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Teacher's Guide

Secondary Geography for Pakistan

for Grade 8

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Introduction

The lesson plans here are based on suggestions on how to cover the curriculum over 18 weeks of Geography teaching during school year 8, with three or four lessons per week of 40 or 45 minutes each.

Each plan consists of the following headings and information -

Chapter

Textbook chapter number and section

Lesson

Number in sequence

Textbook Section

the part of the textbook to be used for this lesson

Aim

the overall objective or enquiry question for the session

Learning outcomes

the specific areas of skills and content to be covered

Lesson plans

Ideas for the stages of the lesson- usually consisting of a preview or starter activity to catch pupil's interest; an explanation of new knowledge and suggested activities,

Plenary

Advice for drawing together the end of the lesson and reviewing what has been learnt to consolidate understanding.

Responses to questions at the end of the chapter

a guide of potential responses to exercises at the end of each chapter in the book

Opportunities for Longer Prose Responses, Debating and Extended Writing

ideas for extended learning activities to engage students in critical thinking and enhance deeper understanding, communication skills, self-awareness and meta cognition

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Chapter 01

Oceans and Seas

This chapter is about Oceans and Seas as key geographical features and focuses on their classifications, features, potential threats, and marine biodiversity.

Textbook Section: Page 1-16

Aim: To develop an understanding of oceans and seas, their importance, and potential threats to oceans and their ramifications.

Learning outcomes of the chapter:

Learners will --

- Explain the importance of oceans;
- Differentiate between seas and oceans;
- Describe and differentiate between sea features;
- Explain the movements of ocean water;
- Identify the role of marine biodiversity;
- Enlist potential threats to the oceans;
- Use specialist vocabulary.

Lessons 1-3 Why is the Earth often called 'The Blue Planet'?

Textbook Section: 1.1 Pages 2-5

Aim: This session introduces the importance of seas and oceans, and their nature and features.

Learning outcomes of the chapter:

Learners will --

- Be able to explain the difference between seas and oceans;
- Name examples of seas and oceans;
- Describe the key features of seas and oceans.

Lesson 1

Welcome the class and as part of your preview of what will be done today read section 1.1 'The Blue Planet', and the introductory text: 'The world of oceans and seas'. After reading the quotation from Yuri Gagarin at the end of this paragraph, ask the group if they see any news on the television or elsewhere about the condition of the oceans under seas worldwide? Some pupils might speak about pollution, threats to wildlife, overfishing, or other issues which threaten our seas and oceans. Explain that the series of lessons they are about to complete will focus on the nature of the world's great bodies of water: the oceans and seas.

Activity 1

Are seas and oceans different from each other?

Ask pupils if they are able to tell the difference (differentiate) between oceans and seas: in what ways is one different from the other?

Read the table, which indicates some differences, and the text below it about 'The Importance of the Oceans.' Decide what level of depth you wish pupils to have of any content about the location and size of the oceans and seas recorded in their notebooks: you could, for example, provide them with a labelled map, or ask them to label a blank and add key facts such as the size of the bodies of water.

For Depositional Plains, use fingers of the hand that is not outstretched to make it look like you are dropping salt or spices into a cooking pot to show the action of matter being gradually added to a surface. Explain that there are three types of depositional plain: abyssal (use the fingers on your free hand to represent water – keep the hand well above the 'plain hand' to represent deep water); alluvial (use the same wiggling fingers, but not as high above the plain); and flood (have the fingers just lapping against the edge of the 'plain hand' and occasionally just over the surface).

Activity 2

Telling the Story of the Oceans (Runs into lesson 2)

Ask pupils to describe the nature of the Pacific, Atlantic, Indian and Antarctic and Arctic Oceans using the information on Pages 3-5, 'Major oceans of the world.' Set them the challenge of doing this in a way that does not just involve copying the text but which presents it in an interesting and attractive way, and which offers a structure which contrasts the differing nature of the five oceans. For example this might involve a prose report which includes comparative tables; or be based on making a visual presentation; or require elements of thinking about how information can be communicated visually—as a poster or by using an infographics approach. You might find it useful to find some examples of infographics online, and either show them or print them to pass around, so that pupils get an idea of the different creative ways that information can be presented by modern designers.

This should provide the opportunity for creative pupils to design something which is visually attractive as well as geographically accurate and informative.

Set clear success criteria for this activity with the learners helping negotiate these so that pupils are involved, feel a sense of ownership and participation, and are aware of what you are looking for before the start of the activity.

At the end of the task, the work could be peer-assessed using the criteria the class has helped create: if you decide to do so, talk to the pupils about how peer assessment works best when people give their friends honest feedback rather than undeserved credit. Also point out peer assessment is not about being hypercritical and unnecessarily picky, but, if done well is a chance for both the producer of the work and the marker to learn from the experience.

Now, together, read the text 'Why is marine biodiversity significant for the world?' at the lower half of page 5, and 'Oceans as a source of food.' Both can be used to explore the significance of oceans and seas to life on Earth as the plenary at the end of the second lesson.

Lesson 3 What are the key features of the Seas and Oceans?

In your preview ask pupils to recap on the key differences between seas and oceans. Ask them if they can list the names of the seas and oceans or tell you any key facts about them.

Move onto explaining that you are now going to look together at the features of seas and oceans and that today will involve lots of specialist vocabulary so they will become experts on describing the features of seas and oceans.

Activity 1

Key terms to describe seas and oceans

Read and discuss the text on pages 6 and 7, breaking this up so that it is not overwhelming in terms of new vocabulary. You might for example, use the 'To Discuss' box at the bottom of page 6 to encourage learners to speculate and make inferences about why geographers use particular phrases for similar features.

You could ask pupils to write some things down to record information in their notebooks; for example:

- making a list of simple definitions and create small pictures for each term;
- draw the diagram on page 7, (or label a copy of the image which does not have the labels on it).

Activity 2

Features of seas and oceans card sorting exercise

This is intended as a way to help pupils learn and reinforce their knowledge of the terms and definitions. There are a number of key terms and definitions on pages 6 and 7: use these to create a set of matching cards where the key terms (in bold in the textbook) and their definitions are all typed onto A4 sized sheets of paper, and then cut out to create a set of matching cards.

There will be key terms, for example ocean trench, on a card each, and the definitions on separate cards each: for example the matching definition to ocean trench is 'The deepest part of the ocean a trench is caused when two tectonic plates meet and one is subducted or pushed under the other.'

Key term	Key term
Key term	Key term
Definition of a key term	Definition of a key term
Definition of a key term	Definition of a key term

This would give you a series of sets of cards for a table top activity where pupils match the definition with the explanation. Sets of these cards could be placed in unsealed old envelopes or plastic pockets to keep them in sets when not in use.

Alternatively the terms and definitions could be put onto an A4 sheet each in large bold print, and these pin up or held-up at the front of the class to make a quiz for the whole class or teams, for example, the left hand side of the class versus the right hand side, with pupils volunteering from one side of the room then the other, giving an answer each.

Lesson 4 Why is underwater map making so important?

Textbook Section: 1.2, pages 6-8

Aim: This session helps learners explore the significance and value of accurate bathymetric (sea floor) chart and hydrographic (sea navigation) chart making and sea exploration.

Learning outcomes: Learners will-

- Be able to explain what bathymetric and hydrographic charts show;
- State the purpose of, and evaluate the value of, bathymetric and hydrographic charts;
- Demonstrate an understanding of why an increased understanding of the nature of the sea floor is important as a scientific, safety, and economic activity.

In your preview you could show images of underwater exploration or drawings and photographs from culture or related to popular media such as Jules Verne's *50,000 Leagues Under the Sea*, or Hollywood films about undersea adventures, or TV documentary images. Choose items which will catch pupils' curiosity and which help show public fascination with life under the sea.

Explain that humanity seems to be very interested in what is under our seas and oceans, and therefore this has had a strong impact on popular culture: lots of adventures are set underwater, possibly because we know relatively little about the dark depths of our oceans. Say that some stories and myths have strongly influenced different cultures over centuries for example the story of Atlantis, the city that is meant to have disappeared into the sea. Stories of giant octopuses and squid grasping fishing vessels in their tentacles and dragging them down to the depths are common in some societies; stories of shipwrecks and marooned sailors feature elsewhere; and stories of other disasters at sea or underneath the waves are common in adventure films.

Activity 1

The importance of Hydrometric and Bathymetric Charts

Explain that whilst all of this is great fun, humans need a much better knowledge of what is under the sea, and really good navigation charts: can they explain why?

They might suggest things like safety for navigation, exploitation of natural resources, learning about sea creatures and plants, conservation and exploration.

Move on to discussing why it was so difficult to map any body of water in the past (lack of suitable technology), then consider how technology has really helped us advance our awareness of underwater features. Show some images of the technology which has assisted us in underwater mapping, for example, a sailor with a simple sounding line (weight on the end of a rope which measures water depths in fathoms from the prow of a boat), old fashioned underwater deep-sea diving suits and diving bells, early and more recent submarines, and then sonar equipment.

Also mention how modern satellite technology which helps us monitor the weather over the seas and oceans, and how measuring things like atmospheric pressure and computer modelling of weather systems which might threaten shipping, have been important advances.

Read the text on the top of page 8 and discuss its contents. Decide what you would like pupils to record in their notebooks.

Optional Extension:

What does a nautical chart look like and what does it show?

If you are able to find examples of hydrographic (maritime navigation) and bathymetric charts then you could look at these with pupils, and ask how and why they are very different to land maps. Alternatively you could look at the picture of a nautical chart on page 8. If you have not yet made use of the underwater features diagram on page 7, or wish to reinforce understanding of underwater features, then this would be a good point at which to look again at that image.

You could ask pupils to write down the text from the 'Did you Know?' box at the bottom of page 8 which draws the distinction between topographic maps and bathymetric charts.

Plenary: Draw together the key learning points from today's lesson.

Lessons 5-6 Is the water of the seas and oceans moving as much as the waves on a beach suggest?

Textbook Section: 1.3, pages 9-10.

Aim/Learning outcomes: Learners will be able to explain the processes that create, and the impact of, waves, currents, and tides.

A note on challenge: In the textbook, the nature of waves is explored and it is pointed out that most sea and ocean water is not moving nearly as much as it can seem. Here we want pupils to understand that some parts of the water do move because currents and tides do circulate some of the body of water and other process is can also move part of the water. However, the majority of the water below the surface is not moving in any significant way. People may find this difficult to understand because if you have stood at the seaside it does seem like the water is coming to wards you as the waves reach the shore. Pupils are therefore likely to have misconceptions around how much of the body of water is moving and why, therefore tackling these misconceptions is important in this sequence of activities.

The task is likely to spread over two to three lessons because of the quantity of material and complexity of some of the issues.

In your first lesson preview ask how many people have been to the seashore and whether their impression is that the water in the ocean is all moving, partly moving or not moving very much at all. This should provide the opportunity to open a discussion about movement of ocean water, it will also give you the opportunity to identify any misconceptions and preconceptions and to note which pupils have a good grasp of some of the vocabulary needed for understanding this aspect of geography.

Activity 1

Understanding the Nature of Waves

Read the 'What is a wave?' text on page 9. Decide how you would like to get pupils to capture this information in their notebooks. You could for example ask a series of questions:

1. How is a wave created?
2. What happens when water is displaced as waves are formed?

3. What do we mean by the terms wavelength, trough, and peak?
4. What do we mean by a collapsing peak?
5. Why do we find Swash and backwash as waves reach the shore and collapse?
6. Although waves might be dramatic, is most of the water moving?
7. Why is backwash potentially dangerous for anyone standing in the water's edge on a beach with strong waves and currents? Who might be most at risk? (Weak swimmers, small children)
8. Why are water currents so important to the life in seas and oceans?

Read page 10 'What determines the nature of waves?'

When you reach the section which explains the four different types of wave (spilling, plunging, surging, and collapsing) you could ask the class to workout hand gestures to represent these types of movement, for example gently moving one hand forward in the air and gradually dropping your fingertips down could visually represent a spelling wave. Decide how you will consolidate this information in people notebooks.

Now move onto the information at the bottom of page 10, which differentiates between an ocean and a sea. Then read page 11, which restates the nature of waves and then explains the processes which create tides. [Do not read the section on currents yet—the explanation of tides is a little complex, and can confuse some pupils, so it is best to consolidate understanding prior to moving on.]

At the bottom of page 11 there is a picture explaining how tides are influenced by gravitational pull—this is quite an abstract concept, and some pupils will struggle to understand unless you are careful to explain this or represented in some sort of physical way.

Activity 2

Representing the action of the moon on tides

You could for example use an object at the centre of an open space (such as a football), to represent the earth, and have a pupil with a sphere (such as a tennis ball) to represent the moon. Arrange the class around the football in a circle, with the pupil and 'the moon' (tennis ball) standing a metre behind one of the people. The class are representing the seas and oceans. The person in the circle the moon is behind steps half a metre towards the moon (the tide has risen) and on the opposite side of the earth the person opposite steps half a metre towards the football as there the tide has fallen.

As the moon moves around the circle the next person steps out half a metre and the previous two people step back to their original places. The person opposite the new person on the other side of the Earth steps in half a metre... thus the tide is rising because of the gravitational pull of the moon on the side of the earth closest to the moon, and on the furthest side of the earth the tide is falling.

As the moon moves where the tide is high and low changes. This continues in a cycle of rising and falling, and sometimes is more dramatic because the moon is not in a perfect circular orbit around the earth but has a slightly elliptical orbit.

If you decide to record this in some way in pupil's notebooks, it might make sense to have a form of words explaining it agreed with the class after some discussion, and then pupils with a less strong grasp of the notion will not record something that is going to subsequently confuse them further.

Activity 3

What is a Current?

Now read the bottom section of page 11 and onto page 12 on 'Currents.'

1. What is a current?
2. What two types of current are identified by people studying seas and oceans, and what is the difference between them?
3. What causes deep sea currents?
4. What are the three major types of movement identified as taking place in seas and oceans and why are these important processes?

Plenary in final lesson

Look carefully at the map of warm and cold ocean currents around the globe, (at the bottom of page 12). Use this as part of your plenary and draw all learners' attention to the circular swirling nature over the currents and how this is important in moving some of the body of water around the oceans and seas. Summarise the learning completed in today's lesson.

Optional Home Learning

Now that pupils have studied the powerful nature of currents ask them to complete the 'Going Further' activity as home learning. Discuss with the class what features an effective warning poster for the seaside would include. Help them understand that audience will matter so that's keeping the message clear and simple so it can be understood by younger people as well as adults will be very helpful.

Lesson 7 Why is it important that there is biodiversity in our seas and oceans?

Textbook Section: 1.4, Page 13

Aim: To explore why ensuring healthy biodiversity in the seas and oceans is an important consideration in protecting the Earth as a holistic environment.

Learning outcomes: Learners will-

- Be able to define the term biodiversity;
- Explain how biodiversity is crucial to keeping an ecosystem/ habitat healthy and sustainable.

In your preview ask the class to tell you why the seas and oceans are so important. They are likely to mention bodies of water being a habitat for many species, and see this as an important element in contributing to global biodiversity. They might identify that seas and oceans provide a source of food. Explain that in this part of their learning about seas and oceans they are going to look at biodiversity and how humans use the seas and oceans.

Then read 1.4 'Biodiversity in our seas and oceans' and discuss the general threats mentioned in the introductory text, and the specific problems listed (pollution, overfishing and rising sea levels). Discuss how sustainability is threatened if the food chain is destabilised, or if the living conditions in the ecosystem become contaminated to the extent that there is species die off.

Decide how you will ask pupils to capture this information in their notebooks. You could for example divide two pages into quarters and ask them to draw a small image, and write a summary text, for the introduction and the three specific problems recording the key points.

Plenary

Draw together the learning from the session.

Lessons 8-9 What contribution do the world's seas and oceans make to the economy of Pakistan?

Textbook Section: 1.4, Pages 13-15

Aim: To explore the contribution of the seas and oceans to a national economy.

Learning outcomes: Learners will-

- Understand how a maritime environment can contribute to the operation of primary industries, and the production of food and raw materials;
- Be able to evaluate the contribution of the sea-foods industry to the economy of Pakistan;
- Explain how employment opportunities are provided in the fishing and harvesting of shellfish and crustaceans; industries which include jobs on land as well as at sea;
- Demonstrate an awareness of how scale of production changes industries, and how over-fishing is presenting a challenge to sustainability.

Activity 1

Studying the seas and oceans as an economic geography case study

In your Preview to lesson 1, explain that some geographers specialise in looking at the economic use of place and space, and how landscapes and habitats provide opportunities for limit or benefit from economic activities. For example, tourism is aided by places of great natural beauty, agriculture is aided by key features of landscape and climate, and extractive industries can only operate where minerals or rocks worth extracting. Therefore, economics is often dictated to by geography. Today the class are going to study an economic geography case study by looking at how the seas and oceans provide employment and raw materials (fish and sea-foods) for Pakistan's economy, food for its people and an important source of exports.

Decide how you would like pupils to use the material about the fishing industry its contribution and the challenges it faces. You could for example ask pupils to make a report about the contribution of the sea-foods industry to the economy. In order to do this, you will need to discuss with pupils the length of time available for research and the importance of not just copying material but thinking about significance and key messages in any information they use.

This will mean negotiating and setting some clear criteria about the final product, thinking about what resource is might be needed to scaffold the activity, and reflecting on what support particular pupils may need to be able to work semi or fully independently. Decide, for example, whether you will allow group work or if this is an individual response; will you be able to provide access to the Internet or library resources; will you provide a pack of supplementary information for some pupils to use; will there be any audio visual material shown or available; and what role if any home learning take.

Once you have established the parameters of the task then read 'The Economic Geography case study' section on pages 14-15 with the class, discussing it as you progress, then get the pupils working on the task.

In your plenary at the end of any lessons in this activity remind students of the aims of the activity and praise any particular habits which you have noticed start taking place and which you want to reinforce in their minds as being evidence of good working and strong geographical thinking or research.

Answers for the end of unit recall questions.

Section 1. Quiz Questions

1. The difference between marginal seas and oceans is explored in section 1.2 on page 6.
2. Bight, fjord, and gulf are defined on page 6.
3. Research-based question.
4. Wave motion is explained in section 1.3 on page 9.
5. See page 5, 'Oceans as a source of food'.
6. Research-based question.
7. The features and relief of the ocean floor are explained on pages 7 to 8.
8. Wave power and impact are explained on pages 7 to 9.
9. Hydrography and its benefits are explained on page 8.
10. Bathymetric charts are explained on page 8.
11. Pollution is explained on page 13.
12. To label the seas and oceans of the world see the map on page two and the panel on Page 3.

Section 2. Multiple Choice Questions

1. C. Indian Ocean.
2. B. Seas always connect to oceans.
3. B. A small or larger group, strings, or chains of islands.
4. B. Plunging waves.
5. B. Bathymetric.
6. B. Fjord.
7. C. Gulf.
8. A. Ocean trenches.

Opportunities for Longer Prose Responses, Debating and Extended Writing

By grade 8, pupils should become more independent but there is still a need to strengthen their memory, develop literacy and oracy, research skills, individual and collaborative working and the use of information communications technology (ICT).

In the chapter Oceans and Seas you could ask pupils to complete written essays or give spoken explanations, for example:

1. Explain the difference between a sea and an ocean, giving examples to support your argument.
2. What are the distinctive features of the Indian Ocean?
3. Debate whether the oceans and seas are something that should be fully exploited by humans, or whether they should be fully protected from humans.

4. Make a quiz activity or game board based on keyword definitions related to oceans and seas, their processes and nature.
5. Evaluate the importance of knowing about underwater features for economic activities and navigation.
6. Do you agree that waves, tides, and currents are all fascinating natural processes?
7. The Russian cosmonaut Yuri Gagarin orbited the earth in 1961 and commented that we should “increase its beauty, not destroy it!” Why could it be said that the world’s seas and oceans are at risk of being destroyed?

Chapter 02

Living with the Climate

This chapter is focused on how climate impacts on habitats and human life, and considers how the increasing frequency of natural disasters is changing life for millions of people, for habitats and ecosystems.

Textbook Section: Chapter 2, pages 17-30

Aim: To look more deeply into what is meant by climate and investigate the impact that different types of climate, and climctic change have on environments as habitats and living and working places.

Learning outcomes of the chapter:

Learners will --

- Define climate and account for different lifestyles that are adapted to local climate;
- Explain extreme weather, understand its causes, and evaluate its impact;
- Identify the causes, consequences and impact of global warming;
- Suggest strategies to reduce and limit global warming;
- Examine climate change in relation to specific locations;
- Use specialist terminology in relation to climate;
- Use climate data and show knowledge of technology which provides support for a study of the climate.

Lesson 1-2 What is extreme weather?

Aim: To understand the concept of extreme weather; climate change related causal reasons for its increasing frequency; and the impact of heatwaves, droughts, storms, floods, wildfires, and land-wasting events.

Learning outcomes: Learners will-

- Explain extreme weather, understand its causes, and evaluate its impact;
- Examine climate change in relation to specific locations;
- Use specialist terminology in relation to climate;
- Use climate data and show knowledge of technology which provides support for a study of the climate.

Lesson 1 What is extreme weather?

In your preview ask pupils what the word 'extreme' means, and discuss the term with them. Ask them to apply the idea to weather: ask "So what does extreme weather mean?" Ask them to give some examples and then explain that today, and in the lesson after this one, we are going to look at things like flooding, forest fires, droughts, and landslides. Check that they have a clear understanding of the difference between 'weather' and 'climate'. Then read the introductory section of 2.1 on page 18.

Activity 1

Extreme Weather

Read the section on page 18 about storms. Ask them to write a short explanation of what a storm is in their notebook and to explain what we mean by typhoons, hurricanes, and cyclones.

Look at the map on page 18 which shows the location and high season for hurricanes, typhoons and cyclones. Provide each pupil with a copy of a simple blank world map, (like the one on page 18, but without the details of the hurricanes cyclones and typhoons). It would be awesome if pupils were to add where and when these violent storms are likely to be experienced. Pupils should stick their completed maps into their notebooks. Discuss what geographers might mean by the term 'tropical revolving storms'.

Activity 2

Show some images or online footage of each of the different types of tropical storm, and ask pupils to make notes about the features of each type of storm. Provide examples of the ferocity and sorts of damage that these storms caused. If possible give pupils some small images to stick into their notebooks which show these types of storms. The significant rainfall associated with these weather conditions can often lead to flooding, so look at the map on page 18, and ask: "If these three types of storm bring heavy rain, where would the floods happen?"

Now read the short paragraph on Floods and explain that we will look at flooding in more detail in a later lesson.

In your plenary explain that global climate change is bringing about significant problems as a result of extreme weather, and that governments are dealing with events that should be quite rare, much more frequently. This places many communities in very precarious circumstances, but locating so many people in coastal margins, along riversides, in mountain areas prone to landslip, and is politically impossible, unaffordable, and unpopular.

Lesson 2

In the preview explain that we are now going to look at how extreme heat is becoming a problem for places that were temperate in the past, and how hot places are becoming much more difficult as habitats. Ask the group if they can explain why climate change might be worsening with places becoming hotter and hotter. Some pupils may have the idea but it is quite pleasant for places to be warm and sunny, but we are not talking about having a nice quiet day at the beach laying in the sun. We are talking about it being too hot to work or study, too hot for livestock to be outside and too hot for crops to thrive.

Activity 1

Why are heatwaves, droughts, and wildfires so damaging?

Read the heat waves and drought paragraph from page 19. Ask pupils to write down definitions of drought and heatwave in their notebook. Discuss the two terms. Ask pupils to explain why developing countries often experience spikes in power consumption during very hot weather (air conditioning and cooling plants for the food industry).

Activity 2

What is the economic impact of extreme weather?

Read the 'Wild fires' and 'Extreme Weather and the economy' sections and then look at three photographs. Ask pupils to explain how each picture shows the impact on people caused by different types of extreme weather event.

Ask pupils to write in their notebooks why heat waves, droughts, and wildfires are very damaging to a national economy and the lives of ordinary people.

Optional Home Learning

You could ask pupils to respond to the task in the 'Going Further' box at the bottom of page 19. If you decide to set pupils this task ensure that you have scaffolded it adequately and they know the sorts of information that you would like them to collect how you would like it presented and the depth of information they should be looking for whilst completing their research.

In your plenary, reiterate how each of these extreme events have a real financial, emotional, and personal impact on the people that get caught up in them, and a lasting impact on the place and space, but also a wider impact on the economy and the way that limited resources are deployed.

Lessons 3-6 The Causes of Climate Change

Textbook Section: 2.2 pages 20-21.

Aim: To understand the causes of climate change, and the consequences of global warming; And to consider the impact for both on Pakistan.

Learning outcomes: Learners will-

- Understand climate change and global warming as processes;
- Identify the causes, consequences and impacts of global warming;
- Suggest strategies to reduce and limit global warming;
- Examine climate change in relation to specific locations;
- Use specialist terminology in relation to climate.

Lesson 3

Textbook Section: 2.2, page 20

Aim: To understand that global warming has real consequences for the people and economy of Pakistan.

In your preview and starter activities ask pupils if they know what the term global warming means and how it happens as a process. Explain that you are going to look at the consequences of global warming.

Read the short opening section at the top of page 20.

Activity 1

Representing global warming.

You could have a series of small random objects on your desk, for example a teacup, a ball, some ribbon, some children's toy figures, a toy car, some plastic farm animals, some rice: the mix is up to you but the idea is there will be some random items and some things which could be really useful in explaining the process of global warming. Ask the class to stand around the desk or show them and tell them what is on the desk, and then give them some thinking time in which they have to decide how they would use the objects to explain how global warming takes place. Tell them this is intended as a fun activity which will stretch their creative thinking. Then ask a small number of pupils, one at a time, to come and demonstrate the process of global warming using whichever of the objects they wish. This should be a good opportunity to celebrate creativity and the lateral thinking that children often possess.

If any still seem confused by what is meant by the term global warming, explain the process yourself using some of the objects, having carefully decided in advance how you would do that to keep it concise, clear, and entertaining.

Now read the section 'Consequences of global warming' on Page 20.

Activity 2

The Consequences of global warming

Ask pupils to make a note in their notebooks about what problems global warming is generating for the earth.

Read, and discuss the next paragraph 'If Pakistan has fewer industries than wealthier countries, why is this a problem?' with the class. The panel is from a report from the Asian Development Bank, and warns that the consequences of global warming will accelerate the range and intensity of natural disasters. Help pupils understand some of the difficult terms for example climate change projections, global mean, water dependent sectors. Then read the paragraph 'Why is food supply at risk?'

Explain that if Pakistan has to divert large scale resource to natural disaster recovery, then it becomes more difficult to invest in improving peoples lives and standards of living. Natural disasters sometimes destroy infrastructure so one of the problems for developing economies, is that countries have to replace infrastructure rather than investing in additional infrastructure. There is of course also the loss of life and the wasted potential alongside the human tragedy of national natural disasters.

Use the 'To Discuss' box to consider with the class where the impact would be felt in each of the areas given, for example, "How much has water availability changed?", "How would work be impacted upon?", "How would food availability change or be restricted?", "How would transport be disrupted or changed?", and "What might happen to the ecosystem and farming?"

Optional Home Learning

You could use the 'Going Further' box on page 20 as a task for home learning, setting pupils a small research task around finding out what is being done to adapt the food sector to climate change in Pakistan. If you set this task pupils would find it very helpful to understand the concept. Ensure that you have clear parameters and likely sources of information if this task involves Internet research. If you are going to provide pupils with materials to use for research, think carefully about accessibility and reading age, and think about what constitutes a meaningful extension to their knowledge rather than just something which will fill their time.

In your plenary explain that now people are aware of the problem of global warming and climate change and understand that it is possible to start to amend habits and to fix problems, and therefore although we should be concerned about the future we should not be negative about it. What is important is action by governments, people and businesses to take urgent action. In the next lesson we are going to look at further information to help us think about what needs to be done.

Lesson 4 The Impact of Climate Change on Pakistan

Start your preview with an explanation that if we are going to defeat climate change and protect the planet we all need to take action. Say that today's lesson is going to start to look at challenges for particular industries and action which is being taken at national level.

Activity 1

Read Source B, the article extract, at the top of page 21. Ask pupils to summarise what this article is telling us, and decide whether you would like them to write anything in their notebooks, using 'The Impact of Climate Change on Pakistan' as their title if they do so.

Activity 2

Use the two 'Did you Know?' boxes on page 21 to begin a conversation with the class about how urgent it is to deal with global warming. The first statement reports Pakistan's position in 'the top 10 most likely to be negatively impacted upon' category in relation to global warming. Discuss with the group how they feel about this, what reasons they might be able to give for why this classification was given, and what we should do about this, if anything. The second statement reports that the government passed a law to create a new agency to monitor national action on climate change and global warming.

Discuss this step with the group, asking whether they think this is enough, what else they would like to know about this agency, and whether they should be taught more about global warming and climate change in school. You might also ask them what their view is of whether adults should be helped to understand climate change and global warming more fully.

Read the remainder of the page, and ask them to tell you what is meant by the term greenhouse gases. Ask who can remember which things most contribute to greenhouse gases and therefore might be the most urgent areas of emissions to tackle.

Look at the statement about the Ministry of Climate Change's vision. Ask whether they know what a vision statement is, and what such a thing might mean in everyday work for a government department. Have a close look at the wording of this vision statement and ask if it is clear and would be easily understood by all adults. It speaks of 'mainstreaming climate change in the economically and socially vulnerable sectors of the economy.' It also mentions building a sense of climate resilience.

Ask what they think these two things mean and why they might be very important

Optional Home Learning

You could ask learners to carry out some research based on the 'Did you Know?' and 'Going Further' panels on page 21, or on the 'To Discuss' panel at the bottom of the page. Responses could take a number of forms: a report, presentation or poster, or a traditional prose response.

In your plenary repeat the message that climate change is a very serious problem, summarise what they have learned about action being taken, and explain that they are the key generation for facing the consequences of climate change but also being part of the solution to the problem.

Lessons 5 Exploring the relationship between extreme weather and climate change

Aim: To explore the relationship between extreme weather and climate change and consider how flooding is a significant risk for parts of Pakistan.

In the preview explain that geographers and historians both try to look for causal links, which means they look for things which make something happen. With global warming one of the consequences of the process is climate change, which in turn has its own consequences for ecosystems, life on Earth, and national economies.

Activity 1

Changing weather patterns globally

Read the opening section of page 22. Ask pupils to make notes about where in the world we are seeing climate change having a significant impact on extreme weather and climate change - top part of page 22.

Activity 2

Now read the lower part of page 22 to the end of the 'Flash Flooding' panel. This text refers to the floods of 2010, so bear in mind that some families might have experienced trauma associated with these events, or subsequent floods, and that therefore some care and sensitivity is needed.

Ask learners to summarise What happened in Pakistan's Flood Disaster of 2010?, (using that as the title) in their notebooks, writing in their own words, and to then draw a coloured box around the summary.

Ask them to also write down the term 'flash flooding', and explain what happens when large amounts of rainwater are 'dumped' onto a landscape.

Optional Home Learning

The 'Going Further' and/or 'Did you Know?' panels could be used to support a research task.

In your plenary summarise the relationship between extreme weather events and climate change/global warming, and remind them that the floods are just one indication of the impact that extremes of weather can have on habitat and people.

Lesson 6 Landslides

Aim: To understand the different processes which geographers describe as landslides, and evaluate their impact on landscapes and habitats.

In the preview explain that the amount of water in an environment can be very significant in holding the soil together, so unusually wet or dry periods, or a changing climate over time, can have dramatic impact on the ability of some land to maintain its shape and stability. When significant sections of the upper parts of banks of rock and soil slide or collapse, this creates mass wasting events called landslides.

Activity 1

The Nature of Landslides

Ask pupils to read the opening paragraph of page 23, and define Landslides in their notebooks, placing a coloured box around the term.

The class should then be directed to look at the six drawings of different types of land slippage.

Pupils would find it helpful to have a copy of the pictures of these different sorts of movement in their notebook, so if you are able to do so provide a photocopy to stick in.

Activity 2

Landslides in Pakistan

Read the bottom panel on page 23, which includes an extract from a report by the Director of the Pakistan Meteorological Department in Peshawar. Ask pupils to summarise what impact the 2016 floods had on Peshawar in their notebooks.

Use the 'To Discuss' box, at the base of page 23, which asks 'What can be done to prevent flood and landslides in Pakistan?' to initiate a discussion about what the class can suggest as preventative and preparation measures.

In your plenary encourage the pupils to think about why a changing landscape matters, and how there is impact on an environment which is permanent in terms of landscape change, and often a significant impact on people.

Lessons 7-8 How is climate change impacting on the frequency and ferocity of wildfires?

Textbook Section: 2.3 pages 24-25

Aim: To understand the causes, nature, and impact of forest and wildfires.

Learning outcomes: Learners will-

- Identify the causes, consequences and impact of forest and wildfires;
- Suggest strategies to reduce and limit these disasters;
- Examine their impact in relation to specific locations;
- Use specialist terminology.

Lesson 7 How is climate change increasing the frequency and ferocity of wildfires?

In the preview ask if anyone saw the television news footage about the massive bush and forest fires that have broken out in the last few years in places as far apart as Australia, Siberia, the USA, and Spain. These wildfires, defined by the World Health Organisation as 'an unplanned fire that burns in a natural area such as a forest, grassland, or prairie.' [https://www.who.int/health-topics/wildfires#tab=tab_1] Devastate plants,

wildlife, and ecosystems across huge areas, destroy any life and property in their way, and can release large quantities of smoke and gases into the environment.

Activity 1

Why and how do wildfires start?

Read the opening passage on page 24, 'How do forest fires start?' Explain that some forest fires, and many wildfires in scrub and bush lands, prairies and grasslands are directly the result of human action- because of carelessness or deliberate fire setting. Many of the others are the result of human action because climate change is caused by global warming, and that is caused by human actions and our heavy use of carbon based fossil fuels- peat, coal, oil, gas.

Ask pupils to write an answer to the question 'How do forest fires start?'

Activity 2

What is a forest fire and why is it so devastating?

Ask the class to read this section, and then answer these questions:

Why are small scale, naturally-caused, fires beneficial to some plant species?

Why are larger wildfires a significant threat to ecosystems?

Why is deforestation likely to lead to land degradation, (a fall in its fertility)?

Optional Home Learning

You could use the 'Ask the Experts' panel as a starting point in asking pupils to find out more about how natural, small scale forest fires play a part in renewing and energising some habitats.

In your plenary restate how badly large-scale fires impact on complex ecosystems, which might take centuries to recover if mature long-lived trees and all of the local plants and wildlife have been killed. Ask how local people must feel after the bush and wildfires have struck. Show some images of scenes during and after some recent wildfires.

Lesson 8 What are the wider impacts of climate change?

Aim: To understand the impact of forest fire on some habitats and the consequences of this for further place, space and people.

In the preview explain that we are going to consider how wildfires accelerate the wider impacts of climate change. Read the text at the bottom of page 24 till the top of page 25.

Activity 1

How is climate change affecting life in general?

Read this section on page 25. Ask pupils to list the four impacts that climate change is already bringing to human society. Can they suggest how these things are being monitored and if they impact most strongly on any particular groups or societies?

Activity 2

Exploring ways to prevent global warming

Read the suggested solutions. Ask learners to list these six solutions in their notebooks in their own words, with a small image for each.

Activity 3

Can we learn to manage natural disasters?

Read the sections 'Learning to manage natural disasters' and 'What is affected after a natural disaster?' on page 25. Ask learners to discuss, and then answer the question: what should societies which have experienced disasters learn from them and what can they do to better cope in the next emergency?

Pupils might need some steering to begin with in discussing this, but can come up with some very insightful observations and suggestions once they get started.

Optional Home Learning

You could initiate the 'To Discuss' topic at the base of page 25, and ask pupils to write this up as home learning.

In your plenary summarise the impact of climate change and emphasis that people are working on solutions that we can all help implement. Note that many young people are worried about climate change and species loss, and only following a negative narrative on problems, while neglecting solutions can have a significant impact on young people's mental health and well-being.

Lesson 9-12 Adapting to the Climate

Textbook Section: 2.4, pages 26-29.

Aim: To understand that making adaptations to climate is a natural element of life on Earth.

Learning outcomes: Learners will-

- Identify the causes, consequences and impacts of global warming;
- Examine climate change in relation to specific locations;
- Use specialist terminology in relation to climate;
- Use climate data and show knowledge of technology which provides support for a study of the climate.

Lesson 9 Is it normal to adapt to climate?

In the preview remind the group of what we mean by adaptation to an environment. Ask if the group can recall any examples from their earlier geographical studies.

Activity 1

Ötzi the Iceman

Read the opening text on Page 26, and the panel on 'Ötzi the Iceman'

Ask learners to write answers to these questions:

- What does it mean to say a creature is adapting to their environment?
- What does the story of Ötzi the Iceman tell us about whether humans were adapting to their environment.

You could catch pupils' curiosity and extend their interest by looking together at an internet site, or showing a short internet video, about Ötzi and how he was discovered and studied. Various sources are available, including Ötzi the Iceman: What we know 30 years after his discovery (nationalgeographic.com).

Preview your choice before showing the parts of it you feel are appropriate or suggesting learners access it at home. Note that Ötzi was only discovered because climate change was melting the ice!

Activity 2

Examining Contrasting Climates 1.: Studying the climate of Anchorage, Alaska

We are now going to look at modern needs to adapt to climate and change. Ask pupils to read the panels from the middle to the end of page 26.

The diagram is a graphical representation of climate details for Anchorage, the state capital (Capitol in U.S. English) of Alaska, USA. Climographs like this display monthly averages for low and high temperature (top two sets of number) and average precipitation (figures along the x axis). Specialist representations like this make comparing the weather month by month in specific places easy, and also help in comparing places.

Having explained how the climograph 'works', ask the class to explain what the weather is like in Anchorage. Climograph is during the year. You could use a series of short true and false to see if pupils understand what the climograph is showing. There is also additional information to the right of this diagram.

Ask pupils to write a description of Anchorage, including climate details and other interesting facts which identify the distinctive features of the city.

Optional Home Learning

You could set the 'Going Further' task on the top of page 27 for home learning.

In your plenary ask what the class think make a place distinctive? How highly do they place the weather/ climate in their choices?

Lesson 10

In the preview recap on the last lesson: how did they decide what made Anchorage distinctive?

Then read the opening paragraph on page 27, which mentions the way that climate setting influences the infrastructure needed. The Mayor of City of Anchorage will need to buy snowploughs, whereas none

are needed for the Mayor of Karachi! In the 'Did you Know' panel on page 27 you can see that the city of Reykjavik is using its snow ploughs less often because of climate change.

Activity 1

Examining Contrasting Climates 2: Studying the climate of Karachi, Pakistan

Ask learners to analyse the climograph for Karachi, and to read the text below it about the city and then repeat the earlier task, this time in relation to Karachi: Ask pupils to write a description of Karachi, including climate details and other interesting facts which identify the distinctive features of the city.

Activity 2

Now discuss the cities using the first part of the 'To Discuss' panel at the bottom of the page as a framework.

Ask pupils to write about similarities and differences between Anchorage, a cold climate city, and Karachi, a warm climate city.

Optional Home Learning

The second part of the 'To Discuss' panel could be used as a home task: to compare a tropical or temperate climate city with one or both of Anchorage and/or Karachi.

In your plenary reflect on the way that distinctiveness for specific places is influenced by climate.

Lesson 11-12 The Climate and Lifestyle of People in Coastal Areas and Plains

Aim: to explore how settlements are impacted upon by the climate in their location.

In the preview link back to the last two lessons which contrasted large cities in particular types of climate, and forward to the current and next lesson about how local climate shape aspects of community life.

Activity 1

Read the opening section 'The Climate and Lifestyle of People in Coastal Areas and Plains' on page 28

Ask pupils to write an explanation of how climate impacts life in coastal areas and plains.

Activity 2

(for lesson 11 /continuing as activity 1 for lesson 12). The Lifestyle of people living in polar regions and tropical regions.

Read the text in the 'Lifestyle of people living in polar regions and tropical regions' section, pages 28-29.

Ask pupils to make a short, well designed report on how the four features are shaped by climate:

Climate b. Diet c. Occupations d. Houses

In your plenary reinforce the message that climate impacts on settlement nature, infrastructure and life.

Answers for the end of unit recall questions

Section 1 Quiz Questions

1. Research-based question. Student's may refer to the 'Did you know' box on page 26 of the textbook. The topic has also been covered in activity 1 under lesson 9 of this chapter in this teaching guide.
2. Research-based question.
3. Research-based question. Students may refer to pages 22-25 of the textbook.
4. Climate change might be a threat to human food supply because of the risk to crops/food production due to heatwaves, drought, storms, flooding, and wildfires. (pages 18-19)
5. Wildfires (page 19 and page 24) destroy habitats, kill flora and fauna, and can cause further problems if trees and shrubs that are destroyed no longer hold soil in place and erosion occurs leading to reduced fertility.
6. Landslides are triggered by (see page 23) creep, fall, flow, slide, slump and topple processes. Human action can worsen this by undermining banks of land by, for example, building, converting land from natural habitat to farmland, removing plants and trees that retained and held the soil (deforestation), diverting water courses and eroding land's natural run-off channels.
7. In the developing countries climate change risks food supply; lowers standards of the people living in rural farming communities and risks starvation and poverty if crops fail.
8. Disaster management planning is the process of predicting and planning to deal with natural hazards.

Section 2 Multiple Choice Questions

1. B. Meteorological Department conveys information about weather and disasters due to extreme weather
2. Rapid flooding is known as: A. Flash flooding.
3. C. Advance Slide is not a result of flooding.
4. Cyclone Season in Pakistan is B. October- November.
5. (C.) has had a climate change ministry for several years.
6. Wildfires help create: B. Carbon Dioxide and Methane gases.
7. The mass loss of whole areas of trees is: B. Deforestation.

Opportunities for Longer Prose Responses, Debating and Extended Writing

In this chapter about Climate and natural disasters you could ask pupils to complete written essays or spoken explanations, for example:

1. What do the story of Ötzi the Iceman, and adaptations to work 'around the climate' in modern Pakistan tell us about human willingness to live in varied climate zones?
2. Giving examples to support your explanation and analysis: How do humans use ingenuity and technology to adapt to:
 - I. Cold climate settlement,
 - II. Hot-dry desert settlement, and,
 - III. Tropical climate settlement life?
3. In what ways is climate change increasing the threat of natural hazards habitats and their flora and fauna?

4. Analyse how natural climate disasters such as floods, fires, land-wasting and extreme storms a threat to food supply and economic activity.
5. Debate: Patterns of change in the climate are normal. We should not be worried about living through a period of more extreme weather, we have the technology and can cope!
6. Debate: All citizens should be trained for coping with natural hazards instead of spending money on prevention schemes.
7. Research: How has climate change impacted on life in ... (insert city or region name in Pakistan)?
8. Research: What have been the costs of extreme flooding in Pakistan, and what should we do next?

Chapter 03

Environmental Pollution

This chapter is focused on pollution in the environment.

Textbook Section: pages 31-44

Aim: To investigate the nature of pollution and its links to environmental degradation, habitat damage and climate change.

Learning outcomes of the chapter:

Learners will --

- Investigate the link between pollution and climate change;
- Identify how water, land, air, noise and light pollution all have harmful impacts on the planet as a habitat;
- Evaluate pollution risks and suggest solutions for different forms of environmental contamination;
- Use specialist vocabulary;
- Discuss how technology helps us monitor and tackle pollution.

Lessons 1-2 What problems has mankind created in the natural environment?

Textbook Section: 3.1, Pages 32-34

Aim: To understand that pollution is created by humans and has a severe impact on ecosystems

Learning outcomes: Learners will-

- Investigate the link between pollution and climate change;
- Identify how water, land, air, noise and light pollution all have harmful impacts on the planet as a habitat;
- Evaluate pollution risks and suggest solutions for different forms of environmental contamination;
- Use specialist vocabulary;
- Discuss how technology helps us monitor and tackle pollution.

Lesson 1 What is the relationship between pollution and climate change?

In the preview ask if the class think the actions of one person make a difference to anything, and allow them to discuss this for a couple of minutes.

What if one person drops a scrap of paper? How about if it is a hundred? A thousand? A million? What if one person picks up a scrap of paper in the street to recycle or put in a bin? How about a hundred... and so on. Explain that really small actions might seem insignificant, but habits form, and when things are 'scaled-up', when lots of people do them, a visible and significant difference is possible. With pollution, random bad habits can make major problems, and if bad habits, or thoughtlessness occur over a long period then a problem can be magnified. Global warming is one of these problems. Although climate

change is becoming very obvious now, and environmental degradation is significant in some places it is hard to change some individuals habits and for the least wealthy people often they have very little choice around where they live, the work they do, and how 'green' their behaviours are on a daily basis. The way the economy works individual companies have often been more preoccupied with selling things and profit than the environmental impact of their actions. Throughout history, governments have had to legislate to protect workers, consumers, and the environment. Explain that a mixture of lack of awareness, urgency, and self-interest have led to global warming and climate change, and that now we all have to force change to happen and be vigilant about what we do ourselves, and the behaviours around us. Today we will look at the causal links and connections between pollution and climate change.

What is the relationship between pollution and climate change?

Activity 1

Ask the class to read the first half of page 32 with the class and ask them to answer these questions:

1. How are pollution and climate change linked?
2. Which gases are considered 'Greenhouse gases'?
3. Why do they get this name?
4. What is the largest contributor to Greenhouse gas emissions?
5. Which human led actions are contributing to climate change?
6. What do we mean by 'air pollution,' from where does it originate, and why is there increasing climate change?
7. How is ground level Ozone increased and what forms as a result?
8. Why do rising sea levels, a result of the melting of the polar ice caps and glaciers due to climate change, threaten the health and well-being of coastal communities?

Activity 2

Read and discuss the remainder of page 32: 'Too many humans? Too much technology?' and 'Overpopulation'.

Ask pupils to: Explain, in their own words why the increasing human population is placing tremendous pressure on the planet due to a cycle of consumption.

In your plenary you could ask pupils to summarise the lesson's key learning points as a simple diagram or drawing (set a time limit), reminding them that we were talking about: global warming and climate change and the way that human habits are impacting on the planet as an ecosystem, and the resources used and available.

Lesson 2 Light and Water Pollution

In the preview explain that pollution can take a number of forms, and today we will look at human agency in creating light and water pollution.

Ask if at night, if they stepped outside where they lived in the middle of the night whether they would be able to see many stars?

If yes, "Great. how many, what is it like, how does it feel when it is really quiet and you are staring at all that sky?"

If not, “Okay, so why do you think you don’t see many/any ... because there are lots and lots!” Begin to tease out that this is due to light pollution. You might want to show some images of the night sky seen with the naked eye in Pakistan if you can do so.

Light Pollution

Activity 1

Read the first two paragraphs on page 33 regarding ‘Light Pollution.’

The photograph has had the political (country border) boundaries added in – can the class recognise which bit of the globe this is showing?

It shows: North Western Europe, with (left to right) the Irish Republic, and UK, then the European continental mainland and islands (Northern France, Belgium, Luxembourg, the Netherlands, and Southern Norway showing in the central section – along with the gas and oil platforms of the North Sea showing very clearly. Then Denmark and southern Sweden, Germany and the Czech Republic and Eastern Poland.)

Discuss what this image tells us about light pollution.

Show a satellite image of Pakistan at night showing our levels of light pollution— you should have a very clear indication of the Indus because of the way the settlements follow its course, and also be able to see the light pollution from the cities and towns of India.

Ask pupils to write down an explanation of what light pollution means as a geographic/scientific term, and to explain its impact, linking to the ‘To Discuss’ box if you wish/have time. Ask them to neatly draw a coloured box around their response.

Water Pollution

Activity 2

Read the ‘Water Pollution’ paragraph from the middle of page 33 onwards and including the ‘Did you Know’ box.

Ask pupils to

- a. Define water pollution.
- b. Then explain
- c. What is meant by biodegradable?
- d. Why are plastics a long-lived pollutant?
- e. How are plastic fragments or pellets a threat to water quality and marine life?
- f. The way that 80%/20% of the plastic in our oceans got there
- g. Ask the group to use a ruler to place a coloured box around their answer.

Show the class some appropriate footage of beach and water course cleaning in Pakistan and elsewhere (having checked and previewed it to ensure suitability). Does the class think actions like this are important? Why?

Optional Home Learning

Find out about and report on The Great Pacific Garbage Patch.

Use, for example, Great Pacific Garbage Patch (nationalgeographic.org) and other websites. Options for the format pupils are asked to use might include:

Classroom presentation; newspaper or magazine style article; eco-organisation's web-page; documentary script or videoed presentation; stop-motion animation.

In your plenary recap on the learning from today and the previous lesson. Humans have made a good job of taking something very beautiful and damaging it. We have learnt about noise, light, and water pollution, and will now move next time to look at air and land pollution.

Lesson 3 Air and Land Pollution

In the preview explain that it is impossible to avoid pollution if it is in your immediate environment, and around you all the time. This makes its effects and risks serious. It is depressing to see a lot of waste and litter, but ingesting (swallowing) it would be more harmful still. During the last lesson we started to learn about plastic pellets, tiny fragments of plastic waste that river and sea creatures are consuming because water passes through all of our bodies. We know that many animals have been injured or killed because of eating plastics. Now we will look at contamination of the air and land caused by humans, our industries, our consumerism, and lifestyles.

What is wrong with the air we all breathe?

Activity 1

With the class, read the 'Air pollution' section, page 34. You could show footage of modern smog over industrial cities.

Set them the task of writing in their notebooks an explanation of what is meant by air pollution and how it impacts on flora and fauna. Ask them to place a coloured border around the response in their notebooks.

Why is smog a threat to the people and creatures in built-up areas?

Activity 2

Together, read the 'Smog' section, page 34.

If you are able to do so show suitable YouTube video clips about smog-air pollution, for example, parts of Out of the Smog: Pakistan's plea.

How does land pollution threaten our natural environment and the ecosystem?

Activity 3

Explain that "Now we will look at what happens when the things we buy are no longer needed." As a group, read the 'Land pollution' section, page 34. It explains that thrown away items often end up in the ground, contaminating it and making it less fit for growing things.

Ask the group to now 'Explain why the physical waste from our consumerist lifestyle present a problem for the land we rely on?'; using the information here to respond.

Optional Home Learning

Read the 'Did you Know?' panel at the base of page 34. Ask pupils to design a public information poster warning about the dangers of polluted air. Discuss with them where they might look for design ideas, themes or information to help make their poster accurate, engaging and hard hitting (without horrifying or panicking the public. Agree any rules about medium (can it be made using ICT or must it be 'by hand'? How large a sheet of paper? When is the hand-in deadline?

In your plenary recap on this lesson's work on air, smog, and land pollution. Next session we will consider environmental problems in Pakistan.

Lessons 4-6 Environmental Problems in Pakistan

Textbook Section: 3.2, Pages 35-36.

Aim: To apply our learning about global challenges from pollution to the local situation of Pakistan.

Learning outcomes: Learners will-

- Investigate the link between pollution and climate change;
- Identify how water, land, air, noise and light pollution all have harmful impacts on the planet as a habitat;
- Evaluate pollution risks and suggest solutions for different forms of environmental contamination;
- Use specialist vocabulary;
- Discuss how technology helps us monitor and tackle pollution.

This sequence of three lessons could be approached as a written (or other format*) assessment of learning about environmental pollution. A lesson or two of information gathering and planning could be followed by a session writing up a response to the target task*.

*The target task could be: an essay; a presentation; a piece of writing, spoken or creatively presented work designed for a particular audience or genre, e.g. radio reportage script; children's textbook pages; display-board for a bus shelter/poster at a bus station.

Lesson 4 Setting the challenge

In the preview explain that in three lessons we will: find out about and research pollution in Pakistan, and plan and create a response to an assessed task. Tell the group the nature of the task, and how you will split the three lessons, and if they have any home learning time for research or writing up the work.

Answer any questions the group have about the format/ work task.

Environmental problems in Pakistan

Activity 1

Read page 35, pausing to ask the group questions, or allow them to ask questions as you proceed: this is a denser and 'adult' text and of longer length than most others we have used – so help them make sense of its content and tone.

Remind them that they will be responding to the key enquiry question 'What is the extent of the environmental challenge facing Pakistan?'

You might find the 'To Discuss' panel at the base of the page helpful in creating a discussion of priorities for action. Ask them to decide on whether they wish to write things down from this article, and give them some thinking and planning time to consider how they will respond to the task.

Decide if you are setting any home learning and draw the lesson together in your plenary.

Lesson 5

In this lesson there is a starter activity to help pupils be energised to respond to the enquiry task. As your preview, re-explain the parameters of the task briefly and then use the starter task.

Visualising environmental challenges across Pakistan.

Activity 1

The images (A-H) on page 36 show eight different environmental hazards— prior to the lesson research each of the eight areas and make statements which include some facts, pictures, short quotations, and perhaps suggested sources or places to visit on the internet further research/as sources of relevant factual information for each of the problems.

Either: Pin the statements up around the room in this lesson so when pupils have looked at, and discussed, the pictures, they can move around the classroom in 'an information hunt' to gather information for their assignment.

Alternatively, provide the statements/any images you have prepared as a bag of evidence, which you have copied/printed a number of times and which can be provided for pupils in grip-seal bags or paper envelopes

You could then suggest pupils use some or all of these eight areas as focus points for their assessment, but remind them that if they all address them as an A, B, C, D, etc., sequence the class's work will be 'very similar'— so they might wish to decide if some are subsets of other problems, or less important in the case they will make.

Decide if you are setting any home learning, and draw the lesson together in your plenary.

Lesson 6

During this lesson pupils have time to research (perhaps again having access to the information from last lesson,) / create/ and-or present their assessed work, i.e., to create an accurate, informative, and well-prepared piece which demonstrates good levels of subject and disciplinary knowledge, and which responds to the question: What is the extent of the environmental challenges facing Pakistan?

In your plenary praise the traits you have been most pleased to see in terms of work habits, without signalling pupils out, and thank them for their assignments/congratulate them for working under pressure.

Lesson 7 How has our economy created the Greenhouse effect?

Textbook Section: 3.3, Page 37

Aim: To understand and evaluate the links between economic activity and global warming/climate change.

Learning outcomes: Learners will-

- Investigate the link between economic activity and climate change;
- Use specialist vocabulary;
- Discuss how technology helps us monitor and tackle pollution.

In the preview ask if anyone can explain how / why 'Greenhouse gases' are worrying climate scientists?

What is the Greenhouse effect?

Activity 1

Read and discuss the first paragraph on page 37, which explains the Greenhouse effect. Ask them to use scrap paper to first rough out, and then later make a best copy in their note books of a set of steps which explain the Greenhouse effect based on the information in the textbook.



To begin with this is about the planning... don't let them make the rest copy yet as they might change their minds about the sequence/layout....

Steps towards the Greenhouse Effect and Global Warming

They decide how many steps they need.

The ground floor (lowest) statement i.e. first step, might be about which gases we are talking about and how they are an essential part of our lives!

Then as they read on they might decide that alongside step 2 they might write about the way the dairy cattle/meat industry has contributed to greenhouse gases; alongside step 3 how industries and modern living have made a difference.

However, in the paragraph they then get to an explanation of what the Ozone layer does.... So might have to rethink where to put that information... is that step 4 or step 2? Or separate?

How did consumerism and capitalism help create the Greenhouse effect?

Activity 2

Now look at the diagram on page 37, and read the information below the diagram. This explains how the 'buy lots of things, and then buy more and better things to replace the other things' cycle of consumerism has been and is a problem... in terms of consumption of resources, production of surplus items and waste generation.

You might explain the idea of 'Obsolescence built-in': that some electronic products and cars are designed to have a limited life span so they have to be replaced, or the manufacturer would go out of business if they made an everlasting product. In other cases, items are marketed as fashionable and then sometime later "a newer, better, brighter" version is marketed to persuade people who want the latest item to have that version. Marketing is very good at taking advantage of human desires and psychology to sell products—and lots of people get jobs from the whole 'make-it, sell-it, then redesign-it and sell-a-newer version' cycle.

Of course, there are also benefits to aspects of consumer choice, and to an economic model that helps people live more comfortable and easier lives. The 1951 comedy film 'The Man in the White Suit' parodies the idea of an everlasting product, in this case a white suit— that never gets dirty or damages, and the way that a whole range of people try to suppress it because it would put them out of work.

Ask the group to decide whether this information adds any additional steps.

Give them some time to complete the 'best' copy of their diagram in the notebooks.

In your plenary ask them to think about whether the economic model can be made more sustainable- we cannot stop making and selling many things, and everyone wants to have a comfortable existence, but is there a more sustainable approach we can take?

Lessons 8-10 Ways to reduce pollution

Textbook Section: 3.4, Pages 38-40

Aim: To begin to identify solutions to the problem of environmental pollution.

Learning outcomes: Learners will-

- Evaluate pollution risks and suggest solutions for different forms of environmental contamination;
- Use specialist vocabulary;
- Discuss how technology helps us monitor and tackle pollution.

Lesson 8 Reducing Pollution

In the preview explain that today we will look at practical steps to change polluting practices and reduce pollution. Ask if the pupils know what is meant by renewable energy and sustainability.

Why do we need renewable energy schemes to increase?

Activity 1.

Read the top three paragraphs on page 38. and discuss the contents. Help them identify which side of the table below different fuels will fit. Nuclear is renewable and is judged sustainable by most governments for example, because, although the radioactivity of the generating materials will deplete it is replaceable. There is disagreement however about whether the nuclear industry is fully sustainable. This presents an opportunity to discuss how sustainability and renewability might not be quite the same thing.

Ask pupils to make a table like this in their notebooks

Tell them it is best to add the horizontal lines once they have finished writing both sides of a row, so they don't have to squeeze things into small spaces.

Non-renewable energy means....	Sustainable energy means....
Example include:	Examples include:
Level of Pollution/Global warming impact:	Level of Pollution/Global warming impact:
Comments about this approach:	Comments about this approach:

Activity 2

Read the text on the bottom part of page 38, 'What impact does the food industry have on the environment?'- ask pupils to write the same words as the title in their notebooks.

And then use the text on pesticides and herbicides; the text on overuse of antibiotics; and the text below to make three speech bubbles to contain a summary of each.

What impact does the food industry have on the environment?

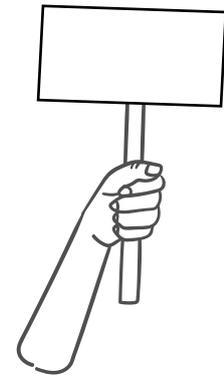
What impact does the food industry have on the environment?

Pupil worded text in the three 'fill-in' bubbles

Pesticides and herbicides farming

Overuse of antibiotics

Best practice



Optional Home Learning

Use the 'Going Further' panel about nuclear accidents as the basis for learners to develop short case studies of nuclear incidents. Explain that these three examples stand out, but there are lots more nuclear power plants globally, so there are far, far more 'safe' nuclear plants than the three that hit the news for the worst of reasons.

Optional Activity 3/Home Learning

Use the 'Did you Know?' and 'To Discuss' panels to provide an opportunity to learn about genetically modified plants. Prior to this ensure that you have checked your own subject knowledge is up to date and well informed from reputable sources.

In your plenary point out that there are highly successful business people following 'Green' and sustainable agendas in all sorts of business fields, including energy and the food industries, indeed some have gone on to be large players in their area because there is a demand for sustainable, climate friendly products and services.

Ask the class to write down what we mean by the word activist, and to explain why Greta Thunberg is seen as a great example of activism in action by many people- then draw a picture to illustrate the idea- for example pacing placard around the explanation

Lesson 9 Making a difference

In the preview say that we will now look at what we can do to make a difference in responding to the environmental problems that the world is facing and that cause difficulties for Pakistan and its people. Ask if the group know who Greta Thunberg is, and why she is famous worldwide. (As a teacher, review some details about her before the lesson!) She is a major inspiration for many young people and an impressive lobbyist for change.

Activity 1

Read the 'Go Green' paragraph on page 39. This gives six strategies for environment-friendly thinking.

Discuss this list, and the 'To Discuss' box, and ask pupils which things they think they or their families could do in their everyday lives in response to some of these actions.

Ask pupils to design a poster which promotes the six environment friendly messages, the 6Rs.

Discuss why these steps can help the environment with the class.

Activity 2

Read the remaining text lower part of page 39, which starts to indicate examples of activists globally who are taking action to repair and protect the environment.

Optional Home Learning

You could set pupils the task of finding out about some environmental restoration and protection initiatives, and, for example, contributing to a display about hope for the environment

In your plenary mention that small steps are important, and 'the six Rs' all help.

Then ask whether bigger steps are needed ... and who should take them.

Lesson 10 Case Studies of Problems in Pakistan

Aim: To consider 'real-world problems' from Pakistan, and to post and evaluate possible solutions

In the preview explain that we will look at two case studies, and they will use the information to a. compile a short report on each problem, and b. suggest solutions before c. evaluating their own solutions, and saying if there might be any risks to, or challenges for, their own plan.

Case Study 1: Pollution in the Thar Desert

Activity 1

Read and discuss the information in groups. Suggest practical responses and record these, then evaluate what risks and challenges these might present.

Case Study 2: The Balochistan Water Crisis

Activity 2

Read and discuss the second case study information in the same groups.

Suggest practical responses and record these.

Then each group passes their suggested solutions to another table (you decide how this is done) to allow them to evaluate what risks and challenges these might present. Allow time for the groups to consider the evaluation that their peers have carried out.

What should we do?

Activity 3

Draw this together in your plenary by asking the class first about Case Study 1: What should we do?, and take their views about action and the possible challenges/risks, then ask about Case Study 2. Sum up their experience.

Lessons 11-13 Can we prevent the further thinning of the ozone layer?

Textbook Section: 3.5, pages 41-43

Aims: To identify practical steps to tackle climate change in an extended writing activity.

Learning outcomes: Learners will-

- Evaluate steps that can be taken to tackle climate change;
- Demonstrate the communication skills required to deal with extended sources of information extract relevant information, and create a synthesis which responds to an enquiry question
- Use specialist vocabulary.

Lesson 11 Extended writing activity: Action for the Ozone Layer

In the preview explain that we will take three lessons to acquire key information, select the most relevant elements and create a report to respond to the enquiry question: Can we prevent the further thinning of the ozone layer. Discuss what marking criteria the group think we should apply to the task with the group, and get the pupils to record these to show in lessons 12 and 13 and to use for marking pupils' assignments or as part of a peer marking exercise.

A reminder summary of the meaning of what we mean by the Ozone layer, and why it is at risk is given in the 'Did you Know' panel at the base of page 41.

The Steps Required by the Montreal Protocol (1987)

Activity 1

Read page 41, which summarises five of the recommendations and actions from the Montreal Protocol.

Ask pupils to decide what information they will decide to take from this information for their report.

In your plenary explain that in the next lesson they will have the chance.

Optional Home Learning for lessons 11-12

Across the three lessons: allow pupils to set their own parameters around what they do as research follow-up, or preparation to support their work.

Lesson 12 Extended writing activity: Action for the Ozone Layer

In the preview for lessons 12 and 13 restate the task, and then move on to looking together at:

Activity 1

The short and long term effects of global warming (top of page 42)

Activity 2

What measures can be taken to reduce these effects? (Centre of page 42)

What are the health consequences of air and water pollution on the biodiversity of Earth?

Activity 3

(bottom of page 42 - top page 43).

Lesson 13

In regard to the Exploring alternative energy source that can help reduce pollution. (page 43)

Ask learners again to decide what information they need, giving them time to record information for their report, carefully curating it and selecting key details to support the case that they wish to make.

In your plenary for lessons 12 and 13 summarise the process that pupils have been following, and praise the work habits that you want to promote. In your feedback for the assignment relate your comments to the criteria agreed with the group.

Answers for the end of unit recall questions.

Section 1. Quiz Questions

1. The rapid growth of the human population has an impact because of the massive demand for additional resources with a significant impact on the environment. (page 32)
2. Light pollution (page 33) is excessive, disruptive levels of light, and is problematic because it disrupts wildlife and human lives and wastes resource.
3. Consumerism leads to excessive waste because of the resources it requires (page 37), the waste it creates and the replacement of items bought after a short period. In this process plastic is especially problematic because it does not biodegrade (break down) rapidly.
4. The Covid shutdown of 2020 had an impact on air quality and pollution (page 34) because far fewer people drove vehicles, used machinery, flew long distance air flights. In cities like Beijing the smog lifted and the air was considerably safer.
5. Energy needs can be met in a sustainable way by increasing green and sustainable energy (pages 41-42)

6. Over-use of antibiotics in humans, and in animals, alongside overuse of pesticides in agriculture is problematic because it increases resistance to treatment. (page 41)
7. The capitalist economy promotes wasteful attitudes and adds to the Greenhouse Effect by releasing so many pollutants into the atmosphere. (page 41)
8. Industrial pollution is a concern in Pakistan because of the various impacts on the ecosystem, flora and fauna, and the quality of life for people (page 35)
9. Have the students do a case study on 'Water scarcity in Baluchistan' instead. They may refer to case study 2 on page 40 of the textbook and answer the following question:
- Q. Balochistan is facing severe water scarcity issues that have led to various challenges for its people and environment. Explore the causes, consequences, and potential solutions to address the water scarcity problem in Balochistan.

Student's may use the following steps:

a. Causes and Effects:

- Identify and explain at least three main causes of water scarcity in Balochistan.
- Describe the effects of water scarcity on the daily lives of people in Balochistan, including health, agriculture, and overall living conditions.

b. Government Initiatives:

- Discuss the efforts made by the government of Balochistan to tackle the water scarcity issue, such as the construction of dams and tube wells.
- Analyze the effectiveness of these initiatives in alleviating the water shortage problem.

c. Role of CPEC:

- Explain what the China-Pakistan Economic Corridor (CPEC) is and its relation to Balochistan's water scarcity.
- Evaluate the impact of CPEC on the water scarcity issue, both positive and negative.

d. Community Solutions:

- Propose at least three community-based solutions to conserve and manage water resources in Balochistan.
- Explain how educating the local population about water discipline and better water management can contribute to addressing the water scarcity problem.

e. Future Planning:

- Describe the significance of constructing dams and implementing long-term water conservation strategies in Balochistan.
- Discuss the potential consequences if the water scarcity issue in Balochistan is not adequately addressed.

f. Conclusion:

- Summarize the key takeaways from your investigation and propose a comprehensive plan of action to address the water scarcity issues in Balochistan. Highlight the importance of collaborative efforts between government, local communities, and international organizations.

Section 2. Multiple Choice Questions

1. Population growth leading to scarce resources is: C. Overpopulation.
2. B. Light pollution: is problematic for nocturnal animals and human body clocks.

3. Noise pollution is not: B. caused by a wide range of wildlife activity
4. B. Biodegradable, is not a feature of traditional plastic packaging.
5. Coal is a form of: A. Fossil fuels
6. The primary cause of air urban pollution is: B. Vehicular exhaust emissions (page 35)
7. Nuclear pollution (C.) is not a common form of water pollution, but A. and B. Chemical and thermal pollution are common.
8. The primary cause of soil pollution is: A. Pesticides and fertilizers.

Opportunities for Longer Prose Responses, Debating and Extended Writing

1. In exploring the nature of pollution, you could ask pupils to respond to some of the following:
2. In what ways does pollution contribute to global warming?
3. Why might it be said that, since the industrial revolutions of the 1740s onwards, humans have been working hard to destroy the planet?
4. How true is it that Pakistan has a significant problem with pollution? (Could be presentation, report, debate or essay).
5. What needs to be done to prevent the problems of climate change, extreme weather and pollution from continuing to accelerate?
6. How has the modern economy created the Greenhouse Effect?
7. "Consumerism has been a disaster for Planet Earth." (Debate)

Chapter 04

Industrialisation and International Trade

This chapter is focused on the economic system, and provides information on trade and the business sector in Pakistan, and their links to international trade. It explores the importance of trade and markets to a healthy economy that provides secure and well paid employment at a range of levels and in a developing and ambitious economy. It examines how urban drift and urbanization are increasing in Pakistan as people are drawn to the economic and other opportunities that urban life offers, and the implications for this trend.

Textbook Section: 4.1, pages 45-58.

Aim: To understand the fundamental structure of the economic system and trade; to identify the current leading industries and products of the country and the significance of the economy for the people and country.

Learning outcomes of the chapter:

Learners will --

- Understand the economic system and its regulation in outline;
- Identify the main industries and products of Pakistan's economy;
- Identify the value of markets balancing mutual benefit and competition, sustainability and ethical trading in stimulating an economy and protecting consumers and workers;
- Understand the role of imports, exports and balance of trade in an economy;
- Evaluate the impact of industrialisation on Pakistan, and its role in urban drift ;
- Use specialist vocabulary.

Lessons 1-6 What is the relationship between geography and an economy?

Textbook Section: 4.1, pages 46-51.

Learning outcomes: Learners will-

- Understand the economic system and its regulation in outline;
- Identify the main industries and products of Pakistan's economy;
- Understand the role of imports, exports and balance of trade in an economy;
- Use specialist vocabulary.

Lesson 1 What is an economy?

Textbook Section: 4.1 page 46.

Aim: To understand the nature of the economic system in outline.

In the preview explain that we will now study the relationship between geography and the economy, looking at how landform and climate influences suitability of land for particular uses, and how there is a connection between where people, resources and markets for goods exist. Read the opening lines of page

46, which introduces the specialism of 'economic geography,' discuss with pupils what sorts of things they think an economic geographer might study.

How does geography shape an economy?

Activity 1

Read the passage 'What is an Economy?' on page 46 down as far as the end of the 'Economic stability' passage towards the bottom of the page. This page explains the different ways that the term economy is used: as a collective term overall; to describe local, national or global business and trade. It also explores why economic stability is important.

Ask pupils to write the title 'What do we mean by the term 'economy'?' in the centre of a clean notebook page so they can write four speech bubbles around it. Ask them to add the bubbles only after they have written in a summary of each of the four different ways economy is used...

Economy as a collective term A local economy

What do we mean by the term economy?

A national economy A global economy

Optional Home Learning

Ask pupils to learn the four different ways that economy is used as a term and check their understanding in a short quiz at the start of the next lesson.

In your plenary summarise the four different ways that 'economy' can be used and link this to the notion of the importance of securing economic stability.

Lesson 2 Why is an economy important to study?

Textbook Section: Section 4.1, page 47.

Aim: To understand the significance of the economic system.

In the preview explain that we will look at why nations need to be aware that they are part of the global economic system, and that as economies have developed over the last 150 years, they have become increasingly industrialised and some of the small-scale approaches have ceased to be viable. Ask what makes businesses succeed or fail and what we might mean by viability.

What do we mean by 'Global Economy'?

Activity 1

Discuss the term 'Global economy' and ask what it means. After some exploration explain them that it refers to worldwide levels of trade and wealth and international trade-relations. We usually measure national economies against each other in terms of Gross Domestic Product (GDP): a calculation of the total value of trade and services within a country over a year, and record this as an overall sum or per capita.

Read the section 'Why does share of the global economy matter in terms of future infrastructure?' on page 47. Ask why a strong level of GDP allows a nation to invest in infrastructure, and explain how some

infrastructure projects can be very taxing when a country has difficult terrain, or remote communities which make connecting them to services is more difficult and more expensive.

Key Terms

Activity 2

Read the remainder of page 47, which lists a series of definitions of key economic terms.

Talk about what we mean by cottage industries, and explain that in the past most manufacturing was carried out by skilled craftspeople working on a small scale in a workshop or room at home. In Pakistan and some other countries there are still people in small towns and villages working in cottage industries, of perhaps a single person or family making something. In some places lots of families make the same product and have a contract with someone who will sell on their pans or carpets, cloth or basic tools. The work tends to be fairly specialised, and might be labour intensive. It might require a lot of skill or repetition of several hand-made elements. However, compared to a factory, where modern machinery and precision equipment can mass produce items, a cottage industry struggles to compete. Some cottage industries can survive in remote places, where access to a range of goods from elsewhere is not possible and self-sufficiency is needed. However, in most locations, as mechanisation increases cottage industries struggle to create and become financially un-viable. Some survive where they can achieve things with a level of expertise and craft skills that a machine cannot replicate, or by producing high-value, high-quality 'one-off' items, but increasingly basic item production switches to mass production in factories.

Optional Home Learning

Ask pupils to:

- i. Find out more about what is meant by the terms artisan and craftspeople and what sorts of jobs such people do in a modern economy.
- ii. Reflect on what geographical factors would impact on where these people live and work.

In your plenary describe how movement to a modern, more urbanised economy is 'pushed' by farms needing less labour because of machines, and 'pulled' by younger people being attracted to towns and cities because of the greater opportunities these offer to earn more and have a wider range of experiences and leisure than in a small village. Explain that this is movement of labour, and can lead to a skills shortage, and depletes rural populations. Where there is movement to towns this can also be termed as internal migration or urban drift, and where towns and cities have a shortage of labour then immigrant labour from abroad is often the result.

Lesson 3 What are locational factors?

Textbook Section: 4.1, page 48.

Aim: To identify geographical factors which help determine location decisions for business and industry.

In the preview remind the group that we are interested in economic geography in these lessons: which means the way that financial decisions are influenced by geographic issues like proximity to population centres (to provide workers and a market) or natural resources, power supply and access roads/available buildings or land and other infrastructure.

What are locational factors?

Activity 1

Read the opening paragraph of page 48 and discuss what is meant by a locational factor in economic geography. Look at the document, and talk about the individual factors in turn and how they might influence decision making. Land, for example, needs to be close to the right mix of other key factors. It could be land that was previously undeveloped, land reclaimed from brownfield (old industrial) sites or from the sea or waterlogged or saline, but if there are no workers nearby, it floods frequently, there is no power supply or obtaining the necessary resources at this site would be expensive or difficult.

Explain that the varied nature of Pakistan's landforms and topography is an important factor in shaping locational decisions for businesses. In Pakistan some sites are remote, others are inaccessible, some are near very large numbers of people and on good supply and transport routes, and others are not.

Ask pupils to write a paragraph about locational factors which uses at least four of the six words in the definitions panel on page 48.

Imports, exports and trade

Activity 2

Ask pupils to read the 'Imports, exports and trade' paragraph and then create a box explaining each term in their notebooks.

Imports Exports Trade

Where do we open our business?

Activity 3

Form the class into small groups. Ask them to read the 'To Discuss' panel together and discuss each of the scenarios, and record what they decided together.

Optional Home Learning You could ask the pupils to research the terms in the 'Going Further' panel.

In your plenary summarise what geographers mean by locational factors, and ask pupils to suggest some of the geographical things that influence choice of location. Ask if the pupils can give you any examples of the terminology we have used today and explain the words.

Lesson 4 Import and Export goods in Pakistan

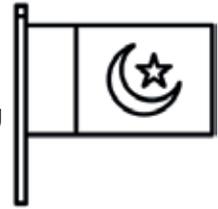
Textbook Section: 4.1, page 49.

Aim: To identify the main imports and exports of the Pakistani economy.

In the preview remind the group that in the last session we defined import and export- ask if they can explain what the terms mean. Ask, do they know what sorts of goods Pakistan imports and exports? Write some of their suggestions on the board, and say we will see if they are correct

Activity 1

Read the first section of page 49 with the group and discuss the nature of imports and exports that come into and go out of our economy. Which geographical factors are shaping these arrangements?



Imports

Exports

Ask pupils to make a diagram like the one above and add in examples of Pakistan's imports and exports.

How can Pakistan earn more revenue from exports?**Activity 2**

Explain that items which are imported are challenging for an economy because they mean money is going out of the country to a supplier of merchandise or raw materials from somewhere else. This is usually paid for in a foreign currency, because the supplier cannot spend Pakistani Rupees at home. Therefore, importers have to buy foreign currency and pay fees, which all adds costs and reduces profits.

Therefore, nationally a government is keen to keep a good balance between the overall outgoings of currency spent on imports, and the gains that come into the economy from payments received for exported goods. Explain that getting the 'balance of payments' as beneficial as possible is seen as very important for the health of an economy overall, although many countries struggle to do so!

Read the middle paragraph on page 49. Ask pupils to answer these questions:

1. Why is it important for a government to maintain a 'balance of payments' between imports and export, and whenever possible increase revenue from exports/avoid deficits?
2. In what ways could Pakistan try to build its export revenue?

How can Pakistan reduce imports and help its industrial development?**Activity 3**

Now read the final paragraph on page 49 with the class, and discuss the content. Then ask the class to answer these questions:

1. In what ways could Pakistan try to reduce its imports?
2. Why would innovating and becoming more competitive help Pakistan's economy?

Optional Home Learning

The 'Going Further' task on page 49 is quite open-ended, so if you set this as a follow-up task and give students some suggestions as to where they might look for answers or given them some printed material to consider which will help them understand the political and economic desire to achieve a good balance of payments.

In your plenary talk about how important a balance of payment is to a national economy, and reiterate how exports bring in revenue, and how imports are costly- but might be essential to acquire raw materials, goods or services.

Lesson 5 What are primary, secondary, and tertiary sectors of an economy?

Textbook Section: 4.1, page 50.

Aim: To understand the classifications of businesses as primary, secondary, tertiary, and quaternary.

In the preview ask pupils if they can recall how the sectors of the economy are classified from their earlier study of extractive industries, manufacturing, and services in geography in earlier grades.

What are the primary, secondary, and tertiary (and quaternary) sectors of an economy?

Activity 1

Read the explanation of primary, secondary, and tertiary sectors on page 50.

Show some images of different examples from the four sectors and see if pupils can correctly allocate them to the correct classification.

Ask the group to make a diagram like the right hand panel, but with four sectors, adding the Quaternary and a short explanation of each sector.

In your plenary check that the group understand the four categories.

Lesson 6 How does the availability of natural resources influence production of goods?

Textbook Section: 4.1, page 51.

Aim: To understand how the resources that are available within an economy influences the nature of an economy.

In the preview explain that today we will look at how the availability, or not, of different raw materials and resources help shape an economy. If an economy is not sophisticated, and relies on a lot of manual labour, agriculture and low tech, low income generation employment there is likely to also be limited development in terms of infrastructure, and so a cycle of limited development is almost inevitable. If education and training is restricted then there will be few people to innovate, to carry out technologically advanced jobs or support the development of stronger infrastructure. In Pakistan a lot of effort is being put into improving infrastructure and advancing the economy, but some challenges remain. We have certain raw materials in abundance but lack others and need to have a more highly skilled workforce.

What natural resources do we have available?

Activity 1

Look at the diagram at the top of page 51. Which items from this image do they feel Pakistan has in good quantities, and which items are we less able to call upon for economic activity?

Which things might they add that are not shown?

Are people a 'natural resource'?

You could provide a copy of the diagram to stick into pupil notebooks, and ask them to write a paragraph

explaining why the availability of raw materials has such an impact on an economy.

Important Products for Pakistan

Activity 2

Read the list of products produced in Pakistan on the remainder of page 51 and discuss it with pupils.

Ask the group if this list indicates anything missing from the diagram at the top of the page? There is no mention of specific minerals, or some of the items from the extractive industries such as coal or metals, for example, no renewable energy is listed.

The list shows industries that are of great importance to Pakistan's economy because of the number of people it provides employment to, the revenue it brings and its export values, for example textiles, cement and steel production, fertilizers for agriculture, sugar production, etc.

You could give pupils additional statistical material about the raw materials being extracted in the primary sector, those being consumed in the secondary sector (and perhaps compare the two lists) and the range of tertiary and quaternary business and how well developed they are in Pakistan – for example from the government's statistics bureau. (<https://www.pbs.gov.pk/>)

Optional Home Learning

could be to work on reading and interpreting additional statistics that you have provided to better understand the link between raw materials and how well developed the primary and secondary sectors of the economy are, and any implications for the tertiary and quaternary sectors, and the development of infrastructure.

In your plenary make the clear link between raw materials and resources available and which extractive and manufacturing industries exist in particular locations: geography matters! Exploiting the natural resources need not mean environmental degradation however, so a balance is always key. Explain that in our next lessons we will look at how the economy is modernising and changing.

Lessons 7-9 Exploring industrialisation in Pakistan

Textbook Section: 4.2, pages 52-54.

Aim: To evaluate the impact of industrialisation on Pakistan, and its role in urban drift.

Learning outcomes: Learners will-

- Understand the economic system and its regulation in outline;
- Identify the main industries and products of Pakistan's economy;
- Identify the value of markets balancing mutual benefit and competition, sustainability and ethical trading in stimulating an economy and protecting consumers and workers;
- Understand the role of imports, exports and balance of trade in an economy;
- Evaluate the impact of industrialisation on Pakistan, and its role in urban drift;
- Use specialist vocabulary.

Lesson 7 Exploring links between industrialisation, immigration and urbanisation

Textbook Section: 4.2, page 52.

Aim: To evaluate the impact of industrialisation on Pakistan, and its role in urban drift.

In the preview explain that the government monitors lots of things about the economy and encourages certain sectors to grow as a way to help develop the economy. Explain that they can do this via tax breaks and other incentives, and that Pakistan's government wants to see all sectors of the economy being successful and some expanding to create high quality jobs and good revenue, and to see the balance of payments offer positive figures around exports of good revenue-earning items. In particular, government would like to see sectors which have traditionally been small, in secondary and tertiary and quaternary sectors develop.

What are the main industries of Pakistan?

Activity 1

Read the opening paragraph on page 52, and the 'What are the main industries of Pakistan?' passage and discuss these with pupils. Explain that growth figures are good, but we could do with digging a little deeper to look at what this means in real terms. The Pakistan Economic Survey mentioned can be found at | Ministry of Finance | Government of Pakistan | (<https://www.finance.gov.pk/>) and gives greater depth and explanation of the figures, but is too complex for grade 8 pupils. You will need to select some information and explain it carefully or re-present it in a more learner-friendly manner. However, there is very useful information present and you could set a range of different tasks using the data in the 'Highlights' summary. Remember that our target here is linking the way that geography influences the economy, and how Pakistan's economic sectors are developing. Tasks can focus on some elements of the mathematical skills in calculating and presenting data, but the main aim is developing the understanding of economic geography and the economic system.

Can we make a link between industrialisation, immigration, and urbanisation?

Activity 2

Ask pupils to read the central section of page 52 with you, which explains what geographers refer to as urban drift. This partly happens as a result of urbanisation and the attractive nature of a town or city in terms of employment, income and lifestyle for some workers. Urban drift is a form of internal migration or population in a country, so distinguish between this and immigration in your explanation. Immigration is where guest workers are flowing into an economy because the prospects of, and remuneration for, employment are much better than 'at home' in another country. Sometimes these guest workers are seasonal, for example to pick crops or the work is for a fixed time span, e.g. to work on an infrastructure project such as road or housing construction and on other occasions migrants might be more highly qualified and moving into a sector where there is a skills shortage or deficit in the native population, for example if there is a shortage of computer programmers at a high level, and recruitment has to be from abroad with terms to attract applicants. Poor workers will often be forced to live in poor conditions to begin with, until they can afford better accommodation, and are sometimes subject to poor treatment because of their short or missing contracts and the ease at which they can be replaced with others.

Ask pupils to write an explanation in their notebooks of how industrialisation, immigration and urbanisation are linked.

Optional Home Learning

If time is available you could discuss the two panels at the bottom of page 52 with the class and ask the group to write something responding to the challenges caused by urbanisation in Pakistan.

In your plenary recap on the economic relationship between industrialisation, immigration and urbanisation, and say that rural (relative) poverty and more restricted infrastructure can 'push' people towards cities, and the chance of a better life 'pulls' people towards urban living (Push-pull factors).

Lesson 8 The Cottage Industries: How does scale of production influence business model?

Textbook Section: 4.2, page 53.

Aim: To evaluate the impact of industrialisation on Pakistan, and its role in urban drift.

In the preview explain that today we will look at the textile industry of Pakistan and how this is changing as the nature of the Pakistani economy changes. Begin by looking at the pictures of knitted, woven and sewn products. Ask the group if they can tell you how each process works, and show pictures of hand and machine-made jute, wool and hair products from Pakistan's textile industries

You could show a film here from an online sites (e.g. YouTube) which would explain how hand and older style machine weaving operates, and which shows examples of people working at home. Note that we will look at factory weaving in the next lesson and show a film related to that also.

What are cottage industries?

Activity 1

Read the text on page 53 which explains how scale of production is often important in manufacturing. In the past small family businesses could produce items to sell at a profit to a 'middle-man' who bought from several families and traded the items on (sometimes the trader was a woman) and made a profit. The items eventually ended up being transported to a market and sold. In the last two hundred years there have also been wholesalers: people who buy a lot of items at a good price and sell them on in bulk or smaller quantities for others to sell to the actual consumer, so the supply chain could consist of multiple sales of items until their eventual retail.

Ask the pupils to write answers to these questions in their notebooks:

What is a cottage industry?

What sorts of manufacturing might still be done in Pakistan as a cottage industry?

Activity 2

Why are the cottage industries at risk of disappearing?

Now discuss the questions raised in the 'To Discuss' panel on page 53, and ask pupils to write answers to them in their notebooks.

Optional Home Learning

You could use the 'Going Further' box as the basis for a home learning activity. Discuss this with the group in outline to give them some parameters if you decide to do this: for example cottage industries, especially those using hand powered looms are sustainable in the sense that they use little or no fossil fuel power (except for lighting, for example) – but is this the entire story? Mass production might be less wasteful and with less of a Carbon Footprint. Ask pupils to do some research (perhaps with materials you provide) and reach a conclusion.

In your plenary link back to the notions of scale and efficiency: cottage industries are an eighteenth-century CE model of working that work well for remote and isolated communities, but they are being made unviable by machinery which can produce high quality items faster and cheaper. However, not all products can be made by machines, so some craftspeople will still be essential – and their businesses will survive, if they can make the transition to producing something that is in demand, and of sufficient quality to obtain a higher price than machine made items. Finding the right market and sustaining sales is often a challenge, so even the best craftspeople can struggle until they become established 'names' in their specialism. Next time we will focus on machinery-based textiles production.

Lesson 9 How significant a part of the economy is the textile industry in Pakistan?

Textbook Section: 4.2, page 54.

Aim: To evaluate the impact of industrialisation on Pakistan, and its role in urban drift.

In the preview link to the last lesson about cottage industries, and ask them to remind you of what the term meant. Explain that today we will look at how this has evolved into the factory system and large scale production as a cost saving and efficiency measure. You could show a film at this point about large scale machine weaving businesses an online sites (e.g. YouTube)

How significant is the textile industry of Pakistan?

Activity 1

Read page 54 with the group, asking them to tell you what they think they can see in the photograph (very large industrial loom, many threads). Ask them why textiles production might be described as being one of the industries where the geographical link is very clear (cotton is grown successfully locally because the terrain and climate makes this possible). Explain that the raw material (primary sector) industries of cotton farming, harvesting and yarn production supplying the secondary (manufacturing) sector of textiles production and manufacture of goods from textiles can be seen as symbiotic (mutually beneficial).

Present the group with current statistics about the industry, and discuss and work with these. You can source things online.

Decide how you would like pupils to capture the key points about textiles as a case study of key economic activities emerging from geographical influences.

You might, for example, ask pupils to write a report about the textiles. Also point out that the sector needs additional regulation as many of the (mostly women) working in the sector are not well treated in terms of pay, conditions and job security.

Optional Home Learning

Working on the report could be extended into home learning time.

In your plenary make the link between textiles being a national industry because of terrain, climate and suitable ecosystem. Cotton growing and textile production can be very demanding in terms of water use, so there are threats to the industry from climate change related to heat, extreme weather and security of long term water supply, however, the sector is a very important contributor to employment and business for Pakistan, and innovation, sustainable practices and the desirability of making efficiencies through adding scientific knowledge and technological responses to problem solving could all be key to the future of the sector and protecting this part of the economy. In the next lessons we will look at how technology and science can assist the economy.

Lessons 10 Science, technology and the modern economy

Textbook Section: Section 4.3, page 55.

Aim: To Evaluate the impact of industrialisation on Pakistan, and its role in urban drift.

Learning outcomes: Learners will-

- Identify the main industries and products of Pakistan's economy;
- Understand the role of imports, exports and balance of trade in an economy;
- Evaluate the impact of industrialisation on Pakistan, and its role in urban drift;
- Use specialist vocabulary.

In the preview explain that we will look at the importance of science and technology to an economy in this lesson. Read and discuss the opening paragraph of page 55 with the group. Ask the group what the difference is between science and technology, and if they can give any examples.

Activity 1

What is the role of science and technology in developing Pakistan's industries?

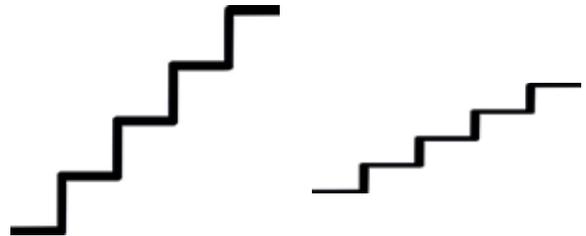
Next read and discuss the remainder of page 55 with the group.

Ask the pupils to take a page in their notebook and mark out a set of six steps

Ask the group to use the information on page 55 to summarise the six ways that science and technology help foster economic development.

Optional Home Learning You could set a home learning task using The 'Going Further' panel on page 55 so that pupils find out about SUPARCO and Pakistan's developing space industry as a case study of how technology and science are contributing to economic development.

In your plenary summarise why and how science and technology are important to economies.



Lessons 11-12 International Trade

Textbook Section: 4.4, pages 56-57.

Aim: To understand the economic system and its regulation.

Learning outcomes: Learners will-

- Understand the economic system and its regulation in outline;
- Identify the main industries and products of Pakistan's economy;
- Identify the value of markets balancing mutual benefit and competition, sustainability and ethical trading in stimulating an economy and protecting consumers and workers;
- Understand the role of imports, exports and balance of trade in an economy;
- Evaluate the impact of industrialisation on Pakistan, and its role in urban drift ;
- Use specialist vocabulary.

Lesson 11 How does international trade work?

Textbook Section: Section 4.4, page 56.

Aim: To understand the international economic system and its regulation.

In the preview explain that we will look at international trade relations in the next two lessons. Ask pupils what they think is meant by international trade relations and discuss their answers.

Read the opening paragraph of page 56 with the group.

Why do we need international trade regulations?

Activity 1

Ask the group to answer the question 'Why do we need international trade regulations?' in their notebooks. Explain the notion of global agreements, and what is meant by any key terms you will use such as bilateral agreements.

What is the impact of trade between Pakistan and China?

Activity 2

Read the 'Impact of Trade' paragraph on page 56 which explores Pakistan's trading and economic partnerships with China. Ask the group to then answer the question 'What is the impact of trade between Pakistan and China?'

Optional Home Learning

You could set up a task looking further at the China-Pakistan partnership, and/or China's outreach via its One Belt Road (or China Belt and Road) programme.

In your plenary mention how important developing infrastructure is when trying to build an economy, and discuss if there is a fine boundary between mutual benefit and enabling others in competing for foreign markets. Explain that in the next lesson we will look at international competition.

Lessons 12 How can Pakistan compete in international markets?

Textbook Section: Section 4.4, page 57.

Aim: To understand the international economic system and the nature of competition.

In the preview ask pupils what the term 'competition' means in an economic sense, and why competition can be helpful, and why it presents risks.

How can Pakistan compete with international trade?

Activity 1

With the class, read the opening part of page 57, down to the end of the sentence after the two bullet points. Ask the group why these things might make a difference/what the problem behind the suggested change might be/what else they would like to know about the problem or solution.

Now read and discuss the remainder of page 57. Ask pupils to summarise the eight points and two bullet points at the top of the page about how international trade can be assisted.

Optional Home Learning You could set pupils the task of finding out about the Trade Development Authority of Pakistan (see 'Did you Know' box).

In your plenary discuss how important government is in terms of supporting an economy develop, and talk about whether the group think any of the priorities listed are more or most important in helping the economy in the international trade sector.

Answers for the end of unit recall questions.

Section 1 Quiz Questions

1. The two terms can be defined as follows:

Global economy: refers to worldwide wealth/ the international situation in terms of trade and economic inter-relations (pages 46-47).

Gross Domestic Product GDP: is a calculation of the total value of trade and services within a country over a year recorded as an overall sum or per capita (page 47).

2. Three methods of land reclamation for urban and agricultural use include: reclaiming brownfield (old industrial) sites; reclamation of land from the sea; and creating usable land which had been waterlogged or was saline.
3. The factors which determine the location of a business include availability of land, transport connections, money, raw materials, power, and workers (page 48).
4. The varied nature of Pakistan's geography is an important factor in shaping the nature and availability of infrastructure because some of the natural landform types/the topography (shape and nature of land) makes connecting and servicing some places difficult, e.g. remote communities in mountain areas are very expensive to connect to trunk roads, power grids, water supplies and so on. Elsewhere the risk of flooding washing out roads or other items means infrastructure has to be more robust, or 'disaster safe', and thus is more costly.
5. The industries that are of greatest importance to Pakistan's economy are textiles, cement and steel

production, fertilizers for agriculture, sugar production (page 51).

6. The top four exports of Pakistan are textile, leather, sports products, and rice (page 49).
7. A nation's GDP impacts on its infrastructure because if revenue is being earned by businesses, and the people are employed and paying taxes a government can invest in improving infrastructure and education/training which leads to greater prosperity and more tax- and so a positive cycle of improving living standards and wealth (page 49).
8. The top four imports of Pakistan are petroleum, machinery, chemical products, and food products (page 49).

Section 2 Multiple Choice Questions

1. When goods made elsewhere are brought into a country we classify this as A. Imports (page 48).
2. When goods made within a nation's economy are sent abroad to be sold this is called: B. Exports (page 48).
3. The terms and definitions match as follows:
 - i. & C. Service industries = tertiary sector (page 50).
 - ii. & A. Industries extracting or creating raw materials = primary sector (page 50).
 - iii. & B. Industries taking raw materials and making things = secondary sector (page 50).
 - iv. & D. Businesses offering high tech, high skills, legal services = quaternary sector (page 50).
4. Pakistan's main export is: A. textiles (page 54).
5. C. China is one of Pakistan's main trade partners (page 56).

Opportunities for Longer Prose Responses, Debating and Extended Writing

1. What does the existence of cottage industries and industrial plants demonstrate about the economy of Pakistan?
2. Why does a government need to keep a balance of trade, and how is this achieved?
3. What benefits do Pakistan and China gain from closer trade relations? (<https://cpec.gov.pk/>)
4. What is the role of science and technology in developing Pakistan's economy?
5. What challenges does Pakistan's textiles industry face in coming years?

Chapter 05

Transport and its Importance

This chapter is focused on the importance of transport infrastructure to an economy, and considers how geographical factors shape transport needs and provision.

Textbook Section: 5, pages 59-68.

Aim: To understand the importance of transport infrastructure and how geographical factors shape transport needs and provision.

Learning outcomes of the chapter:

Learners will—

- Identify and evaluate different methods of transport;
- Explain how scale of need influences availability and cost of transport;
- Identify what is traded internationally through Pakistan's major transport hubs/routes: CPEC, Silk Route, Chaman, Torkham, Port Qasim, Karachi Port and Gwadar Port;
- Explain the significance of local, national and international transport;
- Use specialist terminology.

Lessons 1-3 Transport Networks in Pakistan

Textbook Section: 5.1, pages 60-62.

Learning outcomes: Learners will-

- Identify and evaluate different methods of transport;
- Explain how scale of need influences availability and cost of transport;
- Identify what is traded internationally through Pakistan's major transport hubs/routes: CPEC, Silk Route, Chaman, Torkham, Port Qasim, Karachi Port and Gwadar Port;
- Explain the significance of local, national and international transport;
- Use specialist terminology.

Lesson 1 Transport Networks in Pakistan

Textbook Section: 5.1, page 60.

Aim: To explain the significance of transport in an economy.

In the preview explain that we will now consider transport infrastructure as a key element of economic geography.

Read the opening text on page 60 which defines transport infrastructure and ask pupils to write the definition down in their notebooks, and place a coloured border around the text.

Why is a good transport infrastructure key for a strong economy?

Activity 1

Ask the group what their answers would be to this question.

Then read and discuss the next section of the page that begins to answer the same question. Discuss with them how different sorts of citizens and different businesses might want different things from transport infrastructure, which is why transport networks mean different things to different people. Explain how an exporter needs particular aspects of transport, while a school pupil might just be interested in cycle routes or buses- or even a good safe path to school!

Present the class with some examples of different people/roles and ask them what sort of transport these people need, then discuss their answers: e.g. a firefighter in a town; a rural shepherd; a business person trading in imported cars; a flower seller.

Why does transport always seem more available in urban areas?

Activity 2

Read the remainder of page 60: 'Some reasons for the development of transport systems in urban and rural areas'.

Ask: Why might scale and cost/income be important elements of explaining why transport seems to be better in more urban areas compared to rural areas. The biggest issue is probably demand: more people live in urban areas, and where people want to go is within a tighter geographical area than a rural setting might cover, where people and facilities are more widely spread out. Ask: Are the terrain or the distances involved make any difference? Discuss their responses and ideas.

Decide what, if anything, you would like pupils to record in their note books.

Optional Home Learning

You could ask learners to look at the 'Going Further' panel on page 60, which explains that the NHA website carries details about the national road building and maintenance schemes, and ask the pupils to carry out related tasks.

In your plenary repeat the key messages about the importance of transport networks for the movement of goods, people and materials and identify why scale (number of potential and likely customers balanced against distance of territory which must be crossed and value of the activity which needs to take place).

Lesson 2 Roads, Highways and Motorways: How are they different to each other?

Textbook Section: 5.1, page 61.

Aim: To distinguish between the purposes of different types of roads.

In the preview explain that the most common network which most of us use is the road network, and that we mostly use it without thinking twice. We take it for granted because it is there, and only notice when there are potholes or problems. For most of human history, and across most of the world there aren't roads

criss-crossing every space, and in lots of parts of the world roads are not as well laid out as in cities and towns. However, in rural areas there is not as much traffic, so the quality of surface is often not as well built as in urban roads.

What is the difference between a road, a highway and a motorway?

Activity 1

Read the text at the top of page 61, which explains the difference between the three types of roads, and which explains that the National Highways Agency is required to look after the more major roads. Ask why some roads are being seen as more significant than others.

Look at the information about motorways in the table, and, using an atlas or map of Pakistan look at the connections the motorways make. You might want to ask pupils to mark these connections onto a map of Pakistan. Ask the pupils if they can suggest any reasons as to why these places are connected- and why the planned motorways are connecting those places. This is, of course, to do with connecting important centres linking to ports, and providing trans-national and international routes.

What are the challenges for Pakistan's road networks?

Activity 2

Read the remainder of page 61, which explains what we mean by the term 'trunk roads; and the challenges which exist for Pakistan's roads. Decide if you would like pupil to write anything into their notebooks on these challenges, or to define trunk roads.

In your plenary summarise the importance of the road network in Pakistan, and differentiate between different types of road, pointing out that the cost of roads means that although there is a lot of demand for road development the plans for what gets priority are substantially contested, and there is a backlog of work to do!

Lesson 3 Transport and International Trade

Textbook Section: 5.1, page 62.

In the preview explain that we looked at where our 'strategic' roads go in the last lesson, and that there is a whole government department looking after these key roads, the NHA. Now we will consider how international road connections are an important element of economic infrastructure and are shaped by the terrain and landform.

Transport and International Trade

Activity 1

Read the first section on Page 62 together, which explains how international trade needs transport connections between countries in order to move goods from country to country.

Now read and discuss the 'Did you Know?' panel which provides some statistics about road transport.

Decide whether you would like pupils to record any of this information in their notebooks.

The significance of internal trade

Activity 2

Read the remaining text on page 62. This explain why internal movement of goods for trade is crucial to an economy. Again decide if you would like pupils to write something into their notebooks. You might wish to provide statistics about the local trade and movement of goods in your part of Pakistan- perhaps setting some Home Learning in relation to this work.

In your plenary ask the class to summarise the key points about road transport networks from today.

Lessons 4-6 Transport Links and Connections

Textbook Section: 5.2, pages 63-65.

Learning outcomes: Learners will-

- Identify and evaluate different methods of transport;
- Explain how scale of need influences availability and cost of transport;
- Identify what is traded internationally through Pakistan's major transport hubs/routes: CPEC, Silk Route, Chaman, Torkham, Port Qasim, Karachi Port and Gwadar Port;
- Explain the significance of local, national and international transport;
- Use specialist terminology.

Lesson 4 Transport links and connections

Textbook Section: 5.2, page 63.

Aim: To Identify and evaluate different methods of transport.

In the preview explain that we will now look at how Pakistan's railway carries both freight and passengers, and look at how rail links are very important. We will then look at mass transit systems in urban areas.

Ask how many of the class have travelled by train, and ask which sorts of journeys they have made, and how their journey was as an experience. Ask if the class knows the difference between freight and passenger services.

Pakistan's Railway System

Activity 1

Read the first section (as far as the panel) on page 63. This carries some key information about the railway network and its size. Decide what you would like pupils to record from this in their notebooks.

You might wish to compare some of the figures to others to decide what they tell us. For example the size of the nation was estimated at 220 million in 2020, and 60 million journeys were made in the same year, so at best only 1 in 4 Pakistanis travelled by train, but in reality this will have been lower as some people travelled multiple times or frequently. You could also look at statistics for the amounts of train coverage, fleet size, or journeys made in other countries.

You could ask pupils to develop a set of comparative lists of rail provision in different countries and write a short explanation of what they see as most significant.

Ask the group why they think Pakistan has relatively low numbers of rail track miles and passenger numbers.

Now ask the group to read the panel in the middle of page 63, which shows the international rail connections, and the 'Did you Know?' panel below. Ask the group: What does the International Rail Links panel show us about Pakistan's international rail connections. How do the group feel this information might change over the next ten years? What does the 'Did you Know?' panel suggest?

What is a mass transit system?

Activity 2

Read the remaining text on page 63 and discuss it with the group. Ask them to answer these questions:

Q1. What is a Mass Transit system?

Q2. Which vehicles are usually used in a mass transit system?

Q3. Based on the final sentence of the panel, what do they think a local transport interchange might be?

Q4. Based on the above /their best inference what might a major transport hub connect?

Ask the group to look in small groups at the 'To Discuss' box-and to agree on a response. Why might geography explain a relatively small rail network at present?

Optional Home Learning

you could use the 'Going Further' panel as the basis for a home learning task, asking pupils to research one or more of the rapid transit systems listed, or a more local mass transit system.

In your plenary summarise the key points related to rail freight, passenger journeys, and mass transit systems.

Lesson 5 International Trade Networks

Textbook Section: Section 5.2 page 64.

Aim: To identify how the CPEC is intended to aid international trade linking Chaman, Torkham, Port Qasim, Karachi Port and Gwadar Port.

Divide the class into small groups for working as they arrive. In the preview explain that we will look in more detail at international trade networks over the next two lessons. Read the short opening text: International Trade Networks on page 64

What is the China-Pakistan Economic Corridor?

Activity 1

Read the next section of the text on page 64. Ask pupils to summarise the information in order to: Explain What the CPEC or International Trade Corridor is as a project and what it is intended to achieve?

Ask the group to study the map which shows the CPEC road links in their groups. Ask them to discuss:

What is this map telling us about the aims and priorities of the CPEC?

You might provide some additional stimulus materials: photographs of the large scale construction machinery of the CPEC road building works, large trucks using the already constructed sections, details of the port operations at Port Gwadar and Port Karachi or information about the CPEC and its related infrastructure.

You could provide pupils with a copy of the CPEC routes map, or provide them with a blank map of Pakistan and ask them to mark on the key cities and routes to show the road network being constructed as part of the CPEC.

In your plenary summarise what the National Trade Corridor is intended to achieve and how it will reach its goals.

Lesson 6 Trans-national Routes

Textbook Section: 5.2, page 65.

Aim: To identify what is traded internationally through Pakistan's major transport hubs/routes: CPEC, Silk Route, Chaman, Torkham, Port Qasim, Karachi Port and Gwadar Port.

In the preview remind the group that we are looking at what Pakistan trades internationally and how it is traded. Ask them the question in the 'To Discuss' box on page 65: What do Pakistan and China gain from the National Trade Corridor or CPEC? Discuss this and then read the section 'Why are trans-border roads important?' on page 65.

Why are trans-border roads important?

Activity 1

Ask pupils to write a paragraph explaining why international trade route become important economic arteries for international trade, and to give examples to support their explanation.

Exporting and importing by land and sea

Activity 2

Read the remainder of page 65 which explains how particular locations are channelling imports into Pakistan, and funnelling exports out to other countries.

Ask the pupils to answer these questions

Lessons 7-8 Water Transport: The key to international trade

Textbook Section: 5.2, page 66-67.

Learning outcomes: Learners will-

- Identify and evaluate different methods of transport;
- Identify what is traded internationally through Pakistan's major transport hubs/routes: CPEC, Silk Route, Chaman, Torkham, Port Qasim, Karachi Port and Gwadar Port;
- Use specialist terminology.

Lesson 7 Water Transport

Textbook Section: 5.3, page 66.

Aim: To identify what is traded internationally through Pakistan's major transport hubs.

In the preview explain that there is a difference between perishable and non-perishable goods. Ask if pupils know what perishable means or the difference between perishable and not perishable? Take their suggestions and explain that perishable goods must come to market quickly or will spoil whilst non-perishable goods are not usually in need of urgent transport to market as they will not 'go off'. On occasion a business does need something very urgently so it has to be rushed to where it is needed. However this is expensive as, because of the urgency, couriers and transportation firms will charge a premium for a fast delivery. Ask which transport methods would achieve a fast delivery over a long distance and what might determine the cost (distance, weight, size, value, available competition for delivery and so on), Air freight would work for some goods, but not others, and very heavy or bulky items of mass quantities of things are not practical to send by air freight. In these circumstance water transport between countries in container shipping is often the solution.

Show a presentation or some pictures to demonstrate a shipping container, a shipping container lorry, and shipping container wagon on the railway, the port cranes and storage facilities at a container port.

Read the introductory first two paragraphs on page 66, and examine the images of the container ports on pages 66 and 67. Then ask the pupils to answer the following questions:

Deep water ports

Activity 1

What is container shipping?

1. Why is container shipping economical for non-perishable goods that must be sent long distances internationally?
1. What is a container port?
2. Why are container ports always 'deep water' ports?
3. What is the difference between a bulk carrier and a container ship?

Why is Pakistan developing its deep-water ports?

Activity 2

Read this section, discuss it with pupils, and then ask them to answer these questions:

1. If Pakistan has a 1,058km coastline, why are particular places especially suited to be used as deep water ports?
2. What is the National Shipping Corporation? Why do you think it was established?
3. What are the names of Pakistan's principal ports, and what is their contribution to Pakistan's economy?

Activity 3. What is connecting to the CPEC so important?

Then ask pupils to read the remainder of the page, and to summarise the final section in their own words.

Optional Home Learning

You could use the 'To Discuss' panel at the bottom of page 66 as the basis for home learning.

In your plenary summarise why deep water ports, and shipping container and bulk carrier goods are so vital to Pakistan's imports and exports and to the economy and sustainability overall.

Lesson 8 Air Transport

Textbook Section: 5.3, page 67.

Aim: To identify what is traded internationally through Pakistan's major transport hubs.

In the preview remind the group that last time we talked about perishable and non-perishable goods, and the level of urgency there might be for a product, raw material or person to travel; or temporal (time) factors; and product factors- like size, weight, fragility or value of an item. These shape the method of transport available, and cost plays a major part in deciding what transport is used in most cases. Today we will look at air freight, and passenger flights. Ask if they know what the terms mean.

Read and discuss the 'Air Transport' and 'Which is Pakistan's 'national' airline?' sections on page 67. Explain the term carbon footprint (which the group should have encountered before) And the notion/approaches to 'offsetting a carbon footprint'

How and when is air transport used, and is this justifiable in the modern age?

Activity 1

What justifications can you suggest for using air travel for:

- a. People?
- b. Cargo?

Talk to the class about the 'To Discuss' panel:

Ask them to give a view, as a personal viewpoint to the question: Do you think we should restrict flying because of global warming, or should an airline be allowed to fly if it 'offsets its carbon footprint?'

Ask pupils to respond and to try to create a balanced argument, supported by evidence and careful case-making.

How should we evaluate Pakistan's transport infrastructure?

Activity 2

Read the remaining text on page 67. Discuss with the group how we might evaluate Pakistan's transport infrastructure and how positive or negative we might feel the conclusions should be overall.

This activity could be extended into a longer piece of writing, a presentation or an evaluative report or assessment, and could extend into Home Learning

In your plenary discuss the nature of demands for better infrastructure that a country with threats from climate change, a challenging terrain and many demands for funding to improve the economy, the infrastructure and quality of life for its citizens faces. Ask what might count as a fair rate of development,

and explain that in the next lessons we will look at social and economic development- which also present choices and challenges in terms of economic and human geography.

Answers for the end of unit recall questions

Section 1 Quiz Questions

1. Transport infrastructure means the road, rail, water, and air transport systems, routes, special facilities, staff and vehicles (page 60).
2. Transport needs to work for
Farmers- to get crops and animals to market quickly.
City dwellers- to help them travel to work, study and for leisure.
Textile and cement exporters next to get their product to their international clients in good conditions (page 60).
3. Good transport is needed for imports and exports to ensure goods are safely and quickly carried to their consumers (page 60).
4. The CPEC is: The China-Pakistan Economic Corridor or China Belt and Road Initiative. The benefits it offers are: (page 64, page 66).
5. The term '21st Century Maritime Silk Road' means the equivalent of the Ancient Silk Road trade route, but at sea, linking the Asian countries open up for and to international trade including Chinese goods (page 66).
6. Deep water ports are really important for modern transport because container ships are very large, and need a container ship crane system and railhead to truck facility to support rapid loading, unloading and distribution of goods for sale (page 66).
7. Pupils are asked to: Compare the usage of different modes of modern transportation. Check their work for quality of explanation and supporting content.
8. Pupils are asked to: Use Google Maps to trace some of the major transport routes of the world. Check their work against a world atlas.

Section 2 Multiple Choice Questions

1. Producing and delivering a product or service from raw materials to purchase by consumers is the: A. Supply Chain (page 60).
2. Pakistan's major roads are overseen by the NHA: A. The National Highways Authority (page 61).
3. Major roads can be classified as highways and motorways, and are sometimes described as strategic roads and B. Trunk Routes (page 61).
4. Pakistan has: C.5 main railways (page 63).
5. Pakistan Railways has: B.466 locomotives (page 63).
6. Pakistan's Broad Gauge railway axles are: C. 1.676m wide (page 63).
7. As well as building infrastructure the CPEC is creating: C. Special economic zones to build the economy (page 64).
8. Pakistan's most recently developed deep water port is: B. Port Gwadar (page 66).

Opportunities for Longer Prose Responses, Debating and Extended Writing

1. How well does Pakistan's infrastructure meet the needs of a 21st century economy?
2. Do you agree that roads are the arteries and veins of national economy? Discuss.
3. Which is the greater priority for infrastructure investment, roads for rural communities or motorways to connect cities?
4. Is air travel acceptable in 'the age of climate change'?
5. Is it time to retire Pakistan's railway network?
6. Would it solve all of our environmental problems if we banned private car ownership? (Debate)
7. Why might container shipping be seen as the key to affordable international trade?
8. Should town and city governments invest in dedicated cycle networks and storage, shaded walkways and bus lanes, and ban cars and motorbikes during the daytime?
9. Pakistan should invest in expanding its national railway system. (Debate)
10. The Belt and Road Initiative is in the interests of the region as well of China and Pakistan. (Debate)

Chapter 06

Social and Economic Development

This chapter is focused on indicators of social and economic wellbeing.

Textbook Section: 6, pages 69-82.

Aim: To understand ways of measuring levels of social and economic development within states and wellbeing for individuals and groups.

Learning outcomes of the chapter:

Learners will --

- Define, identify and explain the impacts of aspects of social and economic welfare and development;
- Identify and investigate Economic Development Indicators (EDI) and Human Development Index (HDI);
- Evaluate the role of the Organisation for Economic Development (OECD) in supporting national economic development;
- Use specialist terminology.

Lessons 1-4 Describing Social and Economic Development

Textbook Section: 6.1, pages 70-73.

Aim: To understand the approaches used by human and economic geography to classify levels of socio-economic development and human wellbeing in a society.

Lesson 1 Describing social and economic development

Textbook Section: 6.1 page 70.

In the preview explain that we are going to look at how geographers compare countries in terms of the wellbeing and levels of infrastructure and economic development. In our earlier geography studies we looked at some types of infrastructure and economic indicators. In the current sequence of lessons we will look at how some elements of infrastructure impact on people's quality of life and financial security. Therefore geographers interested in economic and human geography look at indicators which help us understand the nature of a country and its quality of life. This is often tricky, because we are often talking about averages and per capita (per person) distribution of access to certain things, but of course it is more complex than this. Health facilities and access to treatments are not spread evenly for example as some wealthy people in urban centres have excellent access to medical care, and poor people in more remote areas might have very little access to care and treatment. Therefore, as we begin to explore how we use data, we need to be thinking about what information the data is based upon, how recent and accurate the data might be and what its significance is for judging the things we want to consider.

What does development mean?

Activity 1

Read the section on page 70: 'What does development mean?' You could make a verbal link to, or show information about, the UN Declaration of Human Rights [Universal Declaration of Human Rights | United](#)

Nations (<https://www.un.org/en/about-us/universal-declaration-of-human-rights>) which is about basic entitlements. Explain that achieving universal rights has been a challenge in much of the world, and that some aspirations are difficult to deliver because of costs.

Decide what you would like pupils to record in their notebooks, for example an explanation of what geographers mean by development, and how challenging this is to measure.

What are the key indicators of economic development, and what is their importance?

Activity 2.

Read the section 'What are the key economic indicators of development?' on page 70 with the group and discuss its contents. Ask if some measures might be suited to evaluating how well particular types of countries are 'doing.'

Decide what you would like pupils to record in their notebooks from the list of six indicators, and possibly the table of World Bank statistics, for example an explanation of the meaning and calculation of GDP, GNP and PPP, and an explanation of how these things differ in what is measured.

It is key to establish that when we compare countries this is an indicator, but individual lives do not always follow 'averages' and per capita figures.

Optional Home Learning:

you could ask learners to find out more about GDP and GNP figures. These are tailored to favouring nations with significant manufacturing and production, retail and services elements to their economy- the wealthier nations. Ask pupils to reflect as to whether this the best measure of the success of a country – how much of the world's resources they burn-up and how privileged their people are compared to others?

In your plenary summarise how different indices favour particular elements or types of activity. If we are interested in real well-being of individuals and the strength of the economy and its capacity to maintain and improve people's lives then we need to think about how we measure a range of well-being indicators. Later we will also look at notions of 'less' and 'more' development.

Lesson 2 Comparing Indices of Development

Textbook Section: 6.1 page 71.

Aim: To understand the approaches used by human and economic geography to classify levels of socio-economic development and human wellbeing in a society.

In the preview recap on what was said in the last lesson about how well different indices measure well-being, and that today we will look at the Economic Development Index (EDI) and the Human Development Index (HDI).

Comparing the EDI and HDI of a country

Activity 1

Read the opening section of page 71, to the end of point 4. This explains the EDI and how it compares particular types of data.

Ask pupils to summarise this text, and enclose the summary in a textbox

What is the Economic Development Index?

The Organisation of Economic Development (OECD)

Activity 2

Now read the passage about The Human Development Index in the middle of page 71, and again to summarise. The Human Development Index

Then discuss in what ways the two systems are different/whether they have any comments about them and what they measure.

Optional Home Learning

You could ask pupils to research The Organisation of Economic Development as a home learning activity

In your plenary re-explain briefly what is meant by EDI and HDI, and use the 'Going Further' panel question: 'Are these indices a good way to measure the development of a country?' to draw things together with an evaluative-reflective focus.

Lesson 3 How does a country 'develop' economic and social well-being?

Textbook Section: 6.1 page 72.

In the preview link back to the conversation at the end of last lesson which discussed how well the indices measure well-being. Explain that today we will consider how a country works to 'develop' in a socio-economic and well-being sense.

How does a country 'develop'?

Activity 1

Read the first section of page 72 and the 'Did you Know?' panel. This shows how development is influenced by factors connected to, or which can benefit some of the things we would say constitute development, for example technology. Ask the group if they can suggest anything which would help 'development' and discuss their ideas.

If you did not set a home learning task about the OECD you might wish to ask learners to write something about the organisation in their notebooks after they have read the 'Did you Know?' panel.

The impact of technology on the development of a country?

Activity 2

Read, and discuss, the remainder of page 72 with the group and ask them to make a diagram in their notebooks to represent the six points. The title for this could be:

How does technology help a country 'develop'?

Ask pupils to design their diagram carefully, leaving enough space for what they want to say and making it visually attractive as this will help them in memorising the key content.

How does technology help a country 'develop'?

Increasing	Better	Improved
Productivity	Communication	Healthcare
Promoting	Connecting	Better
Education	People	Governance

But... technology can also.....

In your plenary draw things together by asking them to tell you their views as to why they think politicians might want to encourage the development and use of technology as part of a national development strategy.

Lesson 4 How does Pakistan measure up on EDI and HDI indicators?

Textbook Section: 6.1, page 73.

Aim: To understand the approaches used by human and economic geography to classify levels of socio-economic development and human wellbeing in a society.

In the preview explain that today we are going to look at how Pakistan ranks on development indicators.

The Current status of Pakistan at EDI and HDI in terms of indicators

Activity 1

Read the opening section of page 73 and discuss its contents with the group. This explains that Pakistan is a medium ranked state on the HDI as ranked by the UNDP – but note that it comes out as low ranking on some other versions of HDI ranking.

Ask the group what they think of this and what is meant by a composite statistical measure (This is one drawn from a number of sources to make a composite, or overall figure or ranking, so there is variability depending on which figures are used and from where).

You could look at the figures for Pakistan Pakistan Population 2023 (Live) (worldpopulationreview.com) and possibly some comparator countries

Human Development Index (HDI) by Country 2023 (worldpopulationreview.com)

(Note: leave any advertisement blocking software ON)

Look at the figures, and decide which you feel pupils might benefit from considering: Decide how you will use the data and present it to the pupils either as a 'live projection' (i.e. you showing the website,) or as printed extracts from the data/website.

What is the role of inflation and unemployment in a country?

Activity 2

Read the middle section of page 73 with the group and discuss its contents

Some terms are used here that would be helpful for pupils to understand: inflation, unemployment, purchasing power, growth, output, and standard of living: decide for which pupils need to have a working knowledge of and ensure your discussion or any tasks set cover this content.

Inflation and unemployment rates in Pakistan

Activity 3

Read the final section of page 73 with the group and discuss its contents. The World Population Review (website in activity 1) identifies that there is an increase of one in the population of Pakistan every seven seconds (i.e. births compared to deaths) or 343 extra people every 40 minute lessen, and a total of 12,343 more people daily. Pakistan's population is expected to peak in 2048 CE, and then reduce, but this is only a projection. There will be a lot more strain on infrastructure and resources before things improve, and therefore there will also be more pressure on keeping employment high and being able to fund childcare, schooling, health care and so on.

Ask pupils to explain in their notebooks:

Why are inflation and unemployment bad for an economy and its people?

Use the 'Going Further' panel as a the basis for a Home Learning activity, setting pupils the task of finding out more about inflation in the economy, and current levels of inflation and unemployment in order to write a short report.

In your plenary recap on how developing countries score on certain indicators, and how a constantly rising population can place huge pressures on standards of living and well-being. Explain that one of the biggest challenges in a high population country is to afford those basic services- education, health, good water and sanitation provisions, and that next time we will look at measures of healthcare and medical services as an indicator of development.

Lessons 5 What is the role of healthcare in judging a country's development?

Textbook Section: 6.2, page 74.

Aim: To consider the role of healthcare as a measure of a country's development

Learning outcomes: Learners will-

- Define, identify and explain the impacts of aspects of social and economic welfare and development;
- Use specialist terminology.

In the preview explain that they are going to be presented with a series of possibilities about how to improve national healthcare systems. Discuss with the group why healthcare is given high importance in indices to rate levels of development.

Assessing the quality and extent of healthcare as an indicator of 'development'

Activity 1

Ask the group what their suggestions would be for how we assess whether a country is developed based on its healthcare system. What would they suggest: ease of access to seeing a doctor? Numbers of doctors? Survival rates post diagnosis for particular life threatening conditions Or...? Discuss their ideas.

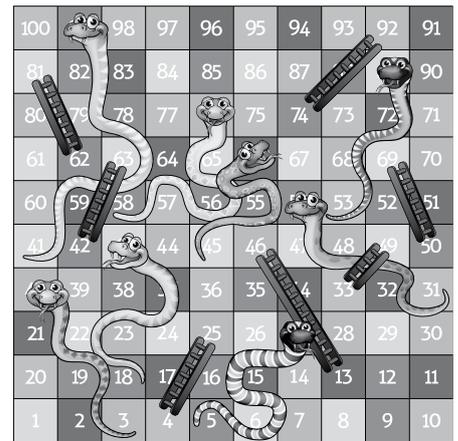
Read the short opening paragraph on page 74. Discuss each of the points – do these seem sensible actions to pupils? What problems do they suggest this indicates?

In your plenary and for Home Learning you could use the 'To Discuss' panel from page 74, which suggests you 'Discuss the condition of the healthcare system in Pakistan', and 'What can be done to improve it?'

You could take pupils' views of the points from the lesson and what they know of healthcare strengths and challenges in Pakistan, and then give a carefully set task as follow-up looking either at research with a clear set of parameters or specific parts of web sites to visit, or based on materials you have provided and checked to ensure the task is realistic and deliverable.

If you wish to opt for a more creative approach pupils could be asked to design a board game about healthcare, for example 'Slides and Stairs' (like snakes and ladders, but with slides and stairs, so no living things are drawn- following image is just an example)

On the board pupils can add 'stairs' to allow players to advance if a positive improvement to the healthcare system is implemented and 'slides' are where a negative event takes place- basing these on, or adapting them from the ten points made on page 74. For example: a new hospital could be opened, (stairs) and anti-smoking campaign reduces young smokers (stairs); doctors take a bribe in a drug trial (slide), or Costs for medical insurance are unaffordable for the poor (slide).



Lessons 6 What do we mean by infrastructure with regard to societal well-being?

Textbook Section: 6.3, page 75.

Aim: To link infrastructure provision to aspects of social and economic welfare and development.

Learning outcomes: Learners will-

- Define, identify and explain the impacts of aspects of social and economic welfare and development;
- Use specialist terminology.

In the preview discuss 'What do the group think infrastructure related to securing societal well-being might involve?' Help them trace out their ideas and start to understand the sorts of needs and facilities we might expect would have an impact on societal well-being.

What do we mean by infrastructure with regard to societal well-being?

Activity 1

Read the opening section of page 74 and discuss how the connection between socio-economic development and infrastructure might be shown. The paragraph mentions a series of possible indicators: education, healthcare, other services, the extent and nature of trade, a stable well-managed society, and availability of a suitable workforce and facilities to support them such as housing public health provision. Ask whether the group if they think a well-developed society has particular 'minimums' in any area.

Examples of Infrastructure that shape well-being (or inhibit it if missing)

Activity 2

Read the speech bubble ("Below are a few examples of infrastructure...") in the middle of page 74. This is a long list of infrastructure, do the group think we need all of these things?, and if so at what level of provision? For example does everyone need access to a library or a railway station?

What is the difference between 'Hard and Soft Infrastructure?'

Activity 3

Read the remaining text on page 75 which explains the distinction human and economic geographers make between hard and soft infrastructure. Explain that this adds an extra dimension to assessing if a society / nation is 'developed': the way that society works is arguably very important – so can we measure how well people support their communities, serve others or serve their fellow humans? Ask if this is about the number of people served, or how big the needs being met are... or if some other criteria might be used. Settle on this being important, but difficult to measure in any really reliable way.

Optional Home Learning

You could ask pupils to talk to older members of their family, asking if there is any way we can assess how strong or supportive a community is, and if they think community organisations are important. Decide how you will ask learners to report or feed this back so they know the assessment criteria/final product for the task.

In your plenary talk about how we have now looked at infrastructure in several different ways over grades 6-8, and have established that the term infrastructure represents lots of different key facilities. Measuring a range of these can make a clear and robust comparison between different countries possible. Explain that in the next lesson we will look at Pakistan's energy infrastructure.

Lessons 7 Looking at aspects of Pakistan's Infrastructure

Textbook Section: 6.4, page 76.

Aim: To understand Pakistan's energy supply infrastructure.

Learning outcomes: Learners will-

- Define, identify and explain the impacts of aspects of social and economic welfare and development;
- Use specialist terminology.

In the preview ask the group what they think is meant by 'energy infrastructure'? Discuss their answers and raise the issue of 'Why might availability of energy make a difference to well-being?'; and 'How might it impact on economic development and personal financial security?'

They should recall some points from their earlier studies of power generation and supply that the economy needs power for manufacturing and conducting business. They might also mention that cooking, heating a home, or affording air conditioning running costs (amongst many other uses of power) are all power-hungry, and all generate expenses. They should conclude that without access to power to support modern expectations life is harder than otherwise.

What is Pakistan's energy infrastructure like?

Activity 1

Read –i. the opening section of page 76, and examine the pie-diagram, which shows the fuel types contributing to electricity generation in Pakistan;

And – ii. the 'Did you Know?' panel, which explains renewable power generation. Ask the group to remind you why the percentage of renewable generation needs to increase and why fossil fuel use needs to be drastically reduced globally.

Where is electricity generated in Pakistan?

Activity 2

Next read the middle section of text with the class, which tells us where some of the renewable energy generation takes place in Pakistan, as well as the coal fired power station. Discuss with the group whether there should be some sort of graduations within categories of infrastructure. For example how recently built is a hospital... or would that not be a good comparator? For power generation should the percentage of 'green' fuel used be part of the indices, with, for example less credit given to fossil fuel burning than wind powered generation.... And if so where might nuclear generation sit in the hierarchy?

This should give a thought provoking conversation and different opinions!

Natural Gas

Activity 3

Now bring into the discussion whether evaluating infrastructure, and how it contributes to socio-economic well-being and development indices, should take into account if particular facilities or resources are available locally. Here for example, in the final section of text on the page, we are told that Pakistan's large natural gas reserves (a fossil fuel) mean that a lot of the national power generation is from burning gas. Should Pakistan get 'bonus points' on any evaluative index for using natural and local raw materials? Or should it lose points for energy infrastructure based on fossil fuels?

Decide if you want learners to note anything in their notebooks to help them recall what they have learned today about energy generation in Pakistan.

In your plenary use the 'To Discuss' and 'Going Further' panels to link to pupils' prior learning about climate issues and economic development. You could also set a task related to the importance of alternative (renewable/'Green') energy as Home Learning. Writing about the importance of economic stability, and foreign competition is also suitable for work at home if suitably scaffolded.

Lesson 8-9 Making comparisons in Geography

Textbook Section: 6.5-6.8, pages 77-81.

Aim: To identify ways in which geographers compare economic and social development.

Learning outcomes: Learners will-

- Define, identify and explain the impacts of aspects of social and economic welfare and development;
- Use specialist terminology.

Lesson 8 Making Economic Development comparisons in Geography

Textbook Section: 6.5, page 77.

Aim: To identify ways in which geographers compare economic and social development.

In the preview read the opening paragraph of page 77, which summarises the idea we have been pursuing throughout this chapter: that comparing countries is best done based on specific criteria, but that what we include varies the outcomes indicated in the final indices. Explain that one of the earlier comparisons geographers used was to describe some countries as 'Third World nations', as in rich nations, middle wealth nations and poorer countries. This was dropped as it was realised that it was stigmatising some countries and suggested a hierarchy of 'good' countries and 'bad' countries.

What are 'Most Economically Developed Countries' (MEDCs)?

Activity 1

Now read the second section with the class and discuss it with them.
Ask the pupils to write down what we mean by MEDCs

What are the features of a 'Least Economically Developed Country' (LEDCs)?

Activity 2

Next read the third section, and the classification table, (mid-page) and talk with the pupils about what this tells us. Ask the pupils to write down what we mean by LEDCs.

Which countries are LEDCs?

Activity 3

Now look at the final section of the page. Ask the class if they are surprised to see any of the countries included in the list. Can they suggest any causal factors for why these countries are on the list?

Which countries do you think might be on a list of MEDCs?

Use the 'Going Further' panel at the bottom of the page to set some Home Learning, asking pupils to research one or more of the organisations: OECD, OICD, and/or the G8/G20 Meetings.

In your plenary check that pupils have a clear sense of why some old descriptors for level of economic

development are no longer seen as appropriate, and that they understand what is meant by LEDCs and MEDCs, and can give examples of each.

Lesson 9 Comparing and contrasting comparative data

Textbook Section: 6.6, page 78.

Aim: To identify ways in which geographers use comparative data.

In the preview read the short introductory text on page 78, and discuss this, and the 'To Discuss' panel below it with the class. The paragraph raises the idea that the absence of something might be an indicator of levels of development. Read and discuss the 'To Discuss' panel with the group.

Comparing Population Profiles

Activity 1

Ask the group to consider the figures in Comparative Data Table 1. Give them some time to talk to each other about what they might mean, and then discuss their observations/take their comments, and ask whether any of the data sets are more useful than any of the others.

Comparing Infant Mortality

Activity 2

Note: Some pupils (and staff) might find that child mortality figures are upsetting, so be sensitive to any distress or upset that emerges.

Read the text, and look at the table under the 'Comparative Data Example 2' heading. Ask the group to decide if this group of figures might also be suggesting other things. They might suggest very young children dying can suggest other problems in society or in a healthcare system, but extrapolating this is dubious without other evidence.

Ask the group 'How might we try to 'triangulate' data?' (use other sources of information,) to check when we think something has a causal link as opposed to just a correlation. Ensuring that pupils understand that correlation and cause are not the same thing is very important.

Comparing the main cities of South Asia

Activity 3

Now look at the 'Comparative Data Example 3' table which provides some data about the main cities of South Asia. Ask the group how this data might be different to the other data sets. Here the information is a list of cities –factual statements that will not change, there is no data derived from the well-being or economic indicators that are used in the other data table. Talk to the group about how it is easy to be bamboozled by data, and that they need to be critically aware and think about what they want to know, and what might inform that need.

In your plenary ask pupils to think about what constitutes 'good data' to answer any particular question, and how they would go about finding the sorts of data to compare countries and their level of development.

Lessons 10-12 Comparing Countries

Aim: To use comparative geographical data to compare nations.

Lessons 10-12* are based on developing a methodology for looking at key data about countries in our region. *You could extend this, depending on time available, by providing more research and writing up time, or truncate it by asking pupils to study fewer countries in depth.

For each country provide additional material which reveals a range of data about that country. This will give pupils the chance to consider relevance, utility, accuracy, and significance in relation to particular key questions.

Lesson 10 Comparing Pakistan with our large regional neighbours: India and Bangladesh

Textbook Section: 6.7, page 79.

Aim: To use comparative geographical data to study large neighbouring states.

In the preview explain that we are going to look at six neighbours/regional states over the course of three lessons, and will have to work out what sorts of data we need to compare the countries. Ask them what they think is useful to know about particular countries. Is this the same as what is significant geographically? And is this the same as what is relevant to illuminating particular issues

Explore what criteria we might apply to comparing countries, and agree some categories or questions which we might ask. Explain that we will test out whether these work by looking at the first two countries.

Looking at comparative data about India

Activity 1

Read the section about India on page 79, and provide the additional information about India for the group to consider. Tell the group how long they will have to look through the information and gather the data they want. Give the class working time to look at the resources about India, and to assemble their comparative information.

Looking at comparative data about Bangladesh

Activity 2

Read about Bangladesh on page 79 with the group the section, and discuss it, then provide the additional materials on Bangladesh. Give the group a fixed amount of time to gather data on Bangladesh.

You could use the 'Going Further' panel to set a Home Learning task about microcredit: the system of giving small scale loans to new businesses to support entrepreneurship and local development. Often focused on helping women start businesses. The model is based on the provision of a business plan to the lending organisation (often a charity or socially focused foundation) and modest repayments of the original capital over time as the business develops. The original capital, and sometimes a small arrangement fee, are reinvested in support for other businesses in new loans. For Islamic people there would be no interest payments to comply with the prohibition of charging interest on loans.

Alternatively home learning during these lessons on comparative data could be about extending what they know about each country and/or writing up their findings. Make clear to pupils what your expectations are and what the final 'product' will be at the end of the activity. Also be clear about how it will be assessed or if peer assessment will be involved in part of fully.

In your plenary spend a little time with the group discussing how well the categories of information they were trying to respond to worked, and if any were more difficult to respond to compared to others. If necessary agree with the group which things will be adjusted for the remaining lessons and if/how this might impact on their overall task/final product of data collection.

Lesson 11 Comparing Pakistan with Nepal and Bhutan

Textbook Section: 6.8, page 80.

Aim: To use comparative geographical data to study our smaller neighbouring states.

In the preview remind pupils of the task and product required at the end

Looking at comparative data about Nepal

Activity 1

With the class, read the text about Nepal on page 80, then give them the additional resources and allow them a fixed amount of working time.

Looking at comparative data about Bhutan

Activity 2

Read the text about Bhutan on page 80 with the class, give them the additional material and give them the working time, allowing a little time for a plenary in which you will praise good working habits and remind them of any agreed home learning.

Lesson 12 Comparing Pakistan with Sri Lanka and the Maldives

Aim: To use comparative geographical data to study our smaller neighbouring states.

Textbook Section: 6.8, page 81.

In the preview remind the group that this lesson adds information about two further regional neighbours

Looking at comparative data about Sri Lanka

Activity 1

With the class, read the text about Sri Lanka on page 81. Provide your additional information and set the group working with a clear time limit.

Looking at comparative data about The Maldives

Activity 2

Read the text about The Maldives on page 81 with the class, then allow them their last chunk of research time for looking at your additional materials on The Maldives.

In your plenary draw things together. If there is a further lesson or lessons 'writing up' the final product remind them of this, also remind the group of any home learning set and how the work will be presented.

Answers for the end of unit recall questions.

Section 1 Quiz Questions

1. Geographers use figures such as GDP, GNI, PPP, EDI and HDI or to make global comparisons (page 70).
2. Terms like third world countries are no longer seen as acceptable because the language is seen as disrespectful and judgmental (page 77).
3. LEDC means Less or Least Economically Developed Countries, and MEDC means More or Most Economically Developed Countries (page 77).
4. The differences between LEDCs and MEDCs would be seen in income, human resources and economic development and resilience (page 77).
5. The main features of India's economy are its relative strength for the region and size of its industrial and manufacturing base with 40% of workers in industry and services and 60% in agriculture. The similarities to Pakistan are the numbers in agriculture, and some of the crops. The differences with Pakistan are the extent and type of manufacturing (page 79).
6. The key physical properties of India are the size and diversity of landscape, and the long coastline around $\frac{3}{4}$ of the country. Its climate and landscape support its agricultural sector because hill and mountain rainfall flow along the Indus, Yamuna, Brahmaputra and Ganges rivers and is used for irrigation (page 79 and elsewhere).
7. Bangladesh faces considerable flooding because many of its 161 million citizens live along the Ganges and the Brahmaputra river valleys or along the coast, and extreme climate change related weather incidents are increasing and sea levels are rising. (page 79 and elsewhere).
8. The key features of Bangladesh's economy are textiles, garment manufacture, and agriculture especially tea and rice (page 79).
9. A comparison of the economies of Nepal and Bhutan tells us that both a relatively isolated mountain societies with limited outside world links Nepal relies on agriculture and tourism and Bhutan on agriculture Both have some exports, include hydro-power from Bhutan, timber from both and cement from Bhutan. Both import oil, machinery and motor vehicles (page 80).
10. The topography and economy of the Maldives is interlinked because it is a low lying territory of a long chain of islands dispersed over a wide area. The land is often close to sea level with an economy based largely on tourism and fishing. The landform, and climate make this a major tourist destination. (page 81 and elsewhere).

Section 2 Multiple Choice Questions

1. The pass that leads from Pakistan to China is: C. The Khunjerab Pass.
2. The area of India with hot, dry climate and poor soil is: C. Deccan Plateau.

3. The climate of Bangladesh is tropical, therefore: B. Hot and humid.
4. The flowing is not a landlocked country: A. Maldives.
5. Sri Lanka's main cash crops are: A. Tea and rubber (page 81).
6. The South Asian country with almost 1200 islands is: B. The Maldives.
7. B. Nature of employment: is not an indicator for the human development index (page 70).

Opportunities for Longer Prose Responses, Debating and Extended Writing

1. What do we mean by development indices, and are they of any use?
2. Is GDP a good measure of wellbeing? Are there better alternatives?
3. What role do the OECD and OICD play in socio-economic development?
4. Are infrastructure investments in health and education worth the money? (Debate)
5. Compare the socio-economic development of countries X and Y.
6. To what extent is it true to say that Pakistan has a long journey before it is a MEDC? (Debate or essay)
7. Is hard infrastructure useless without strong soft infrastructure?
8. Does a rapidly rising population prevent any improvement in overall wellbeing of a nation? (Debate)