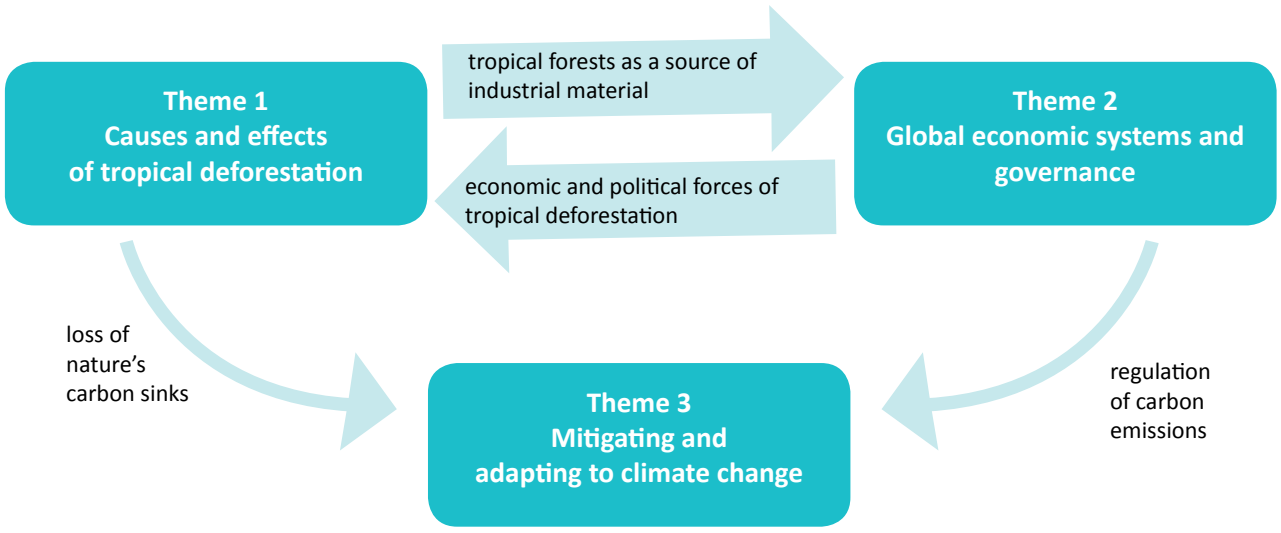
Theme 4 (Geographical Investigation) provides students with opportunities to carry out fieldwork to deepen their understanding of what they have learned from Themes 1–3. They will learn how to craft research questions, plan their investigations, handle data, evaluate and communicate their findings to different audiences.

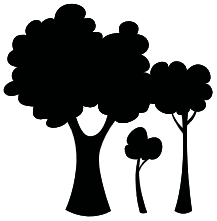
Connections can also be found across Themes 1–3. Students' mastery of the prescribed knowledge in each theme will be strengthened as they learn the other themes. An example is shown below where students' knowledge of the effects of deforestation (Theme 1) enriches their understanding of extractive industries (Theme 2). Similarly, their analysis of the causes of deforestation (Theme 1) is enriched through the study of the political economy (Theme 2). Finally, knowledge of carbon sequestration (Theme 1) and knowing how carbon emissions can be regulated (Theme 2) widens students' discussion about the issues related to the effects of climate change (in Theme 3).



Connections between Themes 1, 2 and 3

2.1 THEME 1 – TROPICAL ENVIRONMENTS

The tropics cover a large part of the Earth's surface with a variety of landforms, including major mountain ranges and rivers, such as the Himalayas and the Amazon. They can be defined as a climatic region of radiation surplus delimited by boundaries fluctuating between 30 and 35 degrees latitude, north and south. Common to all areas in this region (at sea level) is high temperature. Significant variations in the pattern and amount of rainfall differentiate these areas into various tropical climate zones. The tropics are home to some of the wettest (e.g. the Lower Mekong Basin) and driest areas (e.g. the Atacama Desert) on Earth. The atmosphere and tropical oceans play an important role in redistributing heat energy while tropical forests, rivers and wetlands regulate the carbon cycle, acting as carbon sinks and sources of carbon emissions.



Both topics in this theme help students to understand that similar processes occur differently in different parts of the Earth. Within the tropics, processes operate at different rates and with varying intensities, producing a rich array of landscapes. Students will also understand that the boundaries separating tropical and temperate regions are not fixed. Likewise, the transition between the humid and arid areas in the tropics, in most instances, is not as sharp as climate classifications may suggest.

Topic 1.1
Physical Processes in the Tropics

This topic examines the dynamism of tropical environments through the study of different processes using a systems approach. Also covered are various physical processes and factors found in the tropics.

Topic 1.2
Landscapes and Issues in the Tropics

This topic surveys the process-form dynamics in open systems through the examination of characteristic landforms in both the humid and arid tropics. The exploration of tropical landscapes also includes the investigation of topical issues like flooding and deforestation.

2.2 THEME 2 – DEVELOPMENT, ECONOMY AND ENVIRONMENT

Human Geography focuses on the study of how humans modify the environment and in turn are affected by changes in the environment. It focuses on people in places and spaces to understand the complex, interconnected and divided world that we live in. Human geographers study the spatial organisation of human society at various scales, from the global to the personal. They recognise that place-based processes operate across and within different spatial scales, and appreciate the uniqueness of different places and the diversity of people. They also consider the different dimensions of human life, and how economic, political and environmental factors intersect and influence our behaviour and attitudes.

This theme helps students to understand how humans interact with the environment, in particular how we extract value from it in order to fulfil our material needs and achieve progress. Students will understand that the appraisal of natural resources and configuration of production systems vary across space and time. As a result, they will become more sensitive to cultural differences and the implications of their everyday decisions on the environment and the communities living in different parts of the world.

Topic 2.1
Development and the Global Economy

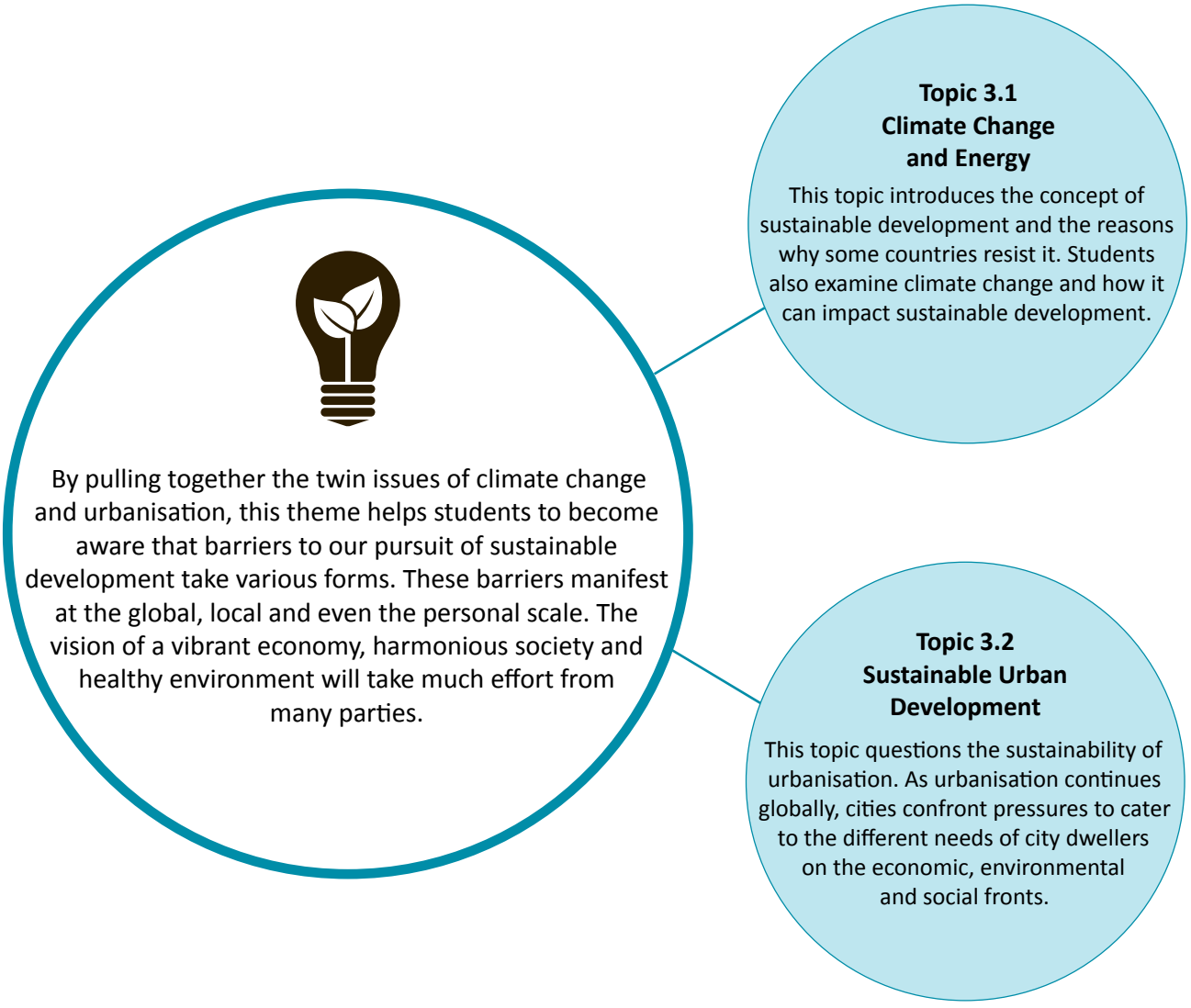
This topic examines the relationship between economic growth and human development. Students will learn about the structure of the economy and how the global economy is governed, with varying degrees of success.

Topic 2.2
Environment and Resources

This topic explores how humans obtain value from the environment through various activities undertaken by extractive industries. Students will also analyse countries endowed with an abundance of natural resources and the challenge of managing scarce water resources.

2.3 THEME 3 – SUSTAINABLE DEVELOPMENT

With the release of the report Our Common Future by the World Commission on Environment and Development (WCED) in 1987, 'sustainable development' has become almost universally accepted to mean 'development that meets our current needs but not at the expense of future generations'. The pursuit of sustainable development is now stated as a principal policy goal of major global institutions such as the United Nations as well as many governments around the world. This theme develops students' understanding of sustainable development at various scales and in different contexts. It demonstrates how geographical perspectives can contribute towards our pursuit of sustainable development.



2.4 THEME 4 – GEOGRAPHICAL INVESTIGATION

With guidance from their teachers, students will identify a suitable geographical question or hypothesis that fall under the following areas:

A | Living with Rivers
- Factors influencing flood risk and ways to mitigate it
- Impact of wind direction on rainfall
- Influence of land use on infiltration rates

B | People and the Economy
- Impact of industries on local communities
- Impact of industries on the environment
- Linkages and TNCs and local enterprises

C | Urban Living Today
- Liveability of urban neighbourhoods
- Needs analysis of the elderly living in an urban neighbourhood
- Impact of urban reimaging on urban dwellers

Students' investigation should reflect the following stages:

1

Students should be able to craft geographical questions/hypotheses that are:
- at a suitable scale;
- capable of research; and
- clearly defined.

2

Students should be able to:
- establish the data needed to examine the question/hypothesis posed;
- identify appropriate methods for collecting primary and secondary data (including sampling when required);
- consider research ethics and understand limitations imposed by resources; and
- minimise potential risks in undertaking an investigation.

3

Students should be able to:
- make use of primary and secondary data as appropriate to the question/hypothesis posed; and
- consider issues of accuracy and reliability in relation to the data being collected.

4

Students should be able to:
- organise and represent data using appropriate methods (see additional notes on data);
- analyse and interpret the data using appropriate qualitative and quantitative methods; and
- interpret the results in relation to the question/hypothesis posed.

5

Students should be able to:
- present a summary of their findings, relating back specifically to the question/hypothesis posed; and
- present an evaluation of the investigation, including the methods used, data collected and possible limitations and improvements that could be made.

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 is an integral part of learning.

Maps: contour maps, choropleth maps, isoline maps, dot maps, flow-line maps, proportional symbol maps and cartograms.

Graphs: pie charts, bars, histograms, scatter graphs, dispersion diagrams, triangular graphs and line graphs.

Photographs: landscape photographs, aerial photographs and satellite images.

Others: tables, diagrams, illustrations and cartoons.

3. PEDAGOGY – GEOGRAPHICAL INQUIRY

Learning through inquiry is commonplace in Geography classrooms where the purposeful use of real-world data is prevalent. The continued emphasis on map and other data-interpretation skills as well as fieldwork in this syllabus encourages the use of inquiry among students. Four elements of geographical inquiry are presented below. It is likely that teachers will include an element or combine elements appropriately to facilitate students' inquiry into what they are learning. With guidance from their teachers, students would be constantly encouraged to ask geographical questions as they learn the prescribed set of knowledge and skills in the syllabus.

SPARKING CURIOSITY
The teacher creates a need to know. Students ask questions, speculate answers, hypothesise, imagine possibilities and generate ideas.

GATHERING DATA
The teacher helps students to use sources of geographical information as evidence. Students search, sort, select and classify geographical information.

EXERCISING REASONING
The teacher creates opportunities to make sense of information. Students interpret, compare and analyse, relating new knowledge to existing knowledge.

REFLECTIVE THINKING
Teacher and students reflect on and critique sources of information, skills used, criteria for judging and the value of how and what they have learnt.

Elements of Geographical Inquiry

4. ASSESSMENT

The assessment objectives for this syllabus are presented below. The first set of assessment objectives (AO1) relate to the Knowledge category in Bloom's Taxonomy. Students are expected to recall factual, conceptual and procedural knowledge.

The second set of assessment objectives (AO2) relate to the Comprehension, Application and Analysis categories in Bloom's Taxonomy. The majority of questions in the national examination will be designed to assess students' ability to process geographical knowledge in context and apply geographical skills purposefully.

The third set of assessment objectives (AO3) relate to the Evaluate and Create categories in Bloom's Taxonomy. A substantial number of questions in the national examination will be designed to assess students' ability to make judgements and offer recommendations. Students are also expected to put together knowledge obtained from different parts of the syllabus.

AO1 – Knowledge
Students should be able to demonstrate knowledge and understanding of:
- geographical terms, facts, concepts, issues, phenomena, trends; and
- geographical investigation skills and methods.

AO2 – Application and Analysis
Students should be able to:
- construct explanations to show how geographical knowledge is understood in particular contexts;
- apply geographical knowledge and understanding to interpret and analyse different types of geographical data; and
- apply relevant geographical knowledge, understanding, skills and methods to carry out investigations in unseen contexts.

AO3 – Evaluation
Students should be able to demonstrate critical thinking by:
- synthesizing knowledge from different sub-fields in geography;
- drawing conclusions and making judgements based on a reasoned consideration of evidence and/or different viewpoints;
- making recommendations and decisions that consider different elements of an issue and/or address interests of different stakeholders; and
- evaluating different types of geographical data, methods of data collection and analysis.

In the national examination, 60% of the marks are allocated to questions that fulfil AO1 and AO2. The other 40% of the marks are allocated to questions that fulfil AO1 and AO3. Students attempt two papers at separate sittings. The first paper consists of data-response questions and the second paper consists of structured essay questions.