

GCSE GEOGRAPHY

AQA



A CASE STUDY COLLECTION

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Haiti Earthquake (2011)

Causes

Haiti lies right on the boundary of the Caribbean and North American plates. There was slippage along a conservative plate boundary that runs through Haiti. On 12 January 2010, a magnitude 7 earthquake hit Haiti. The earthquake's epicentre was 25 km west of Port-au-Prince, the capital.

Effects

Social impacts of the earthquake (effects on people)

- 3 million people affected.
- Over 220,000 deaths.
- 300,000 injured.
- 1.3 million made homeless.
- Several hospitals collapsed.

Economic impacts of the earthquake (effects on money and jobs)

- 30,000 commercial buildings collapsed.
- Businesses destroyed.
- Damage to the main clothing industry.
- Airport and port damaged.

Response

Haiti is a very poor country without the money and resources to redevelop. It is one of the least developed countries in the world with most Haitians living on \$2 or less per day. There were also a few earthquake-resistant buildings making the devastation massive.

Primary responses

- Neighbouring Dominican Republic provided emergency water and medical supplies as well as heavy machinery to help with search and rescue.
- Emergency rescue teams arrived from a number of countries, eg Iceland.
- Temporary field hospitals were set up by the Red Cross.
- United Nations troops and police were sent to help distribute aid and keep order.

Secondary responses

- Money was pledged by organisations and governments to assist in rebuilding, but only slow progress had been made after one year.
- After one year, there were still 1,300 camps.
- 'Cash for work' programs are paying Haitians to clear rubble.
- Schools are being rebuilt.

E15 - Icelandic Eruption (2010)

Causes

Iceland lies on the Mid-Atlantic Ridge, a constructive plate margin separating the Eurasian plate from the North American plate. As the plates move apart magma rises to the surface to form several active volcanoes. In March 2010, magma broke through the crust beneath Eyjafjallajökull glacier. This was the start of two months of powerful eruptions. On 14th April a new phase began which was more explosive. Over several days, violent eruptions belched huge quantities of ash into the air.

Effects

Social effects (local)

- 800 people evacuated
- Homes and roads were damaged and services (electricity & water) disrupted
- Local water supplies were contaminated with fluoride from the ash.

Social effects (international)

- Over 8 days - some 100,000 flights were cancelled
- 10 million air passengers affected
- Sporting events such as the Japanese Motorcycle grand prix were affected

Economic effects (local)

- Drop in tourist numbers - affected Iceland's economy as well as local people's jobs.
- Crops were damaged by heavy falls of ash
- Reconstruction of roads and services was expensive.

Economic effects (International)

- In Kenya, farm workers lost their jobs as fresh produce such as flowers were unable to be flown to European supermarkets.
- Airlines lost an estimated £80 million.

Local Responses

- The heavier particles of ash forced hundreds of people to be evacuated.
- Sections of embankment that supported the main highway were broken to allow floodwaters to pass through to the sea. This prevented expensive bridges being destroyed.
- Within a few weeks embankments and the highway were reconstructed.

International Responses

- Concerned about the possible harmful effects of ash on aeroplane jet engines, large sections of European airspace closed.

Typhoon Haiyan (2013)

Causes

Typhoon Haiyan was a tropical cyclone that affected the Philippines in South East Asia in November 2013. It was one of the strongest tropical cyclones ever recorded with winds of 313 km/h. In some areas, 281.9 mm of rainfall was recorded, much of which fell in under 12 hours. Waves of up to 7 m in height battered the coast. The Philippines is a fairly poor part of the world with minimal investment in prediction, planning and protection schemes.

Effects

Economic effects

- The overall economic impact of Typhoon Haiyan is estimated at \$5.8 billion (£3.83 billion).
- Six million workers lost their sources of income.
- Major rice, corn and sugar-producing areas for the Philippines were destroyed affecting the country's international trade and farmers' incomes.

Social effects

- More than 7,000 people were killed by Typhoon Haiyan.
- 1.9 million people were left homeless and more than 6,000,000 displaced.
- There were outbreaks of disease due to the lack of sanitation, food, water, shelter, and medication.
- In the city of Tacloban, widespread looting took place in the days following the typhoon.

Environmental effects

- Widespread floods damaged and in many cases destroyed homes and businesses in coastal areas.
- Thousands of trees were uprooted leading to a massive release of carbon dioxide and loss of habitat with resulting effects on wildlife.
- Major roads were blocked by trees, and were impassable.

Responses

- Even though the loss of life was significant, it could have been much worse if not for the efforts of the Philippines' meteorological agency. It broadcast warnings leading to the evacuation of approximately 750,000 residents.
- The UK government provided food, shelter, clean water, medicine and other supplies for up to 800,000 victims.
- Several charities provided emergency aid such as water, food and shelter.
- The United Nations launched an international aid appeal in December 2013 for £480 million to finance the humanitarian relief effort for 2014.

UK Heatwave (2015)

Causes

There was a high pressure across Europe and the UK. This allowed southerly winds to draw in hot air from the high-pressure system dominating parts of central and southern Europe. This weather system is otherwise known as an Anticyclone. The result was sweltering heat in the UK over a few days.

Effects

Social effects

- Five people were taken to hospital from the Royal Norfolk Show as temperatures rose to 31C (88F) in Norwich.
- The heat has caused bin collections to be delayed across Bath and North Somerset because the circuit boards in the compactors of the bin lorries are overheating.
- The heat also triggered thunderstorms and torrential downpours across parts of northern England and Scotland. This caused localised flash flooding.
- The heatwave triggered a level two health alert and with 999 calls doubling.

Economic effects

- Various travel disruptions occurred due to the extreme heat. Commuters travelling on the rail network were disrupted.
- Some businesses are receiving increased sells from certain items, for example ice cream, BBQs related items and sun cream. Seaside resorts also reported increased popularity.
- There was an increased in unplanned work leave, causing a decrease in productivity for hundreds of businesses.

Environmental effects

- Hot weather may have been a contributing factor to a large fire which consumed about 30 acres of Thefford Forest.
- Increased crop yields reported in southern England, particularly vineyards in Kent and Surrey.

Responses

- Network Rail instructed train companies to slow down at vulnerable locations where tracks could buckle because of the heat.
- A level 3 heat-health alert was declared for all parts of England.
- The NHS and the media provided guidance to the public on how to cope the heatwave. This involved advice on staying hydrated, avoiding overexertion and using sun lotion.

Epping Forest, UK

Location and Background

Epping Forest is an example of a small-scale deciduous forest. It is in north-east London. It has an area of just under 2500ha – 70 per cent of its area is designated as a Site of Special Scientific Interest (SSSI) for its biological interests.

Components and interrelationships in the ecosystem.

- The deciduous trees include oak, beech, hornbeam, birch and holly. Deciduous trees lose their leaves for the colder months so that they are not damaged.
- Pollarding is the removal of the top branches of a tree to get new growth of denser branches and leaves, usually to increase the supply of wood.
- Branches that fall in stormy conditions create lots of dead wood, which is perfect for decomposers.
- The oak trees support grey squirrels. There are ten species of bat in the forest and also lizards, grass snakes and adders.

Balance in the ecosystem

- The Epping Forest Act (1878) stopped pollarding, allowing the trees to grow to their current shape blocking out much light from ground and therefore reducing vegetation variety at ground and shrub level.
- Deer are enclosed within the forest to reduce collision with vehicles on the busy roads.
- The forest is surrounded by urban areas. This creates pressures such as walking, horse riding and mountain biking.
- Assessments found the forest air to be poor and possibly damaging to older trees.
- Droughts and storms have impacted the balance of the forest with tree being damaged.

Malaysian Tropical Rainforest

Location and Background

Malaysia is a country in South East Asia. It is made up of Peninsular Malaysia and East Malaysia which is part of the island of Borneo. The natural vegetation in Malaysia is tropical rainforest, with 67 per cent being covered with this type of biome.

Causes of deforestation

Deforestation is the cutting down of trees, often on a very large scale.

- **Logging** – Malaysia is the world's largest exporter of tropical wood.
- **Mineral extraction** – Mining is common with companies seeking oil and tin.
- **Population pressures** – Poor urban people were encouraged by the government to move. 15,000 hectares of rainforest was felled for the settlers.
- **Commercial farming** – Malaysia is the largest exporter of palm oil in the world. Large areas of rainforest have been cleared to convert into palm oil plantations.
- **Subsistence farming** - This involves growing and hunting to support your community. This has a limited impact on the rainforest as is small scaled.

Impact of deforestation

- ✓ Development of land for mining, farming and energy leads to more jobs.
- ✓ Companies will pay taxes to the government to improve public services such as education.
- ✓ Improved transport infrastructure opens up more industry and tourism.
- ✓ Hydro-electric power provides cheap and plentiful energy.
- ✓ Minerals such as gold are very valuable.

- X Pollution of water sources resulting in water shortages.
- X Fires can cause harmful pollutions and are difficult to control.
- X Plants that could be used for medical benefits may become extinct.
- X The number of people attracted to visit the rainforest could decrease.
- X Greater contributions towards climate change as trees no longer absorb CO² as they are destroyed.

Sustainable management of tropical rainforest

- **Agro-forestry** - Growing trees and crops at the same time helps to prevent soil erosion.
- **Selective logging** – Trees are only felled when they reach a particular height.
- **Education** – Ensuring people understand the consequences of deforestation.
- **Ecotourism** – Tourism that promotes the environment and conservation goals.

Thar Desert

Location and Background

The Thar Desert is in northwest India. It is one of the major hot deserts of the world with the highest population density. Many people living in this desert are subsistence farmers but with increasing development opportunities, the human population is growing. Due to population pressures this environment is increasingly under threat.

Development Opportunities

Despite having an extreme climate, the Thar Desert can provide development opportunities. These include:

- **Mining** - the desert has valuable reserves of minerals such as feldspar and gypsum. These minerals are used to produce a range of things from cement to fertilisers and are therefore valuable. Limestone and marble are also quarried in the area.
- **Energy generation** - energy is produced in the Thar Desert using solar panels. This energy is used to clean water supplies contaminated with salt (desalination). Wind energy is also used to generate electricity.
- **Farming** - irrigation in the Thar Desert has made commercial arable farming viable. Producing crops such as wheat and cotton has created many jobs and generated income for the local economy.
- **Tourism** - the Thar Desert National Park attracts many visitors who want to see some of the 120-species found there. Tourists explore the desert with local guides on camels. Tourism is an important source of income and creates many jobs for local people. The multiplier effect of tourism creates many development opportunities.

Development Challenges

Development in the Thar Desert includes many challenges such as:

- **Extreme temperatures** - temperatures in the Thar Desert can exceed 50°C in the summer months. It is hard for people to work on farm, in mines or as tourist guides during these months as it is simply too hot.
- **Water supply** - the supply of water to the Thar Desert is precious and limited. With only 120-240 mm of rain falling per year in the desert, water must be used sensibly and sustainably. Without water the development of mining, farming and tourism and therefore the economy would not be possible.
- **Inaccessibility** - the desert covers a huge area of 200,000 sq km. Most of the desert is inaccessible due to the extreme environmental conditions and poor infrastructure.

Hunstanton Management Strategy

Location and Background

Hunstanton is a seaside town (population 4,229) on the west coast of Norfolk, England facing the Wash. It is also one of the few places on the east coast of England where you can see the sunset over the sea.

The geology of the area is made up of tall cliffs with contrasting colours of orange, red and white sedimentary rocks.

Why does it need protecting?

It is estimated that the risk from flooding amounts to some £26 million. The need for effective sea defences has been demonstrated both in 1953 when 65 people died as a result of sea flooding.

In December 2013, Hunstanton experienced waves that breached the town's concrete sea walls and caused damage to several businesses along the front. The storm surge caused marine creatures to be evacuated from the Seal Life centre and damage to the sea wall. In the long term, there were financial losses to businesses that were flooded.

Hunstanton Management Strategy

Hunstanton Cliffs – These cliffs are eroding at an average rate of 3 metres every 10 years. Defence schemes such as base netting, sand bags and gabions have helped slow down the rate of erosion.

Hunstanton Town - The coastal defences in this area consist of hard engineering options. The town is protected by a 500m sea wall which is supported by many groynes which aims at extending the beach. Rock armour is also used, but only on important sections of the town.

Hunstanton South – At this location the soft sand ridge is strengthened with smaller sea walls. Some areas of the beach are supported by groynes that aims to trap sediment and help build up the beach further to reduce erosion.

Is the Hunstanton Management Strategy Successful?

Most of the effects are positive, as the town is now protected by sea walls and the beach has been built up. The major problem of the sea defences is the effect on the beach at Heacham, located south of Hunstanton. Here the groynes further north have stopped longshore drift supplying its beach. Now the beach is small and vulnerable.

River Tees Management Strategy

Location and Background

The River Tees is located in north-east England. Its source area is high in the Pennines in the west and the river flows eastwards into the North Sea. The source of the River Tees lies on Cross Fell in the Pennines, 893m above sea level, where rainfall is over 2000mm a year.

Why does it need protecting?

The River Tees has a long history of flooding. The Tees valley is also home to a large population and many industries, all requiring a reliable water supply. The river is managed to provide a water supply and control flooding.

Cow Green reservoir was built in 1970 to provide water for the growing industries on Teesside. It is a regulating reservoir, storing water in times of plenty and releasing enough for the needs of industry in times of low flow.

River Tees Management Strategy

Yarm's flood defence scheme – Yarm is a historic market town that is particularly prone to flooding. The most recent serious flood was in January 1995. Since then a new flood defence scheme costing £2.1 million has been built. This has involved:

- Improved flood warning systems.
- Better liaison with the Meteorological Office, police and emergency services.
- New development discouraged building on low-lying and flood-prone land is discouraged - an example of land-use zonation.
- Gabions to protect walls and embankments from erosion.

Lower Tees Valley- This is an important economic area consisting of key industries and a port for importing and exporting goods. The flood strategy here includes:

- The Tees Barrage (a manmade barrier across a river) aims to reduce the risk of flooding at very high tides or during a storm surge. The barrage was completed in 1995 and cost £54 million.
- Dredging the lower stretches of the Tees estuary are dredged to improve navigation by maintaining a deep-water channel. It also reduces the flood risk by increasing the capacity of the channel.

Is the river Tees management strategy successful?

The barrage has acted as a catalyst for £500 million of investment in offices, housing, educational, leisure and shopping facilities. In addition, a major flooding events hasn't happened since 1995.

Rio de Janeiro, Brazil

Location and Importance

Rio de Janeiro is an emerging city in Brazil, South America. It is the second most populated city in Brazil. Recently millions of people from rural areas have migrated to major cities such as Rio de Janeiro to seek better opportunities.

The city holds much regional and international significance. These include:

- The city is the second most important industrial center in the country.
- The Statue of Christ the Redeemer is one of the Seven New Wonders of the World.
- The city is one of the most visited places in the Southern Hemisphere.

City Challenges

- Half of the population doesn't have a local health clinic.
- Only half of children continue education beyond 14 due to a lack of schools.
- Around 12 per cent of the population has no access to running water.
- Blackouts occur due to frequent power cuts.
- The city suffers from high crime rates.
- There is a wide gap between the rich and poor in terms of wages.
- Most people who work in favelas work in the informal sector.
- There is high employment in the favelas.
- Heavy pollution due to industrialization and poor sanitation.
- Squatter settlements are built on unstable hilltops.

City Opportunities

- Rio has one of the highest incomes per person in the country.
- The city provides 6% of the country's total employment.
- Increasingly the city is improving people's access to services such as education and healthcare.
- The growth of urban industrial areas can increase economic development.
- As the city becomes more industrialized, the city will become wealthier.

Managing Urban Growth

The Favela Bairro Project is a government plan to improve and upgrade the quality of life in the favelas. There plans include:

- Rehousing people in new basic housing.
- Developing new areas of the city where people can be rehoused.
- Enforcing evictions in some favelas to allow for development.
- Introducing self-help schemes to redevelop housing.
- Providing programs for youths to stop getting into crime.

Sheffield, UK

Location and Importance

Sheffield is a city in South Yorkshire in the North of England. The city grew enormously during the industrial revolution due to internal migrants from the countryside moving for work in its factories. The city holds a number of regionally and national importance.

- The city enjoys a large sporting heritage with a number famous athletes and football clubs situated there.
- Sheffield is described as the greenest city in Europe.
- Sheffield has a thriving community of international students.
- Sheffield has two major UK universities popular with young students.
- Fastest growing city outside of London.

City Challenges

- House prices have increased alongside with greater house shortages.
- A third of households in Sheffield live in the 10% of the most deprived wards in the UK.
- The closure of the steelworks and factories caused large scale unemployment.
- Poor transport connections to large economic hubs such as London and Manchester.
- The urban sprawl has led to increased pressure and decline of greenfield sites around the city.

City Opportunities

- Sheffield has various cultural attractions such as the Crucible Theatre and museums that explore the city's cultural past.
- Meadowhall is a popular large mall that is popular with shoppers.
- The retail sector contributes to thousands of jobs.
- Sheffield still has advanced manufacturing taking place that contributes to the economy.
- Sheffield is close to the Peak District and numerous open places available.

Managing Urban Growth

Sheffield City Centre Regeneration Projects are to encourage investment in business and job opportunities. In addition, the projects aim to improve public spaces with greener urban environments. Its main features include:

- Brownfield sites and derelict buildings being pulled down.
- £50 million invested on the city's train station to improve connections.
- £120 million on green open spaces with the construction of the Winter Gardens and Peace Gardens.
- \$430 million for improving the retail quarter to attract shoppers away from Meadowhall.

Freiburg, Germany

Location and Background

Freiburg is located in South West Germany with a population of about 220,000 people. In 1970 it set the goal of focusing on social, economic and environmental sustainability.

Social Sustainability

- There is a focus on providing people with affordable housing.
- Local people are involved in urban planning at both local and city level.
- Sites for building are considered by the local council and interest groups.
- Cycle and walking paths aim to encourage exercise and healthy living.

Economic Sustainability

- Many jobs have been created in the research and manufacture of solar technology.
- More than 10,000 people are employed in 1500 environmental businesses in the city.
- The city is a popular place for people to attend conferences on sustainability. This provides jobs for the local people.

Environmental Sustainability

- Financial rewards are given to people who compost their green waste and use textile nappies.
- Local people are encouraged to invest in renewable energy.
- The city uses biogas to provide energy for 28,000 homes.
- The city has more than 88% of packing waste recycled.
- 44,000 trees have been planted in parks and streets to provide more green spaces but to also reduce pollution.
- Rainwater is retained and reused to reduce the amount of water used.

Sustainable traffic management strategies

- The city has integrated public transport strategy (ITS) which is updated every ten years.
- The tram network is an important part of the ITS, as it provides cheap and accessible public transport.
- There are 400km of cycle paths with 9000 parking spaces for bikes.
- Areas of the city have restrictions on car parking spaces. A car park space in one area cost £20,000.

Is the traffic management strategy successful?

- Tram journeys have increased by over 25,000 in one year, while car journeys have reduced by nearly 30,000.

Tourism in Jamaica

Location and Background

Jamaica is a LIC (Lower Income Country) island nation part of the Caribbean. Location makes Jamaica an attractive place for visitors to explore the tropical blue seas, skies and palm filled sandy beaches. Jamaica also has an interesting cultural heritage (plantation houses), great air communications but also port facilities for cruise liners.

Ways tourism is reducing the development gap

- In 2015, 2.12 million visited Jamaica for the all-year tropical climate.
- In 2014 tourism contributed 24% of Jamaica's gross domestic product. This is expected to rise to over 30% by 2024.
- Tourism income exceeds \$2 billion each year.
- Tourism is the main source of employment – over 200,000 local people are employed in the sector.

Has tourism been successful at reducing the development gap?

Positives

- ✓ Global recession 2008 caused a decline in tourism. Now tourism is beginning to recover.
- ✓ Jobs from tourism have meant more money being spent in shops and other businesses.
- ✓ Government has invested in infrastructure to support tourism.
- ✓ New sewage treatment plants have reduced pollution.
- ✓ Many local people in key tourist sites of Montego Bay have witnessed improvements in their quality of life.
- ✓ The environment has benefited by landscaping and the designation of nature parks.

Negatives

- × Tourists do not always spend much money outside their resorts. This means there are still pockets of poverty on the island.
- × Infrastructure improvements have not spread to the whole island, instead they're mainly focused around tourist resorts and sites.
- × Many people in Jamaica still live in poor quality housing and lack basic services such as healthcare.

Economic Development in Nigeria

Location and Background

Nigeria is a NEE (Newly Emerging Economy) in West Africa bordered by Benin, Niger, Chad and Cameroon. Nigeria is just north of the Equator and experiences a range of climates and natural environments.

Global and Regional Importance

- Nigeria is the world's 21st largest economy and is still experiencing growth.
- Nigeria is ranked seventh in the world by size of population.
- Nigeria has the third largest manufacturing sector in Africa.
- Nigeria has the highest farm output in Africa.

Influences upon Nigeria's development

- Suffered instability with a civil war between 1967-1970.
- From 1999, the country became stable with free and fair elections.
- Stability has encouraged global investment from China and USA.
- Regional conflicts from groups such as the Boko Haram terrorists.
- Nigeria's diversity has created rich and varied artistic culture.
- The country has a rich music, literacy and film industry (i.e. Nollywood).

Industrial structure and economy

- Once based on agriculture, its economy is now manufacturing and services.
- A thriving manufacturing industry is increasing foreign investment and employment opportunities.

Changing Relationships

- Nigeria plays a leading role with the African Union and UN.
- Growing links with China with huge investment in infrastructure.
- Main imports include petrol from EU, cars from Brazil and phones from China.

Aid and Debt Relief

- Receives \$5 billion per year in aid.
- Aid groups (Action Aid) have improved health centres, provided anti-mosquito nets and helped to protect people against AIDS/HIV.
- Some aid fails to reach the people who need it due to corruption.

Effects of economic development

- Life expectancy has increased from 46 to 53 years.
- 64% have access to safe water.
- Typical schooling years have increased from 7 to 9 years.

Shell Oil (TNC) in Nigeria

Background

Transnational Corporations (TNCs) have played an important role in Nigeria's recent economic growth. Importantly the development of Nigeria's oil and gas industry depended on the investment and expertise of TNCs such as Royal Dutch Shell (UK, Netherlands).

Advantages of TNCs in Nigeria

- ✓ TNCs have been the main source of investment in oil and gas explorations by supporting the construction of oil and gas platforms.
- ✓ The investment has created employment opportunities and raised incomes and contributed hugely to the Nigerian economy.
- ✓ Many Nigerian companies have benefited from the exploitation of oil and gas by winning contracts with the TNCs.
- ✓ The government benefits from export taxes, providing money that can be spent on improving education, healthcare and services.
- ✓ TNCs such as Shell have many international business links. This can help industry to thrive even further.

Disadvantages of TNCs in Nigeria

- × Tankers transport oil to Europe and the USA where it is refined into petroleum products. This means that profits go abroad rather than benefiting the host country.
- × TNCs can exploit the low wage economy and avoid paying local or even full taxes.
- × There have been many oil spills in the fragile delta environment, causing water pollution and damaging fisheries.
- × Oil fumes and toxic fumes have increased air pollution.
- × Social unrest in the area has led to theft, sabotage and violent crime.
- × Incentives used to attract TNCs could have been spent supporting Nigerian companies instead.

The UK Car Industry

Background

Every year the UK car industry manufactures over 1.5 million cars. Most of these are produced at seven giant factories owned by transnational Corporations (TNCs), including Nissan, Honda and BMW.

Past UK car industry

- Car manufacturing was not environmentally sustainable in the past.
- Engines were inefficient as they produced high quantities of harmful pollutants as they burned petrol or diesel.
- The materials used to make cars were often toxic and difficult to recycled, and the production process was energy intensive.

Nissan car plant, Sunderland

Nissan employs 7,000 people in its car plant at Sunderland. Opened in 1986, it produces over 500,000 cars each year. The Nissan car plant is effective for the following reasons:

- The car plant obtains 7 per cent of its energy from wind turbines.
- New car models are designed to be much more fuel efficient and have tighter restrictions on exhaust gas emissions.
- The Nissan 'Leaf' is an electric car. Other cars are 'hybrid', which use a mixture of petrol and electricity.
- Cars are designed using materials that can be readily recycled, reducing waste going to landfill sites.

Fracking in the UK

Background of Fracking

Fracking is a way of extracting shale gas. This involves taking natural gas that is trapped underground in shale rock. Liquid is pumped into the shale rock at high pressure. This causes the rock to crack (fracture), therefore releasing the gas which is then collected as it comes back out of the well.

Locations of Fracking

Shale gas have been identified across large swathes of the UK, particularly in northern England. More than 100 licences have been awarded by the government to firms in the UK, allowing them to pursue exploration in certain areas. Applications have also been submitted in Yorkshire and Nottinghamshire.

The advantages and disadvantages of fracking

Advantages of fracking

- ✓ There appears to be lots of shale gas available in the UK. Fracking increases the energy security of the UK as supplies of other fossil fuels start running out.
- ✓ Gas is less polluting than other fossil fuels. It releases half the CO² of coal.
- ✓ Fracked gas is a less expensive source than some renewables.
- ✓ The technology has already been tested (in the USA) and shown to work, unlike some renewable sources.

Disadvantages of fracking

- X Gas is not a sustainable energy source as it's a non-renewable and releases CO². This therefore means it contributes to global warming.
- X There's a risk of pollution of groundwater, drinking water and air.
- X It uses lots of water which is a limited resource.
- X It's an issue that people feel strongly about. Public opposition has stopped it from being widespread in the UK.
- X Investment in fracking may slow down the investment in renewable energy.

Chambamontera Micro-hydro, Peru

Location and Background

Chambamontera is a small Andean mountain community in the north of Peru. The community is very remote and isolated from the rest of the country. The population of Chambamontera survives largely on subsistence farming (farming for oneself and/or family). Until recently the community had no electricity to supply power for equipment, lighting or heating.

Funding for the Micro-hydro scheme

- The Chambamontera micro-hydro scheme cost \$51,000 to implement.
- The scheme was funded by the Peruvian government, Japan and the charity Practical Action.
- Local people also contributed towards the scheme.
- The steep slopes and high rainfall made it an ideal option as a long-term sustainable energy supply.

The advantages and disadvantages of the scheme

Advantages of the scheme







- ✓ Reliable electricity provides street lighting, heating and power for appliances such as fridges.
- ✓ People can use electricity in school and at home in the evening for completing homework.
- ✓ Local industries have benefited from the power.
- ✓ Less fuel wood is required, resulting in less deforestation and soil erosion.
- ✓ 60% of people said their income had increased because of scheme.
- ✓ Training of local people to operate the technology gives them skills.

Disadvantages of the schemes

- x Poor people must pay for metered electricity.
- x Some villages have doubled in size, creating population pressures.
- x Some specialist equipment had to be imported.
- x Small storage dam is needed which alters the flow of the river and spoils the natural scenery.

Case Study Checklist

Read through the table below and rate your understanding of each case study.

Case Studies	Before Revision			After Revision		
						

Paper 1: Living in the Physical Environment						
<i>The Challenges of Natural Hazards</i>						
Haiti Earthquake (2011)						
E15 Icelandic Eruption (2010)						
Typhoon Haiyan (2013)						
UK Heatwave (2015)						
<i>The Living World</i>						
Epping Forest, UK						
Malaysian Tropical Rainforest						
Thar Desert						
<i>The Physical landscapes in the UK</i>						
Hunstanton Management						
River Tee Management						

Paper 2: Challenges in the Human Environment						
<i>Urban Issues and Challenges</i>						
Rio de Janeiro, Brazil						
Sheffield, UK						
Freiburg, Germany						
<i>The Changing Economic World</i>						
Tourism in Jamaica						
Nigeria						
Shell Oil (TNC) in Nigeria						
The UK Car Industry						
<i>Resource Management</i>						
Fracking in the UK						
Chambamontera, Peru						