



Singapore Examinations and Assessment Board



## **Singapore–Cambridge General Certificate of Education Advanced Level Higher 1 (2027)**

# **Geography (Syllabus 8834)**

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## INTRODUCTION

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The 2016 Charter drafted by the Commission on Geographical Education of the International Geographical Union (IGU) affirms the value and contribution of school Geography as a vital subject for 21st century citizens living in a tightly connected world. It also enables students to think critically about what it means to live sustainably in this world.

At all levels of study, Geography bridges the humanities, social and natural sciences. It is a holistic subject that provides students with integrative ways of understanding the real world. Students will explore Earth, its natural and man-made environments and examine human interactions with these environments, from personal to global scales. Geography fascinates and inspires students, enabling them to gain a deep appreciation of Earth's beauty, the immense power of natural forces, and ingenious ways humans thrive under different circumstances. Through Geography, students will understand how places and landscapes evolve, deliberate on consequences arising from our everyday decisions, and experience the mosaic of cultures and societies.

Fieldwork satisfies and nourishes students' curiosity of contemporary issues that affect their communities. Building on their classroom learning and equipped with essential fieldwork skills, students hone their abilities to generate knowledge, creatively solve problems, and contribute towards making their world a better place. Such learning experiences in Geography enables students living in an interconnected world to discover what it means to live sustainably and exist harmoniously with one another, as well as all other living species.

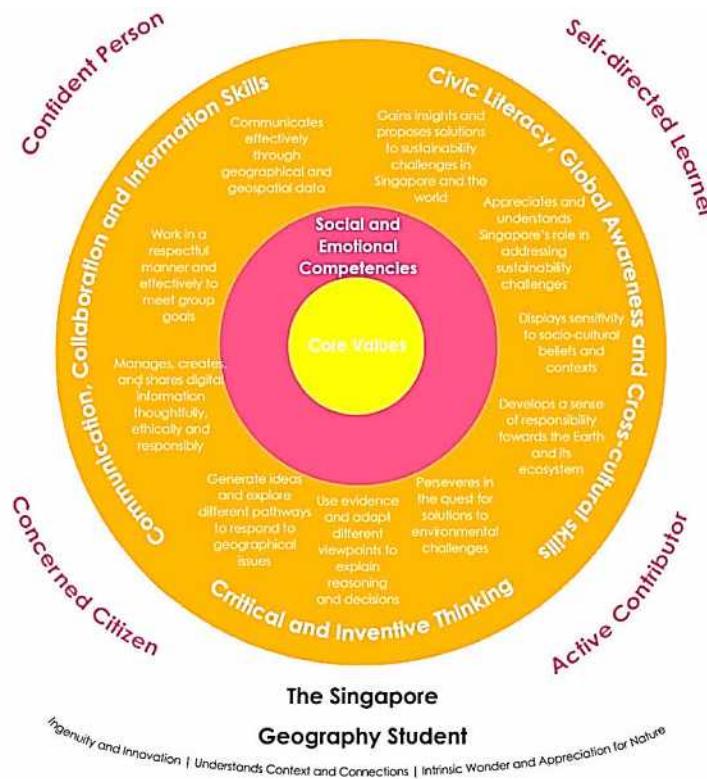
### Desired Outcomes of Education and 21st Century Competencies

Overarching educational outcomes can be achieved effectively through a purposeful study of established subjects like Geography. The H1 Geography syllabus aims to enable students to have the following attributes upon the completion of their formal education. He/she should be a/an:

1. **confident person** who has a strong sense of right and wrong, is adaptable and resilient, knows himself/herself, is discerning in judgement, thinks independently and critically, and communicates effectively
2. **self-directed learner** who questions, reflects, perseveres and takes responsibility for his/her own learning
3. **active contributor** who is able to work effectively in teams, is innovative, exercises initiative, takes calculated risks and strives for excellence
4. **concerned citizen** who is rooted to Singapore, has a strong sense of civic responsibility, is informed about Singapore and the world, and takes an active part in bettering the lives of others around him/her.

## Desired Outcomes of Education (DOE)

Figure 1: Geography Education and DOE



Geography supports the development of important competencies necessary for students to thrive in the 21st century (see Figure 1). Additionally, students will learn a range of life skills and develop key social and emotional competencies that will enable them to achieve personal mastery and relate to others. Most importantly, all learning must be anchored in core values (i.e., **Respect, Responsibility, Integrity, Care, Resilience and Harmony**). These values define a person's character and shape his/her beliefs, attitudes and actions.

Social and emotional competencies (i.e., self-awareness, self-management etc.) are skills necessary for students to recognise and manage their emotions, develop care and concern for others, make responsible decisions, establish positive relationships and handle challenging situations effectively. Emerging 21st Century Competencies (21CC) necessary for the globalised world we live in are Civic Literacy, Global Awareness and Cross-cultural Skills; Critical and Inventive Thinking; and Communication, Collaboration and Information Skills. These competencies will enable our students to tap into rich opportunities in the new digital age, while keeping a strong Singapore heartbeat.

*The domains of the emerging 21CC are defined below.*

### **Civic Literacy, Global Awareness and Cross-cultural Skills**

Our society is becoming increasingly cosmopolitan and more Singaporeans live and work abroad. Our young will therefore need a broader worldview, and the ability to work with people from diverse cultural backgrounds, with different ideas and perspectives. At the same time, they should be informed about national issues, take pride in being Singaporean and contribute actively to the community.

### **Critical and Inventive Thinking**

To be future-ready, our young need to be able to think critically, assess options and make sound decisions. They should have a desire to learn, explore and be prepared to think out of the box. They should not be afraid to make mistakes and face challenges that may at first appear daunting.

### ***Communication, Collaboration and Information Skills***

With the Internet revolution, information is just a click away. It is important that our young know what questions to ask, how to sieve information and extract that which is relevant and useful. At the same time, they need to be discerning so they can shield themselves from harm, while adopting ethical practices in cyberspace. The workplace of the 21st century requires our young to be able to work together in a respectful manner to share responsibilities and make decisions with one another to meet group goals. Importantly, they must be able to communicate their ideas clearly and effectively.

### **National Education**

The syllabuses support National Education (NE) which aims to develop the dispositions of citizenship. A strong sense of belonging, reality and hope motivates our students to be active citizens and contribute to their immediate communities and the nation. Through the subject, students will learn to develop an appreciation for Singapore and the world they live in, show care and concern, and apply their geographical knowledge and skills to actively contribute towards a sustainable future.

### **Geographical Concepts**

The H1 Geography syllabus is framed by four geographical concepts that reflect how geographers study the world. At the Pre-University level, students are expected to have a sophisticated understanding of these concepts and apply them to:

- inquire and describe the world we live in
- analyse issues, phenomena and human-nature relationships
- discuss global efforts to achieve sustainable development.

**Table 1: The Four Geographical Concepts and Their Application at Pre-University Level**

Geographical Concept	Application	Further Guidance
Space	Apply the concept of Space to analyse how physical and human phenomena are organised across the earth's surface across space and over time	<ul style="list-style-type: none"> <li>• Geographers are particularly concerned about the spatial and temporal aspects of what we study.</li> <li>• Much attention is placed on the organisation of physical and human phenomena across space and their evolution over time. Location and distance are often understood in relative rather than absolute terms in this context.</li> <li>• An examination of spatial and temporal relations and patterns can yield significant insights and enrich our understanding of the environment and humans.</li> </ul>
Place	Apply the concept of Place to analyse different locations locally and globally	<ul style="list-style-type: none"> <li>• Places could refer to a specific point or bounded territory on a map. Moreover, places are constantly evolving, fluid and contested by social processes.</li> <li>• Places are socially constructed as different people and groups associate subjective meanings to their experience of place.</li> <li>• Places are constructed and reconstructed as the result of processes that are simultaneously global and local.</li> </ul>

Geographical Concept	Application	Further Guidance
Environment	Apply the concept of Environment as a system to analyse interrelationships between physical and human phenomena	<ul style="list-style-type: none"> <li>Our environment comprises both human and natural systems. Human-nature interactions are dynamic and complex, with changes in one part affecting other parts.</li> <li>Systems are hierarchical, with the whole system at one level being a component of a higher-order set, while the elements of one system are in effect smaller-scale systems.</li> <li>Positive feedback results in a net change in the system while a negative feedback does the opposite.</li> </ul>
Scale	Apply the concept of Scale to analyse physical and human phenomena at different levels of interactions	<ul style="list-style-type: none"> <li>In physical geography, scale is often referred to as the resolution of a fieldwork or study. In human geography, common scales of analysis include local, national and global.</li> <li>Issues and phenomena manifest at different scales from the personal to the global.</li> <li>Processes also operate at different scales, with some operating on multiple scales at the same time. Processes at one scale can be amplified or diminished through interaction with other processes from any other scale.</li> </ul>

## AIMS AND LEARNING OUTCOMES

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The aims and learning outcomes below represent the body of geographical knowledge, skills and values that students will acquire through H1 Geography.

### Knowledge

The syllabus requires students to develop an understanding of:

- the uniqueness of places
- the dynamic and complex interactions and interdependence between natural environments and human environments at various scales
- the evolution of landscapes and development of issues over time
- the processes that shape spaces, places and the environment at various scales
- the connections, trends and patterns in different parts of Asia and the rest of the world
- a range of contemporary issues in different parts of Asia and the rest of the world through geographical perspectives
- knowledge from different subfields of geography to understand different approaches to solve real-world problems and achieve sustainable development.

**Skills**

The syllabus seeks to equip students with the ability to:

- consider evidence and different viewpoints to develop logical arguments and explanations
- analyse, evaluate and reflect on information from a geographical perspective to make informed and sound decisions
- construct understanding through inquiry using different data collection and analysis methods
- use and evaluate data representation techniques to communicate findings.

**Values**

The syllabus seeks to encourage students to:

- be inspired by the splendour of natural environments and human ingenuity
- care for delicate ecosystems and understand the importance of environmentally sustainable lifestyles
- develop as global citizens, seek harmony and respect others in a culturally diverse world
- contribute responsibly towards the building of a robust and inclusive society.

## **ASSESSMENT OBJECTIVES**

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### **AO1 – Knowledge with Understanding**

Candidates should be able to demonstrate knowledge and understanding of:

- (a) geographical terms, facts, concepts, issues, phenomena and trends
- (b) geographical skills and methods to carry out fieldwork.

### **AO2 – Analysis**

Candidates should be able to apply understanding of geographical knowledge to:

- (a) analyse issues, phenomena and trends presented in given data
- (b) analyse fieldwork in terms of data collected and methods used to collect and present data.

### **AO3 – Evaluation**

Candidates should be able to carry out analysis to:

- (a) make judgements, recommendations, decisions and draw conclusions through synthesising geographical knowledge and assessing evidence, viewpoints, interests of different stakeholders and/or elements of an issue
- (b) evaluate the validity of fieldwork in terms of data collected and methods used to collect and present data.

## EXAMINATION FORMAT

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<b>100 marks; 3h; 100%</b>
<b>Section A: Structured Question: Fieldwork (30 marks)</b> One compulsory question on Cluster 2 will be set. Cluster 2: Question 1  Question: <ul style="list-style-type: none"><li>• carries 30 marks</li><li>• comprises no more than 6 sub-parts</li><li>• includes a 10-mark evaluative sub-part assessed using generic level descriptors</li></ul>
<b>Section B: Structured Question (44 marks)</b> Two compulsory questions on Cluster 1 will be set. Cluster 1: Question 2 and Question 3  Each question: <ul style="list-style-type: none"><li>• carries 22 marks</li><li>• comprises no more than 5 sub-parts</li><li>• may be on a specific topic or a combination of topics within Cluster 1</li></ul>
<b>Section C: Essay (26 marks)</b> Three evaluative questions on Cluster 1 will be set. Candidates answer any TWO. Cluster 1: Question 4 and/or Question 5 and/or Question 6  Each question: <ul style="list-style-type: none"><li>• carries 13 marks</li><li>• is assessed using generic level descriptors</li></ul>
There will be a <b>maximum of 11 resources</b> in this paper.

## ASSESSMENT SPECIFICATION GRID

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### Approximate Weighting of Assessment Objectives

Assessment Objectives	Marks	Weighting (%)
AO1	25	25
AO2	39	39
AO3	36	36
<b>Total</b>	<b>100</b>	<b>100</b>

# SYLLABUS CONTENT

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## CLUSTER 1: SUSTAINABLE FUTURE AND CLIMATE CHANGE

### Topic 1.1 Cities in a Sustainable Future

#### Can cities be liveable yet sustainable?

More than half the world's population live in urban areas today. The proportion of people living in urban areas is expected to grow especially in less developed regions, putting pressure on natural environments. This is because cities consume more resources and produce more waste than rural areas. Therefore, managing the growth of cities effectively is key to achieve sustainable development.

In this topic, students will explore the challenges and opportunities to make cities sustainable. Students will first develop an understanding of sustainable development, which is the foundational concept of this syllabus. They will then study the management of waste, slums and urban reimaging. Students will also explore the complementarity and tension between sustainability and liveability. This understanding will be useful as they examine how two key identity markers – age and gender – can influence people's experience of living in urban areas.

Key Question	Content
	<i>Students will understand:</i>
<b>1. Sustainable Urban Development</b>	
What is sustainable development?	<ul style="list-style-type: none"> <li>• The concept of sustainable development, as defined in 'Our Common Future': <ul style="list-style-type: none"> <li>– the meeting of present and future needs, in particular the essential needs of the poor</li> <li>– the maximising of goals across economic, environmental and social dimensions</li> </ul> </li> <li>• The interdependence between economic, environmental and social dimensions</li> <li>• The possible trade-offs between economic, environmental and social dimensions</li> <li>• Limits on ability to meet present and future needs imposed by: <ul style="list-style-type: none"> <li>– current level of technology</li> <li>– the environment's ability to meet those needs</li> </ul> </li> </ul>
How do urban population trends influence progress towards sustainable development?	<ul style="list-style-type: none"> <li>• Possible challenges in progressing towards sustainable urban development: <ul style="list-style-type: none"> <li>– high urbanisation rates and rapid urban growth</li> <li>– urban population loss</li> </ul> </li> </ul>
How does the demand placed on natural environments by urban areas influence progress towards sustainable development?	<ul style="list-style-type: none"> <li>• Demand placed on natural environments due to: <ul style="list-style-type: none"> <li>– high concentration of waste</li> <li>– large ecological footprints</li> <li>– vast quantities of resources absorbed by urban areas from the surrounding areas</li> </ul> </li> <li>• Demand placed on natural environments when waste is not viewed as a potential resource</li> <li>• Demand placed on the environment of the surrounding areas resulting in environmental problems there</li> </ul>

Key Question	Content
	<i>Students will understand:</i>
<b>2. Sustainable Cities</b>	
Why is effective waste management important for progress towards sustainable urban development?	<ul style="list-style-type: none"> <li>• Problems associated with non-hazardous solid waste in urban areas of countries at different levels of development</li> <li>• Impact of these problems on sustainable urban development</li> <li>• Varying success of strategies to manage non-hazardous solid waste across places</li> </ul>
Why is effective slum management important for progress towards sustainable urban development?	<ul style="list-style-type: none"> <li>• Reasons for development of slums in urban areas of countries at different levels of development</li> <li>• Impact of multiple deprivations experienced by slum dwellers on sustainable urban development</li> <li>• Varying success of strategies to improve the lives of slum dwellers across places</li> </ul>
Why is effective urban reimaging important for progress towards sustainable urban development?	<ul style="list-style-type: none"> <li>• Economic reasons for urban reimaging efforts</li> <li>• Impact of urban reimaging on sustainable urban development</li> <li>• Varying success of urban reimaging strategies across places</li> </ul>
<b>3. Liveable Cities</b>	
How are sustainable urban development and liveability related?	<ul style="list-style-type: none"> <li>• Subjective nature of liveability due to place, time and purpose of the assessment</li> <li>• Factors influencing liveability of a place: <ul style="list-style-type: none"> <li>– economic factors</li> <li>– environmental factors</li> <li>– social factors</li> </ul> </li> <li>• Complementarity and tension between sustainable urban development and liveability</li> </ul>
How do we create liveable cities for the elderly?	<ul style="list-style-type: none"> <li>• Increase in proportion of the elderly in urban areas in countries at different levels of development</li> <li>• Issues faced by the elderly living in the city related to: <ul style="list-style-type: none"> <li>– economic well-being</li> <li>– social well-being</li> <li>– psychological well-being</li> </ul> </li> <li>• Varying success of strategies to address the issues faced by the elderly living in the city</li> </ul>
How do we create liveable cities for women?	<ul style="list-style-type: none"> <li>• Importance of gender equality for progress towards liveable cities</li> <li>• Issues faced by women living in the city related to their: <ul style="list-style-type: none"> <li>– economic well-being</li> <li>– social well-being</li> <li>– psychological well-being</li> </ul> </li> <li>• Varying success of strategies to address the issues faced by women living in the city</li> </ul>

## Topic 1.2 The Future with Climate Change

### Can we successfully respond to climate change?

Scientists know that global warming is occurring from evidence such as measurements of rising surface air temperatures and observations of retreating glaciers. They believe that global warming is largely caused by human activities, resulting in climate change. The Intergovernmental Panel on Climate Change (IPCC) warns that climate change can compromise our progress towards sustainable development. Climate change also impacts different aspects of our lives, including economic, environmental and social dimensions.

In this topic, students will learn about contemporary climate change. Students will first study contemporary climate change in relation to past changes in Earth's climate. This will provide students with a better understanding of anthropogenic contributions to contemporary climate change. Students will then examine how contemporary climate change might impact humans, deepening their understanding of human-environment interactions. Students will also explore possible responses to climate change, and the challenges associated with the planning and implementation of these responses.

Key Question	Content
Students will understand:	
<b>1. The Science of Climate Change</b>	
Is climate variability a new phenomenon in Earth's history?	<ul style="list-style-type: none"> <li>Evidence of past climate variability derived from proxy indicators through the study of ice and ocean cores</li> <li>Episodes of warming and cooling of Earth during the Quaternary period</li> </ul>
Can natural factors fully account for contemporary climate change?	<ul style="list-style-type: none"> <li>Natural factors influencing temperature variability in the Quaternary period: <ul style="list-style-type: none"> <li>changes in solar output</li> <li>changes in thermohaline circulation</li> <li>changes in ice sheets</li> </ul> </li> <li>Influence of these natural factors on temperatures through feedback mechanisms</li> </ul>
How significant is the influence of human activities on Earth's climate compared to natural factors?	<ul style="list-style-type: none"> <li>Consensus within the scientific community, represented by the Intergovernmental Panel for Climate Change (IPCC), that climate change in the last two centuries is unequivocal and it is very likely caused by human activities</li> <li>Influence of human activities on the global carbon cycle: <ul style="list-style-type: none"> <li>activities that increase carbon emissions</li> <li>activities that reduce carbon sinks</li> </ul> </li> <li>Enhanced greenhouse effect due to the increased concentration of greenhouse gases by human activities</li> <li>Role of human activities in: <ul style="list-style-type: none"> <li>accelerating warming through positive feedbacks</li> <li>suppressing warming through negative feedbacks</li> </ul> </li> </ul>

Key Question	Content
	<i>Students will understand:</i>
<b>2. Possible Effects of Climate Change</b>	
How will contemporary climate change impact humans?	<ul style="list-style-type: none"> <li>Changes in temperature and precipitation associated with contemporary climate change</li> <li>Impacts of contemporary climate change on aquatic and terrestrial ecosystems</li> <li>Impacts of these changes in aquatic and terrestrial ecosystems on humans</li> </ul>
Will contemporary climate change impact everyone in the same way?	<ul style="list-style-type: none"> <li>Impacts of contemporary climate change on places:             <ul style="list-style-type: none"> <li>positive impacts</li> <li>negative impacts</li> </ul> </li> <li>Variations in negative impacts of contemporary climate change due to:             <ul style="list-style-type: none"> <li>uneven changes in temperature and precipitation across places</li> <li>differences in vulnerability of different groups of people</li> </ul> </li> </ul>
How certain are we of the present and future impacts of contemporary climate change?	<ul style="list-style-type: none"> <li>Reasons for uncertainty over present and future impacts of contemporary climate change:             <ul style="list-style-type: none"> <li>lack of full understanding of physical processes</li> <li>incomplete in-situ data on vast expanses of oceans, deserts and polar regions</li> <li>intrinsic measurement errors in current climate data</li> <li>uncertainty over future greenhouse gas emissions</li> </ul> </li> </ul>
<b>3. Responses to Climate Change</b>	
How can we respond to contemporary climate change?	<ul style="list-style-type: none"> <li>Mitigation strategies to reduce greenhouse gas emissions and enhance carbon sinks</li> <li>Adaptation strategies to help human populations adjust and cope with actual or expected climate change and its effects</li> </ul>
Who are the key actors involved in climate change response?	<ul style="list-style-type: none"> <li>Role of key actors in climate change response:             <ul style="list-style-type: none"> <li>firms</li> <li>non-governmental organisations (NGOs)</li> <li>state</li> </ul> </li> <li>Importance of partnerships between firms, NGOs and states, in responding to climate change</li> </ul>
Are all places able to implement effective strategies to respond to contemporary climate change?	<ul style="list-style-type: none"> <li>Varying success of strategies to respond to climate change</li> <li>Challenges in implementing strategies to respond to climate change:             <ul style="list-style-type: none"> <li>economic challenges</li> <li>political challenges</li> <li>uncertainties over future impacts of climate change</li> </ul> </li> </ul>

**Additional Notes on Content**

Students are required to be familiar with the following terms which are essential to build an understanding of the content covered in Cluster 1.

**Climate variables** Temperature and rainfall

**Macro-regions** (as classified by World Bank) East Asia and Pacific; Europe and Central Asia; Latin America & the Caribbean; Middle East and North Africa; North America; South Asia; and Sub-Saharan Africa

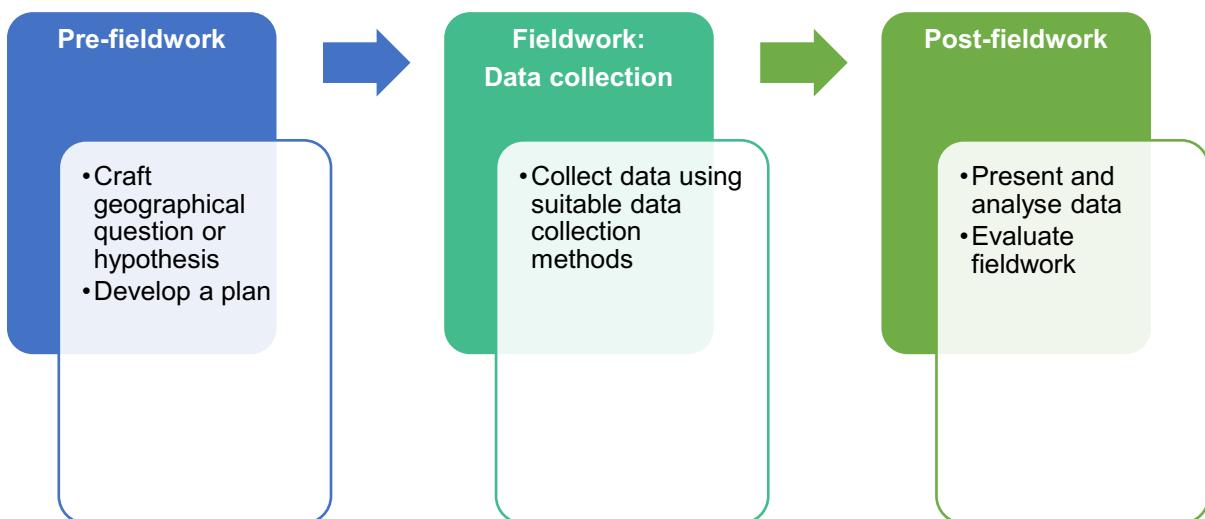
**Urban areas** Central city, suburbs and rural-urban fringe

## CLUSTER 2: FIELDWORK

With guidance from the teacher, students will identify a suitable geographical question or hypothesis to conduct fieldwork. This can be completed individually or in small groups. Students should devise geographical questions or hypotheses and follow through the fieldwork in the following areas:

- Community response to climate change
- Needs analysis of the elderly living in an urban neighbourhood

The fieldwork should reflect the following stages:



### 1. Pre-fieldwork stage

#### Craft Geographical Question or Hypothesis

*Students should be able to craft geographical questions/hypotheses based on geographical issues or phenomenon that are:*

- at a suitable scale
- researchable or measurable
- clearly defined.

#### Develop a plan

*Students should be able to develop a plan that:*

- establishes the primary and secondary data needed to examine the question/hypothesis posed
- identifies appropriate methods to determine sample size, select sample and collect data
- ensures accuracy and reliability of data collected
- addresses possible issues related to research ethics and the limitations imposed by resources
- minimises potential risks in undertaking fieldwork.

**2. Fieldwork stage: Data collection**

**Collect data using suitable data collection methods**

*Students should be able to:*

- collect primary data using appropriate methods
- collect secondary data including available data from geospatial technologies.

**3. Post-fieldwork stage**

**Present and analyse data**

*Students should be able to:*

- organise and represent data using appropriate methods (see Additional Notes on Data)
- analyse the data using appropriate qualitative and quantitative methods
- draw conclusions in relation to the question/hypothesis posed.

**Evaluate fieldwork**

*Students should be able to:*

- Evaluate the validity of the fieldwork in terms of data collected and methods used to collect and present data.

**Additional Notes on Data**

Students are required to be familiar with the following types of data. Making sense of data and representing ideas using different graphical/tabular methods should be an integral part of learning Geography, including fieldwork.

**Maps** contour maps, choropleth maps, isoline maps, dot maps, flow-line maps, proportional symbols maps and cartograms

**Graphs** pie charts, bars, histograms, scatter graphs, radar charts, triangular graphs and line graphs

**Photographs** landscape photographs, aerial photographs and satellite images

**Others** tables, schematic diagrams, illustrations and cartoons

### Glossary of Relevant Content Concepts

<b>Accuracy</b>	Accuracy refers to the degree to which the result(s) of a measurement is close to the accepted true value. A more accurate measurement is one that is closer to the true value. Accuracy may be enhanced by increasing the precision of the measurement though a precise measurement may not always be accurate.
<b>Adaptation</b>	Adaptation refers to techniques that are focused on limiting the vulnerability to the impacts of an event. The adaptation to climate change refers to the process of adjustment to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities.
<b>Deprivation</b>	Deprivation is the lack or absence of a resource or opportunity regarded as necessary for a basic standard of living.
<b>Community response</b>	Community response refers to any action carried out by non-governmental and non-corporate stakeholders.
<b>Contemporary climate change</b>	Contemporary climate change is the changes in the state of the climate that persists for an extended period, typically decades or longer in more recent times. The IPCC uses the pre-industrial period – the period prior to the onset of large-scale industrial activity around 1750 – as a reference. The reference period 1850–1900 is used to approximate pre-industrial global mean surface temperature.
<b>Climate variability</b>	Climate variability refers to variations in the mean state and other statistics such as standard deviations and the occurrence of extremes of the climate on all spatial and temporal scales beyond that of individual weather events. Climate variability may be due to natural internal processes within the climate system or to variations in natural or anthropogenic external forcing.
<b>Ecological footprint</b>	Ecological footprint expresses the impact of human activity on ecosystems in terms of the area of productive land and aquatic ecosystems required to produce the resources used and to assimilate the wastes produced by a defined population at a specified material standard of living, wherever on Earth that land may be located.
<b>Ecosystem</b>	An ecosystem is a dynamic complex of plant, animal and microorganism communities and the non-living environment interacting as a functional unit. Humans are an integral part of ecosystems. The concept of an ecosystem provides a valuable framework for analysing the linkages between people and the environment. Ecosystems vary greatly in size.
<b>Enhanced greenhouse effect</b>	The enhanced greenhouse effect takes place due to the increased concentration of greenhouse gases in the atmosphere. More long-wave radiation is intercepted and absorbed by the greenhouse gases, resulting in higher global temperatures.
<b>Feedback mechanism</b>	Feedback mechanisms in the climate system occur when a perturbation in one climate quantity causes a change in a second quantity and the change in the second ultimately leads to an additional change in the first. A negative feedback is one in which the initial perturbation is weakened by the changes it causes. A positive feedback is one in which the initial perturbation is enhanced.
<b>Gender equality</b>	Gender equality refers to the equality between women and men. It refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality between women and men is seen both as a human rights issue and as a precondition for, and indicator of, sustainable development.

<b>Global carbon cycle</b>	The global carbon cycle is the flow of carbon in various forms, e.g. through the earth's atmosphere, hydrosphere, terrestrial and marine biosphere and lithosphere.
<b>Mitigation</b>	Mitigation is intervention to reduce or alleviate the severity of magnitude of impact of an event. The mitigation of climate change refers to human intervention to reduce emissions or enhance the sinks of greenhouse gases.
<b>Non-governmental organisations (NGOs)</b>	NGOs are organisations formed by members of the public and have no government connections.
<b>Non-hazardous solid waste</b>	Non-hazardous solid waste includes waste from households, businesses and institutions such as schools and government buildings. Non-hazardous solid waste does not include substances that are toxic to humans, plants or animals, are flammable, corrosive or explosive or have high chemical reactivity.
<b>Proxy indicators</b>	Proxy indicators are indirect evidence. In the study of past climates, the information obtained from geological and biological records are proxy indicators – evidence derived from sources other than human measurements.
<b>Quaternary period</b>	The Quaternary period extends from 2.6 million years ago till present. There are two epochs within the Quaternary period – the Pleistocene and the Holocene. The Pleistocene is the period of Earth's history covering approximately 2.6 million years ago until 11 700 years ago. The second epoch of the Quaternary, the Holocene, is the last 11 700 years of earth's history.
<b>Reliability</b>	Reliability refers to the consistency of the measurement, and the degree to which the measurement may vary from reality due to measurement error. This involves establishing whether the measurement instrument, device, or method measures the attribute/variable the same way for each observation, or the same way each time or place it is used. Reliability is considered a necessary but insufficient prerequisite for a valid measurement.
<b>Slum</b>	A slum household is defined as one where the members experience one or more of the following: lack of access to improved water source, lack of access to improved sanitation facilities, lack of sufficient living area, lack of housing durability and lack of security of tenure.
<b>States</b>	States are political units having recognisable control over a given territory.
<b>Sustainable development</b>	Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development requires meeting the essential needs of all, in particular the essential needs of the poor, and extending to all the opportunity to fulfil their aspirations for a better life. The concept of sustainable development implies limits including limitations imposed by the present state of technology on environmental resources and by the ability of the biosphere to absorb the effects of human activities.
<b>Sustainable urban development</b>	Sustainable urban development is the achievement of the objectives of sustainable development at the urban scale.
<b>Thermohaline circulation</b>	Thermohaline circulation refers to the large-scale circulation of the world's oceans, involving the vertical movement of large bodies of water, driven by variations in temperature and salt content. Cold, salty water sinks in 'downwelling zones', particularly at high latitude in the North Atlantic, and flows slowly southward along the bottom of the Atlantic and into the Pacific, where it rises again mainly in an 'upwelling' zone of western South and Central America. It then flows back as a surface current. The thermohaline circulation is important in transporting heat through the Earth system.

<b>Trade-offs</b>	Trade-offs involve making difficult choices at particular points in time and at particular scales as to what is being pursued and how; that certain goals can be compromised to achieve others; and that any action will carry unequal impacts for particular interests and for groups of people.
<b>Urban areas</b>	Urban areas may be identified based on population size, economic base, administrative criteria or functional definitions. Urban areas are diverse in characteristics.
<b>Urban growth</b>	Urban growth is an increase in the population of urban areas. Urban growth has three components – natural increase, migration and reclassification.
<b>Urban liveability</b>	Urban liveability is a relative term whose precise meaning depends on the place, time, purpose of the assessment and on values of the assessor. This view contends that quality is not an attribute inherent in the environment but a behaviour-related function of the interaction between individuals and their environment.
<b>Urban reimaging</b>	Urban reimaging aims to control or influence how others see a place by enhancing and promoting positive images of an urban area. Urban reimaging may involve the physical reshaping of urban areas.
<b>Urbanisation rate</b>	Urbanisation rate is defined as the rate at which the percentage urban grows or declines. It is a function of the respective rates of change and relative sizes of the urban and rural populations in a country. It is expressed as a per cent. Urbanisation rates can be positive or negative.
<b>Validity</b>	Validity refers to the degree to which a measurement instrument, device, or method measures what the researcher intended to measure (such as a variable, concept, or construct). This involves establishing the extent to which the data and its interpretation support one's findings, and one's use of it.
<b>Vulnerability</b>	Vulnerability is a possible future state that implies high risk combined with an inability to cope.

**Appendix A**

<b>Levels</b>	<b>Marks</b>	<b>Generic Level Descriptors for H1 Fieldwork Evaluative Question</b>
<b>3</b>	9–10	Evaluation is analytical and coherent. Response addresses the question and demonstrates good knowledge and understanding of fieldwork methods relevant to the given context.
<b>2</b>	5–8	Evaluation is mostly analytical and coherent. Weaker responses in this level will have evaluation that is broadly analytical and generally coherent. Response generally addresses the question and demonstrates adequate knowledge and understanding of fieldwork methods relevant to the given context.
<b>1</b>	1–4	Response is descriptive with limited or no analysis and evaluation. Response is fragmented and lacks clarity. Response lacks focus on the question and may be largely irrelevant to it. Response shows basic knowledge and understanding of fieldwork methods. Response has some, though limited, relevance to the given context.
<b>0</b>	0	No creditworthy response

**Appendix B**

<b>Levels</b>	<b>Marks</b>	<b>Generic Level Descriptors for H1 Essays</b>
<b>4</b>	11–13	Evaluation is analytical and coherent. Response is mostly well-supported by relevant material, including the appropriate use of examples. Response features accurate geographical knowledge and reflects adequate understanding of the subject content relevant to the question.
<b>3</b>	8–10	Evaluation is broadly analytical and generally coherent. Response is moderately well-supported by relevant material, including some appropriate use of examples. Response features accurate geographical knowledge and reflects adequate understanding of the subject content relevant to the question.
<b>2</b>	5–7	Response is largely descriptive with limited analysis and evaluation. Response is partly coherent and may lack clarity in parts. Response is poorly supported by relevant materials, including the limited use of examples. Response features inaccurate geographical knowledge and poor understanding of the subject content relevant to the question.
<b>1</b>	1–4	Response is descriptive with no analysis or evaluation. Response is fragmented and lacks clarity. Response consists of unsupported assertions. Response features largely inaccurate geographical knowledge and a lack of understanding of the subject content relevant to the question.
<b>0</b>	0	No creditworthy response