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**WORLD WATCH**      **SECOND EDITION**  
**GEOGRAPHY**

**A Geography Course for Grade 8**

**TEACHING GUIDE**

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# Introduction

## An outline of the course

World Watch Geography is a geography course for the 21st century. It is designed for secondary schools that want to stimulate curiosity, thinking skills, and a love of learning. The course comprises four components: Student's Textbooks, Skills Books, My E-Mate companion website, and Teaching Guides.

## Core features

- It draws its content and skills from the Pakistan National Curriculum (2022) and international secondary school syllabuses while focusing on Pakistan for examples.
- At all levels, learning is built on students' knowledge; the teacher eliciting what they already know and building on this, not simply loading them with facts.
- The language, content, and tasks are progressively graded according to class levels.
- Each level is split into separate units, each focusing on a different topic.
- High priority is given to independent and critical thinking skills and building geospatial skills.
- Ideas for discussion are provided to help students to express their own ideas in open-ended tasks.
- Mapping skills are taught in a progressive way that builds on the students' previous learning.
- Diagrams and charts/tables are used to vary the presentation of content.
- Students are encouraged to make connections between the geographical environment and the way people live.

## Student's Books

- The Student's Books form the core of the course. The illustrations, photographs, and maps bring alive the familiar environment and distant places, and both natural and man-made geographical features.
- The 'Contents' page details the learning outcomes for each unit.
- Each unit of the Student's Book consists mainly of reading texts and making observations, followed by assessment questions.
- The 'Overview' at the end of each unit virtually represents the various topics in the unit and how they are interlinked to each other.
- Fact boxes contain interesting information about the relevant topics and key fact boxes at the end of each unit summarize the unit.
- The 'Building Skill' feature box serves as a valuable tool for students to develop

geospatial skills and actively engage with the subject matter. These suggested activities provide practical exercises, real-world scenarios, and opportunities for critical thinking, allowing the students to apply their learning in a meaningful and relevant way.

### **Skills Books**

- At each level, there is an accompanying Skills Book.
- The tasks are varied and enjoyable, and include maps, diagrams, charts or tables, crosswords, fill-in-the-blanks, and situational questions.
- Skills Book pages should be introduced in class and can be completed either in class or for homework.
- Students are usually expected to write in the Skills Book.
- There is a brief learning outcome at the top of every page.

### **Teaching Guides**

Teaching Guides are an invaluable resource for the teacher. It provides a framework for formative assessment of students during each lesson. It has the following features:

- background knowledge
- student learning outcomes
- step-by-step lesson plans
- ideas for further activities and student research
- answer keys for Assessments and Skills Book activities
- scheme of work
- geography skills checklist

# Content

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# Oceans and seas

## Background knowledge for the unit

This unit looks at the oceans and seas, including their characteristics and features, the structure of the ocean floor, and the movements of water in the ocean. It aims to help students understand the vast area that makes up so much of our planet in terms of its underwater topography and the effects that its waters can have on life on Earth.

Three quarters of the Earth's surface is covered in water. This water is vital for the planet. It helps to regulate climate through evaporation which, through the 'water cycle', falls back to the Earth as rain, and through movement of water around the planet by currents known as the great ocean conveyor belt, which helps to keep the atmospheric temperature even. Increasingly too, the ocean has also absorbed the extra heat and carbon dioxide that has been created by global warming, as this webpage and the accompanying video illustrate: <http://climatekids.nasa.gov/ocean/>. Additionally, the ocean is home to many plants and animals, all of which belong to environmental ecosystems.

These ecosystems are vital to life on Earth, and their breakdown can have far-reaching consequences for life all over the planet, especially as the oceans are also a major source of food for humans.

Oceans are saline (salty) interconnected bodies of water that cover the planet. There are five oceans: the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean, and the Southern Ocean. Seas are parts of oceans and are defined as being bordered by land on one, two, or three sides. There are well over a hundred seas. Some of them are large, while others are quite small. They include the Arabian Sea, the Dead Sea, the Mediterranean Sea, the Black Sea, the Red Sea, the China Sea, the Tasman Sea, and the Bering Sea. The Caspian Sea, which is landlocked and therefore more like a large lake, is called a sea because of its size.

Each ocean and sea are unique due to the combination of its geography, currents, and levels of salinity. Oceans and seas also have their own special underwater landforms and natural features that have been created by either geological processes or the interaction of sea and land through erosion or the laying down of sediment, or from a combination of any or all these factors together. Underwater landforms include high mountain ranges created by tectonic plate movements or volcanic activity, and deep trenches that plunge for kilometres under the surface. Natural features are created where land and water meet and include bays, gulfs and bights, straits, isthmuses, peninsulas, and islands.

Ocean waters are in perpetual movement. Currents slowly push water from one part of the planet to another. They work with the weight of cold, salty water, moving warmer,

less saline water to the surface of the ocean. Surface currents and waves are created by wind and move water over smaller distances. Tides, caused by the gravitational pull of the Moon, create tidal zones which are home to many unique ecosystems. All these movements move not only water, but sediment as well, and help shape undersea features and areas of shoreline.

### **Before we proceed**

Before beginning work on this, explain how the structure of the surface of the Earth under the sea is as complex as the structure of the surface of the Earth on dry land. Like the topography of the continents, the topography of the oceans is also shaped largely by tectonic and volcanic forces, along with erosion. Explain that the discovery of underwater geography and oceanic life is still new and largely unknown. Exploration by government agencies such as the National Oceanic and Atmospheric Administration (NOAA) and individuals such as James Cameron, using submersible submarines to look into the deep undersea has given humans a new perspective on a world that has previously been hidden. For more information on NOAA, refer to <http://www.noaa.gov>; and for James Cameron refer to <http://www.deepseachallenge.com>

### **Expected learning outcomes**

Students should be able to:

- identify the world's oceans and major seas and describe their main characteristics
- define features of oceans and seas such as bays and islands
- describe the structure of the ocean floor
- explain oceanic movements and their causes
- describe the life in oceans
- identify and describe resources from oceans and seas
- explain the threats faced by oceans and seas in the twenty first century and identify ways to sustainably manage it

<b>Lesson Plan # 1</b>	
<b>Reference pages 1-5</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• Oceans, seas, and more</li> <li>• Oceans</li> <li>• Seas</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity Characteristics of oceans and seas'</li> </ul>
<b>Introduction</b> <p>The world's oceans cover about 71% of the world's surface and have a total volume of 1.35 billion cubic kilometers. There are five oceans: the Pacific, the Atlantic, the Indian, the Southern, and the Arctic. Although they are viewed as separate, they are all connected and their waters flow from one to the other. The oceans are all largely defined by the landmasses that border them. The characteristic of each ocean includes its size, its position between landmasses, its place on the globe, and its underwater features. Other characteristics include salinity, water temperature, and the sources of its water. Seas are subsections of oceans. They are smaller and usually located around coastlines, and at least partially enclosed by land, which can include islands.</p>	5-10 min
<b>Using the Student's book</b> <p>In the first lesson, introduce the concepts of oceans and seas. Read the text on pages 1-5. Explain the difference between oceans and seas and talk about the characteristics of the five oceans and some of the seas. Project or pin a detailed oceans map onto the board or ask the students to refer to one in the <i>Oxford School Atlas for Pakistan</i>. After reading the section, ask them to observe the shape of each of the oceans and where they are defined. Ask them to look at the elevations in the areas they are looking at and draw conclusions about how shallow or deep various parts of the oceans and seas are. Ask them to find the widest and narrowest sections of the oceans and the deepest parts on the map. Ask about their general impressions of the seas from looking at these maps. Which ocean is closest to Pakistan and how might it influence life in this country? For the Skills Building exercise, help students identify the specific information they need to collect about the temperature, depth, and total area of seas and oceans from the textbook and the Internet. Make them decide on the scope of their data collection, such as the specific regions or time periods they want to focus on. Ask students to look for credible and authoritative sources of data on seas and oceans if using the Internet. It can include scientific research papers, government reports, reputable websites, and databases specialising in oceanographic or marine data.</p>	35-40 min



<p>Examples of reliable sources include the National Oceanic and Atmospheric Administration (NOAA), National Geographic, and academic institutions.</p> <p>Make students record the temperature, depth, and total area values for each sea and ocean of interest. Create a structured format to organise the collected data using Microsoft Excel or Google Sheets. Set up columns to represent the different variables (e.g., sea/ocean name, temperature, depth, total area) and rows to record the corresponding data. Encourage students to present the data in a visual format, consider creating tables, graphs, or charts. For example, they can create a table comparing temperature, depth, and total area values for different seas and oceans.</p> <p>Ask students to analyse the collected data to identify patterns, trends, or relationships between variables. Look for insights or conclusions that can be drawn from the data, such as variations in temperature or depth across different seas and oceans. Consider using statistical analysis tools or formulas within your spreadsheet software to assist in interpreting the data. Ask them to create a written report or presentation that highlights the key observations, trends, and conclusions derived from the collected data. Include the visual representations (tables, graphs, etc.) to support their analysis. Remind students to cite the sources of data used in their research and adhere to any guidelines or requirements for referencing and attribution.</p>	
<p><b>Homework</b></p> <p>Ask the students to answer question B and complete the Skills Book activity ‘Characteristics of oceans and seas’ about the locations and characteristics of the oceans and seas for homework. Encourage them to use the Internet or an encyclopedia to expand their knowledge.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned that oceans are large bodies of water and seas are subsections of oceans.</li> <li>✓ I learned about the characteristics of oceans and seas.</li> </ul>	

<b>Lesson Plan # 2</b>	
<b>Reference pages 5-7</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• Oceanic features</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity Ocean features where it meets land'</li> </ul>
<b>Introduction</b> <p>Many features form where land and sea meet. In this section, the students are introduced to gulfs, bays, bights, straits or channels, peninsulas, isthmuses, and islands. However, there are many more features which can be touched on here, such as sounds, inlets, headlands, beaches, caves, lagoons, estuaries, and more. The purpose of this section is not to list every feature, but to introduce the idea of these features, and explain how to identify them and how they might have been formed.</p>	5-10 min
<b>Using the Student's book</b> <p>Read pages 5-7 and talk about the concepts of gulfs, bays, and bights. You can also mention sounds, lagoons, and caves as being of different sizes or depths. It is important to mention that while each of these geographical shapes has a definition, these are not always fixed, meaning that, for example, while gulfs are meant to be larger than bays, the Bay of Bengal is larger than any gulf in the world. Ask the students to speculate about why that might be. Talk about straits, peninsulas, isthmuses, and islands and define them. What do these features have in common? Ask the students to look at the images and illustrations on pages 5-7 and ask them to identify as many of these features as they can. How do these features relate to each other geographically?</p>	35-40 min
<b>Homework</b> <p>Complete Questions C3 a-b in class. Ask the students to complete the Skills Book activity 'Ocean features where it meets land' for homework to reinforce the concepts. Encourage them to use the Internet or an encyclopedia to expand their knowledge.</p>	
<b>Discussion and review</b> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned about some of the features of oceans and seas like peninsula, bays, bights, gulfs, straits, etc.</li> <li>✓ I learned about the differences between these features.</li> </ul>	

<b>Lesson Plan # 3</b>	
<b>Reference pages 7-8</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• Structure of the ocean floor</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity Structure of the ocean floor'</li> <li>• World map</li> </ul>
<b>Introduction</b> <p>The structure of the ocean floor introduces the students to undersea topography as well as explaining how the geographical features that are found in the oceans have been created. This section aims to show the students that the environment below the surface of water is as complex as the environment above it; and that this environment has been shaped in similar ways to that on dry land with the action of water largely replacing the action of the wind.</p>	5-10 min
<b>Using the Student's book</b> <p>The structure of the ocean floor introduces the students to undersea topography as well as explaining how the geographical features that are found in the oceans have been created. This section aims to show the students that the environment below the surface of water is as complex as the environment above it; and that this environment has been shaped in similar ways to that on dry land with the action of water largely replacing the action of the wind. Divide students into small groups and provide each group with a world map. Instruct each group to label and color the major oceans. Encourage discussion about their sizes and locations. Introduce the concept of ocean basins and explain that the ocean floor is not flat but has various features. Use visual aids (images, diagrams) to explain the basic structure of the ocean floor, including the continental shelf, continental slope, abyssal plain, and oceanic trench. Have each group present their labeled maps and share one interesting fact about the ocean floor features they've labeled.</p> <p>Explain the concept of seafloor spreading and its role in the formation of mid-ocean ridges. Discuss the process of subduction and its relationship to oceanic trenches.</p> <p>Use diagrams to illustrate these processes and their impact on the ocean floor's topography. Facilitate a class discussion on how these processes contribute to the dynamic nature of the ocean floor.</p>	35-40 min

<p>Discuss the significance of studying the ocean floor for understanding Earth’s geology, marine ecosystems, and natural hazards like tsunamis. If possible, show videos or images that highlight the discoveries made through ocean floor exploration, such as hydrothermal vents and deep-sea creatures. Divide the class into pairs or small groups and assign each group a specific aspect of ocean floor research (e.g., marine biodiversity, seafloor mapping, mineral resources). Instruct students to research their assigned topic using available resources (books, internet) and prepare a short presentation.</p>	
<p><b>Homework</b></p> <p>Using the information, they have just learned, ask the students to answer Questions C1-2, C4, and D. Ask the students to complete the Skills Book activity ‘Structure of the ocean floor’ for homework.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned that the structure of the ocean floor is shaped by tectonic activity, volcanic activity, and deposition of sediment.</li> </ul>	

<b>Lesson Plan # 4</b>	
<b>Reference pages 9-11</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Movement of the ocean</li> <li>• Life in the ocean</li> <li>• Oceanic zones</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Multimedia/Images/ Flash cards</li> </ul>
<p><b>Introduction</b></p> <p>The waters of the ocean are in perpetual motion. This movement has deep effects on the sea, and the planet. Waves, tides, and currents all move water from place to place. Waves and tides cause erosion that reshapes features at the edge of the sea, as well as helping to displace sediment into the ocean. Currents have a strong effect on the temperature of the sea and the atmosphere.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Read through the section on currents and discuss the role of currents in the movement of water around the planet. Ask the students to discuss Question D2 in the Student's Book. Ask what overall effects these currents might have. For the second half of the lesson, turn to the sections on waves and tides. Discuss the kinds of effects that they might have on the ocean's features and through erosion.</p> <p><b>Activity</b></p> <p>How does wind affect the size of waves?</p> <p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• one shallow plastic tray</li> <li>• sand or pebbles</li> <li>• portable desk fan</li> <li>• paper and pen to record findings.</li> <li>• Warning! Do not let the fan touch the water or it could cause an electric shock.</li> </ul> <p><b>Instructions</b></p> <ol style="list-style-type: none"> <li>1. Make a small beach at one end of the tray with sand or pebbles. Fill the tray with about 3 centimetres of water.</li> <li>2. Place the fan at one end of the tray, opposite to the beach end. Aim the fan so that the air will hit the water at a 45-degree angle.</li> </ol>	<p>35-40 min</p>

<ol style="list-style-type: none"> <li>3. Turn the fan on low speed and leave it running for 3 minutes. Record your observations of the water. Then turn it off and allow the water to become calm.</li> <li>4. Turn the fan on medium speed for 3 minutes. Record your observations of the water on the table. Allow the water to become calm again.</li> <li>5. Ask students to predict what will happen to the water when you turn the fan on for 5 seconds at high speed.</li> <li>6. Turn it on for 5 seconds and record your observations.</li> <li>7. Ask students to predict what will happen to the water when the fan stays on for 10 seconds at high speed.</li> <li>8. Ask the students to use their observations to talk about the link between wave size and wind. Ask them to talk about what they see in relation to wind speed, wind duration, and fetch.</li> </ol>	
<p><b>Homework</b></p> <p>Ask them to complete the remaining Questions E in the Student’s Book. The following activity can be undertaken in class to illustrate the role wind plays in making waves.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned that the water in the oceans and seas is continuously in motion.</li> <li>✓ I learned that waves and tides erode the land features where the sea encounters land.</li> </ul>	

<b>Lesson Plan # 5</b>	
<b>Reference pages 12-16</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Resources of the ocean</li> <li>• Threats to the ocean</li> <li>• Sustainable management of the oceans</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Visual aids (images, videos, diagrams) related to ocean resources and threats.</li> <li>• Access to the internet and computers/tablets.</li> </ul>
<p><b>Introduction</b></p> <p>Assign the class to present ocean resources such as fish, minerals, oil, renewable energy, and pharmaceuticals with visual aids. Split them into small groups and have each group research and present a brief on their assigned resource. Allow each group to present their findings, highlighting the importance and potential challenges associated with their assigned ocean resource. Encourage questions and class discussion after each presentation.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask students to read pages 12-16 and make mind maps for separate headings on a piece of page for prompt class presentations. Compare and contrast with discussion. In order to educate students about the dangers facing our oceans, it's important to highlight various threats like overfishing, pollution (including plastic, chemical and oil spills), habitat destruction, climate change, and ocean acidification. To help learners grasp the impact of these hazards on marine ecosystems and biodiversity, visual aids can be a useful tool. After that, it's helpful to facilitate a class discussion on the interconnectedness of ocean ecosystems and how threats can have ripple effects. Assign students roles as stakeholders like fishermen, environmentalists, tourism reps, and scientists. Provide each group with relevant info. Engage them in a role-play to discuss challenges and solutions from their point of view.</p> <p>Find out the Sustainable Development Goals (SDG) related to oceans and seas Suggest measures that can be taken by individuals,. community groups, and government in Pakistan to secure them. Using the Internet and news outlets, gather and present data to show the cause and effect of marine pollution and natural disasters. (Online sources) Provide examples of successful marine conservation efforts. Assign each group a specific ocean conservation issue and have them create a detailed plan using sustainable management practices. Consider the viewpoints of stakeholders and present plans to the class.</p>	<p>35-40 min</p>

**Homework**

Ask them to answer questions A, F, and G from the Student's Book.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:

- ✓ I learned about the various resources from ocean and seas that humans are dependent upon.
- ✓ I learned about the threats life in the oceans and seas face from human activities and threats human face from oceans and seas.
- ✓ I learned about the collaborative and individual efforts that can preserve ocean resources and combat threats from it.



## Answers for Assessments

### A. Choose the correct answer:

- |                    |                        |
|--------------------|------------------------|
| I. Eurasian Steppe | V. Gorge               |
| II. Tundra         | VI. Khyber Pakhtunkhwa |
| III. Indus         | VII. Nile              |
| IV. Spring         | VIII. Wetlands         |

- B. 1. The oceans are important to life on Earth in several ways, including: being a source of food, being home to many animals and ecosystems, and being a regulator of climate.
2. Oceans are large, interconnected bodies of water that cover the Earth. Seas are parts of oceans. There are more than 100 seas, and they are characterized as being bordered or partially enclosed by land.
3. Some characteristics of the oceans are:

The Pacific	Largest ocean, with an area of 156,000,000 sq km	Dotted with atolls and other islands	home to deepest location on planet, 11,033 metres (Challenger Deep, Mariana Trench)
The Atlantic	Second largest ocean, with an area of 77,000,000 sq km	the most saline ocean	a maximum depth of 8605 metres (Puerto Rico Trench)
The Indian	third largest ocean, with an area of 69,000,000 sq km	The Red Sea and Persian Gulf are a part of the Indian Sea.	a maximum depth of 7258 metres (Java Trench)
The Southern	fourth largest ocean with an area of 20,000,000 sq km	The ocean's northern boundary is with the Pacific, Indian, and Atlantic Oceans.	a maximum depth of 7235 metres (Sandwich Trench)
The Arctic	fifth largest ocean with an area of 14,000,000 sq km	The Arctic is the coldest ocean and is often covered in floating ice.	a maximum depth of 5000 metres (Amundsen Basin)

4. Some characteristics of seas are:

The Arabian Sea	covers 3.9 million sq km	It is bordered by India, Iran, the Maldives, Oman, Yemen, Somalia and Pakistan.	It is a part of the Indian Ocean
The Baltic Sea	Covers 386,000 sq km	It is linked to the North Sea to the east	It is a part of the Atlantic Ocean.
The Black Sea	Covers 444,000 sq km	It is connected to the Mediterranean Sea by a small channel.	It is a part of the Atlantic Ocean.

- C. 1. In subduction, one tectonic plate moves slightly under another. This forms deep trenches.
2. Volcanic activity shapes the ocean floor by producing seamounts which are single mountains with steep sides. Sometimes these rise above the surface and become volcanic islands. When they are eroded they are called guyots. Volcanic activity often takes place where tectonic plates meet, and strings of volcanic islands are produced along the edges.
- 3 a) Features created where land and sea meet include gulfs, bays, bights, straits, peninsulas, isthmuses, and islands.
- b) A gulf is a deep inlet of ocean or sea with one narrow opening to the wider ocean. A bay is a body of water connected to an ocean and partially surrounded by a curved piece of land. A bay is usually smaller and less enclosed than a gulf, but some bays can be very large. A bight is a little like a bay, but longer and more open to the sea.
- 4 a) true
- b) False; mid-ocean ridges are a connected chain of mountains that run throughout the world's oceans along tectonic plates. They are thought to be between 50,000–80,000 kilometres long in total.
- c) False; trenches form in the deepest parts of the ocean and occur as a result of tectonic plate movements in a process called subduction, when one plate slides slightly under another.
- d) true
- D. 1. A continental shelf is submerged land at the edge of a continent. It can extend from 30 to 300 kilometres out to sea. Continental slope begins at the edge of the shelf and drops more rapidly. It can extend up to 100 kilometres and drop by about three kilometres. The continental rise is at the end of the slope and consists of thick sediment that has built up from the shelf and slope. The rise can extend up to 1000 kilometres.
- 2 a) There are two types of currents in the ocean. The first are wind-driven currents that affect the surface water of the sea. The other type of currents are global currents known as thermohaline circulation which extends through all the oceans.
- b) Wind-driven currents move in large circular patterns called gyres. They affect some areas of water to about 200 metres in depth. Thermohaline circulation moves water in large quantities in a rolling and forward motion that exchanges warm surface water for cold, salty, deep water. It also slowly moves this water along circulation routes known as the great ocean conveyor belt which shifts the water slowly around the planet.

- c) Deep currents are called thermohaline circulation. They move water all around the world in what is called the great conveyor belt, constantly mixing warm and cold water together. The wider effect on the planet is that by moving cold water to warmer places and warm water to cooler places these currents keep the temperatures of the Earth and its atmosphere balanced.
3. The highest part of a wave is called the crest. The lowest part of the wave is called the trough. The distance between the tops of two consecutive waves is the wavelength.
- 4 a) The Moon influences the oceans by causing tides. A tide is the rising and falling of the sea on the coastline every six hours.  
b) The force behind this effect is gravity.
- D 1 a) Students should research using the Internet. Their descriptions should follow a similar pattern that outlines sizes, oceans of which they are a part, depths, capacities, neighbouring countries, temperatures, salinity, etc.  
b) Check students' illustrations of the ocean basin and their labelling of mid-ocean ridges, abyssal plains, and trenches against the diagrams in the Student's Book.
- F 1. a) Answers may vary. Maintaining the health and balance of Earth's environment depends heavily on marine biodiversity. It provides several ecosystem services that benefit both marine and terrestrial life. Diverse marine ecosystems have greater resilience to disturbances because different species interact and depend on each other, helping to maintain ecosystem stability and productivity. Marine organisms like phytoplankton play a significant role in global oxygen production and carbon dioxide absorption, regulating Earth's climate. Nutrient cycling is also integral to marine species, with nutrients from oceans being transported to land through various processes that influence terrestrial ecosystems. Lastly, natural barriers such as coral reefs, mangroves, and seagrass beds protect coastlines from erosion, storm surges, and tsunamis.  
b) Answers may vary. The diversity of marine life has significant economic advantages for human societies. This includes the fact that marine species are the foundation of fishing and aquaculture industries, providing food and livelihoods for millions of people across the world. Coastal and marine areas also attract tourists for activities such as diving, snorkeling, and wildlife watching, contributing to local economies. Furthermore, marine organisms have the potential to provide new drugs and medicines, creating economic opportunities in the pharmaceutical industry. Additionally, oceans support international trade and shipping, which is essential for economies and global commerce.
2. a) The United Nations has established various Sustainable Development Goals concerning oceans and seas, one of which is Goal 14: Life Below Water. The objective is to conserve and use the oceans, seas, and marine resources in a sustainable manner to promote sustainable development.  
b) There are two types of pollution sources: specific and identifiable sources, such

as industrial discharge pipes or sewage treatment plants, and diffuse sources, which often come from runoff and enter the ocean through various pathways, such as agricultural fields or urban areas.

- c) Better waste management, regulations, and sustainable practices can help reduce ocean pollution. Marine Protected Areas can also protect sensitive ecosystems.
- G 1. a) Unsustainable fishing practices lead to overfishing, which depletes fish populations and disrupts marine food webs. Pollution, such as plastic waste, chemical pollutants, oil spills, and other forms of harmful substances, also cause harm to marine life and habitats. Destructive fishing methods, coastal development, and climate change pose a threat to critical marine habitats. Rising temperatures, ocean acidification, and sea-level rise negatively impact marine ecosystems, and non-native species can disrupt ecosystems and outcompete native species. Illegal, unreported, and unregulated (IUU) fishing undermines conservation efforts and is a major concern.
- b) To ensure the long-term health and sustainability of our oceans, it is essential to take a range of measures. Science-based fisheries management should be implemented to prevent overfishing and protect vulnerable species. Protected zones need to be established and effectively managed to conserve marine biodiversity and ecosystems. Policies should be put in place to reduce plastic waste, regulate industrial discharges, and prevent oil spills to reduce pollution. To mitigate climate change, greenhouse gas emissions should be reduced, and renewable energy sources adopted. Educating the public about marine conservation and the importance of sustainable practices is crucial. Additionally, global collaboration is necessary to address transboundary issues such as illegal fishing and pollution. All these measures require the combined efforts of governments, industries, communities, and individuals.

## Answer to Skills Book Activities

### *Skills Book Activity 'Characteristics of oceans and seas'*

- A 1. Check that the names and borders for oceans correspond with those in the text or on an atlas and correct where necessary.
2. The Pacific Ocean is the largest. The Pacific Ocean has the deepest point. The Arctic Ocean is the shallowest. Parts of the Atlantic contain the most saline water. Parts of the Pacific contain the least saline water. The Arctic is the coldest ocean. The Indian Ocean is the warmest.
- 3 a) Students should look up the names and depths of the seas on the Internet.
- b) Oceans are large bodies of saline water that cover more than 70% of the planet. Seas are parts of the oceans, defined as being partially bordered or enclosed by land.

- 4 a) The Indian Ocean  
 b) The Arabian Sea  
 c) These bodies of water are important to Pakistan for food from fishing; and for trade and travel as they enable Pakistan access to the world's waterways.

*Skills Book Activity 'Ocean features where it meets land'*

A 1 a) F b) F c) T d) T e) F f) T g) T h) T

a) strait	a narrow waterway that flows between two landmasses and connects two larger water bodies
b) peninsula	a section of land that is connected to a mainland and is surrounded on three sides by water
c) isthmus	a narrow piece of land separating two bodies of water and connecting two larger bodies of land
d) island	a piece of land surrounded on all sides by water

3 a) island b) strait c) isthmus d) Peninsular

*Skills Book Activity 'Structure of the ocean floor'*

- A 1. The labelling should match that on page 7 of the Student's Book.  
 2. Sediment is matter that settles to the bottom of watery environments. It is found all over the ocean floor. Some sediment is carried along rivers down the continental shelf and continental slope and then deposited on the continental rise. It is believed that the underwater canyons that often lie offshore from river mouths are carved out by the movement of this sediment. Sediment is found across the abyssal plains in the deeper parts of the ocean basin. Some of this sediment is made up of soil and sand that is carried along the rivers from the land. Some of it is dust and ash that comes from volcanic eruptions. Some of it comes from marine life and is made up of small shells and the remains of dead sea organisms. The abyssal plains on the ocean basin appear flat because they are covered in sediment, with only small rises, called abyssal hills, being visible.

# UNIT 2

## Living with the Climate

### Background knowledge for the unit

Climate affects a region's agriculture, buildings, infrastructure, clothing, and many aspects of everyday life. These differences are more noticeable when extreme climates are compared: for example, in extremely cold regions, such as parts of Russia, the permafrost makes the digging of foundations for buildings very difficult.

As a result, most buildings are placed on pillars, which requires a smaller volume of land to be dug out, and pipelines for sewage and water, and cables for electricity and communication are kept above the ground, rather than laid underground. Homes in different climates are noticeably different: for example, in regions that have a lot of snow, roofs tend to be steep and flat roofs are rare; in hot, sunny climates, many homes have window shutters that can be closed to keep out strong sunlight, and white or light colours are used to reflect sunlight. Towns and buildings in hot climates are designed to provide shade and to allow air to circulate easily.

Physical features such as mountains, plains, valleys, lakes, rivers, and forests affect the local climate. Urban and rural places in similar locations can have different climates. Night temperatures in valleys are lower than on any surrounding hills because, in the winter, heavier cold air drops down into the valleys. This can cause fog or mist. In the summer, winds make the air colder on the hills.

Places on the sheltered side of mountains have less precipitation than those on the windward side because they are in a rain shadow. They can have much higher temperatures in winter than places on the windward side of the mountains. In summer, forests have lower temperatures than plains because they trap heat. Forests also reduce wind speed, whereas open plains offer little wind resistance. Trees can store large amounts of water, whereas water easily evaporates from plains, so forested areas have higher humidity, while plains tend to be dry, or even arid.

Urban areas are usually warmer than nearby rural areas, mainly because the buildings trap heat and release it slowly back into the atmosphere. The heat released from energy consumption in homes and industry also increases the temperature of the atmosphere of urban areas.

Climate change refers to the long-term shifts in temperature and typical weather patterns of a place, whether it be a specific location or the planet. It can cause weather patterns to become less predictable, resulting in regions experiencing either lower or higher than average temperatures, and changes in the amount of precipitation. These changes can significantly impact plants, animals, and humans alike. Some kinds of severe weather are

more likely than others in each region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

The primary cause of climate change is the emission of greenhouse gases into the atmosphere, which trap heat from the sun and cause the Earth's temperature to rise. The main greenhouse gases emitted by human activities are carbon dioxide, methane, nitrous oxide, and ozone. Other factors that contribute to climate change include:

- **Deforestation:** When trees are cut down, they release carbon dioxide into the atmosphere.
- **Agriculture:** The use of fertilizers and livestock production releases methane and nitrous oxide into the atmosphere.
- **Industrial processes:** The production of cement, steel, and other materials releases greenhouse gases into the atmosphere.

The impacts of climate change are already being felt around the world. These impacts include:

- **Rising sea levels:** As the Earth's temperature rises, the ice caps and glaciers are melting, which is causing sea levels to rise. This is threatening coastal communities around the world.
- **More extreme weather events:** Climate change is causing more extreme weather events, such as heat waves, droughts, floods, and storms. These events are causing widespread damage and loss of life.
- **Changes in plant and animal life:** Climate change is causing changes in plant and animal life. Some species are moving to new areas, while others are becoming extinct.
- **Health impacts:** Climate change is expected to have a number of health impacts. These include heat stress, respiratory problems, and waterborne diseases.

### **Before we proceed**

It is useful to begin with the students' own experiences of different climates. They could be asked to prepare a presentation on a place that has a different climate from that of their hometown, focusing on a description of the climate and anything they noticed about how it affects everyday life, buildings, cities, agriculture, etc.

Questions such as 'How are the homes in a different climatic region different from ours?' and 'Why do you think their homes were built like that and ours are not?' are useful for focusing on the effects of climate. If possible, the students could also exchange information with their friends or family who live in a different climatic zone. Discuss the increasing extreme weather events with students.

## Expected learning outcomes

Students should be able to:

- Identify some examples of extreme weather on the Earth and its reasons
- Explain the causes and effects of climate change
- Form links between climate change and extreme weather
- Differentiate between the climatic patterns of Karachi and New York
- Describe the impact of climate change on food supply and farms



<b>Lesson Plan # 1</b>	
<b>Reference pages 19-21</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Climate</li> <li>• Extreme weather</li> <li>• World climatic zones</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• <i>Oxford School Atlas for Pakistan</i></li> <li>• Multimedia for watching the documentary</li> <li>• Skills Book activity 'Latitudinal effect'</li> <li>• Skills Book activity 'Monsoon'</li> </ul>
<p><b>Introduction</b></p> <p>Share a newspaper clipping for the most recent extreme weather event in the country. Tell the students that they are now going to study types and causes for frequency of extreme weather. They will also locate countries in their respective climatic zones. Explain that this will also reinforce what they learned in previous grades about climatic zones and climate change.</p> <p>Suggested activity</p> <p>Watch the documentary (<a href="https://www.youtube.com/watch?v=228zX56NCNk">https://www.youtube.com/watch?v=228zX56NCNk</a>) with the students in the class and engage in active conversation in between and after the movie. Ask students what problems were like Germany and what steps do they think a developing country like Pakistan can take?</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask the students to read pages 19-21 and look again at the map of climatic zones on page 21. Ask them to find out the climatic zone of Pakistan. For this, they should remember how to use the key of a map. Point out that there are different climates within Pakistan, but the map does not show all of them because its scale is too small. Then ask them to use the key to find other countries with similar climates. They will need to use <i>Oxford School Atlas for Pakistan</i> or a political map of the world marked with the names of the countries.</p> <p>Ask the students to describe what is extreme weather. Remind them that weather can change from day to day or even several times during the day, and that climate is the weather pattern of a place recorded over a long period of time. Ask them to give some examples of extreme weather. These could include flooding caused by very heavy rains over a short time, drought, very hot or very cold weather, or very strong winds.</p>	<p>35-40 min</p>

To learn about extreme weather on Earth, ask students to share their personal experiences, readings, or media they have seen. Brainstorm a list of weather-related words and phrases by passing around dry-erase markers. Start with one word on the board and give three markers to volunteers with ideas. Each student with a marker should approach the board and write an extreme weather word before passing the marker to the next student. Keep going until no one has more ideas to add. Encourage students to include words like lightning, hail, sleet, rain, wind, gust, flood, snow, blizzard, storm, hurricane, tornado, cyclone, thunder, dust storm, and temperature.

Suggested activity for reinforcement

To explore extreme weather, assign each small group a profile card and have them identify the characteristics that make it extreme.

Prompt questions can guide their analysis.

- What would happen to you if you were outside in this weather?
- What differences would you be able to see in the local area before and after the extreme weather event?
- What makes a weather event extreme?
- How might it affect people? (Businesses, infrastructure, school, social lives)
- Who should people contact if they need help?
- Who puts out a warning, and who should receive it?
- How do the emergency services respond?
- Do different people need to prepare differently? (Very old, very young etc.)
- What would make responding to the situation more difficult? (How far in advance can you issue warnings – if flash flooding occurs or the location of a storm path is unknown, it limits the time you must act)
- Imagine you are working for the local weather office in an area where an extreme weather event is expected to happen. Using the Internet, make a poster to help local people understand what they can do to mitigate (act) the impacts if the extreme weather event occurs. Use the prompt questions on the slides given.

<p>They will need to take notes so they can use the information in their posters later. The posters should include:</p> <ul style="list-style-type: none"> <li>• A description of the extreme weather event</li> <li>• What the warning signs are of an extreme weather event</li> <li>• The risks of the extreme weather event</li> <li>• How and how far will they know if the event will occur?</li> <li>• What can people do before, during and after?</li> <li>• Advice about how to prepare tailored to different audiences</li> <li>• Advice on how to behave when an extreme weather event occurs</li> <li>• Any emergency service information</li> </ul> <p>Have each group present their poster and explain their main discoveries. Analyse the effects and reasons (for individuals and locations). Allow time for questions if possible.</p>	
<p><b>Homework</b></p> <p>After reading this section, the students should complete Question B and Skills Book activities Latitudinal effect and Monsoon in classwork and homework.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned some examples of extreme weather and how this is different from very cold or very hot climates.</li> <li>✓ I learned to use a thematic map to find different countries on a climatic map.</li> </ul>	

<b>Lesson Plan # 2</b>	
<b>Reference pages 22-24</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Climatic regions of Pakistan</li> <li>• Contrasting climate</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Multimedia</li> <li>• <i>Oxford School Atlas for Pakistan</i></li> </ul>
<p><b>Introduction</b></p> <p>Revise and reinforce student’s knowledge on how climate affects lifestyles of people. This encompasses difference in vegetation and types of economic activities people are involved in across Pakistan. You can also share other examples. The United States has a diverse climate that greatly affects economic activities and vegetation across the country. The hot and humid climate of the Deep South is ideal for growing cotton, soybeans, and corn, which are major sources of income for farmers in the region. Conversely, the cold and snowy climate of the Rocky Mountains is not conducive to crop production, but the area is home to important industries such as mining and tourism.</p> <p>The climate also determines the types of trees that can grow in different areas, with pines, oaks, and maples thriving in the Deep South, and coniferous trees such as pines, spruces, and firs growing in the Rocky Mountains. However, climate change is affecting these patterns, with rising temperatures making it more difficult to grow crops in the Southwest, leading to a shift towards more heat-resistant crops. Additionally, the changing climate is causing trees native to the Southeast to move northward, altering the composition of forests in the region. While the interactions between climate, economic activities, and vegetation are complex, the climate plays a significant role in shaping the different parts of the country.</p>	<p>5-10 min</p>
<p><b>Using the Student’s book</b></p> <p>Ask students to read the pages 22-24 and discuss what will June and Dec feel like in each climatic zone of Pakistan. Using the Atlas helps students spot rainfall and temperature variations in different climatic zones and how that impacts the lives of people there. Ask students which climatic zones are prone to extreme weather events and what kinds, for example plains are prone to flash floods, coastal areas are vulnerable to sea storms, while plateaus and arid areas suffer through droughts.</p> <p>Using multimedia or the Atlas, explain to students how to gather weather and climate data. Explain the data given on page 24 and discuss how trends are observed by climatologists.</p>	<p>35-40 min</p>

(There are many ways of finding trends. One is to calculate long-term weather averages, derive irregularities by comparing current values to the historical average, and apply statistical techniques to identify trends and patterns.)

Ask students why is gathering this data essential for economic, social, and political activities. (Collecting climate data is crucial for economic, social, and political progress. It helps us understand the climate system and make informed decisions to address climate change. This data allows us to evaluate climate hazards to businesses, assess impacts on communities, and foster action from policymakers. Global efforts led by organizations like IPCC, NOAA, and WMO are enhancing our understanding of climate change risks. Collecting climate data is vital to combat climate change and secure our well-being for generations to come.)

After studying differences and similarities between Karachi and New York's weather and climate, ask students to summarize the comparison.

Students should practice collecting accurate weather and climate data and consider expert guidance for analysis and interpretation. Here are some approaches they can take:

- **Weather Stations:** Students can set up or use local weather stations to gather data on temperature, rainfall, wind speed, and humidity.
- **Online Weather Sources:** Online platforms offer historical weather data for students to learn about past weather conditions.
- **Weather Apps:** Weather apps on smartphones and tablets offer real-time updates on temperature, precipitation, wind speed, and more. Perfect for staying up to date on the weather in your area.
- **Climate Reports and Records:** Students can access detailed climate data from various sources, including meteorological agencies, research institutes, and government organizations. This data includes long-term averages, trends, and extreme weather events.
- **Citizen Science Projects:** Students can help with weather and climate research by joining citizen science projects. They can track cloud patterns, rain levels, and temperature changes.

<ul style="list-style-type: none"> <li>• <b>Field Observations:</b> To gather firsthand data, students can conduct field observations. This involves observing and documenting weather patterns, cloud formations, temperature changes, and other relevant aspects of the local climate.</li> <li>• <b>Surveys and Interviews:</b> Interviewing locals and experts can provide valuable insights into climate patterns and their impact on the community.</li> <li>• <b>Historical Records:</b> Students can use old newspapers, diaries, and photographs to understand past weather and climate events.</li> </ul>	
<p><b>Homework</b></p> <p>After reading this section, the students should complete Question C.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned the impact of climate on weather and lifestyle of people in Pakistan.</li> <li>✓ I learned which areas are prone to extreme weather in Pakistan.</li> <li>✓ I learned the similarities and differences of climate in Karachi and New York.</li> <li>✓ I learned about how to gather accurate weather and climate data of an area.</li> </ul>	

<b>Lesson Plan # 3</b>	
<b>Reference pages 25-27</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Global warming</li> <li>• Causes of climate change</li> <li>• Impact of pollution on climate</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Multimedia</li> <li>• Handouts explaining global warming</li> </ul>
<p><b>Introduction</b></p> <p>Make a printable handout or show the maps and statistics on this website <a href="https://www.bbc.com/news/science-environment-24021772">https://www.bbc.com/news/science-environment-24021772</a></p> <p>Ask students if they can name international treaties signed to control global warming and why are global temperatures still only increasing in the last century.</p> <p>Using the Student’s book</p> <p>Ask students to read pages 25-27. Ask them to explain It’s a fact box through a flow chart.</p> <ul style="list-style-type: none"> <li>• Food chain supply: Share with students a study by the Intergovernmental Panel on Climate Change (IPCC) found that global crop yields could decline by up to 25% by the end of the century if greenhouse gas emissions continue to rise at their current rate. This could lead to food shortages and price increases, which could have a devastating impact on people in developing countries.</li> </ul> <p><b>Sample flow chart:</b></p> <p>Increased CO2 levels in the atmosphere – Rising temperatures – More extreme weather events – Reduced crop yields – Changes in crop distribution – Increased pests and diseases – Food insecurity – Reduced access to food – Increased food prices – Malnutrition</p> <ul style="list-style-type: none"> <li>• Safe drinking water: Rising temperatures are leading to more frequent and severe droughts, which can dry up rivers and lakes. This can make it difficult to access safe drinking water, especially in rural areas. In addition, climate change is also leading to more flooding, which can contaminate water supplies with bacteria and other contaminants.</li> </ul> <p><b>Sample flow chart:</b></p> <p>Increased CO2 levels in the atmosphere – Rising temperatures – More extreme weather events – Reduced freshwater availability – Increased water pollution – Changes in water quality – Reduced access to safe drinking water – Increased waterborne diseases – Increased health risks</p>	<p>5-10 min</p>

- Shelter: Climate change is also impacting the availability of shelter. Rising sea levels are threatening coastal communities, and extreme weather events such as hurricanes and cyclones are becoming more common. This can make it difficult to build and maintain safe and affordable housing, especially in vulnerable areas.

**Sample flow chart:**

Increased CO2 levels in the atmosphere - Rising temperatures - More extreme weather events - Increased flooding - Increased storms - Increased Sea level rise - Lack of shelter - Homelessness - Displacement - Increased health risks

Ask students what natural events cause climate change. (Events like meteorite collisions and volcanic eruptions release particles that impact the climate in a short time. The Sun’s energy output also affects climate change. Changes in the Earth’s movement in space or crustal plate movement can impact climate over thousands or millions of years. These factors can work together or separately to alter the Earth’s climate). Contrast this with human activities causing global warming. Briefly describe that burning fossil fuels, mechanized farming, and careless disposal of materials have altered climate patterns. This has led to increased greenhouse gas emissions and accumulation of heat in the environment. Urban areas can be up to 5°C hotter than rural areas due to lack of vegetation and more concrete.

**Flow chart**

Emission of greenhouse gases - Carbon dioxide + Methane + Nitrous oxide - Increased greenhouse gas levels in the atmosphere - Traps heat from the sun - Causes the Earth’s temperature to rise - Altered climate patterns - Changes in precipitation patterns - More extreme weather events - Rising sea levels



**Homework**

After reading this section, the students should complete Question D.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:

- ✓ I learned about the link between global warming and climate change.
- ✓ I learned how climate change impacts food chain supply, safe drinking water, and shelter.
- ✓ I learned about the natural causes of climate change.
- ✓ I learned about the human causes of climate change.

<b>Lesson Plan # 4</b>	
<b>Reference pages 27-30</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Impact of climate change</li> <li>• Impact of climate change on Pakistan</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Impact of climate change'</li> <li>• Multimedia</li> </ul>
<p><b>Introduction</b></p> <p>Discuss recent examples of the impact of climate change on the following:</p> <ul style="list-style-type: none"> <li>• <b>Temperature: Heatwaves in India:</b> In 2020, India experienced one of its hottest recorded summers, with temperatures exceeding 50 degrees Celsius (122 degrees Fahrenheit) in some regions. Heat waves have become more frequent and intense, posing risks to human health, agriculture, and energy systems.</li> <li>• <b>Biodiversity: Coral Bleaching in the Great Barrier Reef (Australia):</b> Rising sea temperatures have led to significant coral bleaching events in the Great Barrier Reef, affecting its rich biodiversity. This has consequences for marine ecosystems, fisheries, and tourism, which rely on the reef's health and vitality.</li> <li>• <b>Disasters: Flooding in Southeast Asia:</b> Climate change has contributed to increased rainfall intensity and more frequent and severe floods in Southeast Asian countries like Thailand, Vietnam, and the Philippines. These floods disrupt infrastructure, damage agricultural lands, and displace communities, leading to significant economic and social impacts.</li> <li>• <b>Economics: Agricultural Impacts in India:</b> Changing precipitation patterns and extreme weather events, such as droughts and floods, have affected agricultural productivity in India, impacting farmers' livelihoods and food security. Erratic monsoon patterns have disrupted planting and harvesting seasons, leading to crop losses and economic challenges.</li> <li>• <b>Politics: Regional Cooperation in the Asia-Pacific:</b> Climate change has become a key topic in regional political discussions and agreements. The Association of Southeast Asian Nations (ASEAN) and other regional organizations have prioritized climate resilience, disaster management, and sustainable development in their agendas, emphasizing the need for collective action and policy coordination.</li> </ul>	<p>5-10 min</p>

<p>These examples highlight the urgency of implementing adaptation and mitigation measures and strengthening regional and international cooperation to build resilience and mitigate the impacts of climate change in Asia.</p>	
<p><b>Using the Student's book</b>          Ask students to read pages 27-30. Using the Internet or library, ask students to make a mind map to illustrate the impact of global warming and climate change. Here is a sample of findings that a presentation or class discussion should encompass. Ask students to find out local and recent examples for each heading.</p>	<p>35-45 min</p>
<p><b>Homework</b>          After reading this section, the students should complete Question E and Skills Book activity 'Impact of climate change' in classwork or homework.</p>	
<p><b>Discussion and review</b>          Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned about the impact of climate change.</li> <li>✓ I learned about the link between frequent events of extreme weather and its relationship to climate change.</li> </ul>	

<b>Lesson Plan # 5</b>	
<b>Reference pages 30-32</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Sustainable climate action</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Reducing greenhouse gases'.</li> <li>• Multimedia</li> <li>• Pictures/newspaper clippings/print outs</li> </ul>
<p><b>Introduction</b></p> <p>Discuss keywords adaptation and mitigation in the context of sustainability and climate action. Ask students:</p> <ul style="list-style-type: none"> <li>• Why is mitigation important? To prevent the severe and irreversible risks of climate change, the process of mitigation involves reducing greenhouse gas (GHG) emissions. The countries that signed the Paris Agreement in 2015 committed to limiting global warming to below 2 °C compared to pre-industrial levels and striving to keep it at 1.5 °C. However, current trends indicate that achieving these goals is becoming more challenging. Therefore, it is necessary to significantly reduce emissions in the coming decades.</li> <li>• Isn't reducing emissions sufficient? Reducing greenhouse gas emissions won't bring immediate change. The atmosphere is complex, and past emissions will have lasting effects. Temperatures will keep rising until mid-century, and oceans will face irreversible consequences for centuries to come.</li> <li>• What is the purpose of adaptation? Climate change adaptation aims to manage extreme weather impacts on society, environment, and economy. Adopting preventive measures like early warning systems and investing in flood prevention can save costs. Studies show that investing €1 can yield benefits of around €400 and save an average of €6 in damage costs per €1 invested.</li> </ul>	<p>5-10 min</p>

<b>Using the Student's book</b> Ask students to read pages 30-32 and ask them to make a chart explaining to what extent are these suggestions doable for individuals, local communities, and for governments. Here is a sample:	35-40 min
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Suggestion from textbook	Possibilities for individuals to adopt	Limitations for individuals to adopt	Possibilities for communities/ governments to adopt	Limitations for communities/ governments to adopt
Moving to higher ground to avoid rising sea levels.	<i>doable</i>	<i>Difficult for the old, wounded, and people with disabilities</i>	<i>Doable for organised groups for disaster response</i>	<i>Lack of resources, collaboration between different departments for relief can make this difficult on a large scale</i>

Allow students to have different responses and engage in finding new ways to make adaptation and mitigation a doable response to extreme weather and climate change.	
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<b>Homework</b> After reading this section, the students should complete Question A and F and Skill book activity 'Reducing Greenhouse gases' in classwork or homework.
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<b>Discussion and review</b> Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example: <ul style="list-style-type: none"> <li>✓ I learned about the possibilities and limitations towards adapting environmentally sustainable practices.</li> <li>✓ I learned about the possibilities and limitations towards mitigating environmentally sustainable practices on a large scale.</li> </ul>
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## Answers to Assessments

A. Choose the correct answer:

- I. 10
- II. 16,000
- III. Germany
- IV. One
- V. 5
- VI. Continents
- VII. 11,500
- VIII. Air pressure

B 1. Student's answers will vary.

2. Student's answers will vary. Looking at the comparison between Karachi and New York, they can explain that the amount of sunlight a location receives is determined by its latitude. The sun's rays are more direct at the equator than at the poles. This means that the equator receives more sunlight than the poles, and therefore has a warmer climate.
3. Student's answers will vary. Revisiting knowledge from the previous book, they can explain the moderating effect of the sea on climate. Oceans regulate temperature and humidity levels, which can help to mitigate the effects of extreme weather events. The ocean has a high heat capacity, which means that it can absorb a lot of heat without significantly changing its temperature. This helps to keep coastal areas cooler in the summer and warmer in the winter than inland areas. The ocean also produces a lot of moisture, which can help to moderate humidity levels. This can help to reduce the risk of droughts and floods. In addition, the ocean's currents help to distribute heat and moisture around the globe. This helps to keep the climate relatively stable, even in the face of changes in the sun's intensity or the Earth's orbit.
4. Pakistan's northern and northwestern regions are covered by mountain ranges, which prevent dry air from Central Asia from entering and cause distributive rainfall when moist air from the Arabian Sea moves inland. Plateaus have a semi-arid to arid climate, while coastal zones are cooler, and plains have higher temperatures. Deserts are located at lower elevations and are warmer due to the lack of moisture and heat-trapping properties of the land surface.

C 1. a) Students can refer to the table on page 23 of Student textbook.

**Similarities:** Karachi and New York are coastal cities on the Arabian Sea and Atlantic Ocean respectively, with their proximity to the coast influencing their climate by moderating temperature extremes and introducing maritime characteristics. **Differences:** Karachi has a tropical-arid climate with hot and humid summers, and mild winters while New York has a humid subtropical

climate with hot and humid summers and cold winters. Karachi generally has higher average temperatures throughout the year. New York has distinct seasons, with summer temperatures averaging at 30°C and winter temperatures dropping below freezing. Precipitation patterns also differ, with Karachi experiencing low annual rainfall while New York has more evenly distributed precipitation throughout the year, including regular snowfall in winter.

- b) Karachi receives less rainfall than New York City because it is located on the coast of the Arabian Sea, has a hot, humid climate, and is located on a flat plain. These factors prevent the monsoon winds that bring rain to New York City from reaching Karachi. The average annual rainfall in Karachi is about 250 millimeters, while the average annual rainfall in New York City is about 1,200 millimeters.
  - c) Karachi does not have the necessary atmospheric conditions for snow to form. It is in a tropical climate zone on the coast of the Arabian Sea, and it has a hot, humid climate. The average temperature in Karachi ranges from 25-35 degrees Celsius (77 to 95 degrees Fahrenheit) throughout the year.
2. Students answers will vary due to referring to previous book's contents or using the Internet for research.
  3. There are six climate types: Tropical (hot and humid with heavy rainfall), Arid (dry with more evapo-transpiration than precipitation), Mediterranean (hot, dry summers and cooler, wetter winters), Temperate (mild summers and not too cold winters), Continental (cold, short winters and hot summers), and Polar (long periods of extreme cold).
  4. Students answers will vary due to referring to previous book's contents or using the Internet for research
- D 1
- a) Global warming refers to the Earth's average global temperature rising due to an increase in greenhouse gases in the atmosphere.
  - b) The main greenhouse gases include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases, such as hydrofluorocarbons (HFCs), are synthetic gases used in various industrial applications.
  - c) Natural events like meteorite collisions and volcanic eruptions release particles that impact the climate in a short time. The Sun's energy output also affects climate change. Changes in the Earth's movement in space or crustal plate movement can impact climate over thousands or millions of years. These factors can work together or separately to alter the Earth's climate. Human activities like burning fossil fuels, mechanized farming, and careless disposal of materials have altered climate patterns. This has led to increased greenhouse gas emissions and accumulation of heat in the environment. Urban areas can be up to 5°C hotter than rural areas due to lack of vegetation and more concrete.
2. Human activities, such as burning fossil fuels for energy, transportation, and industry, deforestation, and agricultural practices, contribute significantly to the

release of greenhouse gases. These gases trap heat in the Earth's atmosphere, leading to increased global temperatures and ultimately, climate change.

3. Student's answers will vary.
- E
1. a) Climate change poses a major threat to a country's economic stability due to its impact on weather patterns, infrastructure, productivity, and access to healthcare. This can lead to scarcity, inflation, closure of small businesses, loss of investments, slower economic growth, and strain on government resources.
  - b) Student's answers will vary. Climate change has the potential to cause social and political crises in multiple ways. This includes heightened competition for resources, forced displacement, amplified poverty and inequality, reduced state capacity, and increased political instability. While these crises are not guaranteed, they pose a significant risk if we do not take action to combat climate change.
  - c) Human activities are causing species to become extinct at a rate 1,000 times faster than natural. This is due to hunting and destroying habitats, leading to changes in weather patterns and higher temperatures. Over 16,000 species are currently at risk.
2. Student's answers will vary. Climate change is a significant threat to Pakistan. Water scarcity, agricultural difficulties, extreme weather events, and glacial retreat are all problems. Rising temperatures cause heat waves, while coastal areas face sea-level rise and erosion. Biodiversity loss and energy security challenges add to the risks.
  3. Student's answers will vary from year to year.
- F
1. a) We can adapt to climate change by making informed social, political, and economic choices on individual, communal, and national levels. Mitigation requires collective, committed, and organised steps to reduce and stabilise heat emissions—trapping greenhouse gases in the atmosphere can help us decelerate the rate of global warming.
  - b) Student's answers will vary. Individuals can take action to address climate change through various means. These include advocating for sustainable policies, choosing to buy locally grown organic products, adopting renewable energy sources, building environmentally friendly homes, and refraining from investing in industries that cause harm to the environment.
  - c) Governments can address climate change by protecting and restoring coastal wetlands to prevent flooding, improve water quality, promote policies for sustainable agro-forestry, place quotas, taxes, and take strict measures to hold greenhouse gas emitting organisations accountable. It can also incentivise pooling of resources for monitoring and evaluation of all activities that contribute to climate change and impact the environment.
2. Student's answers will vary. Developing countries face numerous challenges in



adopting climate change action, including limited financial resources, technology and capacity constraints, prioritization of development needs, dependence on fossil fuels, vulnerability to climate impacts, and insufficient international support. These factors impede their ability to allocate funds, access advanced technologies, transition to cleaner energy sources, prioritize climate action, and receive adequate support from the global community.

3. Student's answers will vary. Climate change can disrupt global supply chains through extreme weather events, infrastructure damage, and agricultural production disruptions. Sea level rise and consumer preferences for sustainable practices also affect supply chain processes.

### Answers to Skills Book activities

#### *Skills Book activity 'Latitudinal effect'*

- A 1 a) Both Samsø and Nain are at around latitude 56.6°N and they are at similar altitudes, with Nain at 11 metres and most of Samsø at less than 64 metres. The factors that make their climates different are wind patterns, ocean currents, and the size of the land mass.
- b) Nain has a tundra climate, which is much colder than Samsø (maritime temperate), with heavy snow in winter. Samsø has a higher annual rainfall but less snow. The differences are because Nain is on the eastern side of a large land mass where the cold Labrador current flows along its coast, but Samsø is an island. Cold north winds blow across Labrador, while warmer, wetter winds from the Atlantic Ocean blow across Denmark, which is sheltered from the colder, northerly winds by Finland, Sweden, and Norway.

#### *Skills Book activity 'Monsoons'*

- A 1 a) In winter, in the months of December and January, the winds blow across Pakistan from north-east to south-west, from the Himalayas towards the Indian Ocean. This is because warm air rises from the sea, which is warmer than the land. Cold air from the land rushes in to take its place. The effect of this in Pakistan is cold weather in the north but milder weather in the south.
- b) In summer, in the months of June and July, the winds change direction and blow inland from the Indian Ocean. This is because the land is warmer than the sea, so warm air above the land rises, and cooler, wetter air from the sea rushes in to take its place. The effect of this in Pakistan is the monsoon.

#### *Skills Book activity 'Impact of climate change'*

- A 1. The students' own responses should mention islands and regions with lowland elevation; coastal places at low elevations; regions that are prone to drought;

regions that can be affected by downstream melting from glaciers; regions that have monsoons, cyclones, and storms, and regions near the Equator.

2. The students' own responses should include the effects of rising sea levels, higher temperatures, melting ice caps, and glaciers; also, the effects of melting permafrost, the loss of forests/other changes in land use, and increase in greenhouse gases.
  3. These should include reducing the burning of fossil fuels and other activities that increase greenhouse gases, and reducing deforestation.
- B
1. As the sea ice melts, polar bears, which live on the sea ice around the North Pole and feed mainly on seals, must swim farther to find large enough, stable pieces of ice. This makes them very tired, especially females who have cubs to look after. Because of this, many adults and cubs are dying from starvation.
  2. Rising sea levels could endanger sea turtles' eggs or very young hatchlings, which are laid and hatch on beaches in Brazil. Higher temperatures are more suitable for female hatchlings but cooler temperatures are better for males, so the population of male sea turtles is reducing. This could threaten turtle populations.
  3. Students' answers should include that flash floods, droughts, storms etc. and rising temperature affect the production of good and livestock.
- C
- Ask students to refer to this website for more information: <https://www.adb.org/sites/default/files/publication/357876/climate-change-profile-pakistan.pdf> Use of Internet will make student's answers vary.
1. Increase in temperature and rainfall will keep the upper Indus plain rainfed from summer and winter monsoons while lower Indus plain will be drier from its presence near the equator.
  2. The increase in rainfall and variability in rainfall patterns will lead to frequent floods and droughts that will affect major crops.
- D. Use the link for clarity:
1. Monsoon and winter
  2. Domestic, reservoirs/dams
  3. Temperatures, rainfall
  4. Himalayan
  5. Extreme, efficiency
  6. Sindh, Indus

*Skills Book activity 'Reducing greenhouse gases*

Students' answers will vary.

# UNIT 3

# Environmental pollution

## Background knowledge for the unit

Pollution is the introduction into the environment of substances that cause harmful effects. Pollution can come in the form of contaminated air, water, and land, as well as excessive or unwanted light and noise. It is a leading cause of ill health and environmental degradation and contributes to greenhouse gases and global warming. This unit looks at these five different forms of pollution and how they affect people and the environment. It finishes with an overview of global warming and how that is changing the climatic conditions and threatening to alter permanently the environment of the Earth.

Pollution poses a great danger to our planet both in the short- and long-term. The effects of air, soil, and water pollution affect the health and life of humans, other animals, and plants, and causes the death of key parts of ecosystems. This in turn leads to the death of the ecosystems themselves.

Additionally, many of the pollutants are fossil-fuel based and are long-lasting and hard to eradicate from the environment. They travel from one part of the environment to another: for example, from the air to the water and soil, or from the water into the soil, and from the soil into the water. They also travel through food chains. Because of this, it is far easier to try to stop pollution than to try and clean it up once it has occurred. Whilst the effects of light and noise pollution can also have lasting effects, they tend to be less devastating, and it is possible to see immediate benefits when these forms of pollution are reduced.

Pollution's long-term effects are also felt through the build-up of greenhouse gases released by burning fossil fuels. These gases effectively trap more heat around the planet, warming not just the air, but also the vast tracts of oceans that cover the Earth. This warming also has the effect of destroying ecosystems as animals and plants increasingly struggle to survive in warmer temperatures than those for which they are adapted. The absorption of carbon dioxide into the water, along with melting ice caps, raises sea levels. The growing warmth also causes more evaporation, which leads to more and sudden downpours of rain and other extreme weather events.

## Before we proceed

The effects of pollution might often go unnoticed. As a primer, while reading through this unit, talk to the students about their knowledge of pollution. How do they define it? What do they think it is? Where might it come from? Where does it go to? Do they play a role in causing pollution? How serious is the problem of pollution for society and for the planet? Although some forms of pollution are discussed separately in this unit, they are all

interlinked, and where there is one form there is more than likely another form. Discuss why this might be the case.

Do the students think Pakistan has more problems with pollution than other countries, and if so, what might they be? Ask them to look at environmental statistics on the Internet that compare rates of pollution between countries, on the Internet. Talk about how pollution is linked to growing economies and industrialization. Do they think a growing economy and pollution go hand in hand? How have other nations dealt with the need for growth alongside protecting their environment.

### **Expected learning outcomes**

Students should be able to:

- Identify and define pollution in its different forms
- Explain the causes and effects of pollution
- Explain global warming and its causes and effects
- Describe how changes can be made to reduce pollution
- Collect and analyse local data concerning pollution and climate change, demonstrating the ability to interpret and draw conclusions from the information gathered.
- Assess the personal impact of various forms of pollution on their own lives and engage in discussions to evaluate and articulate the effects.
- Research and organize data on local initiatives and campaigns aimed at addressing climate change and pollution in their respective cities.
- Examine the data gathered about local campaigns, critically evaluate their effectiveness, and draw conclusions about their potential impact on mitigating climate change and pollution.

<b>Lesson Plan # 1</b>	
<b>Reference pages 35-36</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Environmental pollution</li> <li>• Air pollution</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Images, environment awareness posters or multimedia</li> </ul>
<p><b>Introduction</b></p> <p>Air pollution is the contamination of the air by substances that include vehicle and industrial emissions, burning rubbish, and from natural sources such as forest fires and volcanic ash. As well as harming humans, air pollution can damage animals, crops, and the environment in general. The air we breathe is made up of 78.09% nitrogen, 20.95% oxygen, small quantities of other gases, and a tiny amount of dust particles called particulates. Brainstorm the economic and health impacts of environmental pollution. (Economically, pollution increases healthcare costs, reduces workforce productivity, and lowers agricultural output. It also leads to cleanup costs and tourism losses. Healthwise, pollution contributes to respiratory and cardiovascular diseases, premature mortality, developmental disorders, and allergies. It can also lead to cancer.)</p> <p>For most of the history of our planet, this balance has been maintained and checked by natural forces such as photosynthesis and weather movements like rain and wind. However, over the past fifty years or so, large increases in population in many developing countries, along with the rise in the use of motor vehicles and industrialization, have led to a sharp increase in air pollution that has been difficult for nature to rebalance. This is especially true in large cities in the developing world where growth has been rapid but planning and legislation to cope with the negative impacts of this growth have failed to keep pace.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Pakistan is a nation which suffers from poor air quality, especially in its largest city, Karachi, one of the most populous in the world. However, it is not just outdoor emissions that pose a danger in Pakistan. Indoor air pollution, mainly from the burning of biomass and fossil fuels for indoor heating and cooking, is also a health threat to many families throughout the country. Some of the impacts of indoor and outdoor pollution on humans are chronic health problems such as asthma, through to cardiovascular diseases, and cancer.</p>	<p>35-40 min</p>

Broader problems with air pollution and acid rain, which is when pollutants such as sulphur and nitrogen oxides form an acid mixture when mixed with rain, affect animals and plants and lead to the pollution of soil and water.

After reading through the section on air pollution, talk about some of the instances of air pollution near where the students live. Ask if they notice the poor quality of air. Is it visible as smog? Can they smell or taste the pollution in the air? Talk about where the pollution comes from. Do they see pollution being emitted, for example from vehicles or factories? Do they, or people they know, suffer from frequent respiratory illnesses? Talk about the kinds of illnesses caused by air pollution. Ask how animals and plants can be affected, and what that could mean for the environment. Encourage the students to read more widely about this issue on the Internet.

**Homework**

Refer the students to Questions B1–2. These should be completed in class or given as homework.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:

- ✓ I learned about the different forms of environmental pollution.
- ✓ I learned how pollution affects the health and life of humans, other animals, and plants.

<b>Lesson Plan # 2</b>	
<b>Reference pages 37-39</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Water pollution</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book 'Water pollution'</li> </ul>
<p><b>Introduction</b></p> <p>Water pollution is the contamination of water with sewage, toxic chemicals, metals, and other substances. Water pollution can affect surface water such as oceans, lakes, and rivers, or groundwater, which is water stored in porous soils and rocks under the Earth's surface. With only about 3% of the water on the planet available for human consumption, the quality of water is of grave importance to us all. Most water pollution is caused by household sewage and factory waste. Water can also be affected by air pollution and soil pollution that falls or seeps into waterways.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>As in many developing countries, a major source of pollution in Pakistan is sewage. It comes about because untreated waste from domestic and industrial sources is frequently discharged directly into waterways. In cities in the developed world, sewage is treated in large treatment plants which separate the water from the waste. Water is cleaned and recycled as drinking water, while waste is reduced to bio-solids that can be used as fertilizers or fuel. In Pakistani cities it is estimated that only about 8% of waste is treated. Releasing pollutants into waterways results in pathogens and poisons in the water that cause illness and death in humans, and the destruction of water ecosystems. This destruction leads to a lack of food for humans and other animals. It also has a longer-term snowball effect on other ecosystems, with the potential to lead to a loss of biodiversity across the planet. After reading through this section, talk about the waste that goes into waterways and how dangerous this is. Do they see this waste in local waterways? Does it affect the quality of the water they drink? For more information about drinking water worldwide see: <a href="http://www.who.int/mediacentre/factsheets/fs391/en/">http://www.who.int/mediacentre/factsheets/fs391/en/</a></p>	<p>35-40 min</p>

For more information about drinking water worldwide see: <http://www.who.int/mediacentre/factsheets/fs391/en/>

Show the students examples of other places around the world where water is efficiently treated and recycled. To see the process of water treatment in Melbourne, Australia, refer to: <http://www.melbournewater.com.au/whatwedo/treatsewage/etp/Pages/Sewage-treatment-process.aspx> For the treatment of waste materials, see: <http://www.thefuturescentre.org/articles/6058/world-s-largest-wastewater-treatment-plant-pumpsewage-power>

Talk to students about the importance of waste treatment. Why is so little waste treated in Pakistan? What measures need to be put in place for waste to be better dealt with in Pakistan, and for water and waterways to be made safer?

**Homework**

Refer the students to the Questions B3–4 for reinforcement of learning about water pollution and its effects. Ask the students to complete the exercises on ‘Water pollution’ in the Skills Book for homework.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:

- ✓ I learned how water pollution affects ecosystems.
- ✓ I learned how pollutants enter water bodies due to human activities.



<b>Lesson Plan # 3</b>	
<b>Reference pages 39-41</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Land pollution</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book ‘Pesticides and fertilizers’</li> <li>• Skills Book ‘Noise and light pollution’</li> </ul>
<p><b>Introduction</b></p> <p>Land pollution is largely caused by pollution from rubbish and landfill, and from industrial and farm waste. Some contamination also comes from air and water pollution. Land pollution is a huge problem in many countries because of its toxic effect on humans, other animals, and crops in both the short- and long-term, and the difficulty in properly identifying and cleaning soil that has been polluted.</p>	<p>5-10 min</p>
<p><b>Using the Student’s book</b></p> <p>In Pakistan there are few municipal (town or city) landfill sites to deal with household and business waste. It is estimated that only about 25% of rubbish is dealt with formally. Most waste, which includes everything from food scraps to glass, plastic, and oil, is dumped in open sites which are not managed – except informally by rubbish pickers.</p> <p>As well as harbouring diseases, these sites leach toxic chemicals into the ground, affecting groundwater and soil. Other randomly dumped rubbish and discarded items also affect the soil as both ‘foreign objects and items that have the potential to leach toxic substances. Plastic, for example, does not biodegrade, but can break up into small pieces that can affect soil quality, or enter the bodies of animals and birds. Other toxic waste comes from dumped chemicals, metals, and plastics from industries, and from agriculture, where the excessive use of fertilizers and pesticides poisons the soil.</p> <p>After reading page 112, discuss the notion of land pollution. Do they see a lot of land pollution around them? Ask them to give examples from their lives of the pollution they see every day. How does this pollution affect the environment? How could it best be cleaned up? Do they think land pollution has long-term effects on their health?</p>	<p>35-40 min</p>

<p>According to a news report, a government study showed that solid waste generation in Pakistan was about 20.024 million tonnes a year, or 59,000 tons per day. The annual growth rate of solid waste generation was 2.4%. With population increases, the amount of waste produced in Pakistan would double in ten years to 4.29 kg per household per day.</p> <p>There are moves in Pakistan to improve recycling and rubbish reduction. Ask the students to research examples of initiatives like this in Pakistan. Do they think enough is being done? Can they see gaps? If they were to set up their own recycling companies, what areas would they target?</p>	
<p><b>Homework</b></p> <p>Refer the students to Questions A5–6 and B1–4 for extra classroom activities or for homework. Refer the students to the activities on ‘Pesticides and fertilizers’ on page 47 and ‘Noise and light pollution’ on page 50 for homework.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned how land pollution is caused by dumping rubbish, landfill, and industrial and farm waste.</li> <li>✓ I learned how pollution from air and water contributes to land pollution.</li> </ul>	

<b>Lesson Plan # 4</b>	
<b>Reference pages 41-43</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Other forms of pollution</li> <li>• Light pollution</li> <li>• Noise pollution</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book ‘Lead poisoning: a case study’</li> </ul>
<p><b>Introduction</b></p> <p>While not as obvious as many other types of pollution, noise, and light pollution, defined as excessive amounts of noise and light, can cause severe harm to humans and the environment. Both can be highly stressful for humans and other animals, preventing them from resting and sleeping adequately, which in turn can lead to serious health consequences. These two forms of pollution can also alter the natural rhythms of plant and animal life, upsetting ecosystems.</p> <p><i>Case Study 1: Effects of Light Pollution on Sea Turtles</i></p> <p>Share the effects of light pollution on sea turtles, particularly during their nesting season. Artificial lights along coastlines can disorient hatchlings, leading them away from the sea and towards hazardous environments. This disrupts their natural behavior and poses threats to their survival. Steps taken to address this issue include implementing lighting regulations that promote the use of turtle-friendly lighting fixtures, shielding lights to minimize direct beach illumination, and raising awareness among coastal communities about the importance of reducing light pollution to protect sea turtles and their nesting habitats.</p> <p><i>Case Study 2: Effects of Noise Pollution on Urban Bird Populations</i></p> <p>In urban environments, noise pollution can have a detrimental impact on bird populations. High levels of noise disrupt bird communication, breeding patterns, and foraging behaviors. For instance, noise from traffic or construction activities can mask bird songs, leading to reduced mating success and territorial disputes. Steps taken to address this issue include implementing noise barriers along highways, designing urban green spaces with sound-absorbing materials, and creating quiet zones to provide refuge for birds. Promoting green infrastructure, such as trees and vegetation, also helps mitigate noise pollution and provides habitat for urban bird populations.</p> <p><i>Case Study 3: Effects of Light and Noise Pollution on Human Communities</i></p> <p>The case study explores the impacts of combined light and noise pollution on human communities, particularly in densely populated</p>	<p>5-10 min</p>

<p>urban areas. Excessive artificial lighting at night disrupts natural sleep patterns and can contribute to sleep disorders, affecting the overall well-being and quality of life. Concurrently, noise pollution from sources like traffic, construction, or entertainment venues leads to increased stress levels, reduced concentration, and impaired cognitive functioning.</p> <p>Steps taken to address these issues include implementing urban planning strategies that prioritize sustainable lighting practices, promoting green infrastructure to mitigate noise, and enacting regulations to limit nighttime noise levels in residential areas. Creating urban environments that prioritize quiet and well-lit spaces enhances the livability and health of communities.</p>	
<p><b>Using the Student's book</b></p> <p>Light pollution ranges from over illumination, or the over-use of artificial lights, to sky glow, which is the diffuse glow that is found around cities at night. As well as health consequences, the cost of lighting is high, and the overuse of electricity is a negative for the environment. Noise pollution is defined as certain levels of noise for certain environments.</p> <p>When these noise levels are exceeded, they not only cause irritation for those present, but can also cause lasting hearing loss. Both these forms of pollution are rife in larger cities in Pakistan. After reading through this section of the unit with the students, ask if they had considered excessive light and noise to be forms of pollution before. How do these forms of pollution compare to air, water, and land pollution in terms of their effects on people and the environment? Are they easier to fix than these other forms of pollution? Demonstrate in class the effects of noise pollution by turning on music or a noisy appliance and then talking to students Can they hear what you are saying? Is it a strain for them to hear you? How would this noise affect communication and hearing long-term? Do they know people that suffer from light and noise pollution on a regular basis, or do they suffer from it themselves? Does it surprise them that there can be serious health issues associated with them? Can they see any changes in the environment around them from the effects of excessive light or noise?</p>	<p>35-40 min</p>
<p><b>Homework</b></p> <p>Ask the students to complete Questions D1-3 in class or as homework.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned about some other forms of pollution e.g. light and noise, and how they affect our environment.</li> </ul>	

**Lesson Plan # 5**

**Reference pages 43-46**

<b>Topics</b> <ul style="list-style-type: none"><li>• Impact of pollution on climate change</li><li>• Sustainable waste management</li><li>• Steps taken by Pakistan</li></ul>	<b>Resources</b> <ul style="list-style-type: none"><li>• Skills Book 'Recycling around the world'</li><li>• Skills Book 'Recycle and reuse'</li><li>• Skills Book 'Air quality in the developed world'</li></ul>
<b>Introduction</b> <p>Revisit the concept of global warming and its link to climate change. Global warming is the term used to describe an increase in the average temperature of the Earth and its atmosphere and oceans. Evidence from the data collected since temperature measurements were first taken about 150 years ago, shows that the Earth is warming more quickly than before. Most scientists agree that this rise has been caused by man-made activities, especially the burning of fossil fuels. This releases a large number of gases into the atmosphere which exacerbate Earth's natural greenhouse effect, trapping excess heat in the atmosphere around the planet. Global warming is linked to rising temperatures, rising sea levels, and extreme weather conditions, all of which will contribute to the destruction of environments, habitats, and ecosystems across the planet – and of which humans are a part.</p>	5-10 min
<b>Using the Student's book</b> <p>Ask students to make links between environmental pollution and climate change. Discuss the need for the study of the impact of pollution:</p> <ul style="list-style-type: none"><li>• To protect human health. Pollution can cause a variety of health problems, including respiratory diseases, heart disease, cancer, and neurological disorders. Studying the impact of pollution can help us to identify the risks and develop strategies to reduce exposure.</li><li>• To protect ecosystems. Pollution can damage ecosystems in a variety of ways, including killing plants and animals, disrupting food chains, and polluting water supplies. Studying the impact of pollution can help us to understand the risks to ecosystems and develop strategies to protect them.</li><li>• To mitigate climate change. Pollution is a major contributor to climate change. Studying the impact of pollution can help us to understand the role of pollution in climate change and develop strategies to reduce emissions.</li></ul>	35-40 min

- To inform policy decisions. The study of pollution can help to inform policy decisions about how to reduce pollution and its impacts. For example, studies of the impact of air pollution on human health have helped to inform policies on vehicle emissions and air quality standards.

As you read through this section of the student's book on pages 43-45, talk about the greenhouse effect so students understand the mechanics of global warming and the contribution of fossil fuels to this phenomenon. Pakistan is ranked 16th on the world's vulnerability to climate change list. [www.climateemergencyinstitute.com/uploads/global\\_warming\\_and\\_its\\_impacts\\_on\\_Pakistan.pdf](http://www.climateemergencyinstitute.com/uploads/global_warming_and_its_impacts_on_Pakistan.pdf)

Talk about the effects of global warming. How do they think global warming will affect them personally? Good information for deeper discussion can be found at: <http://climate.nasa.gov> and [www.ucsusa.org/contamination/global\\_warming/science\\_and\\_impacts/impacts/global-warming-rain-snowtornadoes.html#.V8-qKmWJVdk](http://www.ucsusa.org/contamination/global_warming/science_and_impacts/impacts/global-warming-rain-snowtornadoes.html#.V8-qKmWJVdk)

Ask students to read pages 45-46. Given the threats to the planet, it is important for humans to find new ways to interact with the environment. While a lot of damage has already been done, there are still many changes that can be made to slow warming. These range from switching to low emissions or alternative power sources, to reusing and recycling a huge range of materials. Talk about the possibilities for the future. This includes small and large changes that can be made that will contribute to the planet's cooling and to the reduction of pollution overall. Begin by discussing the concept of waste management and why it is important for a sustainable future. Ask what happens to the waste we produce? Why is it important to reduce waste?

Suggested activity

**Waste Audit Activity**

- Divide the students into small groups and distribute waste audit worksheets.
- Instruct each group to conduct a waste audit in their homes or at school for a day or week, documenting the types and amounts of waste produced.
- After the audit, have each group analyse their findings and discuss the potential opportunities for reducing, reusing, or recycling specific types of waste.

<p>Ask students what initiatives have been taken locally and internationally to manage waste sustainably. Discuss the challenges and impact of these implemented strategies and ask them to find more about it as pre-reading for revision. Encourage students to think critically about how similar initiatives can or cannot be implemented in their own communities.</p>	
<p><b>Homework</b></p> <p>Refer the students to Questions A, E, and F for homework. Skills Book activities 'Recycling around the world', 'Reuse and recycle', and 'Air quality in the developed world' can be completed in class or for homework.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarizing the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned how greenhouse gases contribute to global warming.</li> <li>✓ I learned the causes and effects of global warming.</li> </ul>	

## Answers for Assessments

A. Choose the correct answer:

- I. Neither (Discuss that biofuels also release greenhouse gas, hydrogen is an indirect greenhouse gas, and fossil fuels release many greenhouse gases)
- II. Impervious
- III. Noise
- IV. Noise
- V. 20%
- VI. Soil
- VII. 65%
- VIII. Pathogens

- B. 1 a) The main causes of air pollution come from the by-products of burning fossil fuels like oil, natural gas, and coal. These are variously used to run cars, factories, and provide heating and cooking fuel for homes. Pakistan also uses oil to fuel electric power stations. Industrial pollution and burning rubbish are also sources of air pollution.
- b) Humans can develop chronic and acute respiratory illness, skin rashes, and eye problems. Long term exposure to air pollution can cause cardiovascular diseases, lung diseases, and cancer.
- 2 a) Causes of indoor pollution are the burning of biomass fuels such as wood, animal dung, and crop waste, or fossil fuels such as oil, coal, and tobacco smoke. It is a problem because all these sources give off a lot of particulates which can irritate people's skin, eyes, noses, and mouths, and enter the human body to block or irritate the lungs, heart, and blood vessels.
- b) This problem could be solved by supplying cleaner fuels for homes, energy-efficient stoves and heaters, and better ventilation; or the introduction of small-scale renewable energy such as solar or wind in more remote areas.
3. Students should name the forms of pollution in their areas. For example, air pollution, which makes them cough; water pollution which means they must boil their drinking water or buy bottled water.
4. Pollution can be reduced by recycling more materials and using items for longer. For example, use electronic equipment until it breaks down, and even then, have items repaired rather than buying new models. Encourage the use of solar and wind power instead of fossil fuels. Use a bicycle instead of a motor bike or car.
5. Air pollution: dust, smoke, chemicals, and other particulates can fall to Earth and affect the soil and water. Water pollution can affect land, and land pollution can affect the water. Many of the same substances, such as gases and particulates from fossil fuels, pesticides, chemicals, and metals can pollute air, water, and soil at different times.



6 a) True

Pollutants can be substances that are discharged into waterways, or that come from air pollution and make their way into surface water. They can also seep through the soil and into ground water from rubbish dumps, toilets, materials discarded in the environment, and from fertilisers and pesticides uses on crops.

b) False

All ecosystems are damaged to some degree by water pollution. Any substance that affects the health or food supply of plants or animals will change the balance of the ecosystem within which they exist.

c) True

Pathogens include bacteria and viruses such as hepatitis and cholera.

Worldwide, between 500,000 and 800,000 people die from waterborne diarrheal diseases each year and they account for about 9% of all deaths of children under five.

d) False

Metals can kill or cause disease in water life. They can also accumulate in the flesh of fish causing long-term toxic effects on the fish and their offspring, as well as any other creatures or humans who eat them.

e) False

Algal bloom results when ecosystems become upset by too many nutrients in the water, which causes a proliferation of plankton, making them 'bloom'. This bloom sits on top of the water, feeding on oxygen and light, and blocking their use by other life forms in the same area.

- C
1. Check that the students have completed their household rubbish journey essay adequately.
  2. Steps to reduce pollution begin at home with separating rubbish into reusable items, recyclables, and non-recyclables. Food scraps can be composted. Reusable items can be washed and reused, for example, jars and bottles. Once the rubbish leaves the house, a good recycling programme would take paper, glass, metals, etc. to separate plants where they could be recycled and made into new objects. Things that cannot be recycled can be disposed of properly in a good waste management programme at a landfill site that has been engineered to be as safe as possible.
  3. Rubbish dump sites are dangerous because they attract vermin and insects and harbour disease; they produce methane, which is liable to explode; they leach toxic chemicals into the soil, which affects soil and groundwater.
  4. It is the overuse of fertilizers and pesticides that makes it difficult for plants to grow. They can alter the levels of salinity in the soil and destroy good bacteria and earthworms that are needed to keep the soil fertile.

- D 1 a) Over-illumination means that everything is too bright all the time and this over-stimulates the senses, making it hard to rest and sleep. Glare is over brightness that can irritate eyes and even cause temporary blindness. Light clutter is too many lights together which can cause confusion and lead to accidents. Light-trespass is unwanted light, which can cause sleeplessness and irritation and lead to other health issues. Sky-glow is the diffuse glow around cities which can also cause overstimulation and sleeplessness.
- b) Light pollution affects the daily rhythms of animals and plants, and can interfere with bird migration, as lights confuse birds' flight paths. Plants can fail to distinguish seasons and grow, or fail to grow, at different times of the year.
- 2 a) Excessive noise in cities is caused by traffic, building machinery, loudspeakers, and outdoor music and festivals.
- b) Excessive noise can distract and agitate people and keep them awake at night. This impacts on health by raising the blood pressure. It can also cause short- and long-term hearing loss.
- 3 a) All humans, other animals, and plants, are part of an ecosystem. If the health of a substantial number of humans, other animals or plants in an ecosystem is affected, as it can be by pollution, then this has a flow-on effect to other parts of that ecosystem. For example, the health of birds affects the number of insects. Fewer birds mean more insects. More insects mean more crop damage. More crop damage means not as much food for animals and humans.
- b) Ecosystems are often linked to other ecosystems, so if one fails, others may follow.
- E 1 a) The greenhouse effect is a natural effect by which the Earth's atmosphere traps radiation from the Sun, which is then absorbed and stored in the Earth as heat. This helps to keep the planet at an even temperature and enables plant and animal life to exist comfortably.
- b) Global warming occurs when carbon dioxide, methane, and other air pollutants collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the Earth's surface. These pollutants, which are called greenhouse gases, add to the Earth's natural greenhouse effect, trapping extra heat, and causing the planet to become hotter than it would be under normal conditions.
- c) The gases that add to the greenhouse effect are pollutants and are byproducts of burning fossil fuels, which also cause other forms of pollution.
- 2 a) Rising temperatures, melting icecaps and glaciers, rising sea levels, and extreme weather conditions are all results of global warming
- b) The effects on Pakistan could be rising sea levels at the Arabian Sea coast and possible flooding of Karachi; melting of glaciers in the northern mountains and flooding along the Indus and other rivers; extreme rains and flooding; drought in some regions. All of this could lead to loss of places to live and the inability to grow crops in many areas.

- c) The students' own responses may include the fact that global warming may cause many more extreme weather events, leading to loss of homes, loss of food supplies, ill-health, and death.
- F 1. Pakistan faces threats to its ability to grow crops because of lack of water and good soil. Humans, other animals, and plants face loss of homes and ill-health and possibly death due to land, air, and water pollution.
2. Student's answers will vary.
  3. Responses will differ depending on the research undertaken

## Answers to Skills Book

### *'Water pollution'*

- A 1 a) sewage  
b) industrial waste
- 2 a) Water pollution can affect water systems by making plants and animals sick or by killing them. It can either be a sudden or a slow process. It could start with one species being affected, which then affects another. For example, if a fish's food supply runs out, it will either die or must move to a new area. If it moves to a new area, it starts to take food from other fish, causing problems in the new area as well. All ecosystems are delicately balanced: when even small things change, this can lead to much greater changes.
- b) Algal bloom is the rapid growth of microscopic algae and appears as coloured scum on the surface of water that is connected to pollution in two ways. First, it comes about when excessive nutrients are dumped into waterways, causing a rapid growth or bloom of plankton. Secondly, it becomes a form of pollution itself, stopping further growth and creating a toxic sludge in waterways. Log on to: <https://www.epa.gov/nutrientpollution/harmful-algal-blooms> for further information

### *'Pesticides and fertilizers'*

- A 1. fertilizer and pesticide → cow → steak and/or milk fertilizer and pesticide → wheat crop → bakery products
- Pesticides eaten by animals lodge in their body systems. These in turn are eaten by humans as meat or milk products. Pesticides are absorbed by plants and are retained when the plants are processed into food like bread. These animal and plant foods are eaten by humans and enter their body systems.

*'Air quality in the developed world'*

A 1.

Name of the city	Highest level	Lowest level
Oslo	61	18
Kristiansand	22	8
Greenland	46	17
Tromsø	52	17
Bergen	<b>36</b>	<b>6</b>

*'Recycling around the world'*

A 1 a) **Bar graph (refer to WWG 3 TG page 76) take it from FAISAL BHAI**

- 2 a) Austria, Germany, Taiwan, Singapore
- b) Japan, Canada, the United States, France

*'Noise and light pollution'*

- A 1 Students can write about any form of pollution. Their ideas may include the fact that light pollution affects the daily rhythms of plants and animals, and can interfere with bird migration, as lights confuse flying birds. Plants can fail to distinguish seasons and grow or fail to grow at different times of the year. Noise can stop animals from resting and can damage their hearing. All plants and animals are part of ecosystems. When any part of an ecosystem changes, the whole of it changes. This can lead to the loss of parts or all an environment.
2. Students should draw the objects that make noise in their homes.

*'Reuse and recycle'*

A 1 Student should make their own plant holders.

*'Lead poisoning: a case study'*

- A 1. Student's answers will vary.
2. PFAS are known as "forever chemicals" because of the significant amount of time it takes for them to break down.
  3. Student's answers will vary. Organisations like Environmental Protection Agency are important as regulatory bodies that keep a check on waste from industries and other sectors and work in the larger national interest by proposing policy changes and banning use of certain chemicals that are harmful for the environment.
  4. Student's answers will vary.
  5. Student's answers will vary.

# UNIT 4 Industrialisation and International Trade

## Background knowledge for the unit

This unit focuses on the notion of industrialisation: what it is; when and how it started; its impact on individuals, communities, and countries; and where the main areas of industrialisation are within Pakistan and the rest of the world. A major focus of the unit is a comprehensive look at the cotton industry, Pakistan's largest industry.

Industrialisation is the transformation of a predominantly agricultural society to a more industrial-based society where the manufacturing and services sectors play a dominant role. Two of the key characteristics of this transformation are the move from manual labour to mechanised production, and the introduction of assembly lines rather than a reliance on people with specialised skills.

This process is said to have begun in Britain in the late 1700s, with the real impact coming from the mid-1800s onwards, in a period known as the Industrial Revolution. This was the time when the first factories were built, and both mechanical and steam-powered mechanisms were introduced into the production system. It was possible to produce goods for far less per unit than before, which meant far greater profits for the factory owners, and more money to invest in more labour and equipment to produce further profits.

Industrialisation is seen as a system for wealth creation and improving the living standards of a nation's population. China is a great example of a nation that was slow to embrace industrialisation, but through this process it has become a powerhouse economy. Of course, there are downsides to industrialisation that must be managed. These include economic inequality and exploitation, geographic dislocation, and environmental damage.

In this unit we look at Pakistan's international trade, examining the goods Pakistan produces and exports, and those that it imports from other countries. The unit begins with imports and exports in general, and the history of trade in present-day Pakistan. It then focuses on one export product and one import product as a way of investigating the movement of goods between countries. The final part of the unit covers international trade organisations and the agreements and arrangements made between Pakistan and other nations that encourage and support trade.

Pakistan has a long history of trade. Since ancient times, the area that is known as Pakistan today has been part of the Silk Road route, a network of trading routes that connected East Asia and Europe via South and Central Asia. The geographic location of Pakistan facilitates the movement of goods and people via its numerous air, land, and sea routes to different countries of the world. Then, as now, trade satisfied the need to supplement everyday life with goods that were not produced locally; at the same time, it presented a

way to deal with any surpluses of their own products. Trade has always been a complex combination of supply and demand, where the buyers and sellers are reliant on each other to make sure products are available or sought after.

The challenge in the modern world is that trade must be actively pursued on a world stage. Countries compete heavily with one another to buy goods that are scarce, or to sell goods for which the market is limited, or that are already in oversupply. Changes to countries' capacities can come in the shape of natural disasters and financial crises that can affect both buyers and sellers. This unit does not delve into the complexities of trade or economics, but a basic understanding of some key terms and ideas is important in order to give the subject context and enable the students to move to a new level of understanding in the forthcoming years of education. The terms supply and demand, and surplus and deficit can be discussed with the students, along with the ideas of balance of trade and balance of payments.

Tariffs and quotas also need to be outlined, and the ideas behind them – such as offering protection to local producers – should be touched on. Most of the above terms can be found in the Student's Book's glossary. Two more advanced terms, the balance of trade and balance of payments, can be explained as follows. The balance of trade is the difference between the value of goods and services exported out of a country and the value of goods and services imported into the country. When exports are greater than imports, there is a trade surplus, or favourable trade balance.

When the value of imports outweighs the value of exports, there is a trade deficit, or unfavourable trade balance. Balance of payments is the account of all the monetary transactions conducted by a country with other countries, usually within the span of a year. When a country spends more than it earns, this is called a deficit.

### **Before we proceed**

Before beginning this unit, it is important to ensure that students are introduced to some basic terms such as industrialisation, globalisation, means of production, consumption, and services. You could ask your students to find out the definition for each from their Oxford Dictionaries. Here are definitions that their responses should resemble:

- industrialisation: the process by which an economy is transformed from being mainly agricultural into one based on the manufacturing of goods.
- globalisation: involving all the countries of the world.
- means of production: the raw materials and nonhuman labour (i.e., equipment, technology, etc.) that are used to produce goods.
- consumption: using a resource.
- services: non-tangible products that are bought and used.

This unit identifies the main industrial regions of Pakistan and examines the types of industries found in these regions. Before the students read the unit and conduct some research, lead a discussion about the types of industry in your region. This will provide you with an idea of how much background knowledge the students have. Here are three

examples of questions you could ask:

- Which goods and services are produced in this region?
- Which industries do your family members work in?
- Are there any factories or other places of production between your house and school? If so, what do they produce?

Note the students' responses and check how similar they are to the research they conduct. The cotton industry of Pakistan is a major focus of this unit. In preparation, ask your students to check the labels on their clothes at home and work out what percentage of their clothing contains cotton. Also, ask them to identify other cotton products around the house. This will give them an insight into how important cotton is to the economy of Pakistan. At the beginning of this unit, talk about the ideas behind trade. Students should be able to see the links that trade has in their lives, in the kinds of goods they use every day, or the way they live their lives. For example, the vehicles they travel in, the appliances they use, or the energy they consume. They should have a clear understanding of why trade is important to any nation, and how, in our global world, trade has become much more important than ever before. They should understand that trade has the capacity to help nations grow economically: for example, the import of machinery or energy sources to help industries produce more and better goods, which can in turn be exported. At the same time, nations engaging in a lot of importing must be careful not to become so indebted that they spend everything they earn on paying off their debt rather than developing enterprises. Before beginning the unit, it is good to alert students to the fact that finding solid figures for the economy can sometimes be difficult. This is because different authorities might gather or interpret figures in different ways. Sometimes it is hard to compare years because different groups of products or figures might be counted at different times. Thus, they will sometimes find figures that do not always match others they have been given. However, if this happens, they should still be able to see general trends in decline or growth in particular areas.

### **Expected learning outcomes**

Students should be able to:

- define the term industrialisation
- identify where and when industrialisation started
- identify the major industrial regions of Pakistan and of the world
- explain how the textile industry works in Pakistan
- outline the pros and cons of industrialisation
- identify Pakistan's major trade goods and major international trading partners
- explain why Pakistan imports and exports goods, and to and from where
- demonstrate knowledge of Pakistan's international trade agreements and arrangements
- explain how trade can shape a country's economy

<b>Lesson Plan # 1</b>	
<b>Reference pages 49-51</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• What is industrialisation?</li> <li>• Economic globalisation</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity 'Agriculture in Asian countries'</li> </ul>
<b>Introduction</b> Begin the unit with a discussion about the progress made in the world as a result of industrialisation. Explain that the economies of those countries which earn through their industries are stronger than the economies of those that earn through the agricultural sector.	5-10 min
<b>Using the Student's book</b> Ask students to read pages 49-51. Make a Mind map from brainstorming and discussion about what is meant by industrialised areas, or countries/economies and nations. Then explaining the shift from small-scale industries to large-scale industries indicates the progression of a country's economy. Continue reading 'History of industrialisation'. Encourage the students to compare modern-day fast trains like bullet trains with the steam engine trains used in the past. Ask for more examples of products used before industrialisation.  Read 'The world's major industrial regions. On the political map of the world in the <i>Oxford School Atlas for Pakistan</i> show them the industrialised countries in North America (the USA and Canada) and in East Asia (Japan, Hong Kong, South Korea). Ask them to locate the other industrialised countries listed in the table on pages 50-51.	35-40 min
<b>Homework</b> Ask them to complete Questions B1-2 and Skills Book activity 'Agriculture in Asian countries.'	
<b>Discussion and review</b> Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example: <ul style="list-style-type: none"> <li>✓ I learned that industrialisation means shifting an economy based on agriculture to one based on industry.</li> <li>✓ I learned that the Industrial Revolution began in Britain in the nineteenth century.</li> </ul>	



<b>Lesson Plan # 2</b>	
<b>Reference pages 51-54</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Service industries</li> <li>• Industrial regions of Pakistan</li> <li>• Industries in other countries of the world</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Important industries in Pakistan'</li> <li>• Skills Book activity 'Major industries around the world'</li> </ul>
<p><b>Introduction</b></p> <p>Service industries are a major part of global economics. Explain that service industries are those in which businesses and consumers receive something intangible, i.e. something that cannot be held and exchanged. For example, when they have a haircut, they pay for the service. Similarly, if their computer, TV, or another machine is not functioning properly, they seek the services of respective professionals to fix them.</p> <p>Ask your students to keep a diary for a week in which they record the number of goods that they purchase and consume, as well as the number of services they purchase and consume. They could include their parents in this activity by asking about purchases for the household. Remind them that goods include food, computer equipment, clothes, petrol, and books; services include education (going to school), medical attention (going to the doctor), computer repairs, transportation, etc.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask students to read pages 51-54. Discuss about the service industry and explain that Pakistan mainly earns through its agricultural products. Most of its industries depend upon the raw materials obtained from its agriculture. Refer to the <i>Oxford School Atlas for Pakistan</i> and look at the map of the cotton growing regions in Pakistan. Then look at the map of the textile industry of Pakistan and elicit that most of the textile industries are in the same regions where cotton is grown. But to increase its industrial production, Pakistan must import raw cotton from other countries.</p> <p>Now discuss the various industries of each region of Pakistan. Ask students to read 'Important industries of Pakistan' to discuss the main agricultural, manufacturing, and service industries.</p>	<p>35-40 min</p>

<p>In this section, students will learn about the industries of Germany, Nigeria, and Kuwait. Lead a discussion in which students talk about other things they know about these countries. For example, they may be aware that Germany produces some of the best cars in the world.</p> <p>Nigeria is the largest oil-producing country in Africa, and Kuwait, a Middle Eastern country, is also known for its huge oil reserves. List the major industries of each of these countries and then discuss with a partner how the economies of these countries are different from each other.</p>	
<p><b>Homework</b></p> <p>Ask them to complete Questions B3–5. They can also answer Skills Book activities ‘Important industries in Pakistan’ and ‘Major industries around the world’.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned that service industries are important for the economy of a country.</li> <li>✓ I learned about some of the service industries in the world.</li> <li>✓ I learned that the main industries are located in Punjab and Sindh, while some are also located in Balochistan and Khyber Pakhtunkhwa.</li> <li>✓ I learned about the industries of Germany, Nigeria, and Kuwait.</li> </ul>	

<b>Lesson Plan # 3</b>	
<b>Reference pages 54-56</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>The textile industry in Pakistan</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>Skills Book activity 'Different aspects of industrialisation'</li> <li>Skills Book activity 'Stages of production of cotton fabric'</li> </ul>
<p><b>Introduction</b></p> <p>The textile industry of Pakistan contributes greatly to the economy of Pakistan.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask students to read pages 54-56. Elicit an explanation of the main processes of producing textiles. Ask students to look at the bar graph and elicit that the production of cotton increased between 2012 and 2016. Read about 'The cotton industry of Pakistan' and identify and discuss the different stages of cotton production. Read 'Problems faced by the cotton industry'.</p> <p>Explain that the farmers depend upon their crops to make their living. If their crops fail, they will suffer heavy financial loss. Explain that the agricultural land is irrigated by the wide network of canals in Pakistan. Due to increased salinity (saltiness) in the soil and water pollution, the yield of cotton is adversely affected. Elicit reasons why cotton is produced at a cheaper rate in China than in Pakistan. The students should be able to compare the problems faced by the cotton industries in Pakistan and China.</p>	<p>35-40 min</p>
<p><b>Homework</b></p> <p>Ask them to complete Questions C1-5 and answer Skills Books activities 'Different aspects of industrialisation' and 'Stages of production of cotton fabric.'</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned about the textile industry of Pakistan.</li> <li>✓ I learned about the similarities and differences between the cotton industries of Pakistan and China.</li> </ul>	

<b>Lesson Plan # 4</b>	
<b>Reference pages 57-59</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Cottage industry</li> <li>• Impact of industrialisation</li> <li>• Industrialisation and Pakistan’s economy</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity ‘Major industries around the world’</li> </ul>
<p><b>Introduction</b></p> <p>Industrialisation shifts an economy from agriculture to manufacturing. This process has many benefits, including increased production, employment opportunities, exports, investment, and technological advancements. Industrialisation in Pakistan has had positive and negative impacts. It has led to economic growth and job creation, but also caused pollution, urbanisation, and inequality. The government has implemented policies to promote industrialisation. Specialisation can lead to increased efficiency, innovation, and exports. It offers many benefits to economies, including increased efficiency and productivity, lower costs, and innovation. In Pakistan, specialisation has contributed to the growth of industries like textiles and IT, leading to increased exports and economic prosperity.</p>	<p>5-10 min</p>
<p><b>Using the Student’s book</b></p> <p>Read page 57 and discuss how a cottage industry is different from a large-scale manufacturing industry. Students might mention that there are fewer workers in the cottage industry. If necessary, explain that there are some other differences including:</p> <ul style="list-style-type: none"> <li>• the method of producing the goods (hand versus machines/ powered equipment)</li> <li>• location of production (home versus factory)</li> <li>• number of people involved in the enterprise (10-100 versus up to several hundred or more) Students could make a list of household items that were made in cottage industries. For example, carpets, furniture, handicraft items, etc.</li> </ul> <p>Read ‘Advantages and disadvantages of cottage industries. Hold a class discussion about this. Explain that many people in Pakistan, especially those living in rural areas, are associated with cottage industries and it is a great way of keeping their cultural traditions alive. They are taught their skills by one generation and pass them on to the next. Their handmade products are valued for their simplicity and uniqueness.</p>	<p>35-40 min</p>

Ask students to read pages 58-59. Mind map ideas from the students about the positive impact of industrialisation. They might mention that industrialised countries are richer and provide better job opportunities for people. Elicit ideas about its negative aspects. They might mention increased environmental pollution. Help students form positive and negative links between industrialisation and urbanisation, immigration, warfare, political policies, etc.

The case study is focused on Pakistan as a low economically developed country. Expand about economic growth and its importance in enhancing living standards and employment opportunities. Help students define low economic growth as slower than usual or stagnant GDP growth rates. Contrast the data about Pakistan with China and Bangladesh to engage students in interactive discussion about why some policies worked for others and not for Pakistan. Discuss impacts such as unemployment, income inequality, reduced standard of living, budget constraints, lack of investment and innovation, and social unrest. Provide examples of countries with prolonged low growth and potential policy measures to tackle impacts. Encourage critical analysis of solutions and policies. Discuss achieving sustainable economic growth and relevancy to current events and global trends.

Introduce the concept of specialisation as the practice of focusing on producing specific goods or services in which individuals, firms, or countries have a comparative advantage. By doing so, it increases efficiency, productivity, and economic growth. Explore the benefits of specialisation, its connection to the division of labor, and its impact on different aspects of an economy. We will also discuss comparative advantage, international trade, technological advancements, and innovation. Through interactive activities, case studies, and discussions, students can understand how specialisation contributes to economic growth and development.

### Homework

Students should complete Question C, D, and E. They can also answer Skills Book activity 'Different aspects of industrialisation.'

### Discussion and review

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned that cottage industries are important for the economy of a country.
- ✓ I learned that cottage industries are small-scale industries run from homes.
- ✓ I learned that industrialisation has a positive as well as a negative impact on society, cultures, and the environment.

<b>Lesson Plan # 5</b>	
<b>Reference pages 60-65</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Sustainable industrialisation</li> <li>• What is international trade?</li> <li>• Exports and imports of Pakistan</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Major industries around the world'</li> <li>• Skills Book activity 'International trading partners of Pakistan'</li> </ul>
<p><b>Introduction</b></p> <p>In the 21st century, sustainable industrialisation has become a crucial process that aims to meet present needs without compromising future generations' ability to do the same. It addresses the challenges of climate change and environmental degradation. To achieve sustainable industrialisation, there are certain principles that can guide the process. These include using resources more efficiently to reduce pollution and environmental impact, relying on renewable resources like solar and wind power to reduce fossil fuel dependency, designing products and systems that can be reused or recycled to reduce waste, and ensuring that the benefits of industrialisation are shared equitably to reduce poverty and inequality.</p> <p>International trade has facilitated industrialisation and technological advancement, but it also has negative environmental effects. Achieving sustainable industrialisation requires balancing economic benefits with environmental costs through promoting sustainable goods, investing in clean technologies, and enforcing environmental standards. Examples of sustainable industrialisation include using renewable energy, recycling, designing sustainable products, and investing in education and training for sustainable industries. Collaboration and effort are necessary for creating a sustainable world for future generations.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask students to read page 60. For several decades following independence, Pakistan had fairly low levels of trade. Look at photographs and diagrams to change in the 1980s. At that time, the government, realising that Pakistan could become wealthier through trade, relaxed import regulations and encouraged farmers and manufactures to produce greater amounts of higher quality goods for export. In the nation's early years, raw cotton made up the largest share of exports, followed by cotton goods.</p>	<p>35-40 min</p>

By 2014–15, value-added goods, such as textiles, cotton cloth, cotton yarn, and manufactured clothing, made up the top 54.5% of exports. Other key export items included rice, and leather and sports goods. At the same time, imports of electronic equipment and industrial materials were important in the 1950s and 1960s. In recent years this has changed, and now industrial raw materials make up roughly 60% of imports, electronic equipment 26%, and consumer goods 14%. Of these, it is crude oil, petroleum, and petroleum products that are the largest imports. Today the major nations to which Pakistan exports goods are the USA, China, the UAE, and Afghanistan countries. Those from which it imports goods are China, Saudi Arabia, the UAE, and Indonesia. After reading through page 60-65, talk about the nature of Pakistan's imports and exports. Ask the students to look around and identify any imported goods, for example, the electrical appliances in the classroom; or to think about items that they have at home, or they see on the way to and from school. Ask what life would be like if they did not have imported goods. Are there some goods that they, or their country, simply could not do without? How does importing products enable a country to do things it could not otherwise do? For example, what does the import of machinery that can process certain goods, or energy sources that can power machinery, do for an economy? Talk about what imports and exports do in general for the economy. . Also discuss the nature of debt and what happens when a person – or nation – has spent more than it has earned. In Pakistan, some revenue also comes from overseas remittances from workers living in other countries. However, to pay for much of its overseas borrowing, Pakistan has to take out loans which have to be paid back with interest.

Identify the goods that Pakistan produces and where they go to. Talk about why the countries that Pakistan exports to now may be different from those it exported to a decade or more ago. Encourage the students to think about why these relationships might have changed – or the types of goods sent to varying places might have changed. In the same way, talk about imports and ask them to note changes in their composition and where particular imports come from. They should discuss questions in class with each other.

**Homework**

Students should complete Questions F and G. They can also answer Skills Book activities 'Major industries around the world' and 'International trading partners of Pakistan'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned about the need for sustainable industrialisation practices.
- ✓ I learned that Pakistan's international trade has grown manifold since its independence.
- ✓ I learned that Pakistan has several trading partners, including the USA, China, the UAE, Saudi Arab, Indonesia, etc.
- ✓ I learned that cotton is the main export product of Pakistan, and its export is a great revenue earner.



<b>Lesson Plan # 6</b>	
<b>Reference pages 65-68</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• International trade organisations</li> <li>• Trade agreements with individual countries</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Trading networks of Pakistan'</li> <li>• Skills Book activity 'International trading agreements of Pakistan'</li> </ul>
<p><b>Introduction</b></p> <p>For several decades following independence, Pakistan had low levels of trade. At that time, the government, realising that Pakistan could become wealthier through trade, relaxed import regulations and encouraged farmers and manufactures to produce greater amounts of higher quality goods for export. In the nation's early years, raw cotton made up the largest share of exports, followed by cotton goods. Imports of electronic equipment and industrial materials were important in the 1950s and 1960s. In recent years this has changed, and now industrial raw materials make up roughly 60% of imports, electronic equipment 26%, and consumer goods 14%. Of these, it is crude oil, petroleum, and petroleum products that are the largest imports.</p> <p>The major nations to which Pakistan exports goods are the USA, China, the UAE, and Afghanistan countries. Those from which it imports goods are: China, Saudi Arabia, the UAE, and Indonesia. Ask the students to look around and identify any imported goods, for example, the electrical appliances in the classroom; or to think about items that they have at home, or they see on the way to and from school.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask what life would be like if they did not have imported goods. Are there some particular goods that they, or their country, simply could not do without? How does importing products enable a country to do things it could not otherwise do? For example, what does the import of machinery that can process certain goods, or energy sources that can power machinery, do for an economy?</p>	<p>35-40 min</p>

Talk about what imports and exports do in general for the economy. Also discuss the nature of debt and what happens when a person – or nation – has spent more than it has earned. In Pakistan, some revenue also comes from overseas remittances from workers living in other countries. However, in order to pay for much of its overseas borrowing, Pakistan has to take out loans which have to be paid back with interest. Identify the goods that Pakistan produces and where they go to. Talk about why the countries that Pakistan exports to now may be different from those it exported to a decade or more ago. Read page 63 and explain that belonging to trade organisations has many benefits for its members, including promoting and regulating trade between their member nations. As well as being a member of the WTO, Pakistan belongs to the regional trade associations SAFTA and ECO. SAFTA covers the South Asian area, and its aim is to reduce trade barriers between member countries so that it becomes cheaper to trade with those countries than with others for similar goods. ECO, based in Central Asia, has a similar agenda, as well as an objective of sustainable development for the region. Reinforce what the terms 'PTA' and 'FTA' stand for. Explain that PTA stands for Preferential Trade Agreement and FTA stands for Free Trade Agreement. Pakistan has several agreements between individual countries including FTAs with Sri Lanka, China, and Malaysia. FTAs encourage trade by cutting tariffs and quotas between the participating nations. For example, if Pakistan wanted to import coconut products, those coming from Sri Lanka would attract very low or no tariffs (or taxes) compared with those coming from other nations that have similar products. Pakistan also has PTAs with Indonesia, Tajikistan, Iran, and Mauritius which also promote preferential trade and lower tariffs. These agreements make it more attractive for these countries to do business with each other. When you have read through this section in class, talk about trade organisations and agreements and what they bring to a country. Ask the students to find out more about ECO and SAFTA. Some information on the associations can be found on their websites at: <http://www.tradeco.org/AboutECO/BriefIntroduction/tabid/55/Default.aspx> Ask [http://saarc-sec.org/areaofcooperation/detailphp?activity\\_id=5](http://saarc-sec.org/areaofcooperation/detailphp?activity_id=5) Explain that these organisations are broader than just trade organisations and also seek to promote development throughout the regions.

**Homework**

Students can do questions H and I. They can also answer Skills Book activities 'Trading networks of Pakistan' and 'International trading agreements of Pakistan'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned that cotton is the main export product of Pakistan and its export is a great revenue earner.
- ✓ I learned that fossil fuels are the main import product of Pakistan and it is mainly imported to meet the energy requirements of the country.
- ✓ I learned that international trade organisations facilitate trade between different countries.
- ✓ I learned that Pakistan has signed PTAs and FTAs with several countries.

<b>Lesson Plan # 7</b>	
<b>Reference pages 69-71</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• Balance of payments</li> <li>• Importance of international trade</li> <li>• Sustainable trade practices</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity 'Types of industries'</li> </ul>
<b>Introduction</b> Balance of Payments, which is a detailed account of a country's economic transactions with other nations. This encompasses the trade balance (exports minus imports), capital flows, and financial transfers. It has three categories: the current account, capital account, and financial account. The BoP helps recognise a country's strengths and weaknesses, evaluate its susceptibility to external shocks, and understand its role in the global economy. It can impact global economies by lending or borrowing money from other countries. Overall, the BoP is a crucial tool for comprehending a country's economic health.	5-10 min
<b>Using the Student's book</b> Read pages 69-71 and divide students into small groups. Provide each group with data on imports, exports, and financial transactions for a fictional country. Ask them to calculate the balance of payments and discuss the implications of a surplus or deficit. Have each group present their findings. Lead a class discussion on the impact of a positive or negative balance of payments on a country's economy.  Explore the idea of international trade and its importance throughout history. Ask students to focus on how countries can benefit from exchanging goods and services with each other. As an additional activity, students can research and present the advantages and disadvantages of international trade for a specific country. Then, we will discuss the overall benefits of international trade and how it can lead to mutual prosperity. Explain the concept of sustainable trade practices, focusing on fair trade, ethical sourcing, and environmental considerations. Discuss the given case studies in the textbook and Ask students to reflect on how they, , as consumers, can support sustainable trade practices by making informed purchasing decisions . Assign research to identify products with sustainability certifications using the Internet	35-40 min

**Homework**

Students can answer questions J and Skills Book activity 'Types of industries'

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned that Balance of Payments, which is a detailed account of a country's economic transactions with other nations.
- ✓ I learned about ways through which consumers can support sustainable trade practices.

## Answer to Assessments

A. Choose the correct answer:

- i. WTO
- ii. Supply
- iii. Export
- iv. Trade
- v. Tariffs
- vi. Textile
- vii. Tea

viii. Specialisation

- B
- 1 Some of the inventions that should be discussed include the steam engine trains, cotton gin, telegraph, sewing machine, and railways.
  2. The Asian countries on the list are Hong Kong, Japan, and South Korea. Description of the report may vary but should include: an increase in the size of their service industries; massive investment in technology in their manufacturing sector, including robots and other high-tech mechanisation; and free trade agreements that increase the size of their markets.
  3.
    - a) industrialisation: the change from having an economy reliant on agriculture to one based on the production of goods and the provision of services.
    - b) service industry: an industry in which businesses and consumers receive something other than goods that can be held and exchanged.
    - c) GDP: the monetary value of all the goods and services produced within a country.
  4. North America, Western and Central Europe, Russia and Ukraine, and Eastern Asia
  5. Young people move from small towns to large cities in search of jobs.
- C
1. iron, steel, aluminium, textiles, cement, chemicals, toys, electronics, railway carriages, ships, aircraft
  2. The cotton industry plays a vital role in the growth of Pakistan's economy. It is termed as white gold because it earns a lot of revenue for the country. It is also important because it provides numerous job opportunities for the people, particularly those living in rural areas who can work on the farms to make their living.
  3.
    - a) Harvesting involves the picking of cotton.
    - b) Ginning is the process of separating the cotton fibres from the seeds.
    - c) Spinning is the process of producing yarn from cotton.
    - d) Weaving is the process of producing cloth from cotton.
  4. from October to February

5.

Problems faced by China	Problems faced by Pakistan
<ul style="list-style-type: none"> <li>• water supply</li> <li>• water pollution</li> <li>• environmental factors</li> <li>• climate change altering the conditions in which cotton can be grown</li> <li>• large number of very small cotton growing farms that are unable to make enough money, or attract enough investment, to improve the quality of their crops</li> </ul>	<ul style="list-style-type: none"> <li>• inadequate supply of water from the Indus</li> <li>• increasing use of pesticides that harm the environment</li> <li>• climate change altering the conditions in which cotton can be grown</li> </ul>

6. Cottage industries are based in in homes/residential areas

D 1. Britain

2. Tourism

3. Khyber Pakhtunkhwa

E 1. The responses obviously depend on the region in which your school or students are located.

2.

Advantages of Industrialisation	Disadvantages of Industrialisation
Higher revenue from manufactured goods	Increased carbon emissions through large-scale manufacturing
More and cheaper goods available to consumers	Extensive use of non-renewable energy resources and other natural resources
Increased standards of living for most people	Low pay for physically demanding work
Incentives to develop technology	Shortage of energy
More job opportunities	Loss of cultural identity

F 1 a). Descriptions may vary but should include increase in jobs as well as economic development. Rise of middle class and decrease in poverty.

b). Answers may vary but should include going forward with export led growth strategies with high savings and investment rates, specialising in areas of competitive advantage. According to economists, human capital, and R&D plays a key role in economic growth. Research and development (R&D) can lead to inventions and innovation which in turn improves the quality of manufacturing and updates existing technologies

- 2 a). Answers may vary but look for low economic growth, higher amount valuing to imports, weak infrastructure, and etc.
- F 2 b) Answers may vary but look for less jobs, loss of cultural identity, possible degradation of environmental ecosystems, and etc.
3. Answers may vary but should include:
- Formulation of green public procurement (GPP) protocols and tools to promote the efficient use of natural resources and commodities.
  - For more sustainable and resource-efficient actions, stakeholders should form common agreements and cooperative action procedures.
  - To strengthen a more resource-efficient economy, collaborative platforms and services to be established for major economic stakeholders.
  - Adoption of new technical solutions that save natural resources and raw materials while encouraging the usage of bio-based products.
  - Adoption of green technologies by economic stakeholders in the maritime sector (e.g. ports) to improve resource efficiency, such as by reducing waste flows or increasing recycling of shipping-related garbage.
  - Investment to support the implementation of more resource-efficient solutions, such as part of cross-border pilot projects to deploy nature-based and green technology solutions.
- G 1. International trade helps Pakistan's economy by giving the nation a better income from the goods they are able to sell overseas than it would otherwise have. Importing allows access to goods that can in turn improve the country's economic output, such as machinery and vehicles.
- 2 a) This large difference means that there is a trade deficit for Pakistan. Essentially, it has spent more than it has earned, although it may be able to make this up to some degree in other ways, such as by using overseas remittances from workers living in other countries, or through loans.
- b) Descriptions may vary but should include:
- Higher demand for foreign currency
  - Fluctuations in exchange rate
  - Foreign debt and political interference
  - Less investment to develop infrastructure and industries
  - Less investment to improve human and technological resources
- When countries have to take out loans to pay off their debts, they often get stuck in a debt cycle of having to pay off their loans, plus interest, and never being able to use the money to buy goods outright.
- 3 a) Pakistan's exports are largely cotton based. Other goods include rice, leather, carpets, surgical instruments, and sports goods.



- b) In the early years, Pakistan exported a lot of raw goods, such as cotton and sugar. Now it exports cotton goods, such as household linens and clothing. In the 1980s, the Pakistani government opened up export markets by lowering tariffs and relaxing regulations around what could be imported and exported; and it encouraged businesses to produce better quality products with the aim of exporting them.
- 4 a) Refined petroleum, crude petroleum, palm oil, scrap iron, cars, and telephones.  
 b) Pakistan now imports a large amount of fossil fuels, fertilisers, and food that it did not import fifty years ago. A growing population, modernisation, and urbanisation have led to more use of fossil fuels for energy, heating, and cooking. Population growth has put a strain on food supplies. More is grown with the help of fertilisers; however, much has to be imported now as well.
- H 1. Pakistan sometimes imports raw cotton from countries because it has a shortfall in its own cotton supplies. This can happen because of crop failure (bad weather) or because it sold more of its supply than expected and has run out.
- 2 a) Cotton became a major export product for Pakistan because it had historically been an area that produced cotton and there was no incentive for farmers to diversify.  
 b) The advantages of having one major export product such as this are that if prices for your goods are high, profits will also be high. However, the disadvantages far outweigh the advantage most of the time. Disadvantages are that if crops fail, competition becomes too fierce, or if markets dry up, there is little to fall back on in terms of other exports.
- 3 a) Oil is used in Pakistan to generate electricity. Although it produces some of its own oil, it is not enough to run power plants.  
 b) This large import is very costly. Although Pakistan does not use huge amounts of electricity by world standards, it uses more than it can afford and uses it domestically rather than in a way that boosts the economy. Refined petroleum cost US\$89.1 billion in 2014.
- 4 a) Most of Pakistan's oil energy is used in people's homes.  
 b) Pakistan's reliance on oil could be lessened through use of renewable energy, such as solar and wind.
- I 1 a) FTA stands for Free Trade Agreements and PTA stands for Preferential Trade Agreements.  
 b) The barriers to trade, mostly quotas and tariffs, are dropped (FTAs) or lowered (PTAs). The advantages of belonging to a trade organisation include preferential trade deals with the countries that are part of the organisation, and access to larger markets. Trade organisations also try to promote cooperation in other areas such as the environment, energy use, education, and the alleviation of poverty.

c) Sri Lanka, China, Malaysia (FTAs) Indonesia, Tajikistan, Iran, Mauritius (PTAs)

2 a) Description may vary but should include value of exports to:

Tajikistan (US\$7.42 million) – sugar, fermented milk products, and packaged medicines

Malaysia (US\$255 million) – rice, cotton goods

Australia (US\$195 million) – household linens, cotton goods, rice, and leather

All these values of exports were less than value of exports to China.

2 b) Some of the reasons that the value of trade is so different are to do with the value of the exports in different countries. (Wealthier countries can afford to pay more.) Wealthier or larger countries will buy different kinds of goods and more goods than poorer countries. There is a larger demand for some goods in particular countries due to that country's geography and economy.

J 1. The economic impact would be huge if Pakistan stopped importing goods and commodities. Pakistani's would have very little fuel and would not be able to grow as many crops, therefore many people could not survive. There would only be old vehicles and machinery to run factories.

2. The students should describe three or four ways in which imports affect their lives.

3 a) The greatest challenges that Pakistan faces in terms of the future of its export economy is to diversify its products, so that it is not reliant on cotton, and to ensure that it is always competitive, but without making goods so cheap that people are not paid properly for producing them.

b) The greatest challenges for Pakistan in terms of the future of its import economy is to be able to import fewer energy-focussed goods.

### Answer to Skills Book activities

#### Skills Book activity 'Agriculture in Asian countries'

A 1. Please ensure that the map is completed so the following countries are coloured as follows:

- India (red)
- Japan (red)
- South Korea (red)
- Pakistan (yellow)
- Bangladesh (red)
- Vietnam (red)
- Laos (yellow)
- Cambodia (yellow)

**Skills Book activity 'Important industries in Pakistan'**

- A 1. Please ensure the map below is completed with the following industries pinpointed in the following regions. Balochistan (coal, gas) Gilgit-Baltistan (agriculture) Khyber Pakhtunkhwa (agriculture, cement) Punjab (agriculture, cement, coal, gas, textiles) Sindh (agriculture, cement, coal, gas, petrol)

**Skills Book activity 'Different aspects of industrialisation'**

- A 1. Some of the responses from the person on the left could include:
- The country is becoming wealthier because it is exporting more goods.
  - The agricultural and manufacturing sectors are becoming more efficient.
  - More goods are available to consumers.
  - Cheaper goods are available to consumers.
  - Standards of living have increased for most people.
  - There are now incentives to develop and introduce technology.
  - There are more job opportunities. Some of the responses from the person on the right could include:
  - Increased carbon emissions through large-scale manufacturing are bad for the environment and people's health.
  - The extensive use of non-renewable energy resources means these resources will one day run out.
  - Pay is low for physically demanding work.
  - The possible decline in cottage industries means people in these industries will lose work and money.
  - The loss of cottage industries may lead to the loss of cultural identity.

**Skills Book activity 'Stages of cotton production'**

- A 1. In describing each stage of production, the students should write something like the following:
- Harvesting takes place from October to February. The picking of cotton is done by hand, often by women. There are about 500,000 female cotton pickers in Pakistan, and they are usually paid less for their work than male cotton pickers. They can pick up to 35 kg of cotton per day in a year when the harvest is good.
  - Ginning is the process of separating the cotton fibres from the seeds. This is done by machines in ginneries. First, the cotton is dried to reduce moisture. Then all foreign materials are removed from the cotton. The cotton is then pulled through narrow slits, which the seeds are too big to pass through. The cotton is then compressed into a bale.

- Spinning is the process of producing yarn from cotton. It is done on machines in mills. Spinning involves a machine pulling, stretching, and twisting cotton into yarn. Pakistan produces far more yarn than it uses domestically, so much of the yarn is exported, providing much of the nation's wealth.
- Weaving is the process of producing cloth from cotton. This usually takes place on a loom. The cloth that is produced in Pakistan comes in many forms, including denim; other clothing fabrics, fabrics for home furnishings, toweling, knitwear, and canvas.

**Skills Book activity 'Major industries around the world'**

- A 1. The responses in this section will depend on the countries chosen. To check on responses and to lead further discussion, two good websites for the necessary information are:
- World Bank Group ([www.worldbank.org](http://www.worldbank.org))
  - CIA fact book ([www.ciaworldfactbook.us](http://www.ciaworldfactbook.us))

**Skills Book activity 'International trading partners of Pakistan'**

- A 1. Check that the students have marked the correct countries on the map. The ten largest import partners (where most imports come from) are: China, UAE, Saudi Arabia, Indonesia, India, Japan, USA, Kuwait, Germany, Malaysia. The ten largest export partners (where most exports go to) are: the USA, China, the UK, Afghanistan, Germany, the UAE, Spain, Bangladesh, Italy, France.

2. a)

Trading nation	Percentage of overall exports by Pakistan to these nations	Main export goods
The USA	17	Household linens, knitwear, and clothing
China	8	cotton yarn and fabric, rice, metals
The UK	8	Household linens, knitwear and clothing, leather, rice
Afghanistan	7	wheat flour, rice, sugar, clothes, cement
Germany	5	Household linens, cotton knitwear and clothes, leather goods, sports goods
The UAE	4	rice, household linens, clothing, refined petroleum, jewellery

Spain	4	Household linens, cotton knitwear and clothes, rice
Bangladesh	3	cotton, household linens, cotton
Italy	3	Household linens, cotton knitwear and clothes, leather goods, rice
France	2	Household linens, cotton knitwear and clothes, leather goods, sports goods, rice

Trading nation	Percentage of imports by Pakistan from these nations	Main import goods
China	27	electronics, machinery, fertilisers, yarn
The UAE	12	Refined petroleum, crude petroleum, scrap iron,
Saudi Arabia	6	Crude petroleum, chemicals
Indonesia	5	palm oil, yarns, nuts
India	4	raw cotton, chemicals, foods, and spices
Japan	4	cars, trucks, machinery, iron
The USA	4	electronics, machinery, scrap iron, medicines
Kuwait	3	Refined petroleum, chemicals
Malaysia	2	palm oil, refined petrol, electronics

**Skills Book activity ‘Trading partners of Pakistan’**

A 1. Place a number (1-8) next to the text to show the correct order.

- |      |      |      |      |
|------|------|------|------|
| 3 a) | 1 c) | 8 e) | 4 g) |
| 7 b) | 6 d) | 2 f) | 5 h) |

2. As cotton is exported in many different states, the networks between countries can be very different. For example, Pakistan exports raw cotton to Indonesia which in turn processes it into thread, fabric, and garments, creating a whole new industry in that country. To other places, e.g., China, Pakistan mainly supplies fabric or thread where these supplement the local manufacturing industry. Readymade goods make up the bulk of what is supplied to Europe and the USA, creating retail jobs in those locations.

**Skills Book activity 'International trade agreements of Pakistan'**

- B 1 a) SAFTA: Pakistan, Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka
- b) ECO: Pakistan, Afghanistan, Azerbaijan, Iran, Tajikistan, Turkey, Turkmenistan, Uzbekistan, Kazakhstan, and Kyrgyzstan
- c) (Check students' colouring of the countries.)
2. The advantages to Pakistan of forming neighbourhood trading groups are: increased access to more trading partners and larger populations to sell goods to; better relationships with countries with whom they trade; more regional cooperation on a range of matters from industry to infrastructure.
3. Check the students' marking of FTAs or PTAs on the map.
- 4 a) FTAs remove barriers such as quotas and tariffs between countries when they trade with each other.
- b) PTAs give countries special terms when they trade with each other, such as reduced tariffs.

**Skills Book activity 'Types of industries'**

A. Large-scale industries use advanced technology and machines to produce standardized products for a wide market. Examples include automobile, steel, and electronics manufacturing. They require significant capital and employ many people over a wide area.

Small-scale industries produce goods using simpler technology and require less capital investment. They are flexible and can adapt to changing market demands. Examples include bakeries, handicrafts, and local food processing units.

Cottage industries produce goods on a small scale using simple tools and family labor.

They preserve traditional skills and techniques like weaving, pottery, and jewelry making.

- B. Natural factors: Climate, geography, and access to natural resources and energy sources can impact the success of industries in a region. Water resources can lead to agriculture and textile production, while access to minerals and timber can influence industry choices. Energy sources also play a role in industrial development and the types of industries present.

Human factors: Examining the size and skill level of the local labor force is crucial for industrial growth. Education and vocational training, government policies, and cultural heritage also impact industrial development.

- C. Diversifying the local economy with cottage industries can improve overall economic well-being and resilience, reducing vulnerability to fluctuations in agricultural production.
- D. Possibilities: State-sponsored financial support, skill development programs, and marketing and branding support can help small-scale and cottage industries adopt sustainable practices. Examples include the Pradhan Mantri Mudra Yojana in India, the Thai Cottage Industry Revitalization Program, and the Handloom Mark scheme for handloom weavers.

Limitations: Inadequate infrastructure, lack of awareness, difficulty implementing policies, and competition from mass-produced goods can hinder the growth of sustainable practices in various industries.

- E. Answers may vary.

# UNIT 5 **Transport and its im- portance**

## **Background knowledge for the unit**

This unit focuses on transport: how it has developed through the ages; how it affects countries and their economies; where the main transport routes are within Pakistan and throughout the world, and what the future might hold. The movement of both people and goods is covered, with the section on the movement of people divided into three reasons for movement: tourism, migration, and work.

Transport is a critical factor in the working of all communities and countries. Advances in transport have improved standards of living, changed the ways in which communities' function, and greatly influenced the development of nations. Today, transport plays a role in people's work, home, and leisure activities.

Transport also plays a vital role in the economies of societies. One area of economics is the production, distribution, and consumption of goods and services. Transport is a critical factor in each of these steps: communities lacking modern infrastructure for transport suffer economically because they are unable to transport the goods they produce or import the goods that they need.

It is not just goods that need to be transported: communities relying on tourism for their economic benefit need to have an infrastructure that enables large numbers of people to travel to their areas. A lack of transport infrastructure also affects the delivery of the health and education services that are critical to a community's overall wellbeing.

Transport also plays a role in the physical development of communities. It is no coincidence that many of the world's largest and busiest cities are located on the coast, with harbours that facilitate the docking of large ships; or along large rivers that connect to these harbours. These cities developed before trains, planes, and motor vehicles were invented, when sea routes were the most efficient way to transport goods for trade. Today, few major cities lack access to airports, efficient railways, and motorways.

## **Before we proceed**

There is a direct link between economic growth and proximity to transport routes. Major cities around the world, including those in Pakistan, all have access to major sea, road, rail, or air routes (sometimes all of them). Perhaps start the exploration of this unit by asking students what they know about the proximity of Pakistan's major cities to transport routes.

Finally, little in the area of transport remains still. Both the means of transport and the infrastructure that supports them are constantly changing in a bid to make things more efficient and economically beneficial.



**Expected learning outcomes**

Students should be able to:

- recount a brief history of transport through the ages
- list the main reasons why people move around the world
- explain how goods are transported around the world
- identify the main air and sea routes around the world
- identify transport links in and around Pakistan
- explain how efficient transport helps the economy
- discuss possible future trends in global transport

<b>Lesson Plan # 1</b>	
<b>Reference pages 75-78</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Transporting people and goods around the world</li> <li>• Brief history of transport</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Public transport: a case study'</li> </ul>
<p><b>Introduction</b></p> <p>The role of transport has evolved significantly over time. From basic means of travel to complex global networks, transportation continues to shape how we live, work, and interact with the world around us. It's important to consider both the historical context and the ongoing changes as we appreciate the impact of transportation on our lives</p> <p><b>Historically:</b></p> <p>Transportation has greatly evolved over time. In the past, people relied on walking, animals, and simple carts. Boats and ships were used for traveling over water. As trade became more important, transportation improved with better roads and sea routes. The Silk Road facilitated the exchange of goods and knowledge between Europe and Asia. The invention of steam engines revolutionized transportation during the Industrial Revolution, leading to faster movement of goods and people and fueling growth in industries and urban areas.</p> <p><b>Currently:</b></p> <p>Transportation connects the world, facilitating movement of people, goods, and information. It drives economic growth, commuting, leisure, and access to essential services. While raising environmental concerns, innovative ideas like self-driving cars and hyperloop transportation promise an exciting future.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>This section starts with a brief history of transport, with a particular focus on how civilisations and cultures remained separate until developments in transport brought increased contact. The most dramatic changes have come since the mid-1700s, many of which are associated with the Industrial Revolution. Ask your students to identify some of the major changes in transport since the mid-1700s. You should expect responses such as the invention and development of:</p>	<p>35-40 min</p>

- the steam engine, which led to steam-powered trains and ships
- the combustion engine
- the aeroplane
- satellites
- spacecraft
- Internet technology

Lead a discussion about how these modes of transport, and others that your students think of, evolved. Does technology drive development or does human-need drive the development? Is it a bit of both? Students could bring a collection of photographs of vehicles of the past and discuss how these have changed over time and ponder why they changed. They could compare the modes of transport of the past with those currently in use. This section looks at the movement of people and divides this movement into three types: tourism, migration, and work. Elicit responses about how their parents travel to their workplaces. Explain that apart from using private means of transport, many people use public transport for this purpose. You can refer to the London underground trains and other such mass transit systems around the world that are used by people for fast and efficient travel to their workplaces. Ask your students how and why developments in transport have changed the nature of tourism. Their main responses should include the fact that technological developments have made aircraft faster, cheaper, and more efficient, meaning more people can afford to travel by air without being away for too long. The students learned about migration in World Watch Geography Student's Book 1. Remind them that people migrate using different modes of transport. In 1947, millions of people migrated across the border of Pakistan and India, mostly by train. When discussing migration as a reason for people to move long distances, ask the students to share any migration stories from their own family. Perhaps an uncle or aunt or cousin has left Pakistan and is now living in another country; or someone has migrated from one city to another city in Pakistan. If so, ask those students to complete the following activity

*Activity: A family member's migration journey*

*What to do:*

1. Ask the students to draw on a map the starting and finishing points for their family member's journey.

2. Now ask them to label the journey with the means of transport that took them along each leg.

Note: To complete this task the students may have to conduct some research by talking to family members. When discussing work as a reason for people to move from place to place, use the map of Pakistan's industries in the *Oxford School Atlas for Pakistan* and ask your students to locate the main industrial cities of Pakistan to which people from different parts of Pakistan migrate.

Students should read pages 77. Discuss in class how the ancient Silk Route was developed to facilitate the movement of goods to and from far distant places. Give examples of products imported into Pakistan from other countries, like cars, machines, food products, etc. Explain that efficient and reliable transport is required for the movement of goods. When people migrate to other countries to settle, they might transport their household goods by air or sea cargo. The time taken and costs of transporting goods by air and sea are different. Perhaps the students could have a class discussion about the vehicles used for the movement of goods, e.g., trailers, lorries, containers, etc. They might have noticed these particularly on the highways or motorways. Explain that goods are transported inland by these vehicles. Similarly, people living in coastal areas, like the fishing villages on the coastal belt of Pakistan, rely on their boats and ships for the movement of goods and people. Discuss the role of seaports regarding the movement of goods on a greater scale.

**Homework**

Students can complete Skills Book activity 'Public transport: a case study'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned that the first major development in transport began with the invention of the wheel.
- ✓ I learned that through advancements in transport, satellites gather universal data and expand our understanding of the universe.
- ✓ I learned that people require transport for different reasons: work, migration, and tourism.
- ✓ I learned that goods are transported around the world via land, air, and sea.

<b>Lesson Plan # 2</b>	
<b>Reference pages 78-80</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Transport and information technology</li> <li>• Postal services</li> <li>• Telecommunications</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Planning a holiday'.</li> <li>• Skills Book activity 'Air routes'.</li> </ul>
<p><b>Introduction</b></p> <p>Efficient transport systems facilitate the movement of people and goods, which is essential for businesses to operate and for people to access goods and services. They also help to connect rural and urban areas, which can help to reduce poverty and inequality. Information technology (IT) enables the efficient collection, storage, and communication of information. This is essential for businesses to operate, for governments to provide services, and for people to stay connected. IT can also be used to improve education, healthcare, and other social services.</p> <p>Postal services provide a reliable and affordable way to send and receive mail. This is essential for businesses to communicate with customers and suppliers, and for people to stay connected with friends and family. Postal services can also be used to deliver government services, such as passports and social security benefits. Telecommunications refers to the transmission of information over long distances. This includes telephone, internet, and television services. Telecommunications are essential for businesses to operate, for governments to provide services, and for people to stay connected. They can also be used to improve education, healthcare, and other social services.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Explain that technology is having a more dramatic effect on transport today than ever before. Make sure your students are familiar with some of the latest technology driving these changes, such as the global positioning system (GPS), cameras, sensors, and online booking and tracking systems. Bring to the class a printout of an interactive online map showing the route between any two places. Show your students that information technology has made it very easy to locate places and navigate using online interactive maps.</p>	<p>35-40 min</p>

Discuss how information technology has affected tourism. Tourists can make use of the online maps, travel guides, tips, trekking routes, location and availability of train and bus stations, etc. and plan their journeys accordingly. Similarly, people living in coastal areas, like the fishing villages on the coastal belt of Pakistan, rely on their boats and ships for the movement of goods and people. Discuss the role of seaports regarding the movement of goods on a greater scale.

Students should become familiar with some of the world's major transport hubs and routes. Use a map of the world to help, ask the students to pinpoint: the two most popular domestic air routes in the world (Seoul-Jeju and Sapporo-Tokyo); the two most popular international air routes (Taipei-Hong Kong and Jakarta-Singapore); the five busiest sea ports (Shanghai, Singapore, Shenzhen, Hong Kong, and Ningbo-Zhoushan); the following important sea passages: Panama Canal, Suez Canal, Strait of Hormuz, Strait of Malacca, Strait of Magellan, Strait of Dover, Sunda Strait, and Taiwan Strait.

**Homework**

Students should complete question B and Skills Book activity 'Planning a holiday' and 'Air routes'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned that information technology has transformed the ways in which people travel and goods are transported around the world.

<b>Lesson Plan # 3</b>	
<b>Reference pages 80-85</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Transport in and around Pakistan</li> <li>• Major international routes of Pakistan</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'Seaports of the world'</li> <li>• Skills Book activity 'Global Sea passages'</li> <li>• Skills Book activity 'Transporting goods in Pakistan'</li> <li>• <i>Oxford School Atlas for Pakistan.</i></li> </ul>
<p><b>Introduction</b></p> <p>The transport routes in and around Pakistan hold immense importance due to their strategic location and role in facilitating trade, connectivity, and economic growth. These routes enable the movement of goods, people, and ideas within the country and across borders, contributing to regional and global trade dynamics..</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>This section explores the transport links between Pakistan's provinces, cities, villages, towns, ports, industrial centres, agricultural land, and remote areas, as well as between Pakistan and its major neighbours and trading partners. Explain that agriculture products are transported to cities mainly along the road network. People living in rural and remote areas travel to cities for better healthcare facilities. Similarly, food and other products from the cities are distributed all over Pakistan by railway, road, and air Elicit responses from students about any air or sea journeys that they have taken within Pakistan. Alternatively, encourage them to research the transport routes to any two cities/towns/villages/resorts in Pakistan where they would like to go. They can have a class discussion about it based on their findings.</p> <p>The following table is a sample that can help mind map the role and importance of these transport routes</p>	<p>35-40 min</p>

Route	Role	Importance
Railway routes	Pakistan's railway network has historical importance in connecting regions and supporting trade.	While modernization is needed, railways remain a cost-effective mode of transport for bulk goods. Improved railway connections can enhance trade efficiency, especially with neighboring countries.
Sea routes	The Arabian Sea coastline, along with Gwadar Port, allows maritime trade to flow through the region, offering a strategic location for shipping.	Gwadar Port's development enhances Pakistan's maritime significance, provides an alternative route for trade, and increases regional economic cooperation.
Air routes	Major international airports in Pakistan are crucial for global air travel, allowing people and goods to connect to various parts of the world.	Air routes expedite international trade, enable tourism, foster cultural exchange, and provide access to markets for various industries.
Peshawar-Kabul Highway	This highway connects Pakistan and Afghanistan, supporting trade and people-to-people contacts between the two countries.	It facilitates bilateral trade, helps strengthen diplomatic ties, and promotes regional stability through increased connectivity.



<p>Khyber Pass Route</p>	<p>Historically, the Khyber Pass has served as a trade and transit route between South Asia and Central Asia.</p>	<p>Although its significance has been impacted by geopolitical factors, it still plays a role in cross-border trade and provides a historical link between Pakistan and Afghanistan</p>	
<p>Indus Highway</p>	<p>The Indus Highway facilitates movement along the Indus River, connecting northern and southern regions of Pakistan</p>	<p>This route plays a crucial role in domestic trade and transportation. It enables the movement of agricultural products, industrial goods, and other essentials between various parts of the country.</p>	
<p>Pak-China Economic Corridor</p>	<p>CPEC is a game-changer in regional connectivity, linking China's western region with Gwadar Port. It provides China with a shorter and more direct route to the Arabian Sea.</p>	<p>CPEC enhances trade between China and the Middle East, as well as between China and Europe, bypassing longer sea routes. It positions Pakistan as a key player in global trade, infrastructure development, and economic cooperation.</p>	

<p>Karachi-Lahore-Islamabad Motorway</p>	<p>This motorway is a key domestic transportation route, connecting major urban centers and facilitating the movement of people, goods, and services</p>	<p>The modern infrastructure of this motorway has boosted connectivity, reduced travel time, and contributed to economic activities. It supports trade, tourism, and overall development by efficiently linking Pakistan's economic centers.</p>	
<p>Karachi-Gwadar Route</p>	<p>The Karachi-Gwadar route is a vital maritime link connecting the Arabian Sea to the landlocked Central Asian countries. It serves as a gateway for trade between these countries and the rest of the world.</p>	<p>: Gwadar Port's deep-water facilities make it an attractive option for shipping and transshipment. The development of this route through the China-Pakistan Economic Corridor (CPEC) has elevated Pakistan's strategic importance and potential as a trade and transit hub.</p>	

**Homework**

After reading this section, students should complete Questions/activities C and D. Students should also complete Skills Book activities 'Seaports of the world', 'Global Sea passages', and 'Transporting goods in Pakistan'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned about the transport routes within Pakistan that link different towns, villages, and urban areas to each other.
- ✓ I learned about the international routes that connect Pakistan with other countries.

<b>Lesson Plan # 4</b>	
<b>Reference pages 85-88</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• Transport and industry</li> <li>• Strength and weaknesses of transport in Pakistan</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity 'Sending goods around the world'.</li> </ul>
<b>Introduction</b> <p>Transportation plays a crucial role in the functioning of industries by facilitating the movement of raw materials, finished products, and workers. It acts as a bridge that connects different parts of the production process. Efficient transport systems contribute to economic growth, employment opportunities, and overall development of a country's industrial sector. Pakistan's location at the crossroads of South Asia, Central Asia, and the Middle East presents unique opportunities for trade and transit. With its strategic position, the country can serve as a gateway for goods moving between these regions. The China-Pakistan Economic Corridor (CPEC) is a major infrastructure project that seeks to improve transportation links between China and Pakistan. As a result of this initiative, new roads, railways, and ports have been developed, which have greatly enhanced connectivity and trade prospects. Additionally, Pakistan boasts an extensive road network that connects major cities and industrial centers, supporting the efficient movement of goods and people throughout the country. Pakistan's transportation infrastructure faces multiple challenges, including poor road conditions, traffic congestion in major cities, struggling railways, high energy costs and security concerns. Inadequate public transportation and geopolitical tensions also limit mobility and disrupt cross-border trade.</p>	5-10 min
<b>Using the Student's book</b> <p>Begin the lesson by discussing how transport is important for the development of industry. You could lead this discussion. The responses you receive should include faster and cheaper movement of goods and people, the creation of more jobs, greater productivity through people spending less time travelling (and therefore more time is spent on working), and increased economic activity from the extra employment and tourism. The example provided in this section is the China-Pakistan Economic Corridor (CPEC). Read page 81 and then,</p>	35-40 min

using the *Oxford School Atlas for Pakistan*, locate Xingiang in north-east China and Gwadar in the south of Pakistan. Explain that the CPEC will create many job opportunities for the people of Pakistan and China.

Students can hold a class discussion on the importance of building the CPEC. How will it help develop Gwadar port and promote trade between Pakistan and China? Students could prepare for this discussion a day ahead using the Internet and then discuss their findings in class.

Governments, companies, and community leaders are constantly trying to improve transport infrastructure as they recognize the economic benefits that flow as a result. Explain that planning routes for the future depend on many factors, like a growing population, a massive increase in the number of cars and vehicles, etc. Traffic jams are becoming a huge problem, particularly in urban areas. Hence the future of transport infrastructure depends on these factors.

**Homework**

Students can take on the role of futurists by completing Questions A, E and F. They can also answer Skills Book activity 'Sending goods around the world'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned that transport plays a major role in the development of the economy as goods are transported to the markets along transport routes.
- ✓ I learned that transport is evolving, and it has a direct impact on the economies of countries.

**Answer to Assessments**

A. Choose the correct one:

- i. 60%
- ii. Islamabad
- iii. 200
- iv. Afghanistan
- v. Karakoram Highway
- vi. Sindh
- vii. 653 km
- viii. Atlantic

- B 1. First, transport options were minimal and therefore relatively expensive: second, only the wealthy had the opportunity to stop work for long enough to visit other places.
2. The years provided may differ from student to student because different people are credited with different stages of development of various technologies. However, among the key developments that should be included on the timeline are steam engine (late 1600s/early 1700s), steam train (early 1800s), motor vehicle (late 1800s/early 1900s), aeroplane (early 1900s), satellites (1950s), and manned spacecraft (early 1960s), Internet (1980s – although development can be traced back to 1960s). Encourage your students to make their timeline as extensive as possible and to provide details of their sources.

3. Tourism, migration, and work

- C 1 a) the intended destination, cost, urgency, and the length of time the goods can last without deteriorating.
- b) either because they are required in a hurry or because they are perishable and would not last in their ideal state if sent more slowly by sea.

c)

	Ship	Air
Advantages	Cheaper because large volumes can be sent at once, and fuel costs are relatively low	much faster delivery
Disadvantages	takes longer and there are limited places that ships can travel from and to	relatively small volumes can be carried at once; limited places that aircraft can travel to and from

- 2 a) infrastructure: the system and services that enable a community/country to operate (e.g. roads, ports, and airports).
- b) migration: the movement of people from one place to another.
- c) freight: goods that are being transported.
- 3). Transport has made travel faster and cheaper. It has facilitated the movement of people and goods so that global trade and travel has increased manifold. With the development of the transport industry, many jobs have been created.

D 1 a) Students should mention some/all of the following:

- Ships provided the first global movement of goods.
- Large, fast aircraft have facilitated the faster movement of goods.
- Cargo ships with refrigerated compartments have enabled perishable goods to be transported farther at a reasonable cost.

b) Students should mention some/all of the following:

- Efficient, affordable transport means goods made in one country can be sold to countries all over the globe, boosting economic activity in the country of origin.
- Investment in transport infrastructure enables developing nations to trade goods more easily and therefore raise the living standards of their populations.
- Towns and villages that previously lost young members of the community because they sought jobs in cities can retain this vital resource because improved transport options make these places more economically viable.

2. a) Hamburg, Germany: The three nearest seaports to Hamburg are Stade, Butzfleth, and Gluckstadt, all in Germany.

b) Seattle, USA: The three nearest seaports to Seattle are Tacoma in the United States, and Victoria and Cowichan Bay in Canada.

c) Los Angeles, USA: The three nearest seaports to Los Angeles are Long Beach, El Segundo, and Huntington Beach, all in the United States.

d) Sydney, Australia: The three nearest seaports to Sydney are Botany Bay, Port Kembla, and Newcastle, all in Australia.

e) Shanghai, China: The three nearest seaports to Shanghai are Jiading, Chongming, and Chuansha, all in China.

3 a) Students should mention some/all the following:

- create more than 700,000 jobs
- boost economic growth of Pakistan
- enable China to send goods to Europe, Africa, and the Americas much more quickly than is currently possible
- upgrade transport infrastructure within Pakistan
- enable more goods to be exported from Pakistan to China

b) Help the students find Gwadar on the map of Pakistan and trace the closest sea routes. Among the countries that could be named are Oman, United Arab Emirates, Qatar, Bahrain, Kuwait, Iran, and India.

E 1. The first part should elicit responses such as: making journeys faster, and more efficient; makes it easier and quicker to book the movement of both people and goods. The second part should elicit responses such as: it facilitates quicker, cheaper, and more efficient movement of goods and people, which boosts economic

growth; it encourages relationships between countries that had previously had little contact with each other; it exposes countries to new ideas that can prove more innovative than ones they are currently implementing.

- 2 a) The Pakistan Post Office ([www.pakpost.gov.pk](http://www.pakpost.gov.pk)) has details of the costs of sending parcels.
  - b) Response should include some of the following: The Silk Road was a series of routes that ran through Asia to the Middle East, Africa, and into Europe. Construction of the route started more than 2000 years ago. Silk was the main commodity traded, but other goods included jade, textiles, artwork, paper, and spices. Religious and philosophical ideas also spread from culture to culture along the Silk Road.
  3. DHL, TNT, and Pakistan Post Office offer quotes for parcel delivery. According to DHL the cost should be between US\$50-\$60 maybe even higher cost.
- F 1 a) There are no correct responses to this question, but you could lead a discussion based on the responses of some of the students.
- b) There are no correct responses to this question, but you could lead a discussion based on the responses of some of the students.

### Answer to Skills Book Activities

#### *Skills Book activity 'Seaports of the world'*

- A 1. The students' maps should be marked showing Shanghai (China), Singapore, Shenzhen (China), Hong Kong (China), and Ningbo-Zhoushan (China).

#### *Skills Book activity 'Global Sea passages'*

- A 1. These critical interoceanic passages are the lifelines of global trade. Changes in their technical or operational aspects can create a domino effect that reverberates throughout the global economy. Businesses, governments, and shipping industries need to stay adaptable and responsive to these changes to ensure the resilience of their supply chains and trade activities.
2. Answers will vary. Most of the trade corridors in the Northern Hemisphere can be attributed to a combination of historical, geographical, and economic factors. Historic civilizations and trade hubs in the Northern Hemisphere paved the way for modern-day trade corridors that connect Asia, Europe, and Northern Africa. Geopolitical stability and favorable trade policies in certain northern regions have encouraged trade corridors to develop and thrive. Additionally, historical colonization and economic dominance by northern countries have influenced trade relationships and patterns.
- B. The photos and labels of the following should be located on the map: Panama Canal (Approximately 50 miles or 80.47 kilometers), Suez Canal (Approximately 120.1 miles

or 193.3 kilometers), Strait of Hormuz (Approximately 34 miles or 54.7 kilometers), Strait of Malacca (Approximately 550 miles or 885 kilometers), Strait of Magellan (Approximately 300 miles or 483 kilometers), Strait of Dover (Approximately 21 miles or 33.8 kilometers), Sunda Strait (Approximately 150 miles or 241 kilometers), and Taiwan Strait (Approximately 110 miles or 177 kilometers).

***Skills Book activity 'Transporting goods in Pakistan'***

- A 1. Responses to this activity will depend on the location of your town/city. Help the students locate both their location and Khyber Pakhtunkhwa on their map and ensure that major towns/cities along the road and rail routes are identified. This is an activity that could be done in pairs or small groups.

***Skills Book activity 'Public transport: a case study'***

- 1) Finchley Road, Swiss Cottage, St John's Wood, Baker Street, Bond Street, Green Park, Westminster, Waterloo, Southwark, London Bridge, Bermondsey
- 2) Paddington, Green Park, Waterloo, Southwark, Euston, Kings Cross St Pancras, Farringdon, Bank, London Bridge, Tower Hill, Liverpool Street
- 3) Along the Central Line from Bond Street to Tottenham Court Road, and then on the Northern Line from Tottenham Court Road to Leicester Square; or along the Jubilee Line from Bond Street to Waterloo, and then on the Northern Line from Waterloo to Leicester Square.

***Skills Book activity 'Planning a holiday'***

- A-F: Information that will help you assess the students' responses should include the fact that the closest airport to Gujranwala is Sialkot and it has flights directly to Malaysia. The students may decide to catch either a ferry or a plane between Malaysia and Singapore. Remember, they do not have to visit the relative on the way home, so they can fly directly from Singapore to Sialkot. Again, this is an activity that could be done in pairs or small groups.

***Skills Book activity 'Sending goods around the world'***

- A-C: The students' responses will depend on their location and the destination they choose.

***Skills Book activity 'Air routes'***

- A. spread out to all major cities of Pakistan in all provinces. Name all major cities and its provinces.



- B. **Punjab:** Air transport has played a significant role in boosting economic growth in Punjab by enhancing trade and investment. The province's busiest airports are Lahore International Airport and Faisalabad International Airport which cater to millions of passengers and cargo annually, thereby providing a vital link between Punjab and the rest of the world.

**Sindh:** Air transport in Sindh has significantly enhanced connectivity among the province's major cities. Karachi, the largest city and commercial center of the country, boasts Jinnah International Airport, the busiest airport in Pakistan that links Karachi to major cities domestically and internationally.

**Balochistan:** Air transport has helped to boost tourism. The province is home to many natural beauty spots, such as the Makran Coast and the Hingol National Park. Air transport makes it easier for tourists to reach these destinations, which has helped to boost the local economy.

In **Khyber Pakhtunkhwa**, air transport has helped to improve connectivity with the rest of the country. The province is home to the country's third busiest airport, Peshawar International Airport. This airport connects Peshawar to all major cities in Pakistan, as well as to some international destinations.

In **Gilgit-Baltistan**, air transport is essential for connecting the region to the rest of the country. The province is home to many remote areas that are difficult to reach by road. Air transport provides a vital lifeline for these areas, and it is essential for the economic development of the region.

- C. The air network density is higher in Sindh and Punjab due to factors like high population density, economic development, and better infrastructure. In contrast, Balochistan and Khyber Pakhtunkhwa have lower air connectivity due to challenges like challenging terrain, low economic development, and security concerns. Addressing these factors can potentially lead to improved air connectivity in less developed regions.

# UNIT 6 Social and Economic development

## Background knowledge for the unit

This unit focuses on the process of development throughout the world. Developing countries like Pakistan are still in the process of development. Among the key features of developed countries are:

- mass industrialisation
- consistent economic growth
- high employment levels
- high life expectancy
- free education
- universal, affordable healthcare

On the other hand, key features of developing countries are:

- reliance on the agriculture sector
- little or no manufacturing industry
- low economic growth
- high unemployment levels
- low literacy rates
- lack of basic healthcare
- low life expectancy

However, it should be noted that the term 'development' has a western bias, affirming positive features of western nations, while not considering positive features of non-western countries. In addition, the world is changing in ways and at a pace not foreseen several decades ago, with economic, political, and social changes causing constant rethinking about the way countries are perceived.

Nevertheless, if one considers development to be closely associated with economic factors, then the economies of the world are not equally developed. Rising up the development 'scale' is not an easy task. There are cultural, economic, and political barriers in the way.

These barriers include:

- lack of local investment
- lack of infrastructure
- lack of technology
- unskilled workforce

- unstable political system
- lack of natural resources

As the above factors are put into place, the economy grows, and prosperity is expected to flow to the wider population through stable employment and higher wages. However, political, and cultural conditions in some countries can inhibit this.

### **Before we proceed**

Before beginning this unit, you should make sure students are familiar with some of the main terms associated with development. For example, the terms GDP and GNP are ways to measure economic activity and growth within a country, so ensure your students can define each of them as below.

- GDP stands for gross domestic product. It measures the value of goods and services produced by a country. However, the overall value is not as important as the value of goods and services in relation to the size of the country's population (known as per capita).
- GNP is the gross national product. It is the GDP plus income earned by residents from their overseas investments, minus the income from non-residents living within the country. Students should also be aware that continents are home to more developing countries than others, particularly Asia, Africa, and South America.

Explore that social and economic development refer to improving the well-being, living standards, and quality of life of individuals and communities within a society. It involves various aspects, including economic growth, poverty reduction, access to education and healthcare, infrastructure development, gender equality, environmental sustainability, and more. Social development focuses on improving social conditions and human capabilities, while economic development emphasises increasing a nation's overall wealth and prosperity. Discuss that learning about and working on social and economic development is essential for several reasons:

- Development efforts aim to enhance the living conditions of people, providing access to basic needs such as clean water, healthcare, education, and housing. This leads to better health, increased life expectancy, and improved well-being.
- Economic development can lift people out of poverty and reduce income inequality by creating jobs, increasing income levels, and providing opportunities for upward mobility.
- Development initiatives can empower marginalised groups and promote social justice by addressing discrimination, ensuring equal access to resources and opportunities, and enhancing political and social participation.
- Learning about sustainable development helps ensure that growth occurs in a way that does not deplete natural resources or harm the environment, enabling current and future generations to thrive.

- Addressing social and economic disparities within and between nations can contribute to global stability by reducing conflict, migration pressures, and disparities leading to social unrest.
- Integrating cultural preservation into development efforts helps maintain and celebrate local traditions, languages, and practices, contributing to the richness of global cultural diversity.
- Economic development fosters innovation, research, and technological advancement, which can lead to improvements in various sectors, from healthcare to communication.
- Social cohesion is strengthened by working on inclusive development that benefits all members of society, reducing divisions and tensions.
- Learning about development encourages collaboration between nations, organisations, and individuals to address shared challenges and promote mutual understanding.
- Balanced social and economic development helps build resilient economies better equipped to weather financial shocks and uncertainties.
- The development emphasises the importance of upholding human rights and promoting dignity for all, ensuring individuals can lead fulfilling lives free from discrimination and oppression.
- Learning about and contributing to development efforts can give individuals a sense of purpose, personal growth, and meaningful career opportunities in international relations, economics, public policy, and social work.

Understanding and working on social and economic development are crucial for creating a more just, equitable, and sustainable world. It involves addressing complex challenges and striving to create societies where all individuals can reach their full potential and enjoy a high quality of life.

### **Expected learning outcomes**

Students should be able to:

- define key terms related to development
- identify which nations are considered developed and which are considered developing
- explain how development is measured
- describe the key characteristics of developed and developing nations
- learn about key economic and human factors of development

<b>Lesson Plan # 1</b>		
<b>Reference pages 91-93</b>		
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• What is meant by development?</li> <li>• How are resources distributed?</li> <li>• Types of resources</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'GDP of different countries'</li> </ul>	
<p><b>Introduction</b></p> <p>Brainstorm about the term “development geography” and explain that it pertains to the living conditions and overall well-being of residents in each area. Development is a process of change that can positively impact people’s lives by enhancing their quality of life. However, this process isn’t always a cause for celebration. Quality of life encompasses an individual or group’s level of health, happiness, and comfort. Economic development is measured by a country’s wealth and how it’s generated, with banking being considered more advanced than agriculture. Meanwhile, human development is gauged by factors such as access to wealth, education, nutrition, jobs, leisure, safety, and cultural and political freedoms. Material aspects like food and wealth are referred to as “standard of living,” while quality of life is often associated with health and leisure.</p>		<p>5-10 min</p>
<p><b>Using the Student’s book</b></p> <p>Ask students to read pages 91-93 and cross link their historical knowledge about why the development map on page 91 shows the north being more developed than the south. Mind map all characteristics that constitute a more economically developed country (MEDC) and a low economically developed country (LEDC).</p>		<p>35-40 min</p>
<p><b>Trade</b></p> <p><b>Climate</b></p> <p>Many of the poorest countries are in the tropics, where it is hot, the land is less fertile, water is scarce, and diseases flourish.</p>	<p><b>Trade</b></p> <p>Goods are traded on a global scale, but it is difficult for poor countries to compete. Some believe the rules of trade are unfair. Rich countries can raise tariff</p>	<p><b>Trade</b></p> <p><b>Discrimination</b></p> <p>Some groups may have less opportunities and this can hold back overall development, eg if women are not educated to the same standard as men.</p>

	barriers to stop cheap imports undercutting their own goods. In the past some countries made money by colonising other countries and using their raw materials to produce manufactured goods.		
<b>Natural resources</b> Some raw materials are valuable and can help a country develop if they have the resources to collect and process them, eg oil, diamonds, forests and gold	<b>Corruption/poor management</b> Countries need strong, stable, and honest leaders to help them develop.	<b>Population</b> Overpopulation occurs where population growth outstrips resources.	
<b>Location</b> Being near trade routes and having access to the sea, eg ports have been important for trade. Landlocked countries are at a disadvantage.	<b>War</b> Wars use up resources and make it difficult to produce goods and trade.	<b>Natural hazards</b> Some places are vulnerable to natural disasters, eg Haiti is located in an area prone to earthquakes and hurricanes.	
<p>Explain that today, your class will be learning about three types of resources, or supplies of things, that our community relies on to function: human, capital, and natural. Gauge your students' prior knowledge by asking whether anyone can define these types of resources for you. After some discussion, define human resources as the people who grow, make, and sell a product or service to their community.</p>			

<p>Give your class a few examples of human resources, such as: teachers, doctors, farmers, and factory workers. Write this definition and draw some examples on the board. Ask your class to think about these examples, using prompting questions like: What do these people provide? Which makes physical things? Which provides services? How do you know? Tell students that capital resources are goods that are made and used to make other things. Give your class some examples of capital resources, such as: tools, machines, and equipment. Write the definition and draw some examples on the board. Finally, define natural resources as raw materials that are provided by nature and used to create goods. List some examples of natural resources, such as: trees, water, sunlight, and plants. Write the definition and draw some examples on the board.</p>	
<p><b>Homework</b> Students can answer Skills Book activity 'Group Discussion' independently.</p>	
<p><b>Discussion and review</b> Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned about development and its role in human evolution.</li> <li>✓ I learned to differentiate between capital, human, and natural resources.</li> <li>✓ I learned about the role of capital, human and natural resources in a healthy society.</li> </ul>	

<b>Lesson Plan # 2</b>	
<b>Reference pages 93-96</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Role of OECD</li> <li>• Factors of development</li> <li>• Economic development factors (EDI)</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Skills Book activity 'What is meant by development'</li> <li>• Skills Book activity 'factors for development'</li> </ul>
<p><b>Introduction</b></p> <p>The Organisation for Economic Co-operation and Development (OECD) is a vital force in promoting economic growth, social well-being, and international cooperation among its 38 member countries from various regions worldwide. Established in 1961, the OECD conducts in-depth economic research and analysis, offering its members valuable data and recommendations to address economic challenges and sustain growth. It facilitates policy coordination among its members, sets international standards, collects and shares economic and social data, promotes best practices through peer reviews, collaborates with non-member countries and international organisations, provides policy insights on education and skills development, encourages innovation and technology use, combats tax evasion and harmful tax practices, and promotes sustainable development. Although the OECD's role is not legally binding, its reports, guidelines, and recommendations carry significant weight in shaping national policies among its members. By fostering cooperation and evidence-based policy making, the OECD contributes to improving economic and social conditions not only within its member countries but also beyond. Introduce EDI s a composite indicator that measures a country's economic progress and quality of life. Factors included are GDP per capita, life expectancy, literacy rate, infant mortality rate, access to basic services, income inequality, employment rate, and sometimes the Human Development Index (HDI). The Economic Development Index (EDI) has been criticised for oversimplifying complex realities, unreliable data collection, subjective weighting, lack of environmental sustainability considerations, and cultural context neglect. Additionally, the EDI needs constant updates due to changing indicators' relevance and importance over time.</p>	<p>5-10 min</p>



<p><b>Using the Student's book</b></p> <p>Read page 93 about measuring development and explain that it is quite complex to measure development. An international organisation called the Organisation for Economic Cooperation and Development (OECD) takes into account the various factors that affect development and provides support to these countries.</p> <p>Organise a debate among your students – three on each team. The others can act as adjudicators and vote on which team provided the most persuasive arguments.</p> <ol style="list-style-type: none"> <li>1. The topic is: 'Developed countries should provide assistance to developing countries'.</li> <li>2. The affirmative team could raise arguments such as: <ul style="list-style-type: none"> <li>• Developed countries have enough money to help others.</li> <li>• Developed countries use cheap labour from developing countries and therefore have a duty to help them.</li> <li>• If developing countries become more prosperous, they will want to purchase more goods and services from developed countries, thereby helping the economies of the developed countries even more.</li> </ul> </li> <li>3. The negative team could raise arguments such as: <ul style="list-style-type: none"> <li>• Developed countries have their own internal problems that are a higher priority.</li> <li>• Developing nations may be in the position they are because of bad decisions and waste – therefore it's their own fault.</li> <li>• Developed countries benefit from low labour costs in developing nations so why would they want to lose this opportunity by helping the economies of developing nations.</li> </ul> </li> </ol> <p>Introduce the economic factors of development. Read page 95 and elicit responses about the meaning of wealth inequality. Explain that if there is a wide gap in the wealth status between the citizens of a country, it means that some people have access to all utilities and necessities of life, while most of them are deprived of them . Encourage them to talk about this topic in class They can share their views about the disparity they might have noticed in their own society.</p>	<p>35-40 min</p>
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<p>Explain that inflation, or an increase in the price of everyday items, can reduce the purchasing power of the citizens. For example, if the price of an item is Rs 1000, 5% inflation would increase its price to Rs 1050. If a great number of people in a country are unemployed, it reflects an insufficient employment sector where jobs cannot be created. Unemployed people become a burden on a country's economy.</p> <p>Elicit the types of industries the students know about. They may name agriculture, manufacturing, textiles, banking, etc. Explain that countries like Pakistan, whose economies are based on agriculture, are not as developed as countries like the United States, which has large manufacturing and service-based industries</p>	
<p><b>Homework</b></p> <p>Students can Answer question B and Skills Book activities 'What is meant by development' and 'Factors for development'.</p>	
<p><b>Discussion and review</b></p> <p>Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:</p> <ul style="list-style-type: none"> <li>✓ I learned the role OECD in distributing benefits of economic development across the world.</li> <li>✓ I learned about the role of OECD in exploiting weaker economies.</li> <li>✓ I learned about the economic factors that influence development</li> </ul>	

<b>Lesson Plan # 3</b>	
<b>Reference pages 96-98</b>	
<p><b>Topics</b></p> <ul style="list-style-type: none"> <li>Human development indicators (HDI)</li> </ul>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>Skills Book activity 'Literacy rate'</li> <li>Skills Book activity 'Poverty Index'</li> <li>Skills Book activity 'Social Welfare'</li> </ul>
<p><b>Introduction</b></p> <p>The Human Development Index (HDI) is a measure of a country's overall development, considering three dimensions: life expectancy, education, and standard of living. These dimensions are given weights based on their importance to human development, with life expectancy having the highest weight. The HDI was created by economist Mahbub ul Haq to provide a more comprehensive measure of development than just economic growth.</p> <p>While the HDI is useful for ranking countries into four tiers of development, discuss the limitations to the index. Help students explore that HDI is based on averages and may mask disparities within countries. Additionally, it does not consider environmental sustainability, which could have negative consequences for future generations.</p> <p>Despite these limitations, the HDI is published annually by the United Nations Development Programme and is ranked on a scale of 0 to 1, with Norway currently holding the highest score of 0.957 and Niger the lowest at 0.353. The HDI has been criticised for its focus on economic growth and lack of consideration for other important dimensions of development, such as gender equality. However, it remains a valuable tool for identifying countries that are making progress and those that need improvement.</p>	<p>5-10 min</p>
<p><b>Using the Student's book</b></p> <p>Ask students to read pages 96-98 and engage them in a discussion about the importance of factors such as healthcare, education, life expectancy, and access to basic facilities in assessing human development. Provide an overview of the selected indicators: healthcare, education, life expectancy, infant mortality rate, access to basic facilities, access to technology, and government spending. Sharing some data from World Bank, refer to comparative statistics or maps to explain all headings. Discuss that the Human Development Index (HDI) is a measurement that aims to provide a more complete evaluation of human well-being and development beyond economic factors like</p>	<p>35-40 min</p>

GDP. It considers various aspects of human development, such as healthcare, education, and standard of living. Indicators such as healthcare, education, standard of living, access to basic facilities, access to technology, and government spending are included in the HDI for the following reasons:

Healthcare (Life Expectancy, Infant Mortality Rate reflects a population's overall health and well-being. Countries with better access to healthcare services, sanitation, and nutrition generally have lower infant mortality rates and longer life expectancies, contributing to higher human development. Education (Education Index) considers indicators like mean years of schooling and expected years of teaching. Education enhances people's capabilities, empowers them to make informed choices, and contributes to overall development.

Gross National Income (GNI) per capita measures the average income of a country's citizens. While economic growth is not the sole determinant of development, income provides access to basic needs and resources that contribute to a decent standard of living. Access to basic facilities, such as clean water, sanitation, and electricity, is essential for health, well-being, and overall human development. Lack of access to these facilities can hinder progress in other areas of development. In today's interconnected world, access to technology can significantly impact human development. Technology can improve education, healthcare delivery, communication, and access to information, helping people lead more fulfilling lives. Effective government spending can contribute to improved human development outcomes. While not explicitly included as an indicator, government spending indirectly influences human development through policies that affect healthcare, education, social services, and infrastructure

**Homework**

Students can Answer question B and Skills Book activities 'What is meant by development' and 'Factors for development'.

Students can answer Skills Book activities 'Literacy rate', 'Poverty Index', and 'Social Welfare' by themselves.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned why is development measures in terms of human welfare indicators
- ✓ I learned about the limitations of HDI.

<b>Lesson Plan # 4</b>	
<b>Reference pages 98-100</b>	
<b>Topics</b> <ul style="list-style-type: none"> <li>• Case study: Australia-a developed country</li> <li>• Case study: Pakistan-a developing country.</li> </ul>	<b>Resources</b> <ul style="list-style-type: none"> <li>• Skills Book activity 'Unemployment: an important human indicator'</li> <li>• Skills Book activity 'Comparison of human indicators for measuring development'</li> </ul>
<b>Introduction</b> <p>Brainstorm what have students gathered about the terms "developed" and "developing" countries which are used to classify a country's level of economic development and social well-being. Reestablish that developed countries have high levels of income, industrialisation, and technological advancement, which results in better standards of living, education, and healthcare. In contrast, developing countries are still in the process of economic development, which results in lower levels of income, industrialisation, and technological advancement, and consequently lower standards of living, education, and healthcare.</p>	5-10 min
<b>Using the Student's book</b> <p>Development can best be studied when two case studies are compared and analysed. Read page 98 and explain that developed countries like Australia provide the necessities of life to its citizens, including free education and healthcare. People from other countries migrate to Australia and other developed countries for a better quality of life.</p> <p>Read the case study of Pakistan on page 99-100. Also study the comparison graph on page 97 and discuss why it is important to have adequate numbers of doctors for a country. People living in far-off places must travel to urban areas to receive medical treatment. There are two case studies in this section of the Student's Book: Pakistan and Australia. They contain information about economic and non-economic indicators of development</p>	35-40 min

As an activity, students can choose another country, developed or developing, and research and write a similar case study. Their responses will obviously depend on the countries they choose. To display the case studies, paste a map of the world onto a large piece of cardboard and display the case studies around the map, drawing arrows from each country to its case studies. You can sum up the lesson by giving the students these statistics for a neighbouring country of Pakistan. Share the following indicators:

- Annual GDP and GNP and per person division of it.
- Total figure rank of the country of all the countries in the world.
- Name the sector that provides the highest amount towards the GDP.
- Status of its wealth disparity through examples about consumption, etc.
- HDI about women employment and empowerment measures, infant mortality, poverty index, literacy, research, etc.
- Annual inflation rate compared to Pakistan and Australia.
- Unemployment rate compared to Pakistan and Australia.
- Percentage of GDP spent on healthcare (refer to World Bank data)

**Homework**

Ask students to complete Questions A, E, and F. Ask the students to complete Skills Book activities 'Unemployment: an important human indicator' and 'Comparison of human indicators for measuring development'.

**Discussion and review**

Ask the students what they have learnt in this lesson. They could make a note of this, summarising the lesson, for example:

- ✓ I learned about the economic and human factors of development in Australia, a developed country.
- ✓ I learned about the factors based on which Pakistan is a developing country.

## Answer to Assessments

### A. Choose the correct answer:

- |               |              |              |
|---------------|--------------|--------------|
| i. Developing | iv. Paris    | vii. GNP     |
| ii. Land      | v. Resources | viii. Gender |
| iii. Capital  | vi. GDP      |              |

- B
1. Inflation is the measure of the increase in the prices of goods and services.
  2. Response should include the following: to promote policies that will improve the economic and social well-being of people around the world; to measure the economic state of countries, and to provide advice on how governments can improve their rates of development.
  3. The key considerations are:
    - the population's access to medical care (including number of patients per doctor);
    - the quality of available healthcare;
    - the cost of available healthcare;
    - the rate of spread of diseases
- C
1. Response should include: keeps the population in touch with each other and with the latest news; enables companies to produce goods and services more efficiently.
  2. Response should include: developed nations tend to have more service industries, while the less-developed nations are more reliant on agriculture. In developed countries, manufacturing and agricultural industries have access to technology that makes it more efficient to produce goods.
  3. For comparison, students' responses should include some or all of the key points.

#### Developed countries:

- mass industrialisation
- consistent economic growth
- high employment levels
- high life expectancy
- free education
- universal, affordable health care

#### Developing countries:

- reliance on agriculture sector
- little or no manufacturing industry
- low economic growth
- high unemployment levels
- low literacy rates

- lack of basic healthcare
- low life expectancy

D 1. Responses will differ according to each student's opinion of what is important.  
a) (Note: Values might vary with each passing year.)

Country GDP

Australia US\$1340 billion

Indonesia US\$862 billion

Italy US\$1815 billion

Canada US\$1550 billion

- b) i) GDP: the gross domestic product measures the value of goods and services produced by a country.  
ii) GNP: the gross national product is the GDP plus income earned by residents from their overseas investments, minus the income from non-residents living within the country.  
iii) OECD: The Organisation for Economic Cooperation and Development measures the economic state of countries and provides advice on how governments can improve their rates of development.  
iv) ODA: Official Development Assistance is money that helps with the development and welfare of developing countries.  
v) per capita: for each person

2. Response should include: unemployed people are less likely to be able to buy basic goods and services, which reduces the amount of revenue and profits companies can earn; governments may have to provide welfare payments to the unemployed. Also mention that unemployed people can offer great human resource potential, which is wasted due to lack of job opportunities.

E 1. Response should be like the following: the greater the level of education, the more likely the population will be to engage in higher pay, higher value work; greater education leads to innovation that can boost both industry and government; low education levels lead to higher unemployment and a less skilled workforce.

2. The manufacturing and industrial sectors are important because they provide job opportunities for many people. The country can export products manufactured by its industries and thus earn money.

F 1. For responses, see notes in activity titled 'Debate' on page X of this book.

2. Responses will depend on the countries selected by the students and their research.

3. Responses will depend on the countries selected by the students and their research.

4. Technology plays an increasingly important role in education, industry, healthcare, transport, and broadcasting or telecasting information. It is measured by the percentage of people with access to telephones, television, the Internet, and other



telecommunication tools. Infrastructure like electricity, fuel, building materials, roads, educational facilities and technological (computers, mobiles, tools, machinery) access derives businesses.

### Answer to Skills Book Activities

#### *Skills Book Activity 'GDP of different countries'*

A. The students' graph should look like the one at the bottom of this page.

#### *Skills Book Activity 'Unemployment: an important human indicator'*

A 1.

- i) a: 3% (Hong Kong)  
b: Hong Kong is considered a developed economy, though it is now part of China, which is a developing nation.
- ii) a: 3.7% (Norway)  
b: Developed
- iii) a: 3.5% (Japan)  
b: Developed
- iv) a: 6.5% (Denmark)  
b: Developed
- v) a: 6.8% (Brazil)  
b: Developing
- vi) a: 13% (Egyptian)  
b: Developing
- vii) a: 16% (Albania)  
b: Developing
- viii) a: 16%.5 (Iraq)  
b: Developing
- ix) a: 26% (Lesotho)  
b: Developed

#### *Skills Book Activity 'Comparison of human indicators for measuring development'*

- A 1 a) i) India  
ii) China  
iii) Nigeria  
iv) Indonesia/Pakistan

- b) Students should draw a line graph based on the statistics obtained from the Internet.

*Skills Book Activity 'Group discussion'*

A 1

Q. What does GDP stand for and what does it measure?

A. GDP stands for gross domestic product. It measures the value of goods and services produced by a country.

Q. What is Pakistan's per capita GDP?

A. Approximately US\$1150

Q. What does OECD stand for?

A. Organization for Economic Co-operation and Development

Q. Which sector of industry plays a major role in the development of a country?

A. Economic sector plays a major role in the development of a country.

*Skills Book Activity 'What is meant by development?'*

A 1 and 2. Answers will vary.

*Skills Book Activity 'Literacy rate'*

A 1. USA and China: developed country Pakistan, Egypt, Bangladesh, India: developing country

2. Answers may vary. A higher literacy rate means more skilled workers, increased productivity, technological advancement, entrepreneurship, higher income and employment, reduced poverty, improved healthcare, social and political stability, and human capital development. Education and literacy are crucial for creating a skilled and informed population that can drive economic progress.

*Skills Book Activity 'Factors for development'*

A. Answers may vary.

B. Conflict: Conflict leads to disruptions in economic activities, damage to infrastructure, and loss of life. It hinders economic growth and human development and can trap countries in a cycle of destruction.

**Corruption:** Corruption weakens institutions and reduces public trust in governance, diverting funds from public services to benefit a select few. This promotes inequality and restricts investment in vital areas like education, healthcare, and infrastructure. Lack of transparency and accountability in governance also hinders economic progress.

**Cash crops:** Exporting cash crops can lead to problems such as unstable prices, limited diversification, and environmental decay.

**Colonialism:** Historical colonialism has long-lasting effects on countries. It leads to underdevelopment and dependency, disrupts local cultures and institutions, and neglects infrastructure development, hindering economic growth.

**Climate change:** Climate change hits poorer countries harder, disrupting agriculture and causing food insecurity. Natural disasters are more damaging to their infrastructure and livelihoods. Climate change also worsens health challenges.

*Skills Book Activity 'Poverty Index'*

- A. Relative poverty relates to what a particular society considers to be poor. For example, someone in Pakistan might be relatively poor if they live on less than the average Pakistan income. Absolute poverty is when someone does not have access to basic human needs such as water, clothing, education, and shelter. The examples will vary.
- B. Answers may vary.
- C 1. People living in poorer countries: Education, skill development, entrepreneurship, community projects, savings groups, and microfinance services can help individuals in poor countries reduce poverty by improving employability, income-earning potential, job creation, access to essential services, financial management, and asset building.

**Governments in richer countries:** Wealthy governments can reduce poverty in developing countries by providing financial aid, trade policies, debt relief, and technology transfer to support local industries and innovations.

**NGOs:** NGOs can reduce poverty through education, healthcare, microfinance, and community development initiatives. They can also advocate for policy changes and promote sustainable development practices.

**Technology:** Access to technology can reduce poverty. This can be done by providing education, job opportunities, market prices, modern agriculture, telemedicine, and digital financial services.

- D. It can help to create jobs, generate income, transfer technology, promote exports, and create linkages with other sectors. As a result, it can play a significant role in reducing poverty.

*Skills Book Activity 'Social Welfare'*

Answers may vary.

Chapter 1: Oceans and seas				
Lesson Plan no	Subtopics	Reference pages	Learning Outcomes	Suggested Activities
1.1	<ul style="list-style-type: none"> <li>Oceans, seas, and more</li> <li>Oceans</li> <li>Seas</li> </ul>	1-5	<ul style="list-style-type: none"> <li>Differentiate between seas and oceans.</li> <li>Explain the importance of oceans in our lives.</li> <li>Describe the location, total area, and marine biodiversity of major oceans of the world.</li> </ul>	<ul style="list-style-type: none"> <li>Divide the class into pairs or small groups and provide them with information about specific oceans and seas. Have students create Venn diagrams or comparison charts highlighting the differences between oceans and seas.</li> </ul>
1.2	<ul style="list-style-type: none"> <li>Oceanic features</li> </ul>	5-7	<ul style="list-style-type: none"> <li>Describe and differentiate between different sea features such as island, peninsula, isthmus, gulf, bay, strait.</li> </ul>	<ul style="list-style-type: none"> <li>Use Google Earth or online interactive maps to explore and identify oceanic features like mid-ocean ridges and deep-sea trenches. Have students discuss the processes that create these features</li> </ul>
1.3	<ul style="list-style-type: none"> <li>Structure of the ocean floor</li> </ul>	7-8	<ul style="list-style-type: none"> <li>Identify and label major oceanic features such as ridges, trenches, seamounts, and abyssal plains on a map or diagram of the ocean floor.</li> </ul>	<ul style="list-style-type: none"> <li>Provide students with playdough or clay and have them create a model of the ocean floor, incorporating features like continental shelves, abyssal plains, and mid-ocean ridges.</li> </ul>
1.4	<ul style="list-style-type: none"> <li>Movement of the ocean</li> <li>Life in the ocean</li> <li>Oceanic zones</li> </ul>	9-11	<ul style="list-style-type: none"> <li>Explain the movements of oceans and the role of ocean currents in it.</li> <li>Identify the role of marine biodiversity in our environment.</li> </ul>	<ul style="list-style-type: none"> <li>Set up a hands-on experiment with water, food colouring, and temperature differences to demonstrate how ocean currents form due to differences in temperature and salinity.</li> </ul>

1.5	<ul style="list-style-type: none"> <li>Resources of the ocean</li> <li>Threats to the ocean</li> <li>Sustainable management of the oceans</li> </ul>	12-16	<ul style="list-style-type: none"> <li>Identify ways in which oceans act as a source of food for the world.</li> <li>List down all possible threats the oceans are facing nowadays.</li> </ul>	<ul style="list-style-type: none"> <li>Divide the class into teams representing different stakeholders (fishermen, conservationists, industries) and hold a debate on how ocean resources should be managed sustainably.</li> </ul>
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Chapter 2: Living with the climate.				
Lesson Plan no	Subtopics	Reference pages	Learning Outcomes	Suggested Activities
2.1	<ul style="list-style-type: none"> <li>Climate</li> <li>Extreme weather</li> <li>World climatic zones</li> </ul>	19-21	<ul style="list-style-type: none"> <li>Investigate some examples of the extreme weather on the Earth and its reasons.</li> <li>Explain the relationship between extreme weather and climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Assign students different extreme weather events (hurricanes, droughts, blizzards) and have them create mock news reports detailing the causes, impacts, and safety measures associated with each event.</li> </ul>
2.2	<ul style="list-style-type: none"> <li>Climatic regions of Pakistan</li> <li>Contrasting climate</li> </ul>	22-24	<ul style="list-style-type: none"> <li>Differentiate the climatic patterns of a national and an international city.</li> <li>Compare and contrast the lifestyle of people living in Polar Regions with those living in tropical regions.</li> <li>Describe ways in which the climate of coastal areas and river plains affect the lifestyles of people living there.</li> </ul>	<ul style="list-style-type: none"> <li>Divide students into groups and assign each group a specific climatic region of Pakistan (e.g., coastal, mountainous, desert). Have them research and create presentations detailing the characteristics, climate patterns, and challenges of their assigned region.</li> </ul>
2.3	<ul style="list-style-type: none"> <li>Global warming</li> <li>Causes of climate change</li> <li>Impact of pollution on climate</li> </ul>	25-27	<ul style="list-style-type: none"> <li>Discuss the main threats of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Organize a roundtable discussion where each student is assigned a specific cause of climate change (e.g., deforestation, greenhouse gas emissions). Students discuss their assigned causes, their contributions to climate change, and brainstorm potential solutions.</li> </ul>

2.4	<ul style="list-style-type: none"> <li>• Impact of climate change</li> <li>• Impact of climate change on Pakistan</li> </ul>	27-30	<ul style="list-style-type: none"> <li>• Identify ways in which climate change affects life in general.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students role-play as stakeholders such as scientists, policymakers, activists, and citizens. Each role discusses their perspectives on climate change and proposes strategies for mitigation and adaptation.</li> </ul>
2.5	<ul style="list-style-type: none"> <li>• Sustainable climate action</li> </ul>	30-32	<ul style="list-style-type: none"> <li>• Recall the main causes of climate change.</li> <li>• Identify the consequences of global warming.</li> <li>• Explore ways of preventing global warming.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign students to analyze news articles related to climate change. They can identify key issues, sources of information, and biases in media coverage.</li> <li>• Ask students to work in teams and create comprehensive climate action plans for their school or local community. Plans can include strategies for reducing carbon footprint, promoting renewable energy, and raising awareness.</li> </ul>

Chapter 3: Environmental Pollution				
Lesson Plan no	Subtopics	Reference pages	Learning Outcomes	Suggested Activities
3.1	<ul style="list-style-type: none"> <li>Environmental pollution</li> <li>Air pollution</li> </ul>	35-36	<ul style="list-style-type: none"> <li>Describe the harmful effects of water, land, air, noise, and light pollution on our environment.</li> <li>Describe the effects of greenhouse gases on our planet and relate them to global warming.</li> </ul>	<ul style="list-style-type: none"> <li>Assign students different types of pollution (air, water, land, noise, etc.). Have them research the sources, causes, and consequences of their assigned pollution type, and present their findings to the class.</li> </ul>
3.2	<ul style="list-style-type: none"> <li>Water pollution</li> </ul>	37-39	<ul style="list-style-type: none"> <li>Compare and contrast the connections between different types of pollution and suggest ways to reduce them.</li> <li>Suggest ways to reduce different types of pollution.</li> </ul>	<ul style="list-style-type: none"> <li>Arrange a field trip to a local water body. Provide water quality testing kits and have students conduct tests for pH, dissolved oxygen, and pollutants. Analyze the results and discuss potential implications.</li> </ul>
3.3	<ul style="list-style-type: none"> <li>Land pollution</li> </ul>	39-41	<ul style="list-style-type: none"> <li>Compare and contrast the connections between different types of pollution and suggest ways to reduce them.</li> <li>Suggest ways to reduce different types of pollution.</li> </ul>	<ul style="list-style-type: none"> <li>Provide students with real-world pollution data (air quality index, water pollutant levels). Ask them to analyze the data trends, identify areas of concern, and propose strategies for improvement.</li> </ul>



3.4	<ul style="list-style-type: none"> <li>• Other forms of pollution</li> <li>• Light pollution</li> <li>• Noise pollution</li> </ul>	41-43	<ul style="list-style-type: none"> <li>• Explore the short-term and long-term effects of global warming on our planet and suggest measures to reduce them.</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct a survey within the school or local community to assess the levels of light and noise pollution. Students compile the survey results and create informative visual presentations.</li> </ul>
3.5	<ul style="list-style-type: none"> <li>• Impact of pollution on climate change</li> <li>• Sustainable waste management</li> <li>• Steps taken by Pakistan</li> </ul>	43-46	<ul style="list-style-type: none"> <li>• Explain the link between pollution and climate change.</li> <li>• Suggest ways to prevent the further thinning of the ozone layer.</li> <li>• Classify the health consequences of air and water pollution on the biodiversity on the Earth.</li> <li>• Explore alternative energy sources that can help reduce pollution.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign students to research and present case studies of historical pollution-related disasters (e.g., industrial accidents, oil spills) and their lasting impacts on the environment and communities.</li> </ul>

Chapter 4: Industrial and International Trade				
Lesson Plan no	Subtopics	Reference pages	Learning Outcomes	Suggested Activities
4.1	<ul style="list-style-type: none"> <li>• What is industrialisation?</li> <li>• Economic globalisation</li> </ul>	49-51	<ul style="list-style-type: none"> <li>• Identify the main industries of Pakistan.</li> <li>• Indicate links between industrialisation, immigration, and urbanisation.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with excerpts from historical texts, speeches, or diaries related to evolution of industrialization. They can analyse these primary sources to gain insights into the perspectives of people during that time.</li> <li>• Divide students into groups, assigning each group a different region of the world. Have them research how industrialization affected economies, societies, and cultures on a global scale.</li> </ul>
4.2	<ul style="list-style-type: none"> <li>• Service industries</li> <li>• Industrial regions of Pakistan</li> <li>• Industries in other countries of the world</li> </ul>	51-54	<ul style="list-style-type: none"> <li>• Highlight the important industrial products of Pakistan.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign groups of students different case studies of successful global service industries (e.g., Silicon Valley's tech sector, medical tourism in Thailand). Have them analyse factors contributing to their success and present their findings.</li> </ul>
4.3	<ul style="list-style-type: none"> <li>• The textile industry in Pakistan</li> </ul>	54-56	<ul style="list-style-type: none"> <li>• Explore the development of the textile industry of Pakistan with its four stages.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign each group of students a specific industry in Pakistan (e.g., textile, agriculture, manufacturing). Have them research and present the challenges faced by that industry, including factors like regulations, infrastructure, and competition.</li> </ul>
4.4	<ul style="list-style-type: none"> <li>• Cottage industry</li> <li>• Impact of industrialisation</li> <li>• Industrialisation and Pakistan's economy</li> </ul>	57-59	<ul style="list-style-type: none"> <li>• Suggest some ways Pakistan can adopt to compete with its international trade counterparts.</li> <li>• Describe the significant role of the cottage industry in the lives of the people of Pakistan.</li> </ul>	<ul style="list-style-type: none"> <li>• Divide students into groups, each focusing on a different aspect of cottage industry (e.g., production, marketing, raw materials). They can collaboratively create a map showing how these aspects interact in a local economy.</li> <li>• Assign groups of students different case studies of countries that experienced significant industrialization (e.g., China, Germany). They analyse economic growth, environmental changes, and the strategies employed.</li> </ul>

4.5	<ul style="list-style-type: none"> <li>• Sustainable industrialisation</li> <li>• What is international trade?</li> <li>• Exports and imports of Pakistan</li> </ul>	60-65	<ul style="list-style-type: none"> <li>• Justify how Pakistan can succeed in industrial development if import needs are reduced.</li> <li>• Explain how bilateral trade between Pakistan and China can contribute to sound economic development for both countries.</li> <li>• Explain the importance for a country to establish regulations for carrying import and export smoothly.</li> <li>• Enlist the top four export and import goods of Pakistan.</li> <li>• Suggest ways which can help Pakistan to earn more revenue from export.</li> <li>• Suggest ways to reduce the imports of Pakistan.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign student groups different countries. They research and rank these countries based on their efforts and policies towards sustainable industrialization. Then, they discuss and compare their findings.</li> <li>• Assign each group a specific product (e.g., electronics, agricultural goods) and have them research the global trade dynamics, showcasing the significance of international trade in sustaining economies.</li> </ul>
4.6	<ul style="list-style-type: none"> <li>• International trade organisations</li> <li>• Trade agreements with individual countries</li> </ul>	65-68	<ul style="list-style-type: none"> <li>• Explore how development in science and technology can help to develop the industrial boom in Pakistan.</li> </ul>	<ul style="list-style-type: none"> <li>• Students form groups, each representing a different country. They showcase their country's industries, products, and trade agreements in a simulated international trade fair.</li> </ul>

<p>4.7</p>	<ul style="list-style-type: none"> <li>• Balance of payments</li> <li>• Importance of international trade</li> <li>• Sustainable trade practices</li> </ul>	<p>69-71</p>	<ul style="list-style-type: none"> <li>• Justify how economic stability can help a nation to encounter different foreign challenges.</li> </ul>	<ul style="list-style-type: none"> <li>• Students participate in a simulation where they take on roles of policymakers and economists. They make decisions to improve their country's balance of payments while considering various trade scenarios.</li> <li>• Assign groups of students case studies of companies engaged in sustainable trade practices. They compare the approaches taken and discuss the challenges and benefits.</li> </ul>
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Chapter 5: Transport and its importance				
Lesson Plan no	Subtopics	Reference pages	Learning Outcomes	Suggested Activities
5.1	<ul style="list-style-type: none"> <li>Transporting people and goods around the world</li> <li>Brief history of transport</li> </ul>	75-78	<ul style="list-style-type: none"> <li>Identify different forms of modern transportation and their characteristics.</li> <li>Explain some of the reasons for the development of transport systems in urban and rural areas.</li> <li>Explain the importance of the transport system in the development of economic activity.</li> </ul>	<ul style="list-style-type: none"> <li>Assign student groups different eras (e.g., ancient, medieval, industrial revolution). They research and create a timeline highlighting key transportation innovations and their impact on the global and regional economy.</li> </ul>
5.2	<ul style="list-style-type: none"> <li>Transport and information technology</li> <li>Postal services</li> <li>Telecommunication</li> </ul>	78-80	<ul style="list-style-type: none"> <li>Outline the role of the transportation system in internal and international trade.</li> <li>Explain the dependence of international trade on an effective transport system.</li> </ul>	<ul style="list-style-type: none"> <li>Divide students into groups and assign them different products. They research and map out the global supply chain of these products, highlighting the role of transportation and information technology.</li> </ul>
5.3	<ul style="list-style-type: none"> <li>Transport in and around Pakistan</li> <li>Major international routes of Pakistan</li> </ul>	80-85	<ul style="list-style-type: none"> <li>Identify major modes of transportation and trade routes in Pakistan.</li> </ul>	<ul style="list-style-type: none"> <li>Divide students into groups, each assigned a specific mode of transport (e.g., road, rail, air, sea). They can analyse the strengths and weaknesses of that mode in Pakistan's context.</li> </ul>

5.4	<ul style="list-style-type: none"> <li>• Transport and industry</li> <li>• Strength and weaknesses of transport in Pakistan</li> </ul>	85-88	<ul style="list-style-type: none"> <li>• List some of the major exports and imports transported through CPEC, silk route, Chaman, Turkham, Port Qasim, Karachi Port, and Gwadar Port.</li> <li>• Explain some of the strengths and weaknesses of the transport infrastructure in Pakistan.</li> </ul>		<ul style="list-style-type: none"> <li>• Students collaborate in groups to propose solutions for addressing specific transportation challenges in Pakistan (e.g., congestion, infrastructure gaps) and present them to the class.</li> </ul>
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Chapter 5: Transport and its importance				
Lesson Plan no	Subtopics	Reference pages	Learning Outcomes	Suggested Activities
6.1	<ul style="list-style-type: none"> <li>• What is meant by development?</li> <li>• How are resources distributed?</li> <li>• Types of resources</li> </ul>	91-93	<ul style="list-style-type: none"> <li>• Describe that development includes the social and economic welfare of the people of a region.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign each group a post-colonial country. They can analyse its development journey, considering factors like political stability, economic growth, and social progress.</li> </ul>
6.2	<ul style="list-style-type: none"> <li>• Role of OECD</li> <li>• Factors of development</li> <li>• Economic development factors (EDI)</li> </ul>	93-96	<ul style="list-style-type: none"> <li>• Identify the role of the Organisation for Economic Cooperation and Development (OECD) to support development in developing countries.</li> <li>• Investigate the key economic indicators of development and their importance.</li> <li>• Evaluate the impacts of technology on the development of a country.</li> <li>• Explain the role of inflation and unemployment in the development of a country.</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse and evaluate the impact of economic development indicators on the overall well-being of a country's citizens, taking into consideration various social, cultural, and environmental factors.</li> </ul>
6.3	<ul style="list-style-type: none"> <li>• Human development indicators (HDI)</li> </ul>	96-98	<ul style="list-style-type: none"> <li>• Explore the importance of health care in the development of the country.</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse and evaluate the importance of investing time and national resources in improving human development indicators for the overall well-being of a country's citizens, considering various social, cultural, and environmental factors.</li> </ul>

6.4	<ul style="list-style-type: none"> <li>Case study: Australia-a developed country</li> <li>Case study: Pakistan-a developing country.</li> </ul>	98-100	<ul style="list-style-type: none"> <li>Evaluate the current position of Pakistan at EDI and HDI indicators.</li> <li>Enlist a few human indicators that are important for the development of the country.</li> </ul>	
			<ul style="list-style-type: none"> <li>Compare and contrast the Economic Development Indicators (EDI) from Human Development Indicators (HDI) of a country.</li> </ul>	<ul style="list-style-type: none"> <li>Ask students to create presentations comparing Australia and Pakistan’s EDI and HDI rankings. They can discuss disparities, challenges, and potential strategies for improvement.</li> </ul>



Geography Skills Checklist						
Skills overview	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Use, interpret information, and complete missing details on physical maps						
Use and interpret Atlas maps						
Use and interpret climate maps						
Use and interpret ground, satellite, aerial, topographic photos						
Label and annotate maps						
Make and complete a bar chart						
Male and complete a line graph						
Make and complete a pie chart						
Use, interpret, and draw climate graphs						
Understand and use numerical data						
Use appropriate statistical measures (range, mean, etc.) in explanations and analysis						
Collect and interpret fieldwork data						
Use written and digital sources						
Write descriptively						
Make analysis (finding limitations and possibilities in policies, measures, and suggestions; supporting views with reasoning and evidence to explain choices, etc.)						
Draw conclusions						
Analyse sustainability or feasibility of options						
Spatial awareness and understanding						
Problem solving						
Interdisciplinary links						
Habitat mapping to identify ecological links						
Global perspective						
Environmental ethics, advocacy, and engagement						

