GCSE Geography Case Study Notes

• This booklet contains revision notes for All the Case studies you need to know.

They are arranged into each topic.
If you have any worries, question or need Help e mail your teacher.

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Our Natural World Exam (Physical)

Global Hazards
Distinctive landscapes (Rivers and Coasts)
*Changing Climate* – no specific case studies (just general UK and global impacts)
Sustaining Ecosystems
Topic 1 – Global Hazards

Weather hazards:

Case studies of two contrasting natural weather hazard events arising from extreme weather conditions. The case studies must include a natural weather hazard from each bullet point below:

- flash flooding or tropical storms
- heat wave or drought.

There must be one UK based and one non-UK based natural weather hazard event.

- For each chosen hazard event, study the place specific causes (including the extreme weather conditions which led to the event), consequences of and responses to the hazard.

Tectonic Hazards:

A case study of a tectonic event that has been hazardous for people, including specific causes, consequences of and responses to the event.
Hazards – Tectonic Hazard in a LEDC – Haiti Earthquake, January 2010

**Background**
Haiti is situated on a conservative plate boundary. The North American plate is slowly moving in the opposite direction from the Caribbean plate. The earthquake struck on 12th January 2010, at 4.53pm (as many people were getting ready to leave work). The earthquake was a magnitude 7 with a shallow focus (15km deep) and an epicentre close to the capital city, Port-au-Prince (7km). Poorest country in the Western Hemisphere, its GDP is only $1,200 per person, and 80% of its 9.7 Million people live below the poverty line.

**Impacts**
- Over 230,000 people killed
- 1½ million people were made homeless
- 50% of buildings were destroyed because they were made mainly of concrete and poorly built. 250,000 buildings razed
- Cost of the earthquake was $7.8billion.
- Water supplies were destroyed, and bodies lay in the streets unable to be buried. This led to outbreaks of cholera which lasted for many years and over 8,000 people were killed in the outbreak.
- 6 months after the quake, 98% of the rubble remained un-cleared
- The government building was destroyed
- Haiti was hit by Hurricane Tomas in November 2010 – many people were still in temporary shelter so the impacts were made worse

**Response**

**Short-term**
- Within a month of the earthquake, $1.79billion of aid had been donated to Haiti.
- The government building was destroyed so it was hard to co-ordinate aid
- Airports, ports and roads were badly damaged meaning the aid could not get in to the country – most got to neighbouring Dominican Republic but could not get through to Haiti
- Countries such as the US, Canada, UK, Brazil and Italy each sent over 1,000 emergency relief, medical staff and reconstruction experts.
- Emergency shelters were flown from companies in the UK to Haiti to provide temporary housing for around 7,000 people.
- The US army arrived in Haiti and took over the airport to take control of distributing aid around Haiti.

**Long-term**
- Industrialised countries cancelled Haiti’s debt
Background
Much of central, eastern and southern England and Wales experienced a prolonged period of below average rainfall from 2010 to early 2012. 

Causes:
Areas affected by drought received only 55-95% of usual rainfall between April 2010-May 2012. unusual wind patterns brought dry winds from Europe in the east rather than usual wet winds from the Atlantic in the west. 
The rainfall from April to July topped up rivers and streams but did not increase the amount of ground water (water stored below the ground). In March UK reservoirs and lakes were at 50% capacity (they should have been at around 90-95% capacity). Warm temperatures increased evaporation from the reservoirs. The UK is leaking huge amounts of water every day in cracked and broken pipes beneath the ground. 
A growing demand for water from people and businesses is causing too much groundwater to be extracted (taken).

Primary impacts
• Water shortages made it difficult to find water for crops and livestock. The dry ground made it difficult to harvest crops in Autumn 2011. 
• Dry areas of moorland caught fire easily with wild fires raging across parts of south Wales, Surrey and the Scottish Borders. 
• River water was used to boost the water supply in some areas, reducing river levels and causing damage to plants and animals.

Secondary impacts
• The hosepipe ban meant that 20 million people could not use their hosepipes for recreation use (e.g. watering plants and washing cars). 
• Many sports clubs will struggle to maintain the grounds during the hosepipe ban. Golf clubs will be badly affected.

Responses
• Seven water companies across the UK brought in a hose pipe ban in April 2012 after 2 unusually dry winters 
• If people use their hosepipes during a ban and are caught they can be fined up to £1000. 
• Permits were given to allow water companies to extract water from rivers. 
• There were campaigns to encourage people to use less water in their homes. Telling people to turn off their taps whilst brushing their teeth can save 6litres of water per minute.
Typhoon Haiyan, Philippines

**General Information**
The Philippines is located close to the Equator on the Pacific Ocean. It is regularly affected by Typhoons because the sea temperatures are over 26.5°C. The Philippines is an EDC with a GNI of $3470. Over 25% of the population love below the poverty line.

**Causes**
The Typhoon started in the Pacific Ocean, moving west and hit the Philippines on 8th November 2013, then moved North-West towards Vietnam and Laos. Wind speeds reached up to 195mph - the strongest Typhoon ever to make landfall - known as a Super Typhoon. There was very little land in the path of the typhoon meaning that it got more and more powerful as it got closer to the Philippines. The time of year meant that the sea was over 30°C giving the storm lots of energy.

**Effect**
- Over 6300 people killed
- 1.2 million homes gone
- 11 million affected in total
- Major rice and sugar producing areas for the Philippines was destroyed leading to a lack of food
- Estimated cost to rebuild was $5.8bn
- Fishing communities have also been severely affected with the storm destroying boats and gear
- Storm surge reached 20ft (the biggest killer)

**Responses**
- People were aware of Typhoons as they are regularly but not warned about the storm surge
- Over 100,000 Mangrove trees replanted as a natural barrier
- 100 tonnes rice sent in
- HMS Illustrious (British) took 10 days to get there with aid
- Save the Children sent workers to work with the most vulnerable The British government gave 8,000 shelter kits
- Infrastructure including road, schools and hospitals were rebuilt.
Topic 2 – Climate Change

Impacts of climate change for the UK
## Impacts of climate change on the UK.

The UK’s climate is also changing. It is expected to…

- Increase in average temperature.
- Have warmer, but wetter winters.
- Have warmer and drier summers.

However, not all the impacts to the UK will be negative, there are clear benefits for a changing climate.

### Negative impacts of climate change for the UK

#### Coastal Flooding
- Vulnerable low lying areas could flood homes and infrastructure.
- Increase of coastal erosion.
- Damage to the economy.

#### Extreme Rainfall
- Increase in extreme flash floods.
- Flood damage to homes and businesses.
- Soil contaminations on farmland.

#### Water Shortages
- Farmers will find it difficult to irrigate land.
- Water restrictions, with London being worst affected.

#### Extreme Heat
- Warmer weather can increase health problems.
- Infectious diseases such as malaria might spread.

### Tourism
- More people likely to take holidays within the UK.
- The economy could be boosted: helping to create new jobs.
- More outdoor events could become common.

### Environment
- New wetlands from coastal flooding could become established.
- New wildlife and plants could be drawn to the UK.

### Farming
- Agriculture productivity may increase under warmer conditions.
- Farmers could potentially grow new foods used to warmer climates.

### Industry
- Heating cost will fall.
- Construction industry will be boosted by the need to build sea defences.
- New designs produced to cope with conditions.
Topic 3 – Distinctive Landscapes

Rivers:
- **Landforms** created by geomorphic processes
  - River profile
  - Geomorphic processes operating at different scales and how these are influenced by geology and climate
  - Human activities influences on the river
    - Flooding on the river Thames (causes and impacts)
    - Management of the River Thames

Coasts:
- **Landforms** created by geomorphic processes
  - Headlands and bays
  - Arches, stacks and stumps
  - Spits, estuaries, bars, tombolos
- Geomorphic processes operating at different scales and how these are influenced by geology and climate
- **Human activities** Holderness

*River Tees or River Thames*
Rivers and Coasts - River Landforms – River Tees

Background
River Tees is located in north east England, it contains waterfalls in the upper course, and winding meanders in the middle and lower course of the river.

High Force Waterfall
This waterfall is approximately 20 metres high and 10 metres wide. The diagram on the right explains its formation. Over many thousands of years the waterfall has retreated, creating a 700m long gorge.

Meanders near Yarm
Lateral erosion on the lower river has created the meanders. These have formed due to the relief creating flow, which causes the river to bend round obstacles. Helical flow also causes the water to corkscrew creating the meanders at Yarm.
Over time the faster water flow on the outside of the bend has created river cliffs and a deeper river, due to the faster flow increasing erosion. On the inside of the bend where the river flow is at its slowest, deposition creates a point bar and a slip-off slope. This is due to the river lacking energy creating the deposition.

Exam Question
Explain how geomorphic processes have shaped your chosen river landscape. (6)
Rivers and Coasts - River management – River Thames

Background
River Thames is located in southern England, it contains winding meanders and terraces in the middle and lower course of the river. The source of the River Thames is in the Cotswold Hills and it flows through London to the North Sea. The soil beneath London are Impermeable London clay with chalk beneath. 40% of London water comes from the Aquifers in the chalk beneath London.

River Terraces
The River Thames has flowed mainly on its present course since the last ice age. The changes in temperature have led to the advance and retreat of ice sheets and sea level changes. This has affected the power and energy of the river Thames – when sea levels fell the river gained energy because it had to drop further to sea level, and when sea levels rose it lost energy and deposited material (known as rejuvenation). This process was repeated during each ice age. Each time the river was rejuvenated, it formed a new floodplain at a new level, leaving the old floodplain as a river terrace at a higher level. River terraces are found along the Thames Valley west and east of London.

Meanders
Lateral erosion on the lower river has created the meanders. These have formed due to the relief creating flow, which causes the river to bend round obstacles. Helical flow also causes the water to corkscrew creating the meanders near Oxford.
Over time the faster water flow on the outside of the bend has created river cliffs and a deeper river, due to the faster flow increasing erosion. On the inside of the bend where the river flow is at its slowest, deposition creates a point bar and a slip-off slope. This is due to the river lacking energy creating the deposition.

Exam Question
For one landform in a named river basin, explain how geomorphic processes have led to its formation (4)
### Background
February 2014 saw the worst flooding in London in 50 years.

### Causes of flooding
The winter of 2013/14 was the wettest on record
- 487mm of rain fell between 1st December 2013-19th February 2014, twice the expected rainfall due to heavy storms from the Atlantic.
- On February 9th, the ground was saturated and water levels in the Thames were very high.

Urbanisation around the river in London has led to impermeable concrete surfaces which reduce infiltration. Deforestation to build new homes (and other human activity) has increased flood risk as it reduces interception.

**Jubilee River:** an artificial river channel has been built in 2001, which was designed to take overflow (extra) water from the Thames to reduce flooding at Maidenhead, Windsor and Eton.
- It cost £110million
- It takes a short route so water reaches the destination faster. It brought water more quickly down to Wraysbury and Staines, increasing flooding there.
- There are now plans to build a channel at Teddington, costing £500 million

### Management
**The Thames Flood Barrier** was build east of London in 1984 to avoid issues with flooding which happened in the past (where heavy rainfall combined with high tides from the north sea overwhelmed London. When high tides are forecast, the gates on the barrier are raised to prevent tidal water reaching London. During 2013/14, the barrier was closed more than 50 times.

In order to solve the housing crisis, new residential developments are being developed at *Barking Riverside* to the east of London. This site is downstream of the Thames Barrier so will get no flood protection. Therefore they will: be green corridors within the development with water as a feature, trees and parkland to allow infiltration, residential areas on raised land.

### Exam Question
Name a river basin in the UK. Explain how human activity has influenced the geomorphic processes in this landscape. (6)

### Impacts
- Transport links into and out of London closed as trains flooded.
- More than 5,000 homes and businesses were flooded in Wraysbury and Staines.
- Thousands of people were evacuated and cost of clear up was £500 million.
- 14 severe flood alerts were issued along the Thames.
Holderness Coast Management

Map showing the location of the Holderness Coast.

Groynes are low walls built out into the sea, usually at right angles to the coastline. They help break the power of the incoming waves and slow down the process of longshore drift.

Rock walls, stop waves removing sand and gravel from the beach.

Sea walls are situated where the beach meets the land or inhabited places. They are usually made of concrete and deflect the waves energy back out to sea.

Beach building builds up beaches to reduce the power of the waves.

Causes
- The coast is regularly attacked by destructive waves from the north sea.
- The boulder clay is extremely soft and is easily eroded.

Effects
- A 4km strip of land has been lost since Roman times and many villages have disappeared. The North sea gas terminal at Easington is one of two east coast sites where gas is supplied to the UK. These are in danger of being eroded away into the sea causing the UK to lose gas supply.
- Coastal towns such as Hornsea and Withensea are under threat from the eroding coastline.

Management Techniques

Harder Rock

Softer Rock
Topic 4 – Sustaining Ecosystems

Rainforests:
• A case study to illustrate attempts to **sustainably manage** an area of tropical rainforest, such as ecotourism, community programmes, biosphere reserves and sustainable forestry, at a **local** or **regional** scale.

Polar ecosystems:
• A case study to examine **one small-scale example** of sustainable management in either the Antarctic or the Arctic such as sustainable tourism, conservation and whaling.
• A case study to examine **one global example** of sustainable management in either the Antarctic or the Arctic by investigating **global** actions such as Earth Summits or the Antarctic Treaty.
The Rainforest, Costa Rica

Why did the rainforest need protecting?
In the 1960s, 70s and 80s Costa Rica experienced rapid deforestation, mainly because of cattle farming. The government decided to act, they made deforestation illegal and began to pay local people to protect parts of the rainforest they owned, 25% of the country’s land is now protected.

How is the rainforest sustainably managed?
- **Agroforestry**: this is where trees and crops grow side by side. The roots of the trees stop soil erosion and crops benefit from the nutrients they can get from the tree.
- **Selective logging**: only older trees are cut down, young trees are allowed to grow to keep the canopy later tall.
- **Afforestation**: trees are planted to replace any that are cut down.
- **Monitoring**: the government use satellites to take regular photos of the rainforest, this way they can see if any areas are being cut down.

Ecotourism
Is a type of tourism that creates jobs for locals whilst protecting the environment. If tourism damages the environment then it can’t be classed as eco tourism. One of the largest projects of eco tourism in Costa Rica is the Samasati hotel, where:

- Buildings fit between trees in the rainforest and no old trees were cut down
- The wood cabins were made from local wood
- No heavy machinery was used in making the hotel
- Only local people are employed in the hotel

The ‘Wildlife Corridor’
The Costa Rican government are currently trying to create a wildlife corridor all the way through central America. The aim is to connect all the different rainforests in the area so animals can migrate freely between the countries.
Whales have been hunted for centuries. Inuits (Eskimos) hunt whales for oil, meat and bones. However, countries and companies started to hunt whales and this became unsustainable.

Whaling in the 20th century
In the 1930s over 50,000 whales were being killed every year. Huge factory ships were catching 10-20 whales each time to make products like margarine, chemicals and make up. In 1946 the International Whaling Commission (IWC) was set up to protect whales. It sets a total number of whales that each country can catch. In 1986 the IWC banned commercial whaling (whaling to make products), however Japan continued to catch whales for what they called ‘scientific research’. Since 1986 30,000 whales have been caught, mostly by Japan.

The Marine Wildlife Sanctuary
This safe place for sea animals was set up on the coast of Baffin Island, Northern Canada. The sanctuary covers 12 miles and protects 17 species of whale. Up to 2,000 bowhead whales stop in the area every year on their migration. Polar bears, seals and fish also benefit from the sanctuary. It is illegal for whaling ships to come into this area. 1,000 Inuit people live on Baffin Island and Greenpeace support them hunting Whales. Greenpeace want to work with the Inuits (indigenous people) and make a joint stand against oil drilling in the Arctic Ocean. Inuit people only live off what they need and they use every part of the Whale in their way of life.
Managing the Arctic and Antarctica sustainably

Why does it need protecting?
- It reflects the sun’s energy (Albedo effect) keeping our global temperature cooler
- It is a habitat and breeding place for hundreds of species
- Very little of the land is currently protected – it means that any countries can go and exploit the resources in the area.

Why is the Arctic a fragile environment?
- Resources like oil and whales are exploited
- Global warming causes climate change
- The minimum area of ice shrinks each year

How is the Arctic protected?
- It isn’t!
1996 – 8 countries came together to form the Arctic Council. It’s goal is to protect the fragile Arctic environment but it has no legal powers to prevent any countries carrying out harmful activities.

Antarctica – protected
- The Antarctic treaty was signed in 1961 by 46 countries because the area was under threat
- Humans are only allowed on the continent for scientific research and tourism (tourism is limited to a certain number of visitors each year)
- The scientific research there discovered the o-zone layer. This helped humans identify how our greenhouse gases were destroying it.
- This scientific research has benefitted the future of our planet.

The Paris climate agreement
This international agreement was signed by 195 countries in 2015. the agreement sets out a plan to help the world avoid dangerous climate change by limiting global warming to less than 2 degrees. This could help slow the rate of sea ice melting and sea levels rising in the Arctic area.

Greenpeace
Greenpeace is campaigning for the ‘Arctic Sanctuary’. This sanctuary would cover 3 million miles of the Arctic Ocean and ban any harmful human activity. At the moment, this part of the ocean isn’t owned by anyone. Within the sanctuary they would ban...
- Fishing
- Drilling for gas or oil
- Mining
- Military activity
People and Society Exam (Human)

Urban Futures

*UK in the 21st Century – no specific case study*

Resource Resilience

Dynamic Development
### Topic 5 – Urban Futures

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<th>Life in an AC city:</th>
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<td>- Cities <strong>location</strong> and <strong>importance</strong> within the region, country, globally</td>
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Life in an AC – Location, importance and patterns of migration in Birmingham

**Background – Location**
Birmingham is a city with a population of 3.8 million. It is located in the West Midlands.
- It is located 2 hours 20 mins from London by car, 1 hour 15 mins by rail.
- It is located 2 hours from Leeds by car, 2 hours by rail.
- It is located 5 hours from 30 mins Edinburgh by car, 4 hours by rail.

**Importance of Birmingham**

*Local*: England's second largest city, rapidly developed during the Industrial Revolution. The Balti curry was located here, with its origins in Kashmir (Pakistan). Cadbury began in Bourneville, an area of Birmingham.

*Regional*: its economy is dominated by the service sector, which in 2012 accounted for 88% of the city's employment and provides employment across the West Midlands. Its Jewellery Quarter is the largest working jewellery centre in Europe.

*Global*: 9th most populated city in Europe, has 6 universities (drawing students within the UK and 12,000 globally). Jaguar Land Rover has 2 factories close to the city centre and exports vehicles around the world, it is owned by Tata Motors (Indian company. Cadbury import Fairtrade cocoa from Ghana.

**Patterns of migration:**
- Rural to urban migration began during the industrial revolution. These people were economic migrants moving in search of work and higher wages.
- After WWII (1950s and 60s) migrants came from the West Indies and the South Asian countries of India, Pakistan and Bangladesh. They came as economic migrants with the right of entry as Commonwealth citizens.
- Since the 1980s there has been a new wave of migrants from Kosovo and Somalia. Many of these people are refugees.
- Migration from Eastern Europe increased after the EU grew in 2004.
- Since 2001, the birth rate in the ethnic communities of Birmingham has been higher than that of the rest of the community. Migration has seen white people leaving the city and more people from ethnic minorities moving in.

**Exam Question**
For a city in an AC, explain the challenges which that city faces such as housing provision or inequality (8)
**Culture**
- There are 1,000 creative businesses in Birmingham employing 17,000 people which include software design, publishing, performing, music, photography, marketing and broadcasting.
- The ethnic restaurant sector is important, the ‘Balti triangle’ is a cluster of approximately 50 Balti restaurants and takeaways.
- Redevelopment has focussed around historical aspects of the city, e.g. Jewellery Quarter and Gunsmiths Quarter.
- Popular music destination with many different concerts venues including:
  - National Indoor Arena, National Exhibition Centre, Symphony Hall, Birmingham Hippodrome

**Ethnicity**
Birmingham is the second most multicultural city in the UK and ethnic minorities make up 30% of the population.
- But 86% of the cities population consider themselves British and many of these see themselves as ‘Brummies’.
- Ethnic minorities consist of those from Pakistan, India and the Caribbean.

**Exam Question**
Examine how ways of life vary within one city in an AC (8)

**Housing**
- Terraced housing built close to the CBD (Central Business District) to house workers who worked in the factories.
- As the city centre has been redeveloped since 2000, focus has been on redeveloping the CBD and building new developments, as blocks of flats, close to the city centre.
- In northern Lozells there are some larger houses which were subsequently converted into flats. Urban Living is now re-converting them back into large family homes.

**Leisure and Consumption**
- Birmingham is home to many entrainment and leisure venues. It is home to Europe's largest leisure and entertainment complex Star City as well as Europe's first out-of-city-centre entertainment and leisure complex Resorts World Birmingham owned by the Genting Group. The Mailbox which caters for more affluent clients is based within the city.
- This indoor shopping centre, costing £530 million, is dominated by the Selfridges building. It is the largest city centre indoor shopping complex in Europe. As well as a three floor shopping area with 140 shops and kiosks, the site contains parking for over 3,000 cars.
## Life in an AC – Challenges in Birmingham

### Housing availability
As the city grew, the fastest growing areas were in the terraced housing around the city centre. These areas housed large migrant families and had poor quality sanitation in the 1950s. These terraced housing, in areas such as Sparkbrook, are still poorer quality than those in the north of the city such as Sutton Four Oaks. A two-bedroom terraced house in Sparkbrook costs £99,500, with a four-bedroom detached house costing £525,000.

### Transport provision
- Birmingham has an extensive road network which includes many motorways around the city (including M40, M42, M5, M6).
- Spaghetti Junction is infamous – a huge road network which connects many roads in many directions.
- Traffic in Birmingham has been a major challenge since the 1990s as the population has grown and more people have been travelling into the city centre each day.
- On every working day, people in Birmingham make 250,000 car journeys that are less than one mile in length. The City Council are promoting walking and cycling to encourage less cars on the road.
- Two-thirds of journeys are made by car and, at peak times, eight out of ten vehicles have just one person in them.

### Access to services
- As the population increases, more demand is put on key services such as healthcare and education, e.g. class sizes may increase.
- There is a shortage of doctors in some areas in Birmingham, an increase of 29% more GPs is need to cater for the current population.
- The Council are spending money to update and improve leisure facilities (e.g. gyms, squash courts, swimming pools) for residents.
- Budget cuts in Birmingham mean 4 libraries shut in 2014, with another 2 in 2016. This is particularly a problem for the elderly or young children who benefit from the services they offer.

### Inequality
- In 2016, a total of 37% of Birmingham children live in poverty. In inner-city areas in Birmingham, 47% live in poverty.
- One five workers in Birmingham earn less than the Living Wage of £8.25 per hour.
- 167,000 unemployed people in the West Midlands. This is an unemployment rate of 6%, roughly in line with the national unemployment rate of 5.6%.
- 10.9% of people in Ladywood claim benefits, this is the highest in the UK.
Life in an AC – Sustainability in Birmingham

**HS2**
This is a high speed railway planned to run between London and Birmingham from 2026. It has 2 branches from Birmingham and Manchester and Birmingham to Leeds (by 2033). The aims are to take pressure off existing rail network, reduce journey times between cities (especially for business travel), bring economic benefits of regeneration and jobs to the Midlands, encourage people to travel by train.

*Benefits of HS2:* create thousands of new jobs in Birmingham, generate £2 for every £1 spent, reduce number of flights within UK, not create extra CO₂ emissions as it will replace other forms of transport.

*Problems of HS2:* people will commute to London (not benefitting Birmingham), total cost is £42.6billion, existing railways could be improved, increase CO₂ emissions as faster trains use more power.

**The Cube**
The Cube is part of the Mailbox regeneration scheme, transforming the old Royal Mail sorting office. It is a 17-storey building costing £100million. It consists of 244 luxury apartments, as well as a hotel, shops, restaurants and offices.

The outside of the building is covered in gold anodized aluminium cladding, which reflects sunlight so keeps it cool in summer and insulates for heating in winter. It is hoped people will live and work in the building, reducing car use. It is a brownfield site also.

**The Veolia Waste Factory**
Residents of Birmingham produce 550,000 tonnes of waste each year. Some is recycled and the rest would be sent to landfill. The Veolia factory burns waste which cannot be recycled to produce electricity. This burns 23.5 tones of rubbish per hour, creating enough to power itself and send 25MW to the national road. The ash produced during processing is used in road building.

**Birmingham Trees for Life**
To improve urban life and make it more sustainable, you can plant more trees which means ‘greening up’ the urban area. Birmingham City Council, Birmingham Civic Society as well as local businesses and voluntary organisations have been involved in planting trees across the city. The aims are to promote understanding and awareness of the value of trees, raise money to enable trees to be planted, encourage residents to become involved.

The trees reduce air pollution by absorbing CO₂, provide habitats to animals, reduce flooding by increasing interception and provide shelter and shade so can reduce energy use in buildings.

**Exam Question**
For a named city in an AC, explain how one initiative you have studied will help make the city more sustainable (6)

*You just need to know one initiative*
Life in an EDC – Location, importance and patterns of migration in Rio de Janeiro

Background – Location
Rio de Janeiro is located in south east Brazil. It is famous for its carnival and beautiful beaches, as well as the major sporting events which have been held there in recent years.

Importance
• Brazil’s second largest city, population of 6.32 million (2010)
• Brazil’s busiest city
• Known as a ‘global city’ because it has global importance economically
• Attracts 2.82 million tourists a year – more than any other city in South America
• Considered one of the main tourist destinations in the Southern Hemisphere and is famous for its beaches, Carnaval celebration and various landmarks such as the statue of Christ the Redeemer.
• Hosted Olympics in 2016, also hosted World Cup games (including final)

Patterns of migration
Rio de Janeiro was settled by Portuguese travellers who arrived in the area in 1565.
Now, 65% of the growth of the city is due to internal migration.
People move to cities like Rio from the North East of Brazil where there is:
• Disease (malaria); drought; poor farming conditions leading to a loss of income; lack of healthcare; lack of education and low levels of skill; lack of government support.
Whereas in Rio there is:
• Higher levels of government support; a wider range of job opportunities; low-skilled employment available; better quality housing; more opportunities.

Exam Question
Examine how ways of life vary between one EDC and one AC city you have studied. (8)
## Life in an EDC – Ways of life in Rio de Janeiro

### Culture
- Brazilian cuisine varies greatly by region. This diversity reflects the country's mix of natives and immigrants.
- Carnival Brazilians are some of the world’s most musical, fun-loving people and the world-famous Carnival in Rio de Janeiro has attracted tourists for decades.

### Ethnicity
Although Caucasians are spread out across the city, there is an intense concentration in the affluent, beachside South Zone neighbourhoods.
- The South Zone is 80% white; Rio's richest neighbourhood Lagoa is 90% white.
- This contrasts starkly with the racial profile of the city as a whole, which is 50% black or mixed-race.
The main ethnic group in Rio de Janeiro are the Portuguese

### Housing
- Housing areas of Rio are highly segregated.
- The city cannot grow because of physical factors - there are mountains to the north and west, and sea to the south and east.
- The rapid growth of Rio de Janeiro's population has led to severe crowding and a shortage of housing.
- There is a clear divide of the rich housing in the south (close to the CBD) and the informal settlements (favelas) on the outskirts of the city centre.
  - Housing in Ipanema (South) costs $1,500 a month, with average earnings in the favelas $240 a month.

### Leisure and consumption
- Nightlife is famed in Rio, with numerous nightclubs, discos and bars offering live music and other acts
- Football or Soccer Football is the national sport and the Brazilians are world famous for being the undisputed best players in the world and has some of the world's largest stadiums, e.g. the Maracanã stadium is Brazil’s temple of soccer.
### Life in an EDC – Challenges in Rio de Janeiro

**Squatter Settlements**
- Lots of people work in the informal sector.
- Poor quality housing which has been built on hillsides, which leads to a risk of landslides and can collapse easily in heavy rains.
- Some level of education for children in nurseries and schools.
- Some healthcare available.
- High levels of crime have led to Pacification of the favelas, where police have increased their presence to reduce crime.
- Streets are narrow and hard to access.

**Informal sector**
- In 2016, an estimated 2 billion people are working off-the-books worldwide and it was worth $10 trillion per year.
- For example, street vendors sell drinks such as beer from their mobile ‘shops’ (i.e. out the back of a bike). Vendors can earn up to $240 a night.
- Informal economies are good for people in these settlements as they are low-skilled and there are very few job opportunities available.
- However, workers do not pay taxes so are not contributing money back to the government (which in turn could be invested in healthcare or the favelas). Also, people do not have a regular job with regular hours and so do not have job security.

**Health**
- Mass protests erupted across the country in 2013 (before the country hosted the World Cup the following year) with lack of investment in healthcare a key issue.
  - Locals felt the government had used money for hospitals to pay for the Olympic Games and World Cup.
  - There has been a lack of government funding for healthcare, meaning resources are stretched and there is not enough to cater for the population, e.g. a lack of beds, lack of equipment.
  - Some hospitals were shut and opened on a day by day basis.

**Waste disposal**
- 1/3 of the 10 million inhabitants area live in places that have no connection to a sewerage system and raw sewage is pumped into the sea every day.
- Diarrhoea and childhood sickness are common.
- Waste trucks find it hard to access the steep and narrow favela streets.
- Money for waste services has been spent on the Olympics.

**Exam Question**
For a city in an LIDC or EDC you have studied, outline the challenges it faces. (8)
Life in an EDC – Sustainability in Rio de Janeiro

Programa Favela-Bairro
This initiative began in 1995 and intended to improve standards of living within the favelas. It included:
• Site and Service schemes where residents are given legal ownership of their land and connected to basic services such as electricity, sewerage and clean water.
• Self-help schemes mean that city authorities provide basic building materials (breeze blocks, cement, roofing tiles etc.) and tools to improve housing standards.
• Improving public services, especially primary schools, technical colleges and libraries. The aim is to give young people the skills they need to escape low skilled, low paid informal employment and escape the poverty cycle.
• Cable car system to connect favelas in the north of the city to the wealthy and commercial Ipanema district to transport 30,000 people a day, allowing people in the favelas to get to work.

Favela redevelopment
Residents of Cidade de Deus (one of the main favelas) can sign up to receive electricity from state companies, rather than ‘stealing’ electricity from the grid, which risks electric shocks. This means their energy costs are higher but has other benefits.
• The energy companies provide advice on appliances such as refrigerators and light bulbs which are energy efficient.
• They are also educated on reducing their energy consumption to cut their energy bills.
• In May 2010, it received its first health clinic. The government also built a subsidised restaurant to boost the local economy.

Pacification
Pacification has taken place in the favelas. This aims to drive the gangs / drugs out of the favelas. This enables the government to formalise and legalise the favelas, but improving access to basic services such as water and electricity.
NGOs (non-governmental organisations) have been able to enter the favelas since pacification to help improve social situations. For example, Solar have been working with young people to provide them with training or skills, and working with young people to provide them an alternative to drugs and alcohol and crime.

Retrofitting
Money is being spent on retrofitting houses to make them better and safer. These include: waterproofing ceilings and walls, improving electrical conditions, improving natural ventilation so less energy is needed to cool down houses, increasing the number of windrows to increase ventilation.
LIDC case study: Zambia

- Overview of their economic development
- Link to Rostow’s model
- Have the MDGs been achieved for this LIDC?
- How wider context has influenced their development
  - Political, social and environmental
  - Trade
    - Impacts (benefits and problems) of TNC investment
    - Advantages and disadvantages of aid or debt relief for development
    - Advantages and disadvantages of one top-down and one bottom-up approach strategy
A brief history...
Is rich in minerals like copper but has never developed. It is landlocked and was a British colony in 1888 until 1964. With a population of 14 million, 80% can read and write and the gross national income is $3,000.

Development over time...
• 1970 – the price of copper falls and Zambia has to accept aid.
• AIDS spreads across Zambia.
• 1990 – debt it high. Food is expensive and there are riots.
• 2000 – copper starts to rise again.
• 2006 – the IMF cancel Zambia’s debt.
• 2010 – Zambia develops new industries in tourism, farming and hydro electric power through the Kariba Dam.

The Millennium Development Goals (MDGs)
In 2000 world leaders agreed to these MDGs. They are...
1. Halve extreme poverty and and hunger
2. Reduce child mortality
3. Improve maternal health
4. Achieve primary education everywhere

Zambia’s achievement of these was mixed. The number of HIV infections has dropped, most children attend primary school but child mortality is still high and many mothers still die in pregnancy/childbirth.
• 90% of children attend primary school
• 10% of the population is affected by AIDS
• 140 children per thousand die under 5yrs old

Foreign investment
In 2012 Zambia started a project called ‘Why invest in Zambia?’. The country has been a peaceful democracy since 1964, the economy has been growing since 2000, Zambia borders 8 countries and is part of the World Trade Organisation (WTO) and 50% of its land is suitable for farming.

Zambia’s reliance on a single commodity – Copper
Zambia relies on the copper metal it has, it makes up 70% of its international export. Between 1970-2000 the price of copper fell and this put the economy into decline and Zambia went into debt. Since 2000 the price has risen but Zambia wants to diversify its economy. China uses the most copper in the world and has therefore invested in Zambia. Over 500 Chinese companies invest in Zambia from mining to tourism to manufacturing. China has expanded the Kariba Dam, built 8,000km of new roads and there are 100,000 Chinese people now living and working in Zambia.
Zambian Development

Benefits of TNCs...
- Provide jobs and an income
- The company and workers pay taxes which supports the government
- Investment helps the country exploit its natural resources

Problems of TNCs...
- Large companies try to avoid paying tax
- Small companies can’t compete
- They pollute and damage the environment

Water Aid in Zambia
Water Aid is needed because 5.2m people don’t have access to clean water, 5,000 children die every year from water bourne diseases. In one year Water Aid provides 54,000 people with safe water and 42,000 people with improved sanitation.

Associated British Foods (ABF) bought Zambia Sugar in 2001. Zambia sugar paid almost no tax in Zambia because profits were sent to ABF in the UK where tax rates are lower. Zambia, like other LIDCs needs taxes to pay for services like education and healthcare, but it also wants to offer tax incentives to encourage TNCs into the country.

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Top down development – ‘The Kariba Dam’
Advantages: power is vital for the copper industry, renewable form of energy, fishing and tourism have developed around the Lake.
Disadvantages: 57,000 local people were evicted from the land and moved to less fertile land,
The future...the dam could collapse because of erosion. Mozambique would be flooded within hours, ecosystems and wildlife would be lost and 3.5 million peoples lives would be at risk from flooding.

Bottom up development – ‘Room to Read’
Its aims: increase the years of schooling for girls, increase girls self awareness and life skills, increase family and community support for girls education.
Why target girls...higher drop out rate, girls are expected to do chores and parents don’t value education for girls. Girls are pushed into early marriage.
Reading for success...school attendance is poor and there are very few schools in Zambia's countryside. Room to Read trains teachers to engage students, children like Milmo travel 90mins to school and he is learning to read, he wants to become a teacher one day himself.
Topic 7 – UK in the 21st Century

This whole topic is the case study you need to learn.

UK involvement in the middle east
Aging population
Economic hubs in Cambridge and London

You have information on this in your revision notes
Cambridge Science Park: An economic hub

### General Information
Established 48 years ago by Trinity College Cambridge. Cambridge Science Park, SE England comprises 150 acres, 1.7 million sq. ft of high technology and laboratory buildings.

### Causes
Silicon Fen attracts international investment.
- **Location of Cambridge Science Park:**
  - Linked to Cambridge university
  - Close to M11
  - High speed rail links close by, 1 Hour to London from Cambridge.
  - Close to Stansted Airport

### Effects
- Provides lots of jobs: Home to 6500 people at over 100 companies e.g. Abcam
- Traffic in/out of Cambridge increased by over 300% in last 45 years.
- Delays of 1-3 hours at peak times
- Positive multiplier effect: more jobs, disposable income, better quality of life

### Responses
- 50,000 new homes need to be built
- Private science park bus routes created to relieve traffic congestion
- More public transport has been put on.
- Increase in bike routes
- Need to improve road and rail routes
<table>
<thead>
<tr>
<th>General Information</th>
<th>Effects</th>
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<tbody>
<tr>
<td>The UK has one of the highest economies and population densities in Europe. 12% of the UK is now urban. The UK's population is 65 million and is predicted to rise to 70 million by 2030.</td>
<td>The UK has a housing shortage, it is most significant in the South East. An ageing population causes a stain on the publically funded NHS. A high dependency ratio means we have more people not working than working and taxes are therefore high.</td>
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<tr>
<td>Causes</td>
<td>Responses</td>
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<tr>
<td>The UK has a high standard of living and life expectancy is 83 years. It’s population has boomed since the industrial revolution the British Empire and is still inclining gradually today due to net migration. The UKs media and fashion has global connections.</td>
<td>London is celebrated as one of the most ethnically diverse cities in the world. The UK has many economic hubs and London although not a mega city is a world city. The Tikka Masala is Britain's no.1 dish.</td>
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Global conflict - UK role in Iraq War 2003

Positives
- The Iraqi army was defeated in 6 weeks
- Saddam Hussain a brutal dictator was captured, put on trial and executed by an Iraqi court.

Negatives
- Hundreds of thousands of Iraqi civilians were killed.
- Different groups in Iraq began fighting for control leading to over 10 years of conflict in the country.
- British and American soldiers had to remain in Iraq to try and stabilise the country as well as many being killed and severely injured.
- The lack of a strong government and anti-American opinion allowed ISIS to take control of large parts of Iraq.
Case study of attempts to achieve food security in one country to include:
• Investigation of statistics relating to food consumption and availability over time.
• The success of one attempt in helping achieve food security at a local scale such as food banks, urban gardens and allotments.
• The effectiveness of one past and one present attempt to achieve food security at a national scale such as global food trade, GM crops, ‘The Green Revolution’ and food production methods.
An attempt to achieve food security in Tanzania at a local scale

• **Goat Aid in Babati Northern Tanzania**
• **Location** – Babati District Northern Tanzania – 90% of population live in villages and depend upon agriculture
• **Goat Aid Facts**
  • Example of bottom-up aid
  • Farm Africa a NGO working with local people ask them about their needs
  • Toggenburg goats chosen
  • Goats produce 3 litres of milk a day
  • Goats given on credit as Farm Africa believes that the villagers will look after them more if not free
• **Advantages/positives**
  • More nutritious diet – cheese, butter, milk, crops
  • Crops better yields due to using goat manure as a fertiliser
  • Money from selling spare milk helps villagers improve their houses
  • Can afford to send children to school so long term sustainability as children will earn more money as they will get better paid jobs in tertiary sector
  • Successful as income for farmers in Goat Aid scheme 3 times higher than those not in the scheme
• **Criticisms of the scheme**
  • Goats require lots of water which is scarce
  • Goats hooves and overgrazing damage land and lead to desertification
  • Vet bills expensive if goats get ill
A past attempt at a national scale to achieve food security
Tanzania-Canada Wheat Project (1967-93)

• Why was the project introduced?
  • 1967 President of Tanzania argued that should grow own food
  • Severe droughts in 1973 and 1974 made food security even more important
  • Mid 70's – 90% maize and 80% wheat was imported
  • 1975 relied on emergency food aid for first time
• What was the Tanzania-Canada Wheat Project?
  • Canada was asked to help as it was used to growing lots of wheat
  • So it was an example of top-down development
  • 1968-1993 Canada provided $95 million in aid
  • Project covered 26 400 hectares in Hanang Province in northern Tanzania
  • Canada provided seeds, training and machinery
  • At first seeds and equipment was free but eventually Tanzania had to pay for them
• Why was the project seen as a success?
  • Provided 60% of all Tanzania's wheat
  • Road, rail and electricity connections were improved
  • Employed up to 400 people
  • In 1992 drought Tanzania was only southern African country not to rely on food aid
• Why was the project seen as a failure?
  • Forcing the Barabaig tribe off their land where they grazed their cattle so wheat could be grown caused conflict and was very controversial – project threatened the livelihoods of 40 000 people
  • Growing one crop reduced biodiversity and soil fertility decreased
  • After harvesting heavy rain washed away top soil
  • Most Tanzanians eat maize so low technology bottom-up maize production might have been a better project
• Evaluation of its effectiveness
  • Who benefitted most from the project? Tanzania or Canada? Were their conditions of the aid given by Canada to Tanzania? Was top-down development appropriate?
A current attempt at a national scale of achieving food security

Southern Agricultural Growth Corridor of Tanzania (SAGCOT)

Project Fact File
• Started in 2010
• Aim is to improve farming in Tanzania in a growth corridor (a region of economic growth)
• East to west strip of land across the width of Tanzania is very fertile
• Connected to port of Dar es Salaam by road and TAZARA railway
• Investment in infrastructure like roads, irrigation and railways by national and foreign governments and TNCs e.g. China has invested $39 million in the TAZARA railway
• Will help food security by producing more food and earn money by exporting food to other countries
• Claim is that by 2030 project will create thousands of jobs and lift millions out of poverty

Early Successes
• Kilombero Plantation has had millions of dollars invested in it
• Tractors, irrigation and a rice mill have been provided
• Some farms have produced 8 times more rice
• Getting a better price for their rice as access to markets has improved
• 4 developments near Morogoro also had successes – 2 tobacco factories been built providing a market for farmers tobacco crops, sunflower processing plant increased farm incomes and a factory making farm equipment has increased its output

Criticisms
• Most investment benefits TNCs/commercial farms
• Small landowners not been involved in decision making (top-down)
• Nomadic (move around looking for best pasture) tribes lost land and access to water for animals
• Last 2 criticisms the same as those for the Tanzania-Canada wheat project so government has not learnt from their past mistakes
### Ethical Consumerism

This involves buying products that have a positive social, economic and environmental impact today, without compromising future generations.

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<th>Social</th>
<th>Economic</th>
<th>Environmental</th>
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<tr>
<td>Fairtrade</td>
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<tr>
<td>• This is a global movement to give farmers a <strong>fairer price for their products</strong>.</td>
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<tr>
<td>• The profits benefit the community with <strong>schools and medical facilities</strong>.</td>
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<td>• Involves using farming methods that protects rather than destroys environments.</td>
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<td>Food Waste</td>
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<td>• One-third of all food gets lost or wasted.</td>
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<td>• Aim to <strong>eat locally sourced food</strong> to reduce waste through transport.</td>
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<td>• Eating ‘ugly’ food despite it not being ‘ideal’ can prevent waste and <strong>save money</strong>.</td>
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<td>• Prevents wasted energy for producing food and therefore <strong>reduces CO2 emissions</strong>.</td>
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### Food Production

This involves producing as much food as possible in as small a space as possible. They often involve using machines and chemicals to gain as much produce as they can.

| Intensive Farming             |          |               |
| • Makes the most of the land and allows for higher yields. This can make growing food more **productive and therefore cheaper** to produce. |          |               |
| • Chemical fertilisers, pesticides and herbicides can **pollute the environment** and **harm people**, animals and insects. |          |               |
| Organic Methods              |          |               |
| • This involves the banned use of chemicals and **ensuring animals are raised naturally**. |          |               |
| • This can lead to **lower yields of 20%** and products being **more expensive**. |          |               |

### Technological Developments

Through better understanding of science and improved technology, it is now possible to change the food we grow and protect and harvest the crops more effectively.

| Genetically modified (GM)     |          |               |
| • Involves changing the DNA of foods to enhance their productivity and properties. |          |               |
| • Crops can be **better protected from disease and drought**, but also made larger or include more **health benefits**. |          |               |
| Hydroponics                  |          |               |
| • This is a method of growing plants without soil. Instead they use nutrient solution. |          |               |
| • Less water is needed and a **reduced need for pesticides** to be used. |          |               |
| • However, this method is **very expensive** so only used for high value crops. |          |               |

### Small Scale ‘Bottom Up’ Approaches

This involves a small scale production of food and relies on individuals and communities, rather than government or large organisations.

| Allotments                    |          |               |
| • This is an area of land that is divided into plots and rented to **individuals to grow their own fruit and vegetables**. |          |               |
| • Allows people in urban areas to produce their **own cheap & healthily food** close to home. |          |               |
| Permaculture                 |          |               |
| • This involves **people growing their own food** and **changing their eating habits**. |          |               |
| • This can create **more natural ecosystems** and fewer resources are required. |          |               |
Food Security in the UK

**Food Availability in the UK**

The UK population is around 65 million and enjoys a high level of food security.

- The UK produces 68% of its own food but this is steadily decreasing.
- The UK has to import the rest, especially seasonal food such as fruit and vegetables.
- Food production in the UK has increased by intensifying agriculture.

**Food consumption in the UK**

Average daily calorie intake in the UK has decreased from 2600 in 1960 to 2150 by 2000. Reasons for this decrease includes:

- More people being more active in the past and having physical jobs.
- More awareness of having a good diet and problems surrounding obesity.
- The price of food has increased.

**Success in securing local food security**

- Food Banks
  - This is food that is donated by the public.
  - They help people with a sudden loss of income.
  - It is estimated that 1 million people rely on food banks for their own food security.

- Urban Gardens
  - These are large projects where groups work together to grow food and promote healthy living.
  - This can involve planting crops in urban environments such as roundabouts.

**Effectiveness of pasts attempt at food security**

Intensification of farming from 1940s to the 1980s attempted to increase production by;

- Higher yields of crops and animals
- Monoculture by growing one crop in a large area.
- Irrigation with better groundwater pumping.
- Chemicals with improved fertilisers and pesticides.
- Mechanisation for sowing and harvesting.

**Effectiveness of present attempts at food security**

Recently the UK has been promoting sustainable intensification, involving food security and supporting the environment.

- New technology such as hydroponics help a range of foods to be grown all year round.
- However, this method is expensive for producer and consumer.