GCSE (9-1) Geography B

Knowledge Organiser

Paper 1: Global Geographical Issues

Issue 2

Key ideas and key content: a student guide

This guide is designed to support students on the key content of the GCSE Geography B specification for Paper 1 Global Geographical Issues. It covers:

- Topic 1: Hazardous Earth
- Topic 2: Development dynamics
- Topic 3: Challenges of an urbanising world

It can be used to identify gaps in learning, as a personalised checklist to aid revision or as a knowledge organiser.

Paper 1: Global Geographical Issues

This is assessed by Paper 1 (90 minutes). It contains three sections. You answer all questions in the paper.

<table>
<tr><th colspan="2">Topic 1: Hazardous Earth</th></tr>
<tr><th>Specification key ideas</th><th>Key content</th></tr>
<tr><td rowspan="2">1.1 The atmosphere operates as a global system which transfers heat around the Earth.</td><td>The amount of heat from the Sun varies around the Earth. Heat is distributed by pressure differences and ocean currents. If it wasn't, the tropics would be even hotter and polar regions would be even colder.

Ocean currents – Cold, salty water sinks at the Poles. It then flows towards the Equator and is warmed again, creating a convection current.

Pressure differences – Land and sea heat up differently.

Land:
• heats quickly in summer and cools quickly in winter
• heats up air above it, the air becomes lighter and rises
• generally forms areas of low pressure in the summer and high pressure in winter.
Sea:
• takes longer to heat and cool, so the air is dense and cool in the summer
• forms high pressure in summer and low pressure in winter.</td></tr>
<tr><td>The Inter-Tropical Convergence Zone (ITCZ) occurs near the Equator between the two Hadley Cells, where warm tropical air converges at the Equator. The Sun's radiation is most intense at the Equator, causing warm tropical air to rise rapidly. This creates an area of low pressure that brings heavy rainfall. As the rising air moves away from Equator, it loses its moisture and density, descending to form arid regions.

As well as bringing rainy seasons to West Africa in summer, the Hadley Cell also brings the dry season in winter. Two other cells</td></tr>
</table>

	complete the global circulation model – the **Ferrel Cell** (30°-60°N and S) and the **Polar Cell** (60°-90°N and S).
1.2 Climate has changed in the past through natural causes on timescales ranging from hundreds to millions of years.	There are four main theories that explain why climate has changed in the past. 1. **Eruption theory** – Eruptions produce ash that rises into the stratosphere, reflecting some sunlight back into space cooling the planet. 2. **Asteroid collision theory** – Asteroids hit Earth sending tonnes of ash and dust into the atmosphere, blocking sunlight, and cooling the climate. 3. **Sunspot theory** – Lots of sunspots means more solar energy warming the planet. 4. **Orbital change theory** – The Earth's orbit is sometimes more oval, affecting the amount of radiation the Earth receives, cooling Earth. Earth's tilt also changes: a greater tilt makes the difference in the seasons more pronounced; less tilt makes the difference in seasons less pronounced.
	Ice cores, tree rings and historical sources tell us about past climates. • **Ice cores** – Air bubbles contain CO_2 that tell us there have been previous warm and cold periods. • **Tree rings** – Each ring in a tree shows a year's growth. In warmer and wetter years, a tree grows more. • **Historical sources** – Historical drawings, diaries or newspapers are more recent evidence.
1.3 Global climate is now changing as a result of human activity, and there is uncertainty about future climates.	The **enhanced greenhouse effect** is the way that human activities (industry, transport, energy, farming) produce greenhouse gases (carbon dioxide, methane) that trap heat from the Sun and warm the planet. Developed and emerging countries emit more carbon dioxide than developing countries.
	The enhanced greenhouse effect has led to global warming. This has been measured. • There has been a near 1°C rise in average temperature since the early 1900s. • Sea levels have risen over 200mm (**thermal expansion**) in the same period. Thermal expansion is the increase in volume of sea water owing to heating. • Arctic sea ice has halved in area since 1980. • 90% of the world's valley glaciers are shrinking.
	Climate change could cause: • more frequent floods and droughts • stronger storms (tropical cyclones) • changes to farming (unreliable rainfall) • climate refugees from low-lying areas. Predicting future climate change is difficult because we don't know how populations and economies may grow. Fossil fuel

	consumption versus renewable energy and people's lifestyle choices are also unknown factors.
1.4 Tropical cyclones are caused by meteorological conditions.	A tropical cyclone: • is a rotating system of clouds and storms • forms over tropical waters (26.5°C) • has winds which can exceed 118 km/h • is known as a hurricane (Atlantic Ocean), typhoon (Pacific Ocean) and cyclone (Indian Ocean) and is measured on different scales, depending on their origin.
	Tropical cyclones form in **source regions**. Their formation depends on three conditions occurring at the same time. • A **warm ocean**, exceeding 26.5°C. This creates a warm body of air to develop. • Strong winds that draw the warm air up rapidly from the ocean surface. • A strong **Coriolis force** created by Earth's rotation (so not formed on or close to Equator where the force is too weak).
1.5 Tropical cyclones present major natural hazards to people and places.	Tropical cyclones bring a range of hazards. • **Strong winds** bring down trees and power lines. • **Storm surges** bring flooding owing to the low pressure. • **Intense rainfall** is a flood risk. • **Landslides** occur because saturated hillsides can slump.
	Bangladesh is particularly vulnerable to cyclones. This is because: • much of its population is rural, living on low-lying flood-prone farmland • urbanisation means increased surface runoff so more rainwater reaches rivers • unplanned settlements have been built on low-lying land prone to flooding • its Gross Domestic Product (GDP) is low, so it is less able to invest in costly flood defences.
1.6 The impacts of tropical cyclones are linked to a country's ability to prepare and respond to them.	Bangladesh attempts to protect the population from tropical cyclones using: • **forecasting** (forecast issued through tv and radio) • **satellite technology** (to track cyclones) • **warning systems** • **evacuation strategies** (cyclone shelters) • and **surge defences** (embankments). Bangladesh has reduced the number of deaths from tropical cyclones by using satellite technology to track cyclones and issuing warnings so that people can evacuate to higher ground and cyclone shelters. However, some people don't have the technology to receive the warnings. In May 2009, Cyclone Aila killed 190 people and made 750,000 people homeless, which was a primary impact. Secondary impacts

	included crops being destroyed and farm animals killed. Sickness spread from contaminated water. The USA prepares for **hurricanes** through forecasting, satellite technology, warnings, evacuation systems and storm surge defences. In 2005, Hurricane Katrina was the worst hurricane to hit the USA. Satellite technology tracked the hurricane's path and residents of New Orleans were told to evacuate. Most evacuated safely. Many low-income residents could not leave as they did not have a car and couldn't afford the cost of transport, and many elderly residents could not leave due to ill health. Those who could not leave sheltered in the Super Dome stadium or chose to stay at home. The storm surge caused the **levees** (embankments) to collapse which flooded 80% of New Orleans. Faulty maintenance and design of the levees were partly to blame. Some of the worst affected areas of New Orleans were the suburbs below sea level, populated mostly by Black people with low-income levels. These residents sought shelter at the Super Dome. The Super Dome and other evacuation centres were not prepared for the large number of residents needing shelter and did not have enough supplies of food and water. 1,833 people died and it cost the economy US$108 billion The federal government has been heavily criticised for not doing enough to prepare for and respond to Hurricane Katrina.
1.7 Earth's layered structure, and physical properties is key to plate tectonics.	The Earth is divided into layers. • The **lithosphere** is the uppermost layer and is split into **continental crust** (granite) and **oceanic crust** (basalt). • The **mantle** can be divided into two layers. The thinner **asthenosphere**, a partly molten 'lubricating' layer under the lithosphere. The lower mantle which is solid. • The **core** is also split into two layers. The outer core is liquid, whilst the inner core is solid because the pressure is so great. The composition of both is iron and nickel.
	The Earth is heated by **radioactive decay** in the core and mantle. Amongst other processes, **convection currents** are caused by the **geothermal energy** and move tectonic plates. The rising heat creates **plumes** which bring magma to the surface.
1.8 There are different plate boundaries, each with characteristic volcanic and earthquake hazards.	Earthquakes and volcanoes are tectonic hazards. They occur at plate boundaries. • **Conservative** plates slide past each other – friction between the plates causes earthquakes (for example, San Andreas Fault in California). • **Divergent** plates move apart and magma rises to fill the gap. Hot and runny magma made of **basalt** spreads to form **shield** volcanoes for example, Iceland sits on the mid-

	Atlantic ridge. Earthquakes tend to be frequent but rarely life-threatening. Smaller earthquakes tend to occur. • **Convergent** plates push together, and the denser oceanic plate is **subducted**. Partial melting of the oceanic plate creates **andesitic** magma which is cooler and less fluid (so more explosive), forming **composite** volcanoes, for example the Andes mountains in Chile and Peru. Earthquakes can be violent as pressure builds from the subducting oceanic plate.
	The magnitude of an earthquake is measured on the **Richter Scale**. The scale is logarithmic – a 6.0 quake is 10 times more powerful than 5.0, and so on. The **epicentre** is directly above the focus, on the Earth's surface. Earthquakes beneath the seabed can generate a **tsunami**.
1.9 Tectonic hazards affect people, and are managed, differently at contrasting locations.	Port-au-Prince (Haiti) was hit by a magnitude 7.0 earthquake in 2010. The official government death toll is 300,000 but the exact death toll is uncertain. Over one million people were made homeless. The earthquake focus was shallow and close to the densely populated city of Port-au-Prince. Lack of building regulations led to collapsed buildings. Haiti was already recovering from the impacts of hurricanes in 2008. Blocked roads, failure of power supplies and disrupted communication delayed the distribution of aid. An outbreak of the preventable disease cholera killed a further 8,000 people and 1 in 5 jobs were lost from clothing factories. Sendai (Japan) was hit by a tsunami in 2011 following a magnitude 9.0 earthquake 70km from the coast. Nearly 20,000 people were killed, and the waves caused US$235 billion of damage. 350,000 people were made homeless and two nuclear reactors went into meltdown.
	There is a high probability that a powerful earthquake will hit Japan again soon. Whilst the earthquake's location and timing cannot be predicted, Japan is a developed country so it can prepare with regular earthquake drills, emergency kits, earthquake proof building design and tsunami walls. Nepal also suffers from earthquakes – two in 2015 killed almost 10,000 people. Developing countries like Nepal receive international aid to help manage the impact of earthquakes. They also prepare by making houses safer. This includes lightweight thatch roofing, simple steel foundations (providing stability) and cross-braced wood frames (supporting the walls).

Topic 2: Development dynamics	
Specification key ideas	**Key content**
2.1 There are different ways of defining and measuring development.	Development can be measured using: • economic indicators (for example, **GDP per capita**) • social indicators (for example, **literacy rate**) • political indicators (for example, **corruption**). The **Human Development Index (HDI)** uses an average of four indicators: • life expectancy • literacy • average length of schooling • GDP per capita.
	There is a relationship between economic development and other indicators. As a country's wealth increases, most development indicators improve (for example, as GDP per capita increases, more wealth is invested in education, improving literacy rates). Demographic indicators (population) include **birth rate, gender equality** and **fertility rate** can also be used to measure development. The high fertility rate in Malawi (a developing country) is due to poverty and low attendance of adolescent girls at secondary school. This means that adolescent girls tend to marry earlier and have several children.
2.2 There is global inequality in development and different theories in how it can be reduced.	The 1980, the Brandt Report divided the world into **HICs** (high-income countries) and **LICs** (low-income countries). There is a 'development gap' between the world's richest and poorest countries but there are also large variations within countries. Since the 1980s, **MICs** (middle-income countries such as Brazil), **NICs** (newly industrialised countries such as Singapore) and **RICs** (recently industrialised countries such as India) have emerged.
	Rostow model says that countries pass through five stages of development: 1. **Traditional society** – most people work in agriculture, a subsistence economy (for example, Malawi). 2. **Pre-conditions for take-off** – a shift from farming to manufacturing, trade increases profits for investment in infrastructure. 3. **Take-off** – investment creates new industries (for example, India), growth is rapid. 4. **Drive to maturity** – industries produce consumer goods and technology is used throughout the economy.

	5. **Age of high mass consumption** – wealth is spent on the service sector such as healthcare (for example, the UK). Consumers enjoy a wide range of goods. The development of manufactured goods is seen as the key to development. Frank's dependency theory argues that: • development is about a core and periphery • core regions are the developed nations • periphery regions are the 'others', producing raw materials to sell to the core – they depend upon the core for their market.
2.3 Approaches to development vary in type and success.	**Top-down** development involves: • decision-makers – usually governments or **Transnational Companies** (**TNCs**) • experts who plan changes. Top-down development schemes: • are large and expensive • often involve loans from **Inter-Governmental Organisations (IGOs)** such as government banks. **Bottom-up** development involves: • experts working with communities to identify their needs • non-governmental organisations (NGOs), for example, charities. Bottom-up development schemes: • are small-scale and inexpensive • bring social and economic benefits to local communities.
	The Sardar Sarovar Dam was funded by the World Bank, Japanese banks and the Indian government. The winners are listed below. • India's cities – hydroelectric power (HEP) and the provision of water • Farmers – **irrigation** water for crops The losers are listed below. • Local residents – Villages and farmland have been flooded by the dam. • Western India – Religious and historic sites have been flooded. Biogas plants are an example of bottom-up development in India. Biogas plants are pits that are filled with dung which ferments to produce methane. The benefits are listed below.

	• Cooking with gas is smoke-free, reducing respiratory illnesses. • Girls have more time to go to school rather than collecting fuelwood. • Slurry produced is a nutrient rich fertiliser. • Larger plants can be used to generate electricity.
2.4 Development of the emerging country is influenced by its location and context in the world.	A significant factor for India's growth is its central location in the Indian Ocean and its enormous coastline of over 7500 km long. The east-west shipping routes are essential for trade and India's growth. India's location in Asia is also an important factor in its economic development. The rapid development of China, Malaysia and Indonesia has forced India to keep up. India is also a member of the United Nations, the World Trade Organisation and the Commonwealth. Whilst India shares borders with Pakistan, Nepal, China, Bhutan, Bangladesh and Myanmar, topography and political relationships are a barrier with these countries. There is a potential water resource conflict between China and India in the Himalayan region and there is growing concern over China's influence in the Indian Ocean.
2.5 Globalisation causes rapid economic change in the emerging country.	**Globalisation** has increased India's exports and output. The impacts have been: • exports increased by almost 20 times in 23 years • a 500% increase in GDP • reduced unemployment and poverty.
	Recent economic policies in India have encouraged **Foreign Direct Investment (FDI)** by the government supporting a market economy. Most has come from major Transnational Companies (TNCs). Shipping, containerisation and aircraft technology have accelerated globalisation and reduced transports costs.
2.6 Rapid economic growth results in significant positive and negative impacts on people and environment in the emerging country.	Economic development in India has social and economic impacts. Rapid urbanisation has created a huge rural and urban contrast. Social impacts, including urbanisation (as a result of **rural-urban migration**) are: • higher levels of education amongst women, leading to later marriages and lower birth rates and fertility rates • young Hindus living in urban areas are freer to marry outside their caste. Economic impacts are: • increased employment in the textile industry (but wages are low) • increased employment opportunities for women.

	Environmental impacts are: • greenhouse gas emissions, India is the world's third greatest emitter • large urban unplanned settlements lack clean water and sanitation.
2.7 Rapid economic development has changed the international role of the emerging country.	India's influence is increasing in Asia, and globally. • Globally, India belongs to the **G20** group of the world's largest economies. • India can help resolve global problems (for example, climate change). • India now supports investment through the **World Bank** in developing countries.
	Despite rapid economic growth, India has not invested enough in its own **infrastructure**. India's government does not receive enough tax revenue (from TNCs) owing to tax free incentives to develop its infrastructure (transport, piped water and sewage treatment).

Topic 3: Challenges of an urbanising world	
Specification key ideas	**Key content**
3.1 The world is becoming increasingly urbanised.	**Urbanisation** is the rise in the percentage of people living in urban areas. In 2007, for the first time, more people lived in urban areas than rural. • Africa and Asia are expected to see the biggest rises in the next century. • Most of the world's largest cities are now in emerging countries. The causes of this growth are: • **rural-urban migration** • **natural increase** (higher birth rate than death rate).
	Megacities have over 10 million people. Increasing numbers of megacities are in emerging countries (for example, Mumbai). **World cities** have a big influence on global politics and decision-making. Some world cities play an unequal role in world affairs. They have **urban primacy** – meaning they have an importance and bigger influence than their size suggests (for example, London).
3.2 Urbanisation is a result of socio-economic	The main cause of urbanisation is economic growth, which creates new jobs. • Lilongwe is the capital of Malawi. It is growing largely because of rural-urban migration (**internal migration**).

processes and change.	• New York's **knowledge economy** attracts **international migrants**. • Some cities experience population decline. **De-industrialisation** has led to population decline in Detroit.
	The **informal economy** in developing and emerging countries is often large. Millions of people sell goods or offer services on the street (for example, selling fruit). The **formal economy** grows slowly as many people are subsistence farmers such as those in Malawi. India's informal economy is huge. Much of India's informal economy is in factories and construction, where there are few regulations. New York's knowledge economy (for example, software and financial services) is the most valuable part of its economy. However, the informal economy still contributes to its GDP, mostly in the catering industry.
3.3 Cities change over time and this is reflected in changing land use.	New York began to grow in the 17th century. Its deep harbour allowed trade and immigration. Manhattan soon became crowded leading to **suburbanisation** owing to the subway and bridges. From 1950-1980, **counter-urbanisation** caused New York's population to fall. People left owing to a decline in jobs, declining services (as wealthier people moved out of the city and city income declined), as well as a high crime rate. Since 1980, the knowledge economy and **regeneration** of brownfield sites in New York have encouraged **re-urbanisation**.
	Land use in cities is usually in a pattern. The three types of land use are: 1. Commercial – mostly in the **CBD** (central business district). The most accessible and expensive part of the city. 2. Industrial – either found in the **inner city** (older) or on the city edge (newer). 3. Residential – older properties are found closer to the centre (19th century **terraced** housing). 20th century **semi-detached** and **detached** housing are found towards the **suburbs**.
3.4 The location and context of the chosen megacity influences its growth, function and structure.	Mumbai is a megacity, India's main commercial city, and a world city. The area now known as Mumbai was colonised by the Portuguese then control passed to the British Empire until India became independent in 1947. During this time the area's economy grew from cotton trading, textile mills and its port. Mumbai is: • on an estuary, where its **port** grew • well-connected owing to its port on the west coast (closer to Europe) and by air, only 9-hours from the UK

	• not typical of developing cities – the CBD is near the island tip surrounded by unequal residential areas.
	Mumbai's structure loosely follows that of developing cities. • High quality housing is found in the inner city close to the CBD that only the wealthy can afford. • Low-income poor quality (permanent housing) surrounds the inner city. • Unplanned (**informal**) settlements spread outwards as rural-urban migrants arrive and build on what land is available.
3.5 The megacity in the chosen country is growing rapidly.	Mumbai grew substantially between 1888 and 2015. Today, Mumbai is experiencing **hyper-urbanisation** – about 1000 new migrants arrive every day. Mumbai has grown for two reasons: 1. **Rural-urban migration** – Pull factors are migrants wanting jobs (higher incomes) and education facilities. Push factors are crop failure and small farmers being forced off the land by their landlords. 2. **Natural increase** – young migrants settle and start families.
	Population growth has created new suburbs, such as Navi Mumbai, caused by the migration of the middle classes from the city. Unplanned settlements continue to sprawl as new migrants arrive. Rapid growth is putting pressure on land. Therefore, prices are rising. Some industries are moving out as a result.
3.6 Rapid population growth creates opportunities and challenges for people living in the chosen megacity.	India's middle class is growing owing to job opportunities and incomes are rising as a result.
	Challenges facing Mumbai include: • not enough income from tax to improve infrastructure • a weak local government • housing shortages and growth of unplanned settlements • water pollution from untreated industrial waste and sewage • air pollution and traffic congestion.
3.7 Quality of life in the chosen megacity can be improved by different strategies for achieving sustainability.	**Top-down development** – 'Vision Mumbai' is a plan to improve the city and quality of life by providing cheap housing, restoring 'green' spaces, building toilets, and improving the rail system. Advantages are: • new flats with piped water and sewage systems that have replaced 45,000 unplanned settlements • 300 extra public toilets • 72 new trains and safer wider platforms. Disadvantages are: • apartment blocks splitting up communities • rents costs becoming unaffordable

	• small workshops (recycling industry) having to move • water quality worsening because of sewage discharge.
	Bottom-up development – LSS health charity was set up to control **leprosy** in Dharavi (Mumbai's largest unplanned settlement). It delivers education about health and carries out health-related and community work. Advantages are that: • 28 000 people treated in the last 30 years • play groups run for young children to help working parents • community education about the importance of boiling water and waste disposal. Disadvantages are that: • it can't reach everyone • it relies on charity funding.

(2)