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Geography A

Paper 3: Geographical Investigations: Fieldwork and UK Challenges

Section A Question 2	Investigating coastal landscapes
Section B Question 3	Investigating human landscapes: central/inner urban area
Section C	UK Challenges

Investigating coastal landscapes

b) What is the enquiry?

How do coastal processes (erosion/transportation) effect the coastline at Southend-on-Sea?

a) What are the impacts of coastal processes?

Economic – large tourist industry, retreat of the coastline could affect their abilities to run business. Could also reduce the number of tourists coming into the area, resulting in loss of income for people/council.

Social – homes can be damage and eventually destroyed by coastal retreat. Personal belongings damaged and larger infrastructural damage can be stressful and expensive to fix. People may have to relocate.

Environmental – loss of animal habitat due to the retreating of the coastline. Damage to vegetation/loss of vegetation.

Key words
Quantitative – data produced in numbers
Qualitative – data produced from opinions
Secondary – data collected by other sources
Primary – data collected by yourself on the day.
Random/stratified/systematic sampling

c) What are coastal processes?
Erosion, weathering, transportation, deposition.

Erosion: the wearing away of material
- Hydraulic action – water/air entering cracks/joints in coastline, widening and breaking parts of.
- Abrasion – rocks picked up by waves and thrown against cliff face, breaking parts of.
- Attrition – rocks/pebbles collide with one another
- Solution – chemical action of rocks dissolving.

Transportation: movement of material along the coastline via longshore drift. **Longshore drift:** Sediment moves up the beach in the swash at an angle, driven by the prevailing wind. Carried back down the beach at a right angle through backwash.
- Traction - largest material dragged/rolled along sea bed.
- Saltation - smaller boulders bounced along sea bed.
- Suspension – fine sediment carried in the flow of water
- Solution – dissolved material transported by water.

d) How did we collect data prior to the fieldtrip?

Secondary data – information someone else has previously collected. Can be qualitative and quantitative.

Geological choropleth map: informed us about the type of rock present in Southend-on-Sea. Lots of soft rock, less resistant to erosion and therefore we expected rounder/smaller sediment samples.

Aerial map: use of google maps to explore fieldwork location. Allowed us to identify probable locations to carry out fieldwork as we can see where there were larger/smaller areas of the beach. Also prevented us from carrying out fieldwork in dangerous location/plotted our route for the day.

Newspaper articles: identified areas of concern at Southend-on-Sea/presence of sea defences.

d) How did we collect data on the day?

Groyne height drop – a **quantitative** measures sediment build up on west and east of groyne.
+ Allowed us to examine presence of longshore drift.
+ Allowed us to examine effect of groyne on sediment build up.
- Inexperience in using equipment
- Human error recording the data

d) How did we collect data on the day?

Primary data – information/data you collect yourself.

1. Beach profile (quantitative)
Measures the shape of the beach from the waters edge to top of the beach. Measures distance and angle of the beach.

+ Allows us to measure/record the shape of the beach
+ Destructive waves = steep gradient as stronger backwash. Constructive waves = gentle gradient as sediment is deposited. This helped to answer the enquiry question.
+ Quantitative data set is easy to interpret, analyse and compare results.

- The tide times effects the length of the beach, weren't able to measure the full beach length on the day.
- Ranging poles contribute to inaccurate results as they are often pushed into the ground leading to inaccurate angle reading
- Weather/seasons affect waves and in turn the shape of the beach = unreliable results
- Weather can affect the equipment on the day
- Lack of experience.

d) How did we collect data on the day?

Sediment analysis – a **qualitative** measure that examines the size and shape of the material on the beach using the **power scale of roundness.**
+ allows us to record the shape/size of the beach.
+ requires very little equipment
+ easy to carry out and every can get involved.
- The tide may affect how much beach we can work with.
- Human error may cause sizes to be recorded inaccurately as it depends on the view of the person analysing the sediment. This can lead to anomalous results
- Lots of data to be recorded (5 pebbles every 1 metre). Very time consuming and increases risk of human error.

d) How did we collect data on the day?

Field sketch – a **qualitative** measure allowing us to record key features of the beach.

+ allows us to record information about the physical and human geography of the area
+ draws attention to important details
+ can be labelled with accurate information
+ can compare with secondary data sources to compare change over time
- Cannot be considered entirely accurate as may lack information
- Analysing the field sketch relies on the skills of the person drawing it.
- May take a long time to complete and therefore increases chance of it being rushed.

e) What sampling techniques did we use?

Random: data is **collected by chance.** We used random sampling for the **field sketch and sediment analysis.** As it was chosen at random, it reduces bias. It is also simple and less complicated method to carry out. However, this can lead to poor representation of the over all data if locations are missed out.

Systematic: data is collected at **equal intervals from each other.** We used systematic sampling during the **beach profile.** This can be more straightforward e.g. every 1 metre and can provide a good coverage of sample area. However, can lead to under representation of a particular pattern elsewhere.

Stratified sampling: data collected **from different sites.** We aimed to use this during the **groyne height drop**. Beneficial as it can be used alongside random & systematic sampling. More representative, avoiding bias, correlation and comparisons can be drawn. However, not possible in every study as accessing each site may be difficult as we saw on the day due to weather conditions. It can be very time consuming.

f) How did we present our data?

Data presentation techniques include a beach transect, histograms, bar graphs, line graphs, pie charts, radar graph.

Beach transect: used to display the **beach profile.** Beneficial for showing the changing gradient of the beach, allowing conclusions to be draw. However, only a snapshot in time and data set may contain anomalous results that are difficult to plot.

Inverted bar graph: we used this to display the **groyne height drop.** Being inverted (upside down) it allowed us to visualise the sediment drop on the west and east side of the groyne which displayed the role of the groyne in trapping sediment moved by longshore drift. Therefore, good for comparing. However, limited space to accurately label data.

Pie chart: we used this to display the results from the sediment analysis. It was easy to draw and represented the wide range of data we collected. However, too many segments made it difficult to read.

g) Conclusion

- Steep gradient on shoreline, presence of destructive waves.
- Small//rounded sediment present throughout beach. Presence of erosional processes at work.
- Presence of longshore drift from west to east along the coastline verified by data sat. However, groynes were effective at trapping sediment on the west side, lessening impact of coastal processes.

Investigating human environments: central/inner urban areas.

a) What is the enquiry?

What are the impacts of urban regeneration in the Stratford Olympic area?

Regeneration – the attempt to reverse the decline of an urban area by improving its infrastructure and the economy of those areas to increase standard of living.

c) Why have we chosen Stratford?

Stratford is the east end of London, in the borough of Newham. It contained some of the most deprived communities in the country, unemployment was high and levels of health poor. There was lack of modern infrastructure and environmental quality was poor.

c) When did urban regeneration take place?

The **2012 London Olympics** bid was agreed partly due to the understanding that Stratford would be regenerated for local people to use after the

c) How was Stratford regenerated?

- By 2030, more than 10,000 new homes will have been built. 5 new neighbourhoods with lots of green spaces planned in. 1/3rd of housing will be affordable housing.
- A new school has been built which educated roughly 2000 pupils between 3-18 years of age.
- It is now a well-connected area of London allowing commuters to travel to work easily.
- New jobs in construction and tourism created. Over 20,000 jobs could be created by 2030 bringing £5 billion into the area.
- The Olympic Park, now Queen Elizabeth Olympic Park is sustainable, lots of walking/cycling routes, reducing cars on the road, water efficient homes and green spaces protected.

d) How did we collect data prior to the fieldtrip?

Secondary data – data collected by someone else.

Office for National Statistics (OfN) : we used the OfN website. This is the body responsible for collecting and publishing statistics relating to the economy, population and society. This allowed us to see how quality of life had improved since the regeneration project. Being a **quantitative** data set, this provided us with accurate information about the progress of the borough.

2011 results:

Economically active population: 67%
Industry: retail trade (17%), Accommodation/food services (11.8%), human health and social work (10.3%) and administration (8.8%)
Deprivation: 2nd most deprived borough.

2017:
Economically active population: 74.5%
Industry: managers, directors and senior officials (39%), professional occupations (16.8%), skilled trades occupation (11.6%).
Deprivation: 25th most deprived ward.

d) How did we collect data prior to the fieldtrip?

Photographs/maps: we explored different images of Stratford prior to regeneration which allowed us to visualise the change that has taken place. Maps also showed us the change in building volume in the region.

e) How did we collect data on the day?

Questionnaire – we collected two questionnaires on the day. One asked question examining the demographic of Stratford e.g. age, employment, job opportunities. The other questionnaire explored people's views on congestion. This produced a qualitative data set.

+ Random stratified sampling was used which allowed us to collect information from three different sites.
+ It gave us an understanding of the opinions of local residents on their views of the success of the project. This is important as residents are the people who see and are affected by the attempt to improve the area.
+ Closed questions e.g. rate public transport from 1-5 allowed us to quantify the data set which made it easier to reflect on/compare results.
- No way of ensuring honest responses are given. Quick answers as people wants to move on.
- Close ended questions do not allow for people to expand on views.

e) How did we collect data on the day?

Questionnaire continued

- People may feel uneasy about revealing their opinion, making the data set less reliable
- People may interpret questions differently, not answering the question you intended to ask.

How could we have improved?
- Repeat questionnaire on a different day
- Use systematic sampling e.g. every 5th person that walks past.

e) How did we collect data on the day?

Pedestrian and traffic count – we randomly picked a spot and counted pedestrian and traffic congestion. This allowed us to explore the effectiveness of urban regeneration in reducing traffic congestion and thus improve air quality. The pedestrian count allowed us to consider the type of person, who they are.

+ We were able to count the type of transportation used mainly e.g. cars, buses, taxis, motorbikes, bikes, lorry's/trucks.
+ Produced a quantitative data set which was easy to interpret and draw conclusions from.
+ Pedestrian count gave us an idea of whether there were lots of people of working age in the area.
- Dependent on the time of day, month. Stratford may have been much busier on a weekend leading to unreliable results.
- Not representative as only conducted in one location.

e) How did we collect data on the day?

Photographs - photos taken to record evidence of land use and quality of the urban environment. Randomly taken.

+ Very easy to produce this type of data
+ Helps us to visualise the sampling sites, allowing us to recall important information that is useful to our investigation.
+ Photographs don't lie, easier for people to understand the evidence.
- People might not focus on important aspects of regeneration, missing important conclusions that could be drawn. Must annotate photographs to ensure everyone understands
- Reliant on the battery on your phone.

e) How did we collect data on the day?

Environmental quality survey - we conducted an environmental quality survey and judged many aspects of the areas land use e.g. in good condition, presence of vandalism, safe, roads well maintained. +2 signified being very good, -2 being very poor. Stratified.

+ Allowed us to assess a wide range of factors important to urban regeneration
+ Easy to conduct, required very little equipment.

- Although this is recorded in numbers, it is a qualitative data set as it is based on the judgement of the person assessing environmental quality.
- Places the same value on each factor e.g. presence of crime may be more important than noise. Does not allow room to express higher importance.

f) What sampling techniques did we use?

Random: data is **collected by chance.** We used random sampling for the **photographs, questionnaire and pedestrian/traffic count.** As it was chosen at random, it reduces bias. It is also simple and less complicated method to carry out. However, this can lead to poor representation of different locations within Stratford.

Systematic: data is collected at **equal intervals from each other.** We did not use this on the day, however, this could have improved the reliability of our questionnaire. We did not know the area well enough to plan systematic sampling.

Stratified sampling: data collected **from different sites.** We used this method for the environmental quality survey Beneficial as it can be used alongside random & systematic sampling. More representative, avoiding bias, correlation and comparisons can be drawn. However, not possible in every study as accessing different locations may not be possible by foot.

f) How did we present our data?

Wordle – wordle is a website we used to display the most common type of transport investigated through the traffic count. The more prominent the factor, the larger it appears on the screen among. We saw that cars and buses were the most prominent transport type. Very easy to make, but need lots of different wordle clouds for different factors.

Radar graph: a graph that shows differences in the scores for the qualities of the environment on a scale of -2 to 2+. This helped to visualise where urban regeneration had been successful, and where it was less effective such as noise pollution.

Geographical information system (GIS) - an online system that captures and stores data relating to different areas using maps. We were able to add our data from the questionnaire. We placed circles over the map to highlight the prominence of a factor e.g. whether a person thought the urban environment was good or bad in different locations around Stratford. The circles were coloured so we could easily see where people's views were negative of the area.

Conclusion
Urban regeneration has been mostly successful, lots of modern new buildings as well as use of brownfield sites. Appears to be employment opportunities, green spaces and evidence of sustainable transport. However, some peoples' views are it hasn't gone far enough.

Geographical Investigations – UK Challenges

a) How has the UKs population changed overtime?

Population has increase by 7.8 million since the 1980s when it was 56.3 million. The largest increases will be seen in England.

2018: 66.4 million

Predictions
2020: 67.2 million
2030: 71.4 million
2050: 77 million

b) What pressure will this put-on resource consumption?

Increasing demand for housing, education, employment, food, power and water will increase the strain on resources.

Demand by fuel type: overall demand for fuel will increase to 150 mtoe, however oil and gas will slightly decline, and electricity and renewables will increase by 2032.

Energy demand by transport: overall increase, both oil-based fuels and road petrol demand will increase for transport needs by 2032.

Demand in industry: overall demand will increase; commercial services will increase by 2032

Domestic energy demand will increase.

b) What pressure will this put-on ecosystems?

- Increase in food production, lead to an increase in **agribusinesses** (agricultural businesses). Will need more land to do this, destruction of habitats to provide larger fields.
- More housing will put pressure on local/national governments to release **greenfield** sites. The use of the greenbelt destroys open spaces/affects habitats through increase surface runoff and erosion where impermeable surfaces are put in place.
- New housing built on floodplains increases chances of flooding.
- Greenhouse gas emissions could increase through the increasing use of fossil fuels resulting in climate change.

c) How do we address these issues?

We can't stop the use of resources but we can limit them by:

- Choosing sustainable energy sources
- Building on brownfield sites for new home buildings and building vertically rather than laterally. This would allow more greenfield land to be used for habitats.
- Switching to alternative energy sources to reduce greenhouse gas emissions.
- Managing river catchments to reduce risk/impacts of floods.
- Improved education on conservation of resources through reducing energy demands in home/businesses.
- Reducing water wastage/leaks

d) How do we use sustainable transport in the UK?
Transport fuels account for more than 70% of demand for oil in the UK. How can we reduce this?
- Improving **public transport systems** to make them more attractive to commuters, who may leave their car at home as a result.
- **Cycle routes** encouraging people to cycle, making it easier and safer.
- **Car-sharing** schemes encourage commuters to share car journeys reducing number of cars on the road.
- Use of **zero emission vehicles** e.g. hybrid or electric cars reduces impact of poor air quality.
- **Congestion charge –** a charge for entering a heavily congested zone in London in a car. Introduced **2003, traffic reduction of 10.2%, reduction in greenhouse gases, pollutants in the air declined by 12%.** Largely a success in the eyes of government/locals. Motor organisation think that its simply adding congestion to other routes. There are still 9400 early deaths because of pollution.

e) what is the two-speed economy?

Refers to the idea that economic growth in the UK is not even across the whole country.
- London/south east higher & faster economic growth
- Northern England, Scotland and Wales slower & smaller economic growth.

Example: London has large infrastructure projects e.g. the Shard and new transport systems such as Crossrail which are evidence of growth as stakeholders are willing to invest their money in this region as they think they will make it back. This is not evidenced as much in the rest of the UK.

f) What are the effects of a two-speed economy?

- Increasing population in London/south east as people are moving from the north of England to the south east, or commuting long distances to work in the capital. This reduces the local workforce in these areas which further leads to the decline of industry as it does not encourage businesses to set up shop there.
- Lack of business investment also affects peoples life opportunities, they may not be able to get the job they desire.
- Demand to live in south east and London has increased house prices faster than the rest of the country. In turn, the government focuses their investment here, rather than where there is less demand. This does little to regenerate the more northern and western parts of the UK.

Solutions:
- **High Speed Rail 2:** railway between London and Northern cities to jobs away from London.
- **Better transport:** means that goods/services can be moved more easily from/to the north to generate more income.
- **Improving northern airports** to increase international attraction
- **Smart tickets** to make it easier for commuters to use.

G) Pros and cons of using Greenfield/brownfield.

Greenfield: an area of land that has not been built on yet.
+ Relatively cheap and can build infrastructure faster
+The layout is not determined by previous buildings
+ Healthier environment
-Valuable farm or recreational land lost
-Wildlife and habitats lost/destroyed
-Wildlife disturbed by noise pollution
-Often far from work and services generating more traffic in the area
-Encourages urban sprawl (urban areas becoming bigger)

Brownfield: an area of land already developed on
+reduces the loss of countryside
+Helps revive old/disuses urban areas making it more attractive
+Services such as water/electricity gas ad sewerage already in place
+located nearer main areas of employment=reduces congestion
-more expensive as old buildings have to be cleared
-surrounded by rundown areas and so does not always appeal
-higher levels of pollution=less healthy.

i) Migration and the UK.

Migrants = people moving home within and between countries.
Emigrant = leaving a country
Immigrant = living in another country.
Net migration = the difference between the number of people entering and leaving a country.
UK has a **positive net migration**; more people move here than leave. This includes people born in the UK and not. It does not include:
- Tourists
- Illegal immigration
Prior to the 1990s, more people left the UK than joined.

h) What are the reasons for migration?

People move for a number of push and pull reasons. Pull factors include job opportunities or education. A 2018 government report saw work and family as the largest reasons. Push factors include fleeing from war, persecution or natural disaster. Most migrants are aged between 26-64 and are less likely to be children or people of retirement age.

Immigration (To the UK)	Emigration (from the UK)
Poland	Australia
India	USA
Pakistan	Spain
Romania	France
Ireland	New Zealand

j) why are views on migration different?

Different stakeholders have a variety of views.

Businesses/government – immigration offers an increase in workers who help the economy grow and pay their taxes. Many bring useful skills to the UK.
People: migration is good for multiculturalism, meaning we can learn about different ideas and cultures.

However, some local governments feel that migration puts pressure on local servies such as health, school places and housing. Some political parties play on the fears of people to argue against the idea of people coming into the UK as they believe they take jobs that would have gone to British workers.

However – most people **agree** that **refugees** (a person forced to flee their country) should be allowed to move to the UK.

k) What are national parks?

A national park is an area o protected by the government to preserve the countryside, wildlife and their habitats and also cultural heritage. There are 15 national parks in the UK, the first being set up in 1951.They aim for **sustainable development** by trying to meet the needs of local communities in the area, tourists whilst **conserving** the landscape and wildlife.

L) Is there a flood risk in the UK?

Yes. A recent assessment suggests that 2.4 million properties (homes, buildings) are at risk of flooding. This is a dramatic increase from the 330,000 in 2016. This is due to:
- Urbanisation: more people are living in cities which leads to more built up surfaces e.g. tarmac. These surfaces are **impermeable,** meaning water can't pass through, it will through surface run off quickly into the river.
- Increasing populations means that more floodplains are being built on, reducing areas of land that naturally allow flood water to infiltrate through the ground.
- Climate change: warming temperatures are increasing global temperatures, leading to more evaporation and therefore rainfall.

The **Environmental Agency** manages floods in the UK by:
1. Making floods less likely by controlling the number of floodplains built on, increasing flood defences through hard engineering and managing rivers through soft engineering.
2. Reducing the impacts of flooding by helping people prepare for flooding and giving flood warnings.

k) What is a national park five-year plan?

All national park authorities produce a 5-year plan, made alongside local landowners, communities and organisations to help develop the parks sustainably. They aim to:
- Create **conservation apprentices** to encourage young people living in the parks rural areas to maintain the countryside and address youth unemployment.
- Encourage people to change their transport habits to reduce carbon dioxide emissions, especially tourists.
- Encourage local businesses to use sustainable energy sources
- Convert old farm buildings into business projects to increase employment e.g. art galleries/offices for the national parks
- Provide funds to small businesses as well as training to provide job stability and encourage investment.

M) How has the environmental agency responded to the flood risk of the River Thames?

The River Thames Scheme has been proposed to protect the River Thames between Datchet and Teddington. It is the largest area of undefended floodplain in England. Recent flooding in January and February 2014 highlighted the need to address the issue with 1,000 homes affected and around £1billion in projected damages if it happens again. The scheme proposes to:
- The EA will build a new flood channel alongside the River Thames.
- They will also widen the river channel to increase the volume of water it can hold.
- Create new open spaces to enhance the landscape.
- Protect 15,000 homes and 2,400 businesses from potential floods.
- Increase the resilience of the local area by working with emergency services and local council to coordinate their response during a flood.

Arguments against the scheme suggest it will increase the risk of flooding further downstream.

N) What are the UK's coastal challenges?

Millions of properties in the UK are also at risk from coastal flooding. This can have serious impacts on homes and businesses as well as farmlands. Coastal flooding is often a result of **storm surges,** when sea levels are higher than usual due to wind due changes in atmospheric pressure (high/low).

o) East England storm surges 2013

Resulted in widespread coastal flooding. The Thames Flood Barrier was raised in advance to prevent flooding in central London. Temporary flood barriers were put in place e.g. in Norfolk to protect as many homes and businesses. Information was passed to people through social media and media outlets to keep the public aware of the risk & to avoid contact with the flood water. This was because farmlands flooded which resulted in chemicals contaminating sewage water and the possibility of rats moving into people's homes. 800,000 people were protected.

p) Addressing coastal flood risk

Sea walls can be built to act as a barrier to prevent flooding (e.g. in Southend). They are a hard engineering method, expensive and will be damaged overtime. May not be economically sustainable. Sea levels are rising, if a sea wall broke, there would be significant damage to the local areas. In this instance, **managed retreat** may be a better option.
Managed retreat involves allowing low-lying land to flood to protect areas further back. However, areas must have low value farmland and low-density population.

q) How will global climate change affect the UK?

Global temperatures have risen by 1 degree Celsius in the last 100 years due to the **enhanced greenhouse effect,** which is increasing greenhouse gases in the atmosphere, trapping more heat in earth's atmosphere which warms earths surfaces. In the UK:
- Temperatures have risen by 1 degree Celsius.
- Summers have become warmer. It is predicted they will increase by 3-5 degrees.
- Winters may become warmer, increasing temperatures of 2-4 degrees Celsius. The UK experienced its hottest January day in 2020 since record began.
- Extreme weather is increasing e.g. heatwaves and storms. It predicted by the MET office that a heatwave will happen every 2 years. Climate scientists argue that the UK must prepare for more **intense** storms.
- Computer models predict that the UK will be 15-30% wetter in the winter and 15-30% drier in the summers.

r) What will the Impacts of climate change be on the UK?
- Increased precipitation will make flash floods and river floods increasingly likely. Sea levels are rising which will increase the risk of coastal flooding. This will increase **flood hazards** as population is rising and this puts pressure on the land and floodplains particularly for housing.
- The cost of floods will increase, rising from £2 billion to £12 billion by 2080.
- Warmer and drier summers will increase the risk of **drought** with lower rainfall and increased evaporation resulting in less water in rivers and the soil and groundwater. This will lead to **water deficits** and threatens **water security**. Water security is essential to a growing population which will require more **agriculture** and more water for **industry.**
- Drier areas of the UK such as the **south east** will be particularly vulnerable.
- **Increase pressure on key services** such as the NHS as extreme weather both heatwaves (sun stroke) and storms cause human injury/stress.
- **Ecosystems** will be impacted as they try to adapt to new climates. Some species may become extinct and others may migrate further north to cooler areas. Some will experience competition from **non-native** species moving to the UK which are better suited to the climate.
- **By 2100,** landscapes will look different with the changing climate changing vegetation.
- **Drought** in other parts of the world which supply food to the UK may result in a reduction in food supply and an increase in food prices.
- **Climate refugees,** where homes have been destroyed from coastal flooding, or where life becomes unmanageable with rising temperatures may be forced to flee their homes and move to areas like the UK.

S) What are the responses to climate change?

Local scale: individuals and families can make changes to reduce carbon dioxide emissions and resource consumption. This may include
- Walking or cycling shorter journeys instead of driving to reduce fuel consumption and CO2 emissions.
- Purchasing locally produced food to reduce the amount of food ships/flown into the UK which would have used more fuel to get here.
- Recycling waste materials.
- Installing insulation and double glazing to reduce heat loss and reduce the amount of heating needed which relies on burning energy (fossil fuels).
- Installing solar panels to generate energy in the home.

National scale: governments can launch campaigns or create legislation (laws) to encourage people to recycle and reduce resource consumption as well as put limits on businesses and industry as to the amount of carbon they can emit into the atmosphere. The UKs **Climate Change Act of 2008** attempted to reduce greenhouse gas emissions by 100% of 1990s. By 2018, they were 44% lower than 1990. However, national governments face pressure to increase economic growth which may involve greater consumption of resources. This makes it difficult for governments to balance environmental concerns and economic development. Also, some cities in the UK may use more energy than others which may lead to tensions within the UK, especially those experiencing **urban sprawl.** Governments could try to address this through legislation, but this might be unpopular with voters in such areas.

International scale: The **Paris Climate Agreement 2016** set out a global framework to avoid a 2 degree rise in global temperatures by reducing global reliance on fossil fuels. It was signed by 197 countries, excluding the USA. This presents the challenges international agreements face. Countries sometimes favour economic development over efforts to reduce the impacts of climate change. For example, Donald Trump thinks it is more important to increase coal usage as it makes more money for the industry. Low and middle income countries could also argue than high income countries benefited from the usage of fossil fuels as it made them economically developed, so why can't they?