyed
144854 asked for assistance
10x increase in Alabama benefits applications
105580 people went to shelters
$1 billion agricultural losses -10% N Carolina tobacco lost
N Carolina 500 roads impassable
Storm surge in Nassau sunk boats
Beaches in Bahamas destroyed – Wrightsville beach 20m sand on roads

Prediction

National hurricane Centre in Florida government run
Use geostationary satellites
Allowed 2.5 mil to be evacuated
N Carolina 800,000 evacuated – caused traffic on Interstate 26
150km journey took 10 hrs

Preparedness/Buildings/Land use planning

Federal Emergency Management Agency (FEMA) gave advice for family disaster plan and disaster supply kit
Building codes to construct earthquake proof buildings – not always applied though
High risk coastal locations identified based on past hurricanes and surges
Building limited here

Case study 6. CYCLONE ONE BRAVO, BANGLADESH 1997 (LEDC)

Intro

Formed in Bay of Bengal
Struck SE coast of Bangladesh on Monday 19 May 1997
250kph winds struck Cox’s Bazaar and Chittagong
4 million people living there
8 Mount Everest expeditions trapped in basecamp

Effects

111 died
7000 injured
2m high tidal surges
Cut communications
500,000 homeless as mud and thatch destroyed
608 educational institutions destroyed
- Saltwater contamination of freshwater tubes and wells – 1 mil no clean water
- Fishing boats and nets destroyed
- 300,000 ha crops destroyed and 2000 cattle lost
- Electricity cut for one week in large towns
- Diarrhoea
- Destruction of roads, bridges and cyclone shelters

Management

- 1997 Government established Relief fund
- 500 families in each area received 32kg of rice in 2 months
- One bundle of corrugated iron to people with no house
- Red Crescent plane to survey damage
- 20 May 2000 Bangladesh red Crescent 400 tarpaulins, 100 jerry cans, 500 mugs, 500 crockery and aluminium plates, 50 bars soap and 1 Tonne rice
- Six medical teams and first aid volunteers
- International donors eg UN established new tube wells
- European Commission Humanitarian Committee donated 350,000 ecu
- CARE gave food, survival kits and water purification tablets
- Donations - Australia $77,000, Canada $100,000, France $35,000, Sweden $240,000, UK $160,000, USA $640,000

Protection

- Earth embankments
- Cyclone shelters above sea level
- Education programmes

(c) In many parts of the world the natural environment presents hazards to people. Choose an example of one of the following: a flood, a tropical storm, a drought. For a named area, describe the causes of the hazard which you have chosen. [7]

. (c) The weather often causes problems for people. These include problems caused by:
- flooding,
- drought,
- tropical storms.
Choose either one of these hazards or any other hazard faced by people as a result of the weather or climate. Describe the problems experienced by people living in areas at risk from your chosen hazard.
You may refer to examples which you have studied.
(c) In many parts of the world the natural environment presents hazards to people. Choose an example of one of the following:
- tropical storm
- flooding
- drought
For a named area, explain the causes of the hazard which you have chosen and describe its impacts on people living there. [7]

(c) Tropical storms are another type of natural hazard. Explain why the effects of tropical storms of the same strength are likely to be greater in an LEDC than an MEDC. Refer to examples which you have studied. [7]

(c) Name an area which you have studied where tropical storms occur. Describe the problems which they cause for people living in your chosen area. [7]

(c) In many parts of the world the natural environment presents hazards to people. Choose an example of one of the following:
- a flood,
- a tropical storm,
- a drought.
For a named area, describe the causes of the hazard which you have chosen. [7]

(c) In many parts of the world weather and climate may cause natural disasters. These include drought and tropical storms. For either a drought or a tropical storm which you have studied, describe the impacts on a named area which you have studied. [7]
Climate and natural vegetation

Malaysia Tropical Rainforest

Location
Tropical rain forests are found in equatorial areas, between the tropics. They are concentrated between 5 degrees north and south of the equator. The main areas covered by tropical rainforests are: Central America; the Amazon Basin in South America; the Congo Basin in Central Africa; Madagascar; Southern Asia and small parts of North Western Australasia.

Climate

TEMPERATURE
Kuching in Malaysia has a minimum average monthly temperature of 28°C in January and a maximum average monthly temperature of 32°C in June. This gives a small annual temperature range of 4°C.

There are two main reasons that cause these high temperatures and the small annual temperature range.

- The first is because the sun is either directly overhead or is high in the sky. Therefore, insolation from the sun is very concentrated and only heat up a small area of the earth's surface.
- Secondly there is very little variation in the daylight over the year, (12 hours of daylight). This means that tropical rainforest always receives the same amount of insolation each day.

RAINFALL
The annual rainfall for Kuching in Malaysia is 4000 mm and on average it rains on 20 days per month. This is because the Malaysian rainforest is always underneath the rising limb of the Hadley cell. In the morning insolation from the sun begins to heat up the surface of the rainforest. The surface then emits longwave radiation, which warms the overlying air that contains large quantities of water moisture. The air then starts to rise rapidly, as the air ascends it cools and eventually reaches dew point where the water vapour condenses to form large cumulus clouds. The water droplets within the clouds begin to collide and eventually became large enough to overcome the updraft of the rising air. As a result tropical rainforests experience periods of heavy convectional rainfall between 2 and 4 pm.

Characteristics and structure
The rainforest is a very tall and dense forest with a very high biodiversity. In the Amazon, there may be over 300 different species in 1 km². (mahogany, ebony, greenheart, palm and rubber trees). These trees are of the hardwood deciduous variety, (they appear to be evergreen, but shed their leaves at any time of the year).

The structure of the tropical rainforest is divided into different layers. These are the emergent layer, the main canopy, the under canopy, the shrub layer and the herb layer, (see diagram above).
How and Why the Rainforest is at risk from Human Activity

- **Logging** – Trees are chopped down to obtain tropical hardwoods such as Teak and Humin. These hardwoods are exported to the developed world and provide Malaysia with valuable foreign currency. This has reduced biodiversity of the forest and increased the rates of soil erosion and mudslides.

- The $2bn Bakum Dam project in Sarawak has resulted in the flooding 230km² of virgin rainforest and some 9000 indigenous Kenyah people have been forced to move from the flooded area.

- **Mining** – this is widespread in Peninsular Malaysia, with tin mining and smelting dominating. Large areas of rainforest have been cleared to make way for open cast operations and the construction of roads and smelting factories. In some places the mining activities have led to pollution of the land and rivers.

- Large areas of forest in the Pasoh region have also been cleared for **Commercial Plantations** of palm oil and rubber. Today Malaysia is the largest exporter of palm oil in the world. This is used in the production of many foodstuffs, animal foods and to produce biofuels.

- **Pollution** – In Sarawak these plantations have endangered the Orangutan. The fertilisers and pesticides used on the plantations has been washed into and polluted the Baram River killing many fish species and contaminating commercial grown king prawns.

- In the past poor urban dwellers have been encouraged to move into the rainforest to relieve the pressure on the cities. This policy was called transmigration. Between 1956 and the 1980’s an estimated 15,000 ha of rainforest were felled to accommodate the new settlers, many of whom set up plantations.

- **Fires** are common in Borneo. Some of these fires were the rest of forest clearance or arson. Occasionally slash and burn agriculture – where local people clear small areas of land in order to grow food crops – results in wildfires.

Rainforest clearance in the Amazon, Brazil

1/3 of the world’s trees in Amazon
Estimates that 15-40% has been cleared
15 football pitches per minute cleared for:
- Slash and burn farming by Amerindian tribes like the Yanomami
- Subsistence farming by 25 million landless peasants
- Commercial cattle ranching for fast food chains
- 5300km Amazonian highway
- 900km railwayline from Carajas to the coast
- Timber/ logging companies
- Mineral mining eg diamonds, gold
- HEP
Settlements eg Carajas

Effects:
- 30000 known species could be threatened
- May lose species that are as yet undiscovered
- Could lose the cure for diseases like Aids and cancer eg periwinkle found to cure Leukaemia
- Loss of Amerindians due to European diseases
- Loss of Amerindian traditions
- Soil erosion as lack of interception as canopy removed
- Loss of nutrients in soil
- Climate change and global warming
- Global balance of carbon and oxygen affected

Ways to protect Amazonia:
- Zones for different activities
- Loggers use selective logging practices
- Laws
- Limit licences to be given out
- Restricting use of heavy destructive machinery
- Encourage helilogging—uses helicopter
- Community forestry development scheme to educate local people
- Avoid construction where local tribes exist
- Fines and prosecution for lawbreaking
- Increased patrols

(c) Many areas of natural vegetation are at risk from human activities. Name either an area of tropical rain forest or tropical desert which you have studied and explain why and how it is at risk from human activities. [7]

(c) For a named area of tropical rainforest which you have studied, describe and explain the characteristics of its climate. [7]

(c) For a named area of tropical rainforest which you have studied, describe the ways in which it benefits people. [7]

(c) Explain why parts of some continents, such as South America and Africa, experience a tropical rainforest climate whilst other parts experience a tropical desert climate. [7]

(c) Describe and explain the main characteristics of the natural vegetation of a tropical rainforest. You must include a labelled diagram. [7]
Desertification in the Sahel, Africa

- The Sahel is a narrow belt of semi arid land South of the Sahara in Africa
- Rainfall is only in 1 or 2 months of the year
- Rainfall is irregular with no rain in some years
- Droughts in Ethiopia (1983), Sudan (1984-91) and Somalia (1990s)

Causes of desertification:

- Climate change and global warming allow less rain per year
- Water holes dry up
- Increased population growth – 3 or 4% increase each year
- Overgrazing of cattle, camels, goats etc increased 40% since 1980s
- Animals taken to wells which decreases height of water table
- Non drought resistant grasses die
- Farming on marginal land
- Farming the same crop each year
- Lack of fallow land
- Taking local trees for firewood

All these increase the size of the desert, increase soil erosion and cause famines for people

Climates

➢ Desserts are extremely dry (arid) places. True deserts normally have less than 250mm RAINFALL a year, although some deserts like the Atacama to the right can go years without any water.

➢ Deserts are very dry because the air that descends over them is very dry. The air is dry because most of the moisture has fallen as precipitation over the Equator (tropical rainforests) before being pushed out and falling near the tropics.

➢ The air is also very dry because the air travelling from the equator to the tropics travels over land and not the sea. This means that no additional moisture is picked up. Because there is no moisture in the air, there are very few clouds in deserts which means desert areas are exposed to high levels of incoming radiation from the sun.

➢ Daytime temperatures in the desert are very high.

➢ However, the lack of cloud covers also means that a lot of outgoing radiation is able to escape, making desert temperatures very cold at night. So even though the annual temperature range in deserts is very low, the daily temperature range is very high. The daily temperature range is known as the diurnal temperature range.

(c) For a named tropical desert, explain how and why the natural environment is threatened by human activities. [7]
c) For a named area of tropical desert you have studied, explain why and how it is at risk from human activities. [7]

(c) For an area of tropical desert which you have studied, describe and explain the characteristics of its natural vegetation. [7]

(c) For a named area of tropical desert which you have studied, describe and explain the characteristics of its climate. [7]

(c) Name an area of tropical desert which you have studied. Describe and explain the main features of its climate. [7]

(c) For a named tropical desert, explain how and why the natural environment is threatened by human activities. [7]

(c) For a named area of tropical desert you have studied, explain why and how it is at risk from human activities. [7]

(c) For a named area of tropical desert which you have studied, describe the features of the natural vegetation and explain how it can survive in the desert climate. [7]

AGRICULTURE

Case study Dairy Farming in an MEDC - UK
Name of farm owner - Mr Gilbert Hitchen
Location – Cheshire Plains
Relief – low lying, flat land
Soil – deep and rich growing good quality grass
Climate – reliable rain throughout year,
    mild winters – so farmer does not need a lot of winter fodder
    summers not very warm – so grass does not die
Size – 450 hectares
Animals – 190 dairy cows
Problems – herd destroyed because of foot and mouth disease in 1960s
Transport – M6 motorway nearby
Market – Manchester and Merseyside near
Technology – Refrigerated lorry to transport milk
    Computers control food in relation to milk production
Income – milk sales
EU subsidies

Case study | Intensive subsistence wet rice farming in the Philippines
Philippines is a group of 7000 islands in the Pacific Ocean
Name of farm owner – Maximo Casiendo
Location of farm – Barangay Busay
Since when has he had farm-1996 because of land reform act
Relief – Flat at 70m above sea level
Soil – fertile clay loams
Climate – average temperature 25 degrees and 1800m rainfall
Size of land – 2.6 hectares
Crops – rice, maize, vegetables and cassava
Labour- Mr Casiendo and his seven children
Machines- rice thresher (which he rents to others in village)
Needs to hire water buffalo to plough for 28 euros per hectare
Chemicals – Fertilisers (8 bags of nitrogen, phosphorus and potassium
Insecticide to kill leafhoppers
Herbicides to control weeds
Diesel- 30 litres per hectare for rice thresher
Output – 520 cavans of rice per year and maize (subsistence – most for family use but some may be sold)

Ganges Valley- Ledcs

INPUTS

Physical-
Rich fertile silt which is deposited annually by the ganges
Temperatures over 21 degree Celsius
Continuous growing season
Monsoon rains
Rice, vegetable or cereal seed
Small farm 1hectare

Human

➤ Lots of labour force
IGCSE GEOGRAPHY CASE STUDIES

- Embankments
- Irrigation canals
- Hand labour
- Water buffalo used
- Manure as fertiliser

**Processes**

Weeding, irrigation, watering

**OUTPUT**

- Rice
- Some wheat, vegetables and chicken.

(c) All farming systems have inputs, processes and outputs. Name an area where small-scale subsistence farming takes place. Describe the inputs, processes and outputs of this farming system. [7]

(c) All farming systems have inputs, processes and outputs. Name an area where large-scale commercial farming takes place. Describe the inputs, processes and outputs of this farming system. [7]

(c) For an example of small-scale subsistence farming at a named location which you have studied, describe the farming processes. [7]

(c) All farming systems have inputs, processes and outputs. Name an area where small-scale subsistence farming takes place. Describe the inputs, processes and outputs of this farming system. [7]

(c) Name an area where small scale subsistence farming takes place. Explain why the farmers are subsistence farmers. [7]
Lake District: Waterside House Farm

*Physical inputs*

**Temperature**
- summer 15°C in valley, lower on fells
- winter 5°C in valley, lower on fells

**Rainfall** 1476mm/year in valley, higher on fells

**Soil**
- in valley – some silty, so heavy; some gravely, so well-drained
- on fells – thin and stony, with acid peat on high, flat land

**Slopes** gentle near lake, with steep, glaciated valley sides rising to rugged fell

*Human inputs*

**Labour**
- farmer and son plus one casual worker at busy times
- full-time worker on campsite in summer

*Capital inputs*

**Machinery** tractor, baler for silage

**Chemical inputs** sheep dip to kill parasites, limited fertiliser on silage meadows, spray to kill bracken

**THE FARM**

**Area of land** 113ha plus grazing rights to fell – 69ha

**Buildings** tractor shed, silage store, sheds for lambing of weak ewes

**Animals** 880 ewes produce 950 lambs

**Main processes**
- sheep winter on inbye and intake land; lamb near farm
- in May, move onto intake land and fell; silage made in early summer
- shearing; sales; dipping; mating

**Outputs**
- wool to merchant in Bradford for carpets
- 475 fat lambs for slaughter and export to Europe
- 325 female lambs sold to other farms for breeding
- (150 lambs kept for breeding)

**Other sources of income**
- EU guarantee prices of lambs, but only up to the quota of 880 sheep
- CAP subsidy for ‘severely disadvantaged status’ – harsh environment
- ESA payments (Environmentally Sensitive Area) to maintain and increase habitat diversity
- Campsite on edge of lake for 120 tents from March to October
- Canoes and boats for hire on Ullswater
### East Anglia: Lynford House Farm

**Physical inputs**

Temperature
- summer 16°C
- winter 16°C

Rainfall 559mm/year

Sunshine high totals

Soil alluvium and peat – very fertile

Slopes flat, just above sea level, much drained marshland

**Human inputs**

Labour 5 full time workers plus contract workers employed for harvesting

**Capital inputs**

Machinery several tractors, combine harvesters, sprays, fertiliser spreaders, ventilated potato store, etc.

Chemical inputs large amounts of fertilisers, pesticides, insecticides – bought through a co-operative

Other input 55 000 cubic metre reservoir for irrigation water

**THE FARM**

Area of land 570ha

Buildings machinery sheds, storage buildings

Animals none

**Main processes**

- wheat: plough (Aug), sow (Sept), fertilise, spray, harvest (Jul)
- potatoes: plough (Nov – Jan), fertilise, plant (Apr), spray, irrigate, harvest (Oct)
- sugar beet: fertilise (Nov), plough (Dec – Feb), sow (Mar), spray, harvest (Oct)
- peas: plough (Nov, Mar), sow (Apr), spray, harvest (Jul)

**Outputs**

- 3000 tonnes of potatoes to supermarket chain
- 400 tonnes of peas to canning company
- sugar beet to factory at Ely (10 km)
- wheat to grain merchant plus surplus unsold goes into EU storage

**Other sources of income**

- EU intervention price paid for wheat that cannot be sold
- 55 ha (hectares) of land in set-aside – EU pays to leave land out of production
- 10 out of 12 workers’ bungalows on the farm are being sold or hired to non-farm workers
- small wind farm, pays £3000 per year per turbine

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(c) Name an area where large-scale commercial farming takes place.
Describe the inputs, processes and outputs of this farming system. [7]

(c) For a farm in a named area which you have studied, describe and explain the land use.
You should refer to physical and human factors. [7]

(c) All farming systems have inputs, processes and outputs. Name an example which you have studied of either small-scale subsistence farming or large scale commercial farming. Give the name of an area where your chosen farming type takes place. Describe the inputs, processes and outputs of this farming system. [7]

(c) All farming systems have inputs, processes and outputs. Name an area where large-scale commercial farming takes place. Describe the inputs, processes and outputs of this farming system. [7]

(c) Choose an example which you have studied of large-scale commercial farming. Name an area where your chosen farming type takes place. Describe the inputs, processes and outputs of this farming system. [7]

INDUSTRIES

Case study 38. Changing location of heavy industry: The iron and steel industry in Wales

In the 19th century the iron and steel works were found in South Wales (e.g. Ebbw Vale) on the coalfields as:

- Coal was bulky and needed in large quantities so it was cheaper and easier to locate near this input.
- Water from nearby rivers used for power and effluent (waste)
- Exports sent by routes through valleys so easy
- Large numbers of unskilled workers from surrounding villages like Ebbw vale and Merthyr Tydfil
- Local markets eg Cardiff and Newport
- Small scale and manual technology only

By the 1970s Ebbw Vale had only 2 steelworks because the advantages no longer existed. The steelworks moved to the coast at Port Talbot because:

- Imported coal from far away as Australia so port needed
- Iron ore imported from North Africa and America
- Coastal water used for cooling
- Electricity from National Grid
- Large area of cheap flat land
- Government and EU incentives to locate there
Case study 39. High technology industries: The M4 corridor
M4 corridor runs from Wales to London passing Bristol and Newbury on the way – it has a lot of high tech firms like microelectronics, Rolls Royce and British Aerospace because it has:
- M4 motorway to allow inputs and outputs to be transported
- Mainline railway Wales to London
- Heathrow airport for international links
- Large labour force who have moved out of London into new towns and overspill towns
- Nearby firms to exchange ideas
- Near Bristol, Bath, Reading and London Universities for expertise and research
- Attractive environment for workers eg National parks like Dartmoor

Case study 40. High technology industries: Cambridge Science Park
- Was built in 1970
- 90 high tech firms locate there
- The majority of companies are involved in scientific research and development
They locate here because of:
- Low cost of land
- Large area of land – 152 acres
- Pleasant working environment as 20 of 152 acres are parkland and landscaped
- Large supply of expert labour from nearby Cambridge university - 5,000 people in total.
- Links with Cambridge University for research and development
- Park facilities include a CCTV system, conference facilities, restaurant and bar, child care nursery, health and fitness centre and squash courts.
- Companies can share maintenance and support services with other firms
- It is linked by roads, regular bus service and cycle routes to the town centre.
- Not too far from London Stansted airport for international links
- M11 motorway link to London for inputs and outputs

Case study 41. Industry in a NIC: Malaysia
(Please note NIC = Newly Industrialising Country)
- Malaysia first developed heavy industry like steel and ship building
- Now concentrating on high tech industry like microelectronics and biotechnology
- It aims to be a MEDC by 2020
- Many industries not run by government anymore but privatised
- Uses a large workforce
- So little unemployment that needs to attract workers from Indonesia and Philippines
- Attracting foreign companies too
- Now building a new international airport, new towns, science parks and high tech buildings like PETRONAS building
Case study 42. Informal sector industry in LEDCs: beach vendor on Copacabana beach, Rio, Brazil

- Beach vendor sells sunhats, lotions, bikinis, cold drinks, jewellery and roses for 50 cents.
- Self employed
- Small scale
- Little capital (money) involved
- Labour intensive
- Use cheap resources
- Low standards of goods
- Work irregular wages for uncertain wages
- No government assistance as not paying any taxes
- Illegal
- Women and children as workers

Good as:
- Employs many people 15,000
- Gives skills that many be useful in other careers
- Uses local materials

Case study 43. Multi National Companies in a LEDC (MNCs) – Sao Paulo, Brazil

- German company Volkswagen opened factories in Sao Paulo in the mid 1960s
- Brazilian government encourages MNCs as they thought that support industries, jobs etc would raise the standard of living
- For Volkswagen the benefits were
  - Modern factories could be built cheaply and easily
  - Guaranteed market for VW in Brazil and South America
  - Wages low so production cost lower
  - Military government in Brazil so strikes unlikely
- For Brazil benefits were
  - 5% of export earnings from cars
  - Support services
  - Jobs
  - Skills
- Problems for Brazil
  - Leakage – money from profits taken out by VW
  - Increase car use in brazil has increased cost of oil imports
  - Rural-urban migration for workers has caused problems in Sao Paulo
  - Wages of the workers on the assembly line are too low to support the family
  - Workers sometimes forced to work very long hours

(c) Name an example of an area where manufacturing or processing industry has been located and explain the factors which have attracted this type of industry to the area. [7]
(c) Name an area where either manufacturing or processing industry is important and give an example of a type of industry (or factory) which you have studied in that area. Explain the reasons for its growth at that location. [7]

(c) For a named country or area which you have studied, explain why high technology industries were located there. [7]

(c) High technology industries are science-based industries such as aerospace, pharmaceuticals, computers, and manufacture of communication equipment and scientific instruments. For a named country or area which you have studied, explain why high technology industries were located there. [7]

(c) Name an area where either manufacturing or processing industry is important and give an example of a type of industry (or factory) which you have studied in that area. Explain the reasons for its growth at that location. [7]

(c) Give an example of a manufacturing or processing industry and name an area where this type of industry is located. Explain the factors which have attracted this type of industry to the area. [7]

(c) For a named area where manufacturing industry is important, describe its impacts on the natural environment. [7]

(c) Name an area where manufacturing or processing industry is important and give an example of a type of industry (or factory) which you have studied in that area. Explain the reasons for its growth at that location. [7]

(c) Describe and explain the factors which encourage the development of craft industries. You may refer to examples which you have studied. [7]

(c) How have the lives of people in NICs changed as a result of economic growth? You may refer to examples which you have studied. [7]
(c) Name an area where high technology industry has been located and explain the factors which attracted this type of industry to the area. [7]

(c) For a named example of an area where high technology industry has been located, explain the factors which have attracted this type of industry. [7]

(c) For a named area which you have studied, describe the benefits of the growth of high technology industry. [7]

TOURISM

Case study  Tourism in Ayia Napa Cyprus, MEDC
Cyprus is third largest island in the Mediterranean
In 1998 tourism brought 879 million pounds to Cyprus
Ayia Napa is becoming a party town for young people (like Ibiza)
Why is it attractive to tourists?
- Climate – Summer is hot with average August temperature of 30 degrees
- Akamas peninsula with unspoilt forests
- Beaches with breeding turtles eg Nissi beach
- Troodos mountains
- Greco peninsula with caves
- Cruise ships stop here
- Day trips to Egypt and Jerusalem
- Bars, discos and nightlife
- Waterworld waterpark
- Marine park with performing dolphins and seals
- Ancient ruins like Makronissos Tombs

Effects of tourism on the environment
Good
- New hotels built
- Beach cleaned and maintained

Bad
- Beach destroyed by new hotels right on beach
- Turtles no longer attracted to beach to breed
- Beach overuse means littering
- Daily cleaning of beach needed
- Pressure on services like sewage
- Power supply problems so government want to build new oil fired power station
Effects of tourism on local people

**Good**
- Provides 20% of GDP
- Employs 20,000 people in hotels
- Multiplier effect doubles impact
- Local young Cypriots have better night life
- More bus services to Larnica

**Bad**
- Seasonal jobs
- Only 30% of rooms let in winter
- Loss of local fishing village traditions
- Original inhabitants moved to new village on the hill
- Locals disturbed by noise and bad behavior of tourists

**Case study: Tourism in Arachova, Viotia, Greece**

**Location:**
- Mt Parnassos is at the Southern tip of the Pindos mountain range
- It is in the Viotia region of Central Greece
- It is only 180km from Athens – close proximity for weekend getaways
- It is one of the largest mountains in Greece at 2457 m

**Attractions:**
- The Area has been given National Park status since 1938
- Every year some 150,000 people visit the two ski centers of Kellaria and Fterrolakka at Parnassos
- 14 lifts cater to up to 15,000 visitors per day
- 25 marked runs, 12 ski routes with 36km in length total. The longest is 4km long.
- Slopes cater for all abilities from beginners to Black runs
- 7 cross country ski routes
- Half pipe for snowboarders
- Snowmobiling
- Many facilities on the slopes for food, drinks and ski rental
- World famous Delphi site is very close where the Holy Oracle predicted the future of the Ancient Greeks
- Amazing flora, including Cephallonian fir, and fauna, like wolves, hares, eagles and vultures
- Scenic views of surrounding countryside and olive groves
- Hiking, mountain biking, 4x4 driving, paragliding, hunting
- Many well marked mountain trails for walkers
- Unique scenery – the limestone rock that dominates results in numerous precipices, caves and gorges
- Local vineyards
- Beautiful, traditional charm of Arachova with its local stone houses and staired side roads ascending up through the town.
ADVANTAGES OF TOURISM

Benefits on the economy

- Increases GDP
- Taxes increase the revenue for the government
- Jobs – more diverse range
- Less reliance on farming and greater economic diversification
- Foreign currency
- Multiplier effect
- Helps fund more infrastructure

Social benefits

- News ideas and improves education
- More services for locals to use
- Better public transport, services and widens amenities for locals to use

Environmental benefits

- National park status since 1938 – encourages tighter environmental legislation
- Litter collection
- Planting trees
- Buildings in Arachova built to local traditional standards to ensure quality of the environment remains

DISADVANTAGES OF TOURISM

Problems for the economy

- Leakage – money spent on imported products from outside
- Seasonal jobs – more workers needed only in winter high season
- Managerial jobs mainly go to the people from outside – and locals tend to get the more unskilled and manual jobs e.g. the lady who is the Manager of the ski lifts comes from Athens
- Reliance on tourism in times of an economic crisis can be risky
- House prices increase – so local young people cannot afford to stay in the area when they try to buy their first home
- Prices of goods like food increase so life becomes tough for locals

Social problems

- Local traditions lost
- Young people more exposed to ideas from outside that can bring tension between the youngsters and older generations
- Increase rift between those who have done well and badly out of tourism – dual society
- Increased material aspirations

Environmental problems

- Traffic congestion - roads are jammed when coaches make their way through Arachova town on their way to the ski resort or Delphi archaeological site.
• Erosion of ski slopes by up to 20cm on the centre of the piste which also results in soil compaction and decreased infiltration.
• Loss of vegetation on the slopes – reduced vegetation height, vegetation diversity and increased bare ground and exposure of rocks.
• The landscape was quarried and hacked apart to install the ski lifts all over the mountain. Little consideration was given to the environmental impact when they were installed back in the 1970s and 1980s pollution from large number of vehicles.
• Litter
• Graffiti

Case study. Tourism in Zanzibar (LEDC)
Located in the Indian ocean 37km from coast of Tanzania
Why is it attractive to tourists?
• Climate – temperature always 28-38 degrees
• Island surrounded by coral reefs
• Unspoilt white sand beaches
• Swimming with dolphins
• Jozani forest reserve with walks with guides
• Red Columbus monkey can be seen
• Stone Town with Dr Livingstone’s house

Effects of tourism on the environment
Good
• Hotels at Nungwi built to fit in with the environment
Bad
• Raw sewage flows straight into the Indian ocean
• Waste left around island
• Fear of water contamination and lack of drinking water

Effects of tourism on local people
Good
• Job opportunities
• More diverse economy - no longer just relying on primary industry
• Improved roads to use
Bad
• Loss of fishing stocks
• Loss of access to beach for locals as the hotels control it
• Many jobs menial and low paid
• Fresh water supplies are only for the benefit of the hotels
• Cost of food has risen locally
• Tourists culture and behavior often offends locals
• The local economy starts to depend on tourism
• Increased crime and muggings
(c) For a named area which you have studied, explain why the tourist industry has developed there. You should refer to the area’s natural and built attractions. [7]

(c) For a named area which you have studied, explain why the tourist industry is important. You should refer to the area’s physical and human attractions. [7]

(c) Name an area which you have studied where the tourist industry is important. Explain why the tourist industry has grown up in the area. You should refer in detail to the area’s physical and human attractions. [7]

(c) Name an area which you have studied where the tourist industry is important. Describe the benefits and problems of the tourist industry for local people. [7]

(c) For a named area which you have studied, explain how tourism is damaging the natural environment. [7]

(ii) For a named tourist area, describe the benefits for local people from the growth of the tourist industry. [7]

(c) Name an area which you have studied where the tourist industry is important. Describe what has been done in the area to maintain, improve and conserve the quality of the environment. [7]

(c) Name an area which you have studied where the environment is at risk from tourism. Explain how tourism is damaging the natural environment of your chosen area. [7]

(c) For a named area which you have studied, describe the impacts of the tourist industry on the natural environment. [7]

(c) For a named area which you have studied, describe the impacts of tourism on the natural environment. [7]
(c) For a named area which you have studied where the tourist industry is important, describe what has been done in the area to conserve the natural environment. [7]

DROUGHT /FOOD SHORTAGE

Case study 7: Drought in UK (MEDC)

UK has a temperate climate and can expect rain throughout year – but 1995-96 rains were less than average

Effects:
In N of England 200 tankers working 24hrs a day to transfer water to reservoirs
Garden hosepipes banned
Water rationing
Clay soiled dried, cracked and buildings collapsed
Grass stopped growing so cattle did not have enough food
Crops died
Forest fires as land dry
Legislation introduced to reduce home and industrial use of water

Case study 8. Drought in Ethiopia (LEDC)

Ethiopia is one of the poorest countries in the world
1983-84 saw the worst drought ever

Cause:
Rainfall level was considerably lower than average
Famine caused as civil war and poor roads made it difficult to transport food

Effects:
Farmland dried out
Animals died and crops failed causing widespread starvation and illness
500,000 people died
Millions of people needed food from MEDC charities like Oxfam and Bandaid
People migrated to other areas or refugee camps
People malnourished
People living in poverty

(c) Many areas have a shortage of water supplies. Describe the likely impacts of a water shortage on the people and development of a named area which you have studied. [7]

(c) There are large scale food shortages in some countries. These may be the result of:

• physical factors
• economic factors
• political factors
For an area or country which you have studied, explain why there are food shortages. [7]

(c) Describe how people can be provided with a reliable supply of safe drinking water. You should refer to an area or country which you have studied. [7]

(c) Many areas have a shortage of water supplies. Describe the likely impacts of a water shortage on the people and development of a named area which you have studied. [7]

(c) Name a city in an LEDC and describe what has been done to improve the quality of life of the people who live there. [7]

(c) For a named area or country which you have studied which suffers from famine, explain why there is a shortage of food. [7]

(c) Name an area which you have studied where drought occurs. Describe the problems experienced by people living in your chosen area. [7]

(c) Name an area which you have studied which experiences water shortages. Explain how the water shortages cause problems for the people who live in your chosen area. [7]

(c) For a named country or area which you have studied, describe the ways in which water supplies are being developed. [7]

(c) For a named area or country, explain why it suffers from food shortages. [7]

(c) For a named area or country you have studied which suffers from food shortage, explain why there is a shortage of food. [7]