April 2024

Case study summaries

It is important to revise key facts and figures linked to each case study / example to score L3 marks

These may be needed in 6 and 9 mark questions

Challenge of natural hazards

Section	Specification content	Case Study	Key facts/features	
3.1.1.2 Tectonic Hazards	***'Use named examples to show how the effects and responses to a tectonic hazard vary in two areas of contrasting wealth'.***	Japan – HIC Haiti - LIC	**Japan (HIC) -** 11.03.2011 Magnitude – 9.0 (Richter scale) Destructive plate margin **Effects** 15,854 deaths 230,000 in temporary housing 2mn homeless US $235bn damage Cascade event – tsunami triggered Fukishima oil refinery caught fire **Responses** 900 helpers from Japan US $4.6mn donations 400km flood wall built Rebuilding of homes on higher land and further away from the coast	**Haiti (LIC) -** 12.01.2010 Magnitude – 7.0 (Richter scale) Conservative plate margin **Effects** 316,000 deaths 180,000 homes destroyed 5mn homeless US $11.5bn damage 75% of buildings were damaged Violent crime rates and looting **Responses** World Bank gave $100mn 118 countries sent aid No government plan in place US $48mn donations Rebuilding of homes by local people
3.1.1.3 Weather Hazards	***'Use a named example of a tropical storm to show its effects and responses'.***	Typhoon Haiyan	Philippines (SE Asia) November 2013 category 5 storm **Effects** 6300 deaths 600,000 people displaced 40,000 homes damaged 90% of Tacloban city destroyed 14mn people made homeless Shortages of water, food and shelter 15ft storm surge 20ft deep floodwater **Responses** 1200 evacuation centres set up Oxfam supported replacement of fishing boats UK government sent shelter kits Cyclone shelters built and new homes built away from flood risk RAF delivered 2000 tonnes of aid in first 10 days	
3.1.1.3 Weather Hazards	***'An example of a recent extreme weather event in the UK to illustrate the causes, social, economic and environmental impacts and management strategies to reduce risk'.***	Beast from the East	24th February – 4th March 2018 Two separate events merged to create freezing temperatures and heavy snowfall **Causes** Polar air from NW (Russia) brought cold temperatures and snow Storm Emma (depression) brought warm, moist air from SW which turned to snow when it met the cold air already over the UK **Effects** 100's stranded on M80 for 36 hours Over 8000 collisions 1300 power cuts £22mn lost in supermarket sales £1bn cost to economy / day Snow drifts making roads impassable Gas deficit warning **Management strategies** RAF transported doctors and patients Red weather warnings issued in Scotland (danger to life) Farmers helped clear roads Emergency shelters open for homeless Emergency shelters open for homeless	

The living world

<table>
<tr><th>Section</th><th>Specification content</th><th>Case Study</th><th>Key facts/features</th></tr>
<tr><td>3.1.2.1 Ecosystems</td><td>‘An example of a small-scale ecosystem to illustrate the concept of interrelationships within a natural system. An understanding of producers, consumers, decomposers, food chain, food web and nutrient cycling’</td><td>Freshwater pond ecosystem</td><td>Pond bottom – decomposers and scavengers

Mid water – fish (predators)

Pond surface – ducks, water boatmen, midge larvae and tadpoles

Pond margin – plants provide shelter for insects and small animals

Above the pond surface – birds (kingfishers) and insects (dragonflies)

Producers: Algae, water lily (basic source of food which the consumers feed on)

Consumers: Tadpoles, heron

Apex predator: Heron</td></tr>
<tr><td>3.1.2.2 Tropical Rainforests</td><td>‘A case study of a tropical rainforest to illustrate the causes and impacts of deforestation’</td><td>Amazon rainforest</td><td>South America (9 countries including Brazil and Peru)

<table>
<tr><th><u>Causes</u></th><th><u>Effects</u></th></tr>
<tr><td>Hydroelectric power – 74 dams in operation (e.g. Belo Monte in Brazil)</td><td>Flooding of land
Belo Monte destroyed 1500km2 of rainforest and displaced between 20,000 – 40,000 people</td></tr>
<tr><td>Road building – The Trans-Amazonian highway stretches 4000km across the Amazon</td><td>Improved access to rainforest increases deforestation because machinery can more easily access forest areas</td></tr>
<tr><td>Cattle ranching accounts for 80% of deforestation in the Amazon</td><td>Provides export income when beef is sold across the world
Cattle ranching is responsible for the release of 3.4% of global methane emissions</td></tr>
<tr><td>Commercial farming of palm oil, soy beans, sugar cane and tea</td><td>Up to 79% of this type of deforestation is illegal</td></tr>
<tr><td>Mining of valuable minerals (e.g. gold and iron ore)
Accounts for less than 1% of deforestation in the Amazon</td><td>Soil and water pollution.
Gold mining uses mercury to help extract the gold which can poison aquatic wildlife if left to leak into waterways</td></tr>
<tr><td>Logging – the removal of trees for the timber.</td><td>Companies are interested in valuable wood (e.g. mahogany) which can be sold for high prices</td></tr>
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<u>Additional effects:</u>

Climate change – The Amazon is huge carbon sink – when it is removed less carbon dioxide can be absorbed. In addition burning of trees releases carbon dioxide alongside activities such as farming

Soil erosion – increased leaching as rainforest cover decreases

Indigenous people – rainforest tribes have decreased from 330 to 240 in the last 100 years. The Yanomami tribe faces threats to their land and are slowly losing their traditional way of life</td></tr>
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3.1.2.3 Hot Deserts	***'A case study of a hot environment to illustrate the development opportunities and challenges'.***	Thar Desert	NW India and Pakistan and size – 200,000 km^2 High population density - 80+ / km^2 **<u>Opportunities</u>** Mineral extraction (limestone and marble) – valuable for building industry Energy (wind power – Jaisalmer Wind Park opened in 2010 with 75 turbines / solar energy – Bhadla Solar Park spreads over 22 square miles and has created 10,000 jobs Commercial farming (wheat and cotton crops) creates an income for people. Farming made possible by irrigation from Indira Ghandi Canal. Tourism (desert safaris using camels, visit to Jaisalmer fort, annual Desert Festival, glamping) **<u>Challenges</u>** Extreme temperatures (exceed 50°C in the summer – hard for people to farm or work in mines or as tourist guides) Strong winds and shifting sand (difficult to keep solar panels clean) Water supply (low annual rainfall). Indira Ghandi Canal enables irrigation of farmland, but often too much is used which leads to evaporation and salt deposits being left on the land Accessibility (limited road network) Jaisalmer fort struggling due to tourism and increased water demand (increased by 12 fold)
3.1.2.3 Hot Deserts	***'An example of an area on the fringe of hot deserts are at risk of desertification'***	Sahel, Africa	Northern Africa Threatened by desertification **<u>Causes</u>** Physical – climate is hot and dry. Climate change worsens situation. Human – overgrazing (animals eat all vegetation), overcultivation (constant growing of crops on land strips it of nutrients), deforestation (removal of trees exposes the ground to the hot sun) **<u>Effects</u>** Hunger and famine (20 million people in the Sahel in 2014) Land is barren and infertile and unable to support growth of crops Migration to large cities **<u>Management</u>** (all appropriate technology) Stone lines – stones are laid along contour lines. When it rains, soil and water will flow across the land and accumulate at each line. This can be spread across the land and create fertile land. Acacia trees – native to region so known to flourish and grow well. Wide trees protect ground beneath from hot sun and rainfall. Roots bind soil together. Provide secondary income of gum.

Urban issues and challenges			
Section	**Specification content**	**Case Study**	**Key facts/features**
3.2.1 Urban issues	***'A case study of a major city in an LIC or NEE to illustrate: * the location & importance of the city * causes of growth * how urban growth has created opportunities * how urban growth has created challenges'***	Mumbai, India	**<u>Importance</u>** 6% India's GDP (29th largest city globally for GDP) 25% manufacturing of goods **<u>Causes of growth</u>** Migration (pull factors to urban areas from surrounding rural areas) High natural increase (high birth rate and falling death rate) **<u>Opportunities</u>** Community spirit (people work and live closely together so little crime) Education (high proportion go to school) Employment (58% employed in Dharavi) Recycling (80% of plastics recycled) **<u>Challenges</u>** Water (rationed to 1 hour / day) Housing (self made with waste materials) Illness (Doctors deal with 4000 cases of sickness / day) Education (Parents forced to work in poor conditions to pay for schooling) Sanitation (500 people to one toilet)
3.2.1 Urban issues	***'An example of how urban planning is improving the quality of life for the urban poor'***	Mumbai, India	**<u>Slum rehabilitation authority</u>** (government backed strategy) Totally redevelop Dharavi slum at cost of £2bn to clear slums and rehouse people in high rise flats up to 14 stories high **<u>NGO led initiative</u>** (not government backed) Local people involved in redevelopment Model has been used in other countries (e.g. Brazil) successfully Changes made so far include increasing numbers of toilets
3.2.1 Urban issues	***'A case study of a major city in an LIC or NEE to illustrate: the location & importance of the city how urban growth has created opportunities how urban growth has created challenges'***	London	**<u>Importance</u>** Hub of business in the UK – home to 15 head offices of the top 250 largest global companies. Provides approximately 5.8 million jobs 5 International airports (taking people to 180 destinations globally) and rail links to many parts of the UK across to Europe (Eurostar) One of the most visited cities in the world (approx. 30 million visits per year) Cultural diversity – around 1/3 of Londoners were born abroad **<u>Growth</u>** Natural increase (birth rates higher than death rate) International migration – people seeking new opportunities in London (pull factors) Internal migration – young people move to London for education and jobs but people older than 30 move away for increased space, lower costs and to start families

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<td><u>Opportunities</u>
Cultural mix (increases exposure to different food, music and religion)

Entertainment (range including museums, sporting events, theatre)

Employment (headquarters of many TNCs)

Urban greening (700 rooftop gardens, large parks – Hyde Park)

<u>Challenges</u>
Urban decline (250 hectares of derelict land)

Inequalities (Tower Hamlet has high unemployment and lower GCSE scores)

Urban sprawl (increased traffic, use of greenfield and brownfield land)

Waste disposal (20% reduction in future)

Pollution (size of city and dense road network contribute to this)</td>
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<td>3.2.1 Urban issues</td>
<td>‘An example of an urban regeneration project to show reasons why the area needed regeneration and the main features of the project</td>
<td>London (Newham, Hackney, Stratford, Tower Hamlets)</td>
<td><u>Reasons why Stratford needed regeneration</u>
40-50% child poverty

£500-600 / week – household income

GCSE point score – 281 to 319.5 (low compared to rest of the UK)

Lots of brownfield sites where industry has closed down

<u>Impacts of the development:</u>
<table>
<tr><th><u>Positives</u></th><th><u>Negatives</u></th></tr>
<tr><td>Area modernised and less industrial use</td><td>450 homes demolished to make way for Olympic Park</td></tr>
<tr><td>Athletes village used for new housing (2818 new homes in total with 40% affordable)</td><td>Building materials imported from overseas</td></tr>
<tr><td>Built on over 500 acres of brownfield land</td><td>Olympic stadium cost £701 million pounds (3 times more than the original estimate)</td></tr>
<tr><td>£10bn additional income during games</td><td>Relocation of wildlife (e.g. 4000 newts and 100 toads)</td></tr>
<tr><td>£9bn investment to area</td><td>Rents and property prices have increased – which are unaffordable to the poorest people</td></tr>
<tr><td>Aquatics centre used by local schools for sport</td><td>Over-budget by £5 billion</td></tr>
<tr><td>25% built from recycled materials</td><td></td></tr>
<tr><td>Increased urban greening through the creation of parkland</td><td></td></tr>
<tr><td>Improved water quality in the River Lea</td><td></td></tr>
<tr><td>New school (Chobham academy) built to provide additional school spaces in the area</td><td></td></tr>
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