

O'LEVEL PAKISTAN STUDIES 2059/2 (GEOGRAPHY)

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For the
welfare of
students

Foreword

Greetings!

This book is written according to the Cambridge O'Level Syllabus for examination from 2022-2024. Use of this book after that period is not recommended unless syllabus remains the same. It is intended to make Pakistan Studies' Paper II easier for students as it was observed that best resource available is the book 'Environment of Pakistan' by Huma Naz but even that book was designed according to 2015 syllabus and therefore, many things enunciated in syllabus are missing therein. So in order to make this book, comprehensive review and precise, it contains several resources from various sources, including Huma's book along with authors' own analysis and knowledge, as the sole purpose is to gather the relative information. This book first states the content points and then provides the information required. Authors have down their utter most to make this source helpful but if you still have any questions related to any content points, you can reach out to us on phone and social media; contact information is available below and also on our website. It'll be our pleasure to assist you in way possible.

If this book helped you authors and distributers deserve your prayers.

Regards,

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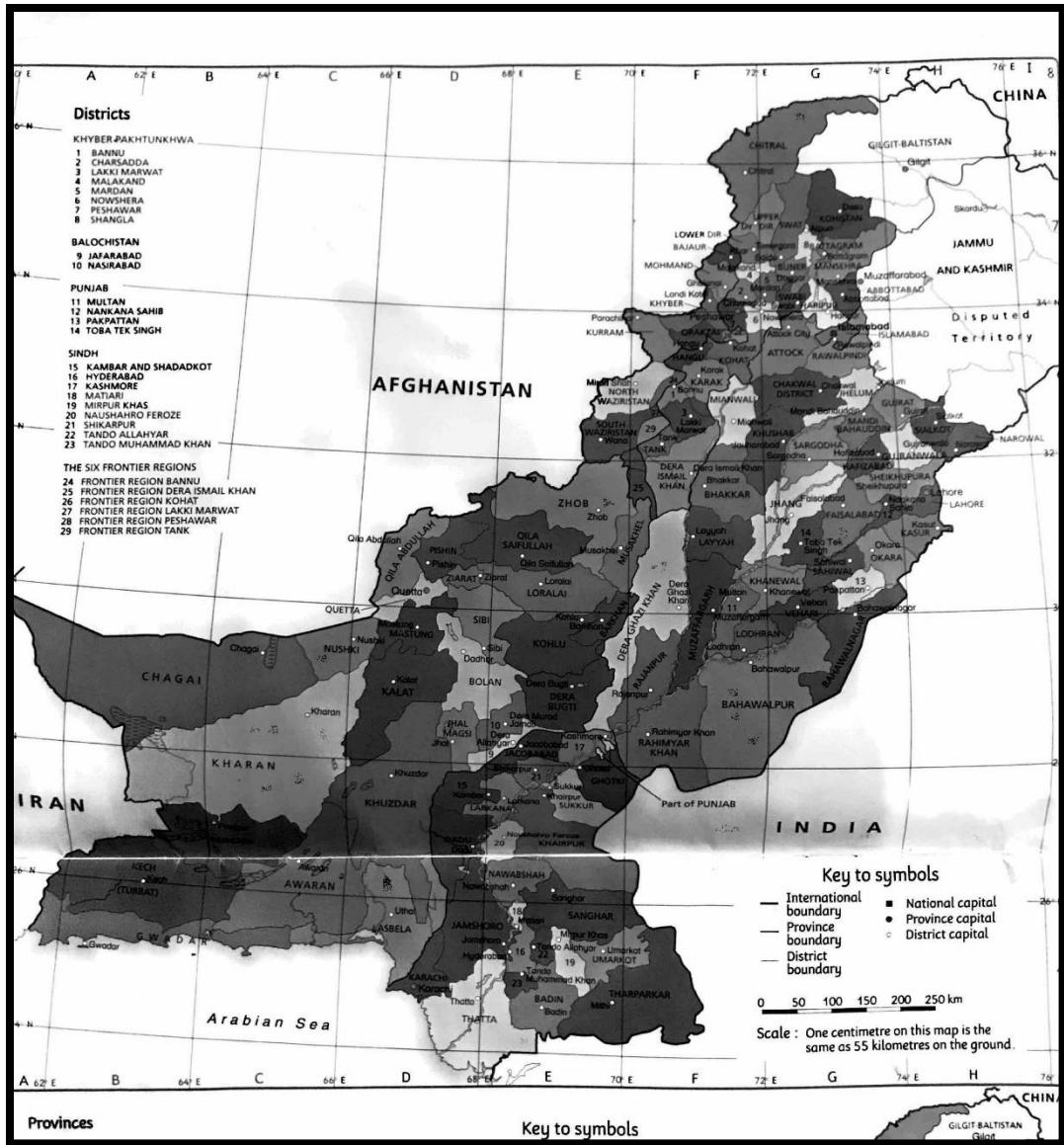
1. The land of Pakistan

Candidates should be able to identify the following on a map:

- the Tropic of Cancer, latitudes 30°N, 36°N, longitudes 64°E, 70°E and 76°E
- the Arabian Sea
- the countries sharing a border with Pakistan, and Pakistan's position in relation to others in South and Central Asia
- the administrative areas of Pakistan
- named cities: Islamabad, Muree, Rawalpindi, Gujranwala, Lahore, Faisalabad, Multan, Sialkot, Peshawar, Chitral, Gilgit, Hyderabad, Karachi, Quetta and Gwadar.



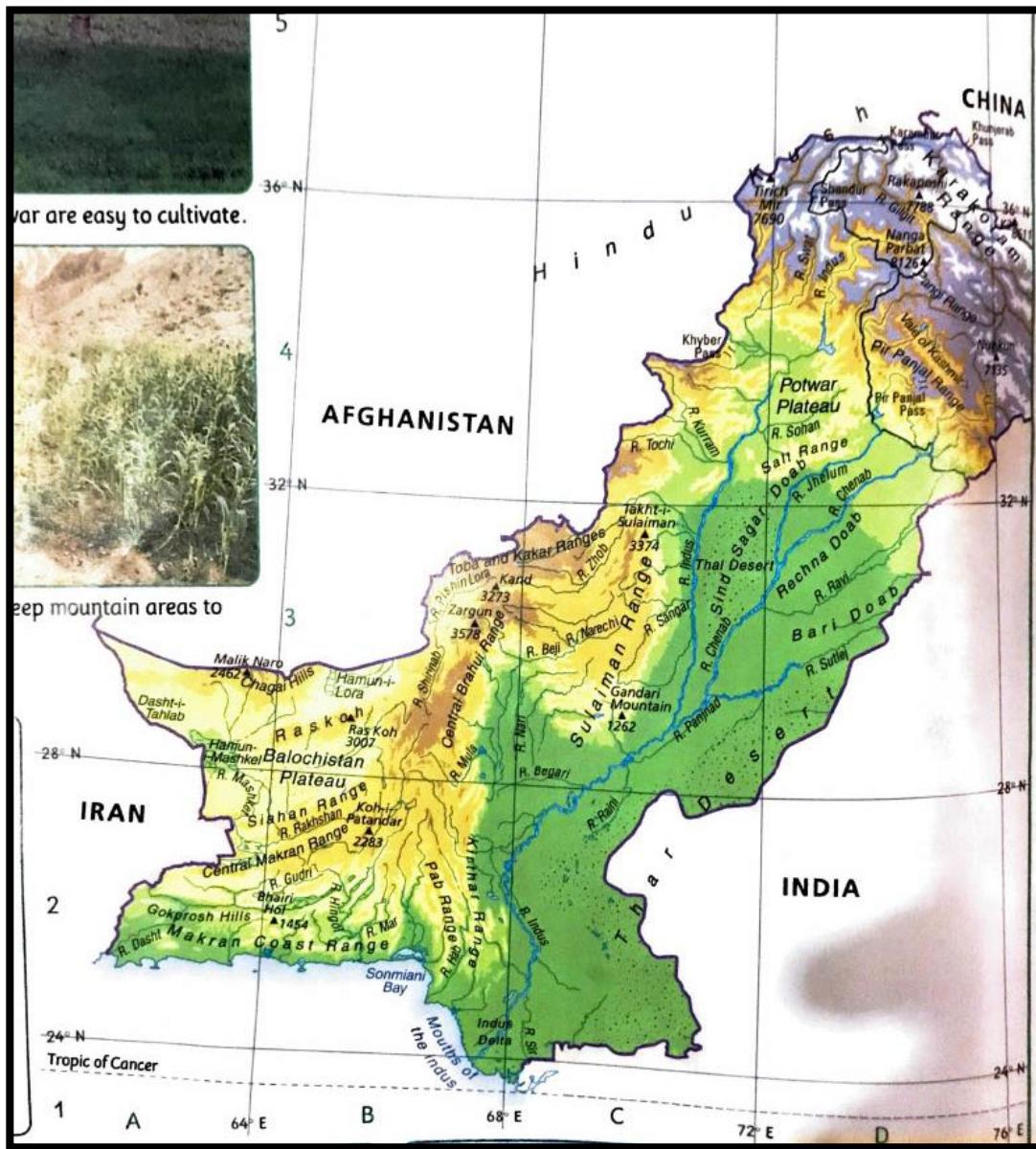
Tropic of Cancer is there on image on page 7





- named rivers: Indus, Jhelum, Chenab, Ravi, Sutlej, Kabul, Hab and Dasht

- named landforms: Balochistan Plateau, Sulaiman Range, Safed Koh, Potwar Plateau, Salt Range, Hindu Kush, Karakoram and Himalaya mountain ranges
- named deserts: TharThal and Kharan.



- Use the appropriate vocabulary when describing the distinguishing features of mountains, plateaux, floodplains and deserts (knowledge of the formation of the natural topography of Pakistan is not required).

Features of mountains:

The top of a mountain is often bare and windswept, without soil or any plant life. Steep and jagged features, such as ridges or cliff-faces, can be found just below the summit. They are sharpened by the effect of freezing temperatures that cause the bedrock to split and splinter. As a result, the base of steep slopes may be covered in piles of loose rock fragments called scree.

Deep narrow valleys are present in between; V-Shaped (V-shaped valley is a narrow valley with steeply sloped sides that appear similar to the letter "V" from a cross-section) or U-Shaped (U-shaped valleys, also called trough valleys or glacial troughs, are formed by the process of glaciation. They have a characteristic U shape in cross-section, with steep, straight sides and a flat or rounded bottom)

Features of plateaus:

This landform has a large elevated area on its top. Very often rivers or streams cut out deep valleys and gorges (gorge is a narrow valley with steep, rocky walls located between hills or mountains) in a plateau region. Most of the minerals in the world are found in plateaus. Rivers falling down the edges of plateaus form waterfalls. They have low relative relief and are enclosed by mountains.

Floodplains:

ACTIVE FLOOD PLAINS	OLD FLOOD PLAINS
A strip of land on both sides on Indus and its tributaries	Higher above the active flood plain
Fresh alluvium deposition(annually inundated)	Old alluvium deposition(inundated once a decade)
Difficult to grow crop due to annual inundation	Best places to grow crops

*meanders, oxbow lakes and levees are common in both

There is a slope which connects old flood plains and alluvial terraces

It's a steep slope about (5-11) meters high and around 6 meters wide

ALLUVIAL TERRACES

Also called 'Bars' and are found in Doab. Doab is the land between two rivers about 15-20 m high. Alluvial terraces are formed by layer upon layer deposition of alluvium. These are flat level plains.

CUESTAS

These are limestone ridges of small variable height (about 80 meters) and are about 40 km long. These help in the construction of barrages for irrigation

PEIDMONT PLAINS

Found between two ranges. One stretch is in between Himalayan range and river Indus. Second stretch is between Suleiman range and river Indus (this stretch is larger as compared to the one between Himalayan and river Indus). These are formed by the deposition of alluvium on foothills of mountains, deposition of alluvium fans on gentle shape areas and also by seasonal river channels

INDUS DELTA

River Indus forms a delta at its mouth at south of Thatta. The intense tussle between the sea and the rivers force the water of Indus to be spread into numerous channels which create Indus delta covering an area of about 3000 square kilometers.

DESERTS:

These are barren areas of landscape where little precipitation occurs. Dust storms and windstorms are also common in desert areas which constantly change the shape of the dunes. Day temperature reaches up to 50 degree and falls a lot at night. Diurnal range of temperature is high.

- **understand the influence of the natural topography on human activities:**
 - **steep slopes and flat land on the way that the land is used**
 - **mountains and deserts on the road and rail networks.**

Buildings can't be built upon steep slopes due to lack of stability. However, agriculture can be practiced by terrace farming but it's more likely that agriculture practiced therein is sustenance farming as slopes makes irrigation and other processes harder, which results in low annual yields.

Mountains have rugged land scape, upon which roads and railways can't be built without extra effort of leveling the ground, making the cost higher. The extreme climate in mountains, also hinder availability of labor and snow also adds to difficulty while harsh climate in deserts dehydrates labor and may result in skin burns, heat strokes and skin cancer. Rugged landscape and sandy soil also hinders the transportation of heavy machinery, which is indispensable. Sandy soil, further is a weak foundation for such infrastructure, so some soil have to mixed with it and cost skyrockets.

- Know the rainfall,

Climatic Zones	Sources
1 – Highland zone	<ul style="list-style-type: none"> ■ Relief rainfall ■ Monsoon rainfall ■ Thunderstorms ■ Western Depressions
2 – Lowland zone	<ul style="list-style-type: none"> ■ Convectional rainfall in northern Punjab ■ Western Depression in northern Punjab ■ Monsoon rainfall
3 – Coastal zone	<ul style="list-style-type: none"> ■ Monsoon rainfall (Sindh coast) ■ Western Depressions (Makran coast) ■ Tropical cyclones
4 – Arid zone	<ul style="list-style-type: none"> ■ Little rainfall from Monsoon winds and Western Depressions

distribution of temperature and including monsoon, depressions and convectional rain.

- know seasonal and regional variations, and the factors contributing to them, including depressions, thunderstorms and cyclones (typhoons)

Region	Areas	Season	Temperature conditions	Reasons
Highland zone; Northern Mountain and North Western Mountains	Gilgit, Muree, Muzafrabad, etc.	Winter	Very Cold-Cool	Low angle of sun. Height of the land
Highland zone; Northern Mountain and North Western Mountains	Gilgit, Muree, Muzafrabad, etc.	Summer	Mild Warm	Transfer of heat from central from central Pakistan. High angle of sun.

Western Mountains and Balochistan Plateau	Quetta, Kakat, Waziristan.	Winter	Cold-Cool	Low angle of sun. Altitude and rainfall from western depression
Western Mountains and Balochistan Plateau	Quetta, Kakat, Waziristan	Summer	Mild-Warm	Continental effect, aridity and high angle of sun
Lowland zone	Upper Indus plain. Northern and western lower Indus plain	Winter	Cool-Mild	Low angle of sun. Continental effect.
Lowland zone	Upper Indus plain. Northern and western lower Indus plain	Summer	Hot	High angle of sun. Continental effect.
Costal Zone	Karachi, Pasni, Jawani, Omara and Gwadar	Winter	Mild	Maritime influence. Occasionally, Quetta winds bring short spells of cold.
Costal Zone	Karachi, Pasni, Jawani, Omara and Gwadar	Summer	Warm-Hot	Influence of Arabian Sea and at times winds from Rajasthan. High angle of sun. Cloud cover in July and August.
Arid Zone	Kharan Desert, South-Western Balochistan, Southeastern desert.	Winter	Cool-Mild	Low angle of sun
Arid Zone	Kharan Desert, South-Western Balochistan, Southeastern desert.	Summer	Hot	High angle of sun & lack of cloud cover

- Understand the causes of the monsoon (knowledge of the causes of other types of rain is not required)

Monsoon causes rainfall from July-August. There are two types of monsoon; South-east and North-east. South-east (July-August) is caused by vapors evaporated at Bay of Bengal and Arabian Sea. The low air pressure in East side of Pakistan attracts these winds as during summer sea is cooler (thus air have high density above them) while land is hotter (thus air have low density above it), that low density air rises and air from sea comes over to cover; they have moist vapors, thus rain is poured down. North-east monsoon, is actually in winter as land is cold and sea is warm. The breeze move from land to sea but little rain is caused over sea as land is dry and air above it doesn't have much of those moist vapors.

- **describe and explain the characteristics of the climate of the arid, semi-arid, humid and highland regions, including seasonal variations**

Arid: Hot dusty winds prevail almost continuously from mid-May to mid-September. Western depression causes rainfall over Karan desert while Monsoon winds cause rainfall over deserts in south-east. There is a huge diurnal range which refers to the difference between highest and lowest temperature in a single day due to lack of cloud cover. Summers are hot and long while winter are cool and short. Extreme heat, dryness and dust storms are the main features of arid climate

Semi-arid: Extremity is one of its features as summers are very hot and long while winters are cool. Monsoon winds are the main source of rainfall in this zone while only northern Punjab receives rain from western depression. Thunderstorms are common in north and south-west of the Indus plain. The southern upper Indus plain and the whole lower Indus plain have very less rainfall along with high spells of temperature.

Highland: Winters are piercingly cold and long, temperature can fall below freezing point while summer are from mild-hot and short, temperature remains in 20's degree Celsius. Rainfall is observed here from all sources; Monsoon winds (summer), Western depression (winter), Relief rainfall (all around the year) and conventional currents also cause rainfall.

Coastal Zone: Climate in here is also called maritime climate and it includes Makran coast along with Sindh coast. Summers are hot, humid and long while winters are mild, humid and short. The temperature is pleasant the whole years as during winter warm sea breezes comes over while in summer cold sea breeze blows. That makes the air pressure high enough to repel the rainfall, so very little rain fall here due to western depression and monsoon winds both.

- **know the influence of latitude and longitude on day length and climate**

At latitude 0° (the Equator) day length will be approximately 12 hours. Areas on the Equator have a constant 12 hours of day light all year round. As latitude increases to 80° (polar circles - north or south) day length can be seen to increase to 24 hours or decrease to zero (depending on time of year).

At the equator, the Sun's rays are most direct. This is where temperatures are highest. At higher latitudes, the Sun's rays are less direct. The farther an area is from the equator, the lower its temperature. At the poles, the Sun's rays are least direct. Much of the area is covered with ice and snow, which reflect a lot of sunlight. Temperatures are lowest here.

- **understand the influence of the climate (both the benefits it brings and the problems it causes) on the economy and on the lives of the people:**

- (a)the influence of low temperature, ice and snow on the lives of people in the mountains
- (b)the influence of rain storms and flooding on agriculture, industry and communications
- (c)the problems caused by drought and shortage of water supply on agriculture and industry

(a)Snowfall lower the temperature in northern areas making the cultivation impossible, making cottage industry only option left for the people for survival therein. People with animals practice transhumance while nomadic and seminomadic lifestyle is common. Snow also blocks the roads, which isolates the area from rest of the country so trade get halted and tourists also can't visit. It further causes health issues such as frost bites, asthma, lung infections and other respiratory problems. Extreme temperatures amidst snow makes the development difficult so people here are deprived from infrastructure such as road, railways. However, due that snow HEP is generated here and people get employed in there. Similarly, snow attracts tourists, which is a source of income for local people.

(b)In terms of agriculture, rainstorms and floods have devastating effect on them. It can completely destroy them. At the same time rainstorms irrigates the soil but excessive irrigation may deteriorate the soil quality. Rainstorms may also erode the top most fertile soil, leaving the land uncultivable. Floods deposits alluvium, which makes active flood plains, old flood plains and alluvium terraces.

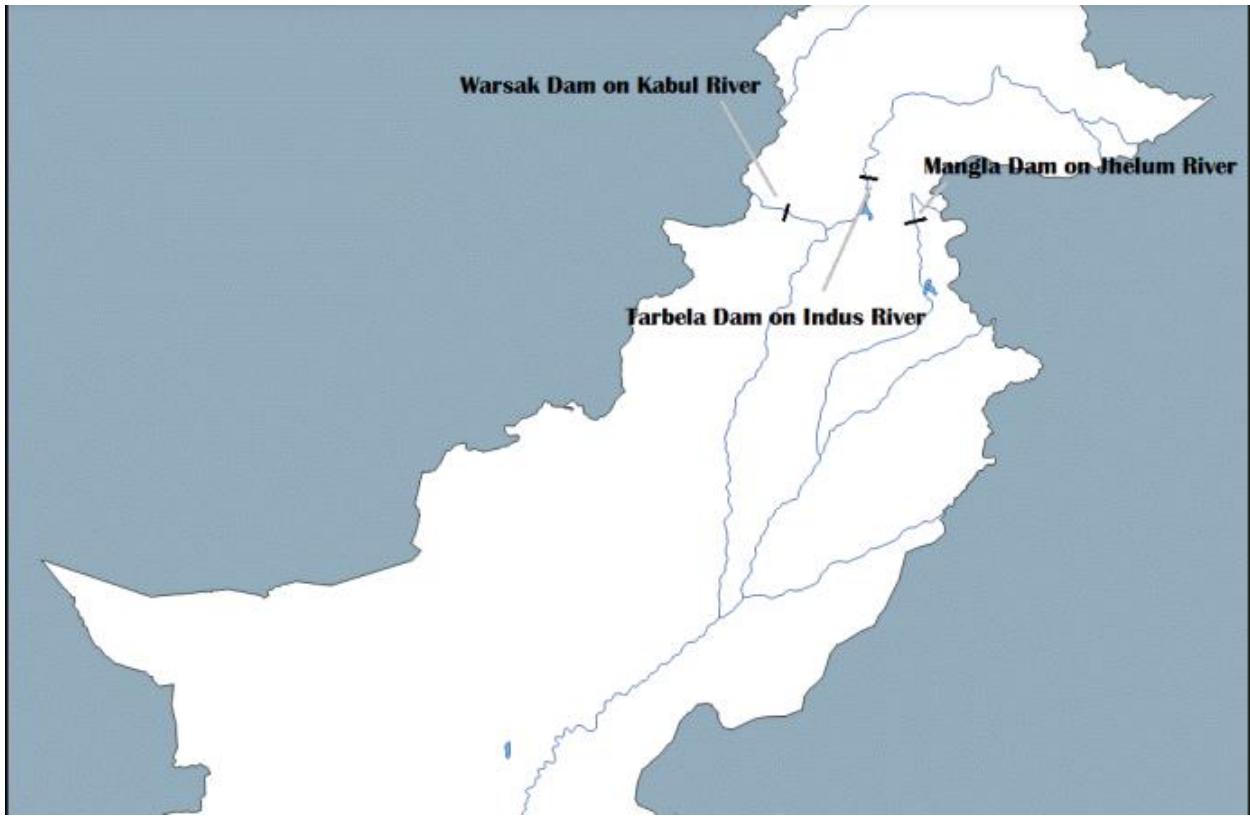
Transport links gets blocks, making the communication by road impossible, which also effects the industry as deliveries and supplies are delayed. They may also damage the fiber cables, networks towers completely isolating the place.

(c)Droughts results in failure of crops and Pakistan is an agro-based economy, thus economy of Pakistan will be deteriorated. People who depend on crops for subsistence will suffer malnutrition and even deaths. In water is used in HEP and thermal power stations to generate energy, which is basic need of industries to run machineries, if it's not available, they won't be able to function. Industries such as textile and chemical require water as a raw material, also won't be able to function.

2. Natural resources – an issue of sustainability

1. Water

- identify on a map the Mangla, Tarbela and Warsak dams, and name two examples of barrages



Jinnah Barrages is on River Indus while the Rusul Barrage is on River Jhelum.

- understand the importance of water as a resource; understand how supplies for agricultural, industrial and domestic purposes are obtained, maintained and controlled as well as used; understand the reasons for, and consequences of, the Indus Water Treaty
- understand the value of water as a resource for development

Water is very curtail for Pakistan as Pakistan's economy is Argo-based but most of fertile lands are there in arid or semi-arid climate zones, and after monsoon season there's long period without rain. Further,

as we use HYV's for more yields, they need more water. In terms of other industries, HEP and Thermal Power Stations both require water and electricity they produce is needed for modernization and for all industries. Textile industry, one of the largest Pakistani industry also require water for washing, bleaching and printing. Other industries such as Pharmaceuticals, Chemical, Steel, etc. also use water as basic need. Other than this, it is humans that work and they can't work to their full potential without proper health, which can't be maintained with fresh water supply.

Water is obtained for agricultural purposes by different means such as;

Shaduf: It's a pole attached with a bucket lowered in a water body, while the other end is connected to a heavy weight to bring the bucket upward.

Charsa: It includes a large wheel attached to several buckets and placed over a water body. The wheel is also connected to gears, so when animals such as cattle move the gears, the wheel turns drawing up the water.

Karez: It is a narrow sub-terranean canal, which starts from the base of hills or mountains where sub soil water is present. It's used to minimize the evaporation.

Inundation Canal: They are divisional canals that are drawn from rivers or other water bodies and water is only present therein what water table is high enough.

Perennial Canals: They are also divisional canals but they are connected to dams and water is available throughout the year.

Tube wells: They are fuel powered pumps that draw the ground water from as depth as 92 meters.

Sprinklers: They are small tools distributed throughout the field connected to a underground water supply and water is sprinkled from these tools irrigation the field.

INDUS WATER TREATY

On 1st April 1947, India blocked water supply to Pakistani as their headworks were mainly in India. This was a serious problem for Pakistan as agro-based economy. A temporary agreement was signed but it was of no avail as India put forward the condition that Pakistan must look for alternative sources. Therefore, the dispute was referred to World Bank and Indus Water Treaty was signed according to which India will take control of Ravi, Sutlej and Beas while allow water to flow through Indus, Jhelum and Chenab. Transition period was till 1973 and during that time Pakistan built 1 gated syphon, 2 Dams, 5 Barrages as well as 8 link canals.

- **explain and evaluate the causes of and solutions to the problems of water supply (including pollution)**

There are many problems faced by water supply. Water logging and salinity is one of them. It is caused when water table raised under the soil thus when water is evaporated salt is left behind that makes land uncultivable, it's usually a result of seepage of water from rivers. It can be solved by lining of canals or by planting eucalyptus tree, which absorbs excess water. Add Gypsum to soil will also help it and so will closing of canals that don't have much use. SCARP is entrusted to deal with it.

Siltation is another hinder. It's when soil is eroded due to fast flowing rivers along the mountains and banks of rivers the silt is then deposited at bottom of river or Dam, thus reducing the capacity and making floods more likely to occur. Further, the turbines in dams may also get damaged and as capacity of rivers is reduced the water supply will also decrease. It can be solved by lining of canals, planting trees on banks to hold fast to soil, raising the wall of dams and raise embankments of rivers. Applying silt trap before entrance of dam will prevent silt from even entering it.

Water pollution is a result of untreated discharge of toxic waste which includes toxicants such as Sulphur into rivers or nearby water bodies. The spillage of oil from ships is another cause along with Chemicals (Pesticides, Insecticides and Nitrogen Fertilizers) that are washed off to water bodies. NGO's must spread awareness about consequences of such acts so that people refrain from it. Moreover, government should enforce strict laws regarding treatment of waste before its discharge. Encouragement of usage of organic fertilizers may also help or the whole concept of organic farming.

- Explain and evaluate how water supply issues can lead to conflict.**

Water disputes can lead to conflicts at both international and local levels. Internationally, Pakistanis likely to be in dispute with India over water. It's because due to Indus Water Treaty eastern rivers of Pakistan are deprived of water, which is much needed thing for an agricultural country. Furthermore, India also violated treaty by building Baglihar Dam as well as by setting up Kishanganga and Neelam-Jhelum Projects. This further reduced the flow of water in Pakistan.

Punjab and KP also have dispute over construction of Kalabagh Dam. KP argue that by Kalabagh dam water will be diverted to Punjab along with energy generated therein through National Grid Station. Several people will be displaced and further whole district of Nowshera will be submerged in reservoir.

Despite of formation of ISRA there is no even distribution of water and that bothers Sindh. It will further be hampered by Kalabagh Dam as flow of water will be reduced and there will be less water available in south for agriculture, and industries such as steel industry. The flow of water from river Indus also push the salt back off the mangrove forests but when flow will be reduced, there'll be more salt and mangrove won't be able to grow in mere salt, thus fishing industry will be affected.

Consumers such as domestic, industrial and agricultural also fight among themselves for water supply. Agriculture utilizes most of the water available to produce agricultural products which otherwise would have to be brought using foreign exchange. However, industries such as Textile and Steel argue that they produce more profitable good earning more foreign exchange, thus deserve more water. Domestically, water is indispensable as it's used in almost every aspect of human life.

2. Forests

- understand the different types of forest and identify, on a map, their main locations

Types	Examples of Areas	Description	Importance
Alpine Forests	Northern areas (Chitral, Dir, Kohistan)	Trees have stunted growth due to low temperature and less sunlight. Roots spread sideways on thin soil to absorb more nutrition and to have better grip on the ground. Normally upward branches to attain more sunlight.	Used as fuel wood only.
Coniferous Forests	1. Northern areas. 2. Khyber Pakhtunkhwa (Abbottabad, Mansehra, Kohistan, Shangla, Swat) 3. Rawalpindi, Islamabad, Murree. 4. Balochistan Mountains. (Quetta & Kalat divisions)	Evergreen forests survive in low temperature. Conical in shape. Sloping branches which prevent snow accumulation. Small, thick, leathery and needle-shaped leaves to check excessive transpiration. Less leaf-fall provide less humus formation.	Important source of timber for making furniture and boxes. Environmental protection. Conserve soil and help in checking floods. Good breeding and conserving centres for birds, wildlife. Attract tourists and promote tourism industry. Add to the scenic beauty of the area.
Tropical Thorn Forest (Rakh)	1. Punjab Plains. 2. Southern & Western Balochistan. 3. Sindh Plains.	Low height (6 - 10 metres). Forest dominated by thorny hardwood. Deep roots to search for water. Scanty vegetation due to water shortage.	They are used as firewood.
Sub-Tropical Scrub Forest	1. Hills and foothills of Lower Himalayas. 2. Sulaiman and Kirthar Ranges. 3. Western Mountain (Peshawar, Waziristan, Kohat, Mardan) 4. Above the Makran Coast Range.	Sub-tropical broad-leaved and tropical thorny species.	Watershed protection. Supplying firewood. Grazing purposes.
Riverain or Bela Forest	River Indus and its tributaries.	Linear plantation along the banks of rivers. Normally high-yielding commercial hardwood species.	Provide Shishum and Babul, two valuable species, which are used for making furniture, agricultural implements.
Mangrove Forests	1. Coastal areas of Sindh. 2. Coastal areas of Balochistan (Deltaic regions)	"Broad leaves with drip tips. Leathery texture to minimize transpiration. Low trees and shrubs grown on the tidal mud flats. Mangrove roots spread into sea-water and survive in salty water. In better water areas, the trees rise to 6 - 8 meters but their general height is 3 meters. Stunted growth of trees in Indus and Hub delta because of dumping of industrial, agricultural and chemical waste into Arabian Sea. Limited number of species in polluted water.	Supply of firewood. Coastal communities use these forests for timber. Breeding grounds for fish and shrimps. Camels and livestock feed on the leaves of mangrove. Fallen leaves provide nutrition for marine life. Protect coastline from erosion, storm damage and wave action. Act as barrier against intensity of earthquakes and tsunamis by absorbing shock waves.
Irrigated Forests	1. Changa Manga near Lahore. 2. Wan Bachran in the Thal area. 3. Chichawatni in Sahiwal district & Ghulam Mohammad and Guddu Barrages.	Economically important species are planted in large blocks of the same species. Shishum, Babul and Eucalyptus are normally preferred.	Important sources of timber, firewood. When planted in linear form they provide shade.

Fig. 4.3

- **understand the physical factors that control the distribution of the different types of forest, and the human factors which have reduced their extent**

There are several factors upon which is based distribution of forests. To begin with, altitude is one of them. As the altitude increases temperature decreases approx. 6.5 degree Celsius per every 1000 meters, but temperature is crucial for photosynthesis, thus only the plants that can grow with little amount of glucose can survive in there. Furthermore, at higher altitude precipitation is in the form of snow and plants such as conifers have leaves pointing downwards so that snow may not accumulate up there and leaves get sunlight, plants without such features can't survive at higher altitude.

In terms of soil or else called edaphic features, different plants require different type of soil such as rice crop needs water and clayey soil can retain water, so it grows in clayey soil. Sugar Cane requires minerals so it grows in loamy soil. Lenses and alluvium also adds to the fertility of soil.

Temperature is also a factor and its effect described in altitude.

Water is required for photosynthesis, but some plants such as cactus can grow with little water so in arid climate only such plants can grow

Deforestation is discussed later in this chapter

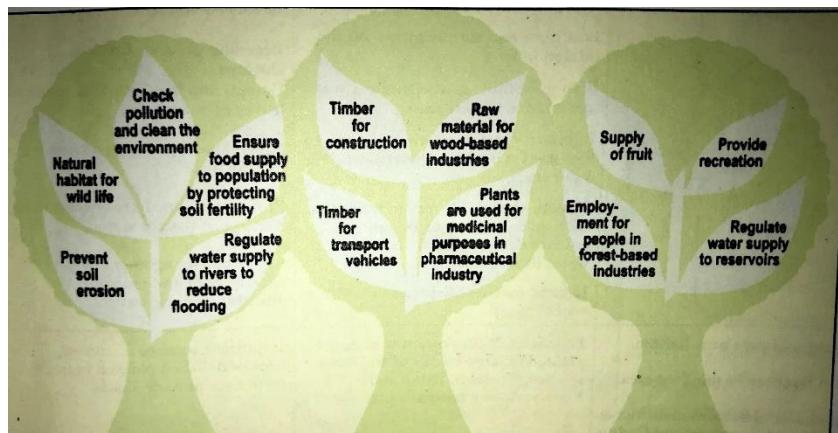
- **understand the reasons for:**
 - **the development of plantations in the Indus Plain**
 - **afforestation on mountain slopes and plateau**

There are plants grow adjacent to Indus River and they are part of protective planting. They maintain ecological balance by adding Oxygen to atmosphere. They further act as first line of defense against floods and their roots hold on the soil so that river may not erode it, thus preventing deforestation and subsequently desertification. They also help to lower the temperature as evapotranspiration leads to rainfall.

In mountains there are several afforestation projects such as Rachna-Doab Afforestation Project. They are to maintain ecological balance, provide habitat for creatures and also to hold fast to soil beneath them.

- understand the value of forests as a resource for development, and the importance of their sustainability

Forests maintain ecological balance, provide raw materials for several industries such as furniture. They also prevent soil erosion, attract tourists, and refer to image below also:



- explain the effects of deforestation, such as soil erosion, silting and flooding

Deforestation have dire consequences, at first as trees will be cut, this will lead to extinction of important species. It will also lead to desertification as when there aren't any trees to hold soil, then water and air will erode fertile layer, thus land can bear trees. Further, there will be no evapotranspiration, thus leading to hotter temperatures and less rainfall making conditions even harder for plants and humans. Global Warming will also be a result as there won't be any trees to replace CO₂ with O₂. When water will erode soil, it will be deposited at base of rivers or dams, this means capacity of is reduced thus floods are more likely to occur. (Other impacts of siltation are also included discussed in other topics)

- Evaluate possible solutions to the problems caused by deforestation.

In deforested areas water must be supplied and Pakistan Agricultural Research Council must develop fast growing species. The grounds for grazing and agriculture must be confined. NGO's must spread awareness to people about consequences of deforestation. Government must provide locals with Gas supply so that they don't have to use trees as firewood. Moreover, Government must keep a strict watch on how many trees are cut and heavy machinery such as bulldozers mustn't be used. If a plant takes 30 years to grow then each year no more than 1/30th of total of its species should be cut down. Afforestation projects must be carried out, if plants are cleared from one place then they must be planted somewhere else. Terracing is another solution, which includes terrace farming on mountains as well as counter ploughing in which two types of plants are planted in same areas but they are opposite to each other in direction.

3. Minerals

- identify the main locations of limestone, gypsum and rock salt extraction from a map, and understand their uses

Limestone: Making cement, glass, soap, paper, paints and lime

Gypsum: Used to make cement as well as plaster of Paris and is also used as a solution to water logging and salinity.

Rock salt: Used for cooking. Making of Soda Ash, Bicarbonate of Soda and caustic soda.

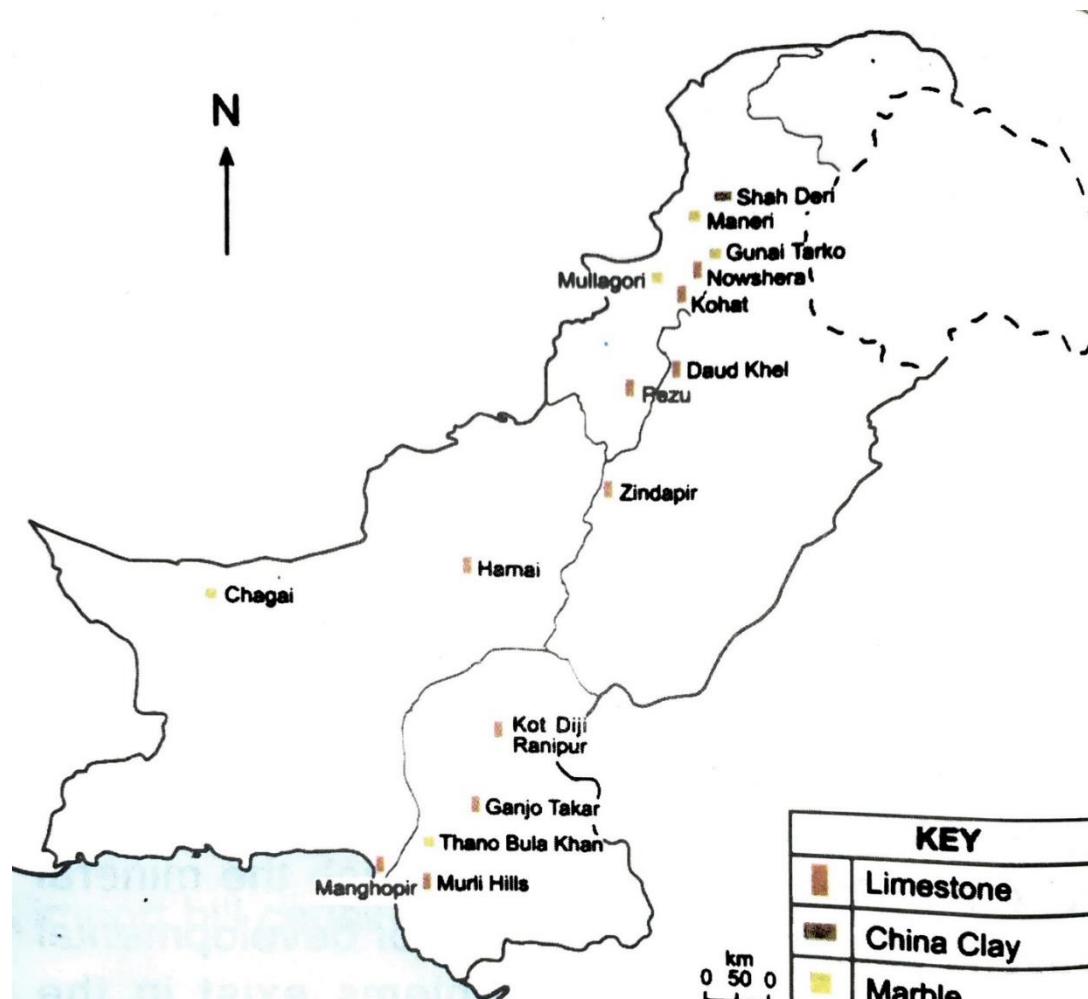
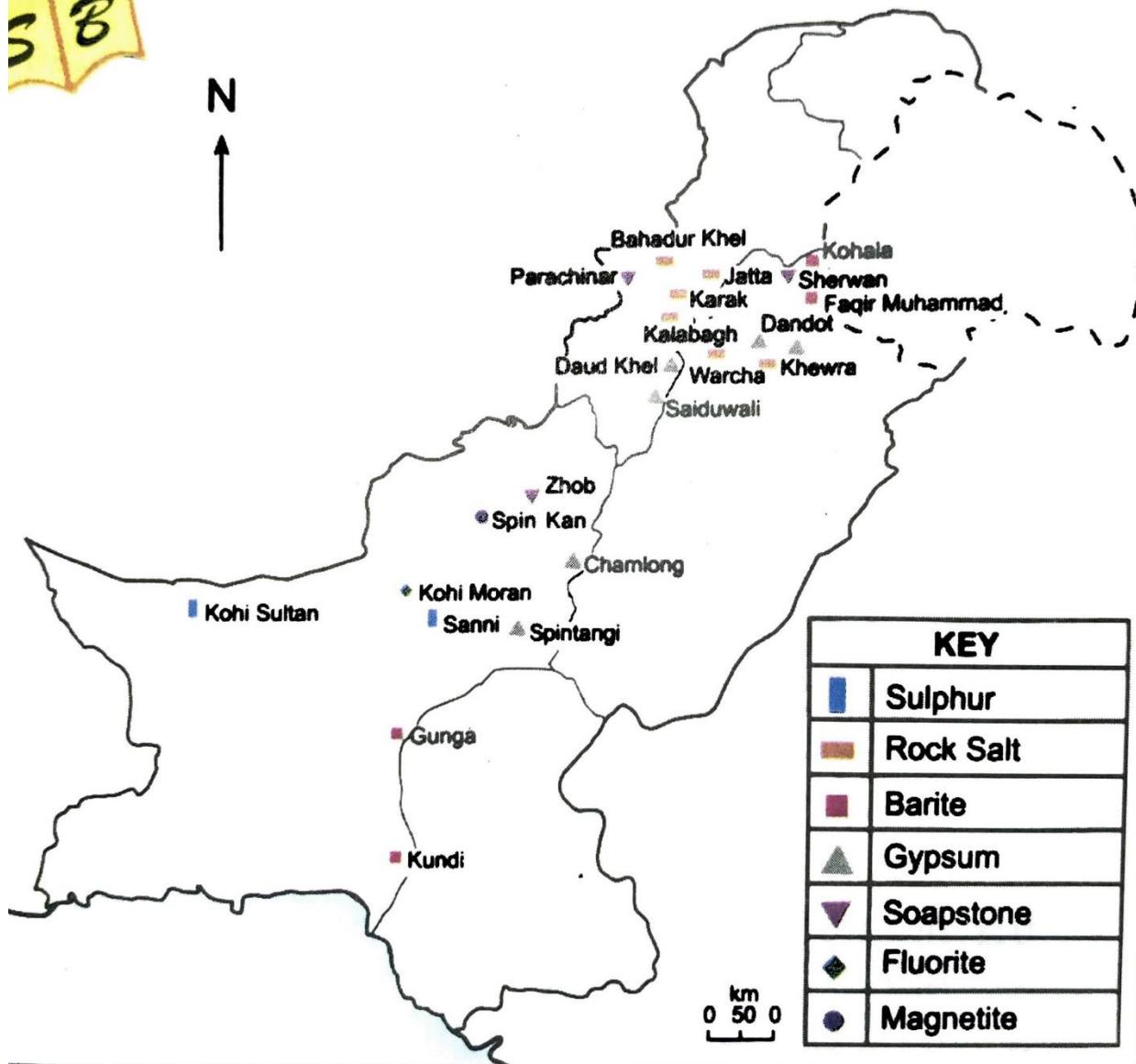


Fig. 5.11 Pakistan Limestone, Marble and China Clay.

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- identify the main metallic and non-metallic mineral resources of Pakistan, and in what quantities they:
 - are extracted
 - exist as reserves

[YOU WON'T BE ASKED ABOUT FACTS, THEY WILL BE GIVEN IN PAPER YOU JUST HAVE TO IDENTIFY THEM]

Metallic Minerals	Non-metallic Minerals
<ul style="list-style-type: none"> ▪ Iron Ore ▪ Copper ▪ Antimony ▪ Chromite ▪ Celestite ▪ Manganese ▪ Gold ▪ Silver ▪ Tin ▪ Bauxite 	<ul style="list-style-type: none"> ▪ Coal ▪ Sulphur ▪ Rock Salt ▪ Barite ▪ Gypsum ▪ Soapstone ▪ Fluorite ▪ Limestone ▪ Marble ▪ Clays

- understand the extent to which these can be exploited

Pakistan is very rich in mineral wealth, especially area of Baluchistan, Where Pakistan Mineral Development Cooperation (PMDC) is running 3 other projects than Sandik Copper-Gold Project. A survey also suggested that area is rich in antimony and gold. Moreover, Potawar Plateau is also rich in things such as limestone, marble, rock salt, soapstone, and clays. However, there are several factors that hinder that development;

- After 9/11 attacks, international investors lost confidence that their investment is secure in Pakistan, therefore they withdrew.
- Roads aren't developed, which not only makes the survey of the area harder but also adds to the expense of exploration.
- Financial constraints is another factors that government or private companies don't have enough money to carry out mining processes. This is further backed by lack of technology, which makes the task easier but as we neither have technology or technical experts, mining is difficult to carry out.
- Institutional mismanagement is also there and mineral officers are subject to incompetence and corruption. Therefore, developmental projects are postponed.
- Tribal chiefs are also influential and they also don't let government to explore areas under their influence.

- **evaluate the benefits of developing mineral resources and understand the sustainability of extraction**

By mining we produce things such as gypsum and limestone which is used to make cement and cheap cement encourages development of infrastructure. Mining results in employment thus less unemployment rate, contributing to economic development. Non-metallic minerals such as Coal & Natural Gas are used in energy production, which is indispensable part of modernization and industrial growth. Minerals such as Iron, copper, etc. are used to manufacture many things such as Tractors or Bulldozers (manufactured by Heavy Machinery Complex), furthermore, their local availability will encourage industrial development and it will improve balance of payment when their imports are reduced and they are exported. Mining also leads to development of far off areas and when process of mining starts roads are developed along with other infrastructure projects to facilitate miners.

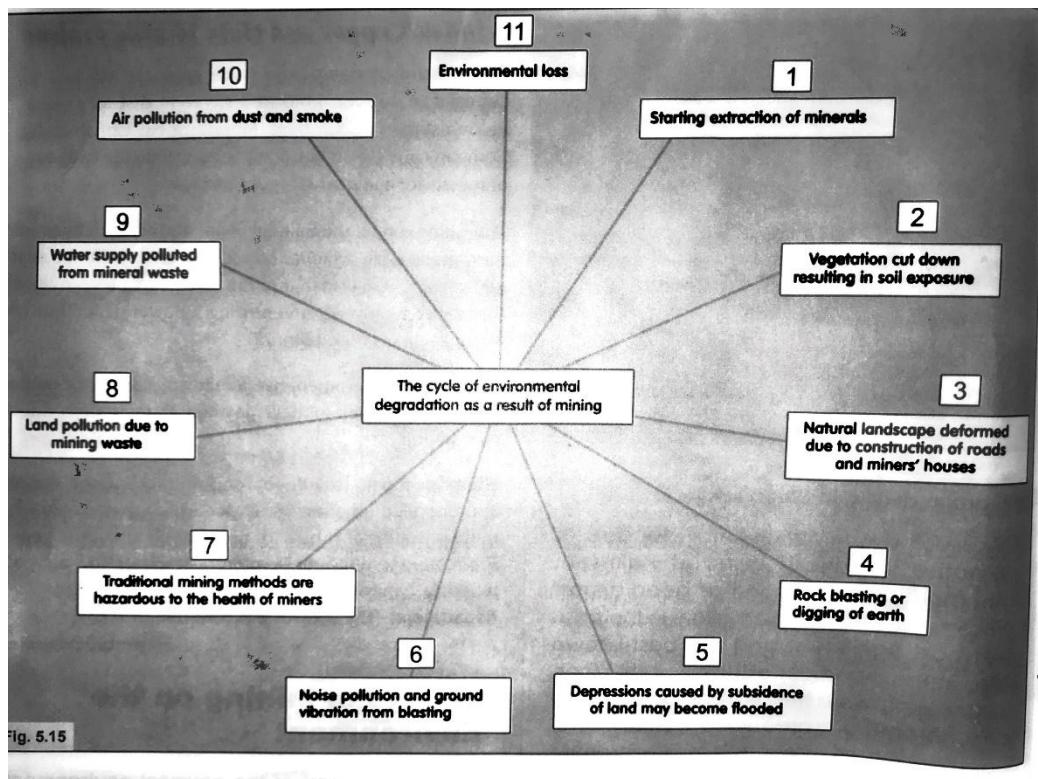
- **identify the main imported minerals, where they come from, and in what quantities**

Main Pakistan's imported minerals includes **bauxite, chromium, copper, iron, lead, manganese, nickel, oil and potash**.

- Oil; United Arab Emirates (\$1.04B), Saudi Arabia (\$696M), Kuwait (\$76.1M), South Korea (\$55.9M), and Oman (\$24.8M)
- Bauxite: India, China and Germany
- Chromium: China, Japan, Spain
- Copper: UAE, China
- Iron: China, United Arab Emirates, Vietnam, Iran, and Germany
- Lead: China, UAE, US
- Manganese: South Africa, China, Brazil, and United Kingdom
- Nickel: China, France, United Kingdom, Finland, and Japan.
- Potash: Russia, Germany and China.

[YOU WON'T BE ASKED ABOUT FACTUAL QUANTITIES AND YOU DON'T NEED TO MOMORIZE EVERY MINERAL ABOVE]

- describe the environmental problems caused by mineral extraction



4. Fish

- **describe the fishing methods used in both marine and inland waters, including fish farms**
- **give examples of the fish caught in both marine and inland waters, and of the fish reared on fish farms**
- **give examples of the fishing ports on both the Balochistan and Sindh coasts**

In Pakistan, Fish is caught at both Sea (Marine) and at land (In-land Fishing); they both've different techniques:

Marine Fishing: Both substance and commercial fishers fish in sea. Sustenance fishers move with small wooden boats with little storage capacity and no refrigeration facility, fishing rods or nets are used to catch fish. However, commercial fisher have larger boats that've large refrigerated storage capacity so they can stay in water for days. Mesh size nets are used which are either suspended at bottom of ship or thrown over the surface once in ocean. Fishes are located by SONAR and they find their way back by Radar. Metrological department provides weather information. Ports such as Kemari (Sindh), Port Qasim (Sindh), Jawani (Balochistan), Gawadar (Balochistan), Pasni (Balochistan) and Omara (Balochistan) are used. Fish caught includes; Sharks, Cat Fish, Drums, Rays, Skates and Croakers.

In-land Fishing: A deep pool is dug which is either lined or just the boundary soil is stiffened at the selected area. Water is added and temperature is controlled. Food is artificially added such as animal waste or Plankton. Required fish species are bred and for effective growth and breeding, effluents are added to boost hormones. The fish is caught by either fishing rod or net. Dam reservoirs could also be used for In-land fishing such as Tarbela. In-land farms are located at Sukkur, Kotri and Thatta. Fish caught in here includes; Palla, Thalla, Rahu, Trout and Manaseer.

- **describe the uses of the fish caught**

Fish caught is used as food. However, other than this, fish is processed to make frozen foods and canned fish, which is both exported and used locally. Fish oil is rich in Omega 3 fatty acids and its skin is used to make fertilizers

- **explain improvements in fishing methods and processing techniques**

Improvements in fishing methods includes larger boats equipped with refrigerated storage facilities, so that they can remain in sea for longer period. Usage of metrological facilities (along with developmental projects by Marine Fisheries Department (MFD) such as monitoring of deep sea vessels and strengthening quality control labs) as well as SONAR to locate fishes and Radar to find the way back is also included. For processing techniques, in Makran coast 16 ice factories have been built, through which fish caught is preserved and later transported to Karachi where it's further processed into canned fish. Gwadar Harbor cum mini port was also established

- **Understand the problems facing the fishing industry and evaluate the possibilities for its further development and sustainability.**

Water pollution is one of the problems faced by fishing industry; pollutants contaminates the sea water and toxic materials are lethal for fishes, which may threaten their existence, so there'll be less fishes available to catch. Furthermore, not even humans are immune to diseases caused by these carcinogenic materials, so they may stop purchasing fish, thus the sales of fish declined collapsing the industry. Other than this, eutrophication also hampers the in-land fishing, as it causes the death of fish therein.

Over-fishing is when more fish is caught a season than they can be reproduced in the breeding season leads to less fish available next season, thus supply is reduced.

Mangroves add Plankton to water which is only food that many fishes eat or is the food of fishes at the bottom of food chain. Unfortunately, they are under severe threat, as forests have been cut down to get fodder and wood. Moreover, wetlands over which they grow are also considered very good for fish breeding, so trees are cleared and due to lack of water down the Indus river, salt isn't pushed back, which makes wetlands more concentrated in salt, and mangroves can't grow in mere salt.

Finances are needed to get refrigeration systems, bigger boats, SONAR and Radar as well as other modern equipment which help fisheries to development. So lack of these finances hampered its growth.

To make fisheries sustainable a country must not allow fishermen from any other country to access the marine wealth to avoid over fishing. The enforcement of laws for protection of mangroves will also help as well as ban on small size nets, through which small sized fishes are also caught; they are at first of no use and secondly they are yet to attain maturity, so that they can mate and reproduce but if these small fishes are caught, reproduction of fishes will be reduced.

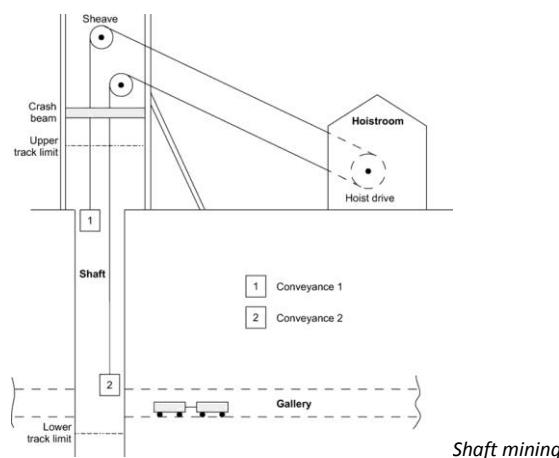
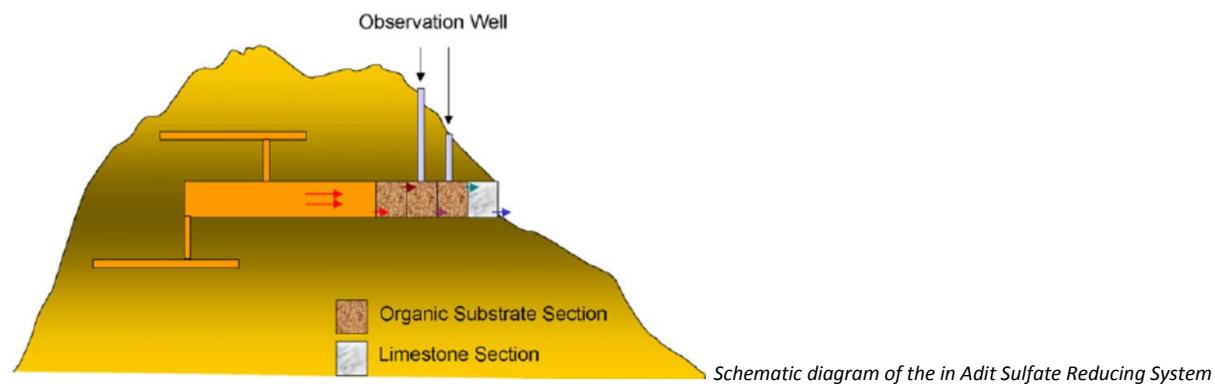
3. Power

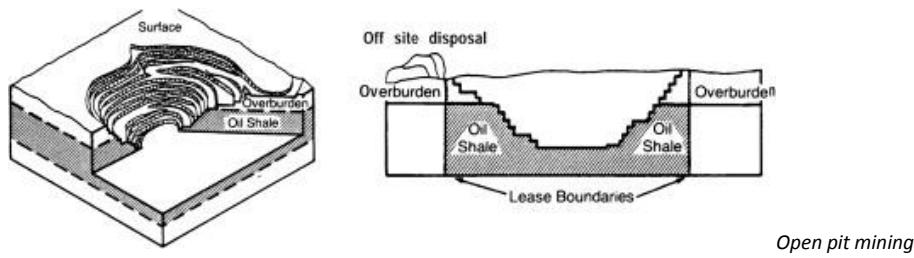
- describe, with the help of a simple diagram for each method, how non-renewable fuels (coal, crude oil and natural gas) are extracted:
 - coal as obtained by open cast, adit and shaft mining methods
 - natural gas and crude oil obtained by exploration and drilling

An adit is an entrance to an underground mine which is horizontal or nearly horizontal, by which the mine can be entered, drained of water, ventilated, and minerals extracted at the lowest convenient level. Adits are also used to explore for mineral veins.

Shaft mining or shaft sinking is the action of excavating a mine shaft from the top down, where there is initially no access to the bottom. Shallow shafts, typically sunk for civil engineering projects, differ greatly in execution method from deep shafts, typically sunk for mining projects.

Open-pit mining, also known as open-cast or open-cut mining and in larger contexts mega-mining, is a surface mining technique of extracting rock or minerals from the earth from an open-air pit, sometimes known as a borrow.

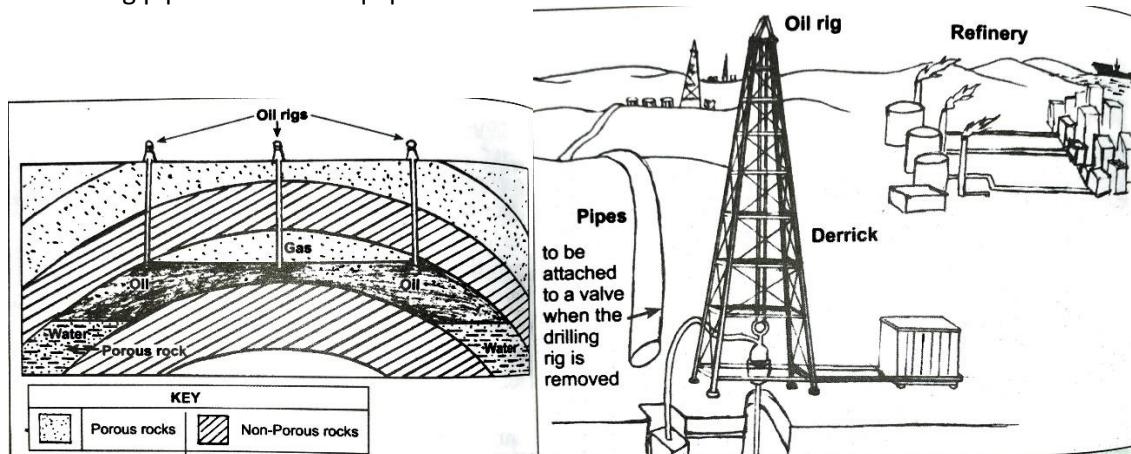




Open pit mining

Oil is liquid and cannot be extracted in the same way as coal. It is normally trapped deep underground. Occasionally it has been known to leak up to form puddles on the surface. This was how people first discovered oil. Now, wells are drilled to pump this liquid fuel out of the ground.

Modern oil prospecting is a technical job that requires modern scientific equipment. Once the drilling site has been selected, a derrick or drilling rig is set up. The derrick is a large steel structure that holds the drilling pipes and other equipment.



- **understand the difference between renewable and non-renewable sources of electricity**

Non-renewable resources generally refers to fossil fuels that are extracted from earth. They formed over millions of years and when they'll run out, won't be acquired afterwards i.e. Oil, Gas. However, on the other hand renewable resources refers to means of energy that will never deplete such as power generated by wind or thermal heat of sun.

- **explain (briefly) how electricity can be generated from renewable resources (hydel, wind, solar, and other possibilities such as wave, tidal, biofuels, geothermal)**

To understand how energy is produced through non-renewable resources you first need to know how its turbines work to generate electricity. When turbine moves, there's kinetic energy that generates electron magnetic field, thus the electrons moves and then generator transforms these electrons into electricity. What most of these non-renewable resources do is just to move that turbine. In hydel electricity, water moves it and in wind, air moves it. Waves and tides also do the same thing. While biomass, when left to decay produces methane; that methane could be itself used as fuel or burnt to evaporate water and those vapors moves the turbine. Geothermal is when due to the earth's core, water beneath the land get heated up itself and areas where they are exposed, turbines are set and vapors move it.

Solar panels have photovoltaic cells that convert protons from thermal energy into electricity. Sunlight can also be focused by mirrors on a common point which results in fire to be lit in solar furnaces.

- **understand the importance of power sources for development**

Energy resources play a very important role in the economic development of a country. A country with a well-developed resources of energy has a better chance of development than a country with fewer energy resources

There is large number of resources which generate electricity. The power resources are important for Pakistan's economic development in the following ways.

1. All industrial plants, excluding cottage industries, use power in processing raw material. Power shortage reduces production of industrial goods and increases the cost of production which results in a lower GDP (Gross Domestic Product).
2. Modernization of agriculture is also heavily dependent on power resources. Tube wells are run by electricity and agricultural machinery such as tractors, threshers, and combine harvesters use oil as a fuel for functioning.
3. Power resources are used in exploration and extraction of metallic and non-metallic minerals. Mining and drilling machinery such as derricks, bulldozers, drills, and explosives and trucks are necessary for mining operations. They all need fuel/power to operate. Minerals play a key role in a country's economic development by providing raw material to industries and employment opportunities in the mining sector.
4. Power resources play a key role in the modernization of society. All electrical appliances and IT devices such as computers, cell phones, TV, radio and many other gadgets run on power/electricity. In recent years economic development has become dependent on communication devices which cannot operate without an efficient power supply.
5. If power resources are produced locally, the dependence on imported power resources is reduced. This helps to save foreign exchange resources and improves the balance of payment.

- **describe the quality and the amount of coal available from within Pakistan and how long reserves are likely to last, and also describe the types of coal which have to be imported for industrial purposes**
- **describe how coal both produced in Pakistan and imported is transported to the end users**

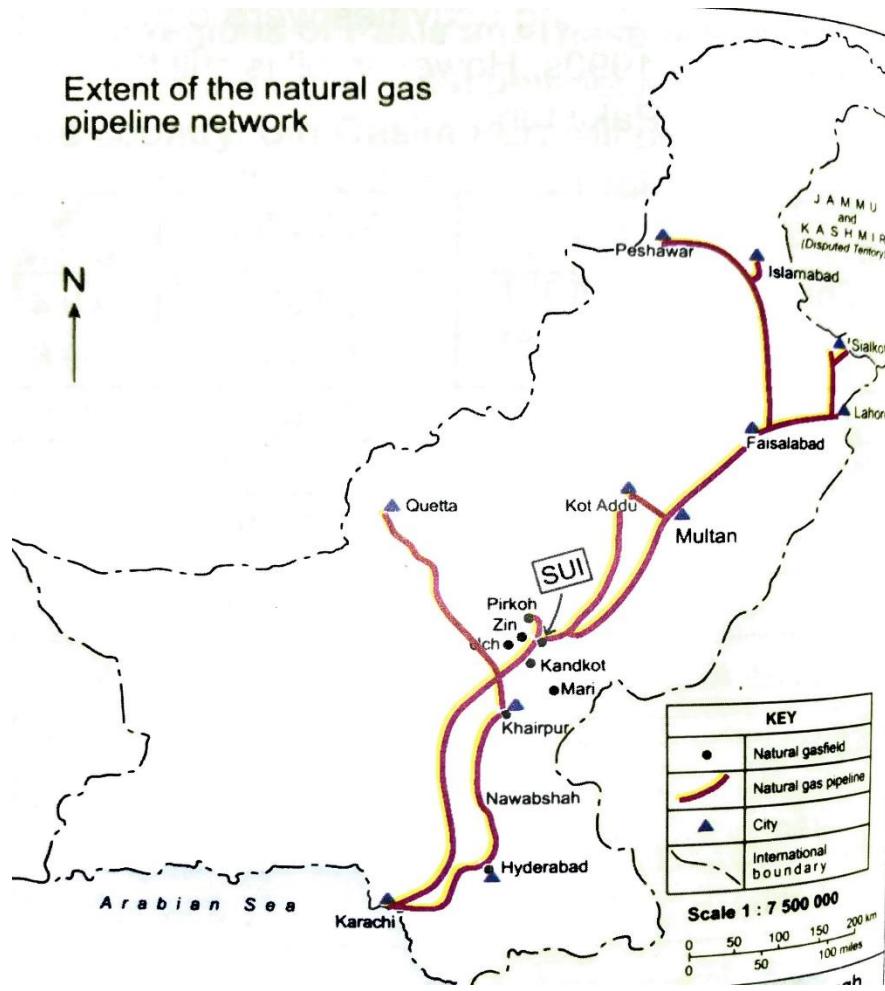
You don't need to state any such stats. For types of coal refer to image below; As for transportation, coal is taken out mines by trolleys which run on a rail track. Once out, different qualities of coal get separated and loaded to trucks to supply industries such as Brick kilns and rails are used to transport coal to thermal power stations. By gasification, we can convert coal into gas, which can be transported by pipelines.

Type of Coal	Characteristics
a) Anthracite	Best quality coal. Hardest with the highest hydrocarbon content. Burns quietly with great heat.
b) Bituminous i) Steam Coal ii) Coking Coal	i) A superior black, hard coal found in highly compressed seams. Burns readily with great heat. Its hydrocarbon content is less than that of anthracite. ii) Coking coal is burnt to produce coke, a hard, grey, porous material. It is used in blast furnaces for the extraction of iron from iron ore.
c) Lignite	It is a lower quality coal with a high moisture and ash content. It has a low heating value.
d) Peat	Exclusively vegetative matter and represents the initial stage of coal formation. Its carbon content is low.

Only Anthracite and Steam coal is imported

- state how much natural gas is produced by Pakistan, and how long reserves are likely to last
- describe the extent of the natural gas pipeline network in Pakistan and explain how natural gas can be taken to those parts of Pakistan away from the pipelines, and the limitations of doing this

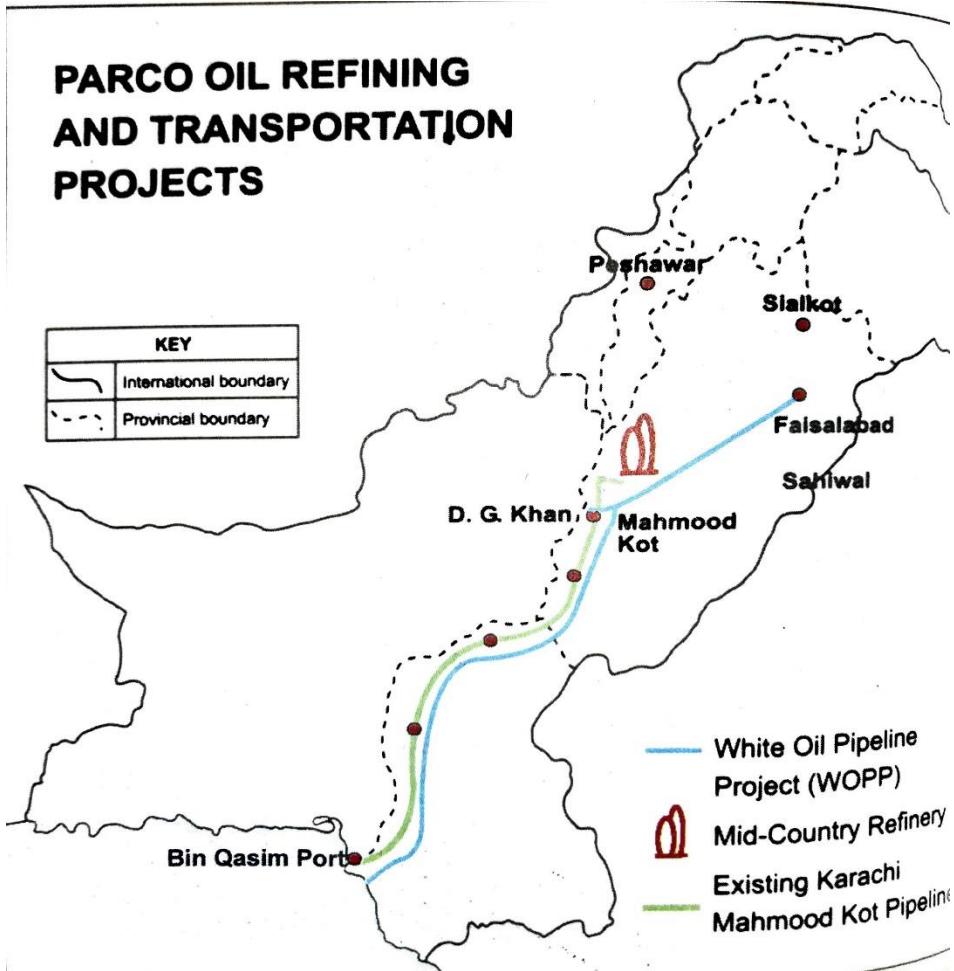
You don't need to state such stats but just interpret them from any graph given in exam. For extent of pipelines refer to image below; in far off places where there isn't pipeline, gas is transported by converting into Liquid Petroleum Gas (LPG), which can be contained in special cylinders. They are loaded on pickups or trucks and then transported to required area. However, this have several limitations; Road transport is slower than pipelines, which may cause gas shortages in area. LPG is explosive, so it's dangerous to transport it, especially in the areas where roads aren't that good. The image on next page shows the extent of gas pipelines.



- state how much oil is produced by Pakistan, how long reserves will last and how much oil is imported, and explain why it is necessary to import large amounts of oil
- describe the extent of the oil pipeline network in Pakistan and describe the other methods that are used to transport both imported oil and oil produced in Pakistan

You don't need to state such stats but just interpret them from any graph given in exam. Oil is imported and oil tanker ship, berth (parked) at oil piers from where oil is sucked up to storage tanks at port or else pumped to oil marketing refineries. Refineries are also located at other parts of country such as Mahmood Kot, crude oil is pumped there by pipelines. Refined oil is either transported by pipelines such as PARCO's WOPP (White Oil Pipeline Project) or by land through road tankers and rail tankers.

PARCO OIL REFINING AND TRANSPORTATION PROJECTS



- Understand that electricity can be generated in a variety of ways. In thermal power stations by burning coal, oil, gas and waste, or with nuclear energy; or with renewable sources e.g. water (including hydel), the wind and the sun.

Electricity produced through wind, hydel and solar are described earlier. As for thermal power station (coal, oil or gas) and nuclear, the Principle is same which is of movement of turbine. Turbine is fixed upon a boiler containing water, which is heated by burning of either coal, gas or oil. Vapors are produced which turns the gears of turbine. Nuclear reactions are either fission or fusion, in both case energy is released and that energy heats the water.

- Understand that non-renewable power sources are running out, and are increasing in price.

Price of a product depends on its demand and supply; in terms of fossil fuels demand is increasing due to increase in consuming population but at the same time supply is decreased as they are depleting. So prices got higher.

- explain and evaluate the advantages and disadvantages of the different methods of producing electricity from renewable resources (generated by water, wind, wave and sun)

Advantages of hydroelectric energy

1. Renewable

Hydroelectric energy is classified as a renewable energy source because it is powered by water, and water is a naturally replenishing resource.

2. Low emissions

The action of generating electricity with hydropower energy does not emit carbon dioxide, a greenhouse gas that drives global climate change.

3. Reliable

Hydroelectricity is a very reliable renewable energy source.

Additionally, the output of electricity can be adjusted. If energy demand is low, water can be averted from the turbines and less energy will be produced. The opposite is true if more energy is needed - more water can flow into the plant for electricity production.

4. Safe

Generally, hydropower is a very safe form of power generation.

No sickness-causing pollution is emitted during energy generation and there is zero chance of oil spills or gas pipes breaking, since the only fuel used to power a hydropower plant is water.

Disadvantages of hydroelectric energy

1. Environmental consequences

Hydropower facilities can be tricky because when one is built with a dam, a previously dry land area will be flooded with water, in order to be used as a reservoir. That means whatever habitat was in that location will be ruined. Also, the natural flow of the river will be affected.

2. Expensive to build

Building any type of power plant is expensive -

This means that the upfront cost of building a hydropower plant can be millions of dollars. Compared to the falling prices of solar installations, for example, hydropower is a more challenging renewable project to finance.

3. Drought potential

The ability to create electricity can be severely reduced if there is a drought and not enough water is flowing into the plant.

4. Limited reservoirs

It is challenging to find a suitable spot that has a large year-round water supply, with the right amount of water and is close enough to existing power lines. It can also lead to water logging and salinity in surrounding areas, which means that every piece of agriculture practiced nearby will be damaged.

Water in dams may seep down into earth's crust, thus lubricating it, which makes the movement of plates more likely, increasing the chances of earthquakes

Advantages of Wave Energy

The advantages of using wave energy as a source of energy are listed below:

1. Environment-friendly energy source: Wave energy does not emit greenhouse gasses when generated, as fossil fuels do. The turbines generate electricity through the power of waves, making them pollution-free, renewable energy sources. With the advancement of technology, tidal power can be a massive part of the green energy mix, complementing solar power, wind turbines, geothermal, and hydropower.
2. Renewable source of energy: Like all alternative energy sources, wave power is renewable. Waves are created by wind, and the wind is caused by uneven heat on the planet's surface, driven mainly by the sun warming at different rates at different locations. Wind moves the heat energy from one part of the planet to another, which causes waves to form. Because the wind will always exist, waves will always be available at the water's surface to generate electricity, making this a renewable source.
3. Reliable energy source: Waves are hardly interrupted and almost always in motion. This makes electricity generation from wave energy a more reliable energy source than wind power since wind is not constantly blowing. However, the amount of energy transported through waves does vary every year and from season to season.
4. Enormous energy potential: The quantity of kinetic energy exerted in a wave is enormous – that energy gets captured by wave energy converters to produce electricity. The ocean provides a lot of potential for energy production because it is constantly moving and generating energy. There is also potential because many countries have access to an ocean or a sea that can help power their electric grids.
5. Less dependency on fossil fuels: Dependence on fossil fuels can be reduced if energy from wave power is extracted up to its maximum. This will help curb air pollution and also provide green jobs to millions of people.
6. No damage to land: Unlike fossil fuels, which cause massive damage to land as they can leave large holes while extracting energy, wave power does not cause any damage to the earth. It is a safe, clean, and consistent method to produce energy from the ocean.

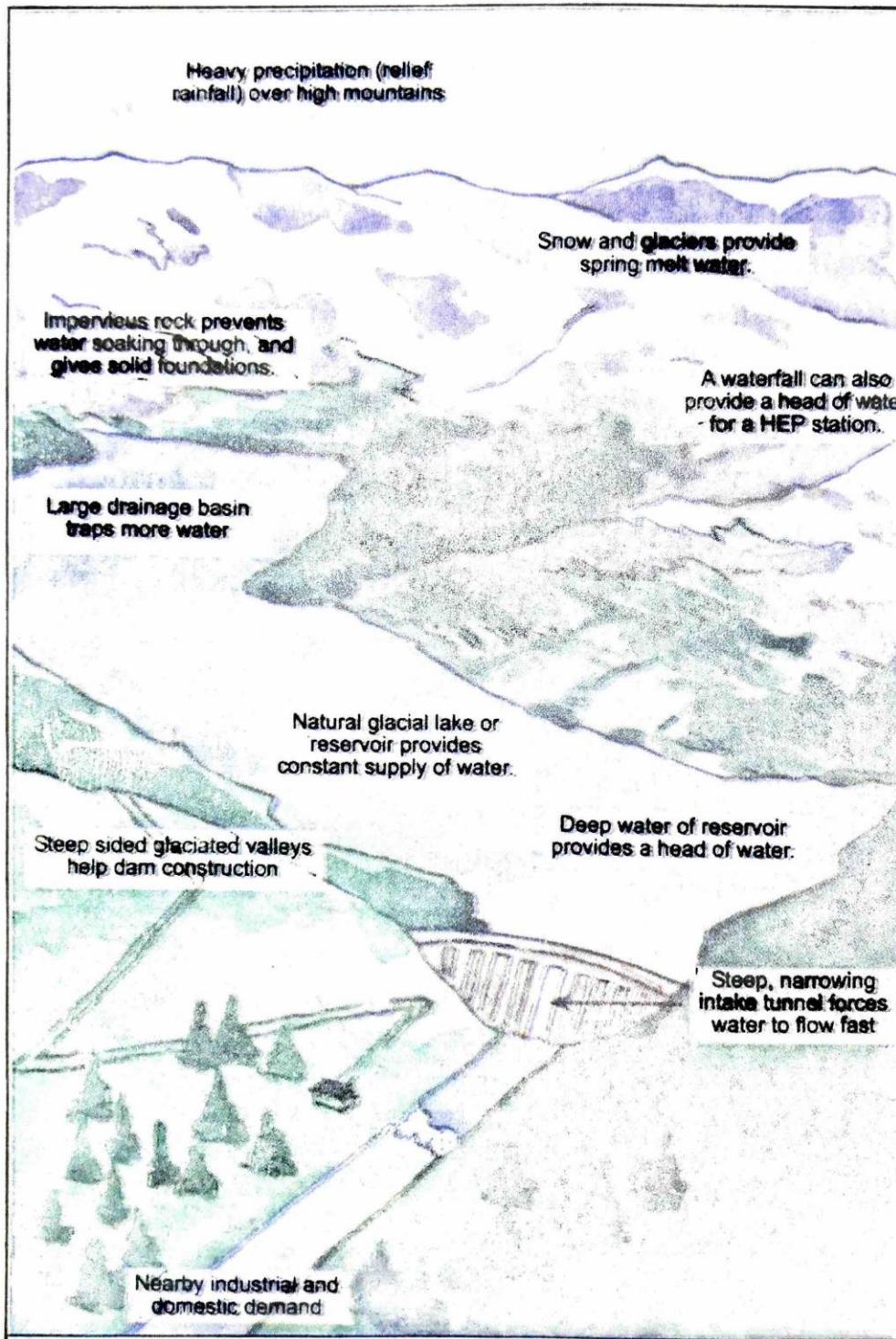
Disadvantages of Wave Energy

Besides the good advantages of wave energy, it has few disadvantages, which are listed below:

1. Environmental effects: Because wave energy is still developing, primarily in research, there is no measure of the environmental impacts of large-scale power stations on the shore. Establishing plants directly on the beach might be harmful because they would be unsightly and can cause damage to marine life and the surrounding ecosystems. Local fishing zones could also be affected, or the plants could cause more coastal corrosion.
2. Highly expensive: Wave power is an energy technology in the early stages of development, making speculating on prices difficult. Currently, the prices of wave power are generally very high because they are in the research phase of development, but the prices can go down in the future. At the moment, no energy company is utilizing wave energy at a large scale, which would bring the cost down.
3. High maintenance costs: Maintenance for these plants is estimated to be very expensive because they will be submerged in constantly moving saltwater. The constant movement can lead to more breaking. Wave energy plants will most probably need regular and costly maintenance.
4. Hard to scale: The biggest drawback at the moment is that no utility can install wave farms as they are not yet large enough to produce a considerable amount of electricity. The technology is expected to grow, but it remains challenging to implement wave energy generators at a usable scale

Advantages of Solar Energy	Disadvantages of Solar Energy
Renewable Energy Source	Cost
Reduces Electricity Bills	Weather Dependent
Diverse Applications	Solar Energy Storage is Expensive
Low Maintenance Costs	Uses a Lot of Space
Technology Development	Associated with Pollution

- understand the physical and human conditions that favour the development of multi-purpose hydel schemes



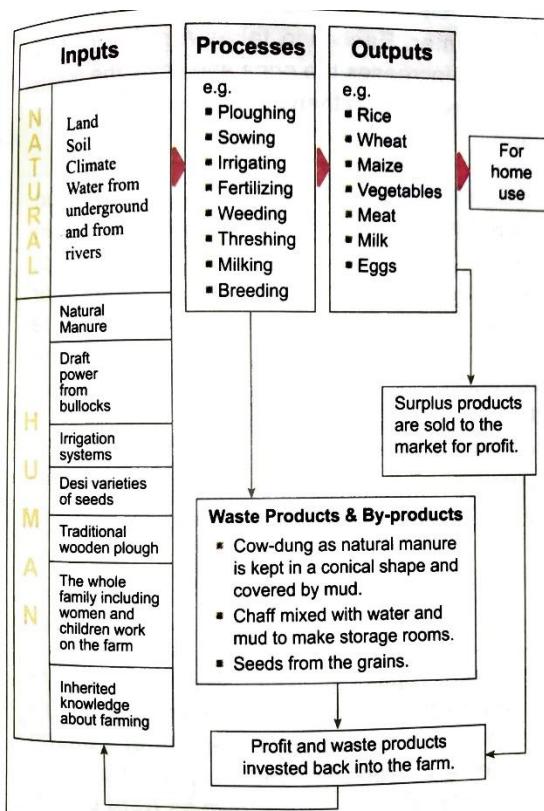
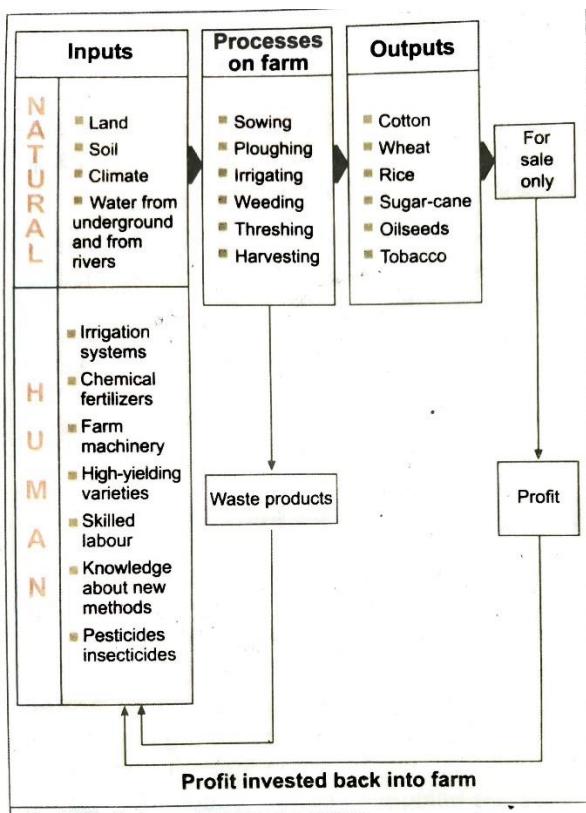
- Explain why the supply of electricity is not sufficient or reliable to develop many parts of Pakistan.

Many power stations aren't working to their full capacity due to financial constraints, as well as lack of technology and technical experts. Siltation is a problem in Dams which is further backed by reduced flow of water in reservoirs in winters. Electricity generated is first shifted to National Grid Station, which results in energy loss. In thermal power stations such as KESC and WAPDA, power is even stolen.

4. Agricultural Development

Name of crop	Soil	Temp.	Irrigation	HYV's	Area
Wheat(Rabi)	Claey, loamy	15-25degrees	1500-1800mm	Maxi Pak	Okara, Multan, Faislabad
Cotton(kharif)	Loamy,sandy	30-35degrees	1000-15000mm	Sojin78	Multan, sahuwal, sukkhur
Rice(kharif)	Loamy, water retentive soil	30-35 degreed	1800-2200	Basmati	Okara, Larkana, Gujrat
Sugarcane (kharif)	Loamy, Claey	25-35 degrees	1500-1800mm	JN88	Okara, hyderabad, peshawar
Tobacco(Rabi crop)	Sandy,Loamy	20-30 degrees	200-250mm		Peshawar, Multan, NWFP
Maize (kharif crop)	Porous soil	30-35 degrees	50-500mm	Ajinkya seeds	Peshawar, Sargodha
Pulses(kharif crop)	Loamy	20-25 degrees	400-500mm		Punjab, rawalpindi
Millet(Kharif crop)	sandy soil	30-35 degrees	350-400mm		Tharparker, kohat, Attock

- Understand how small-scale subsistence farming, cash crop farming and livestock farming operate as systems made up of inputs, processes and outputs.



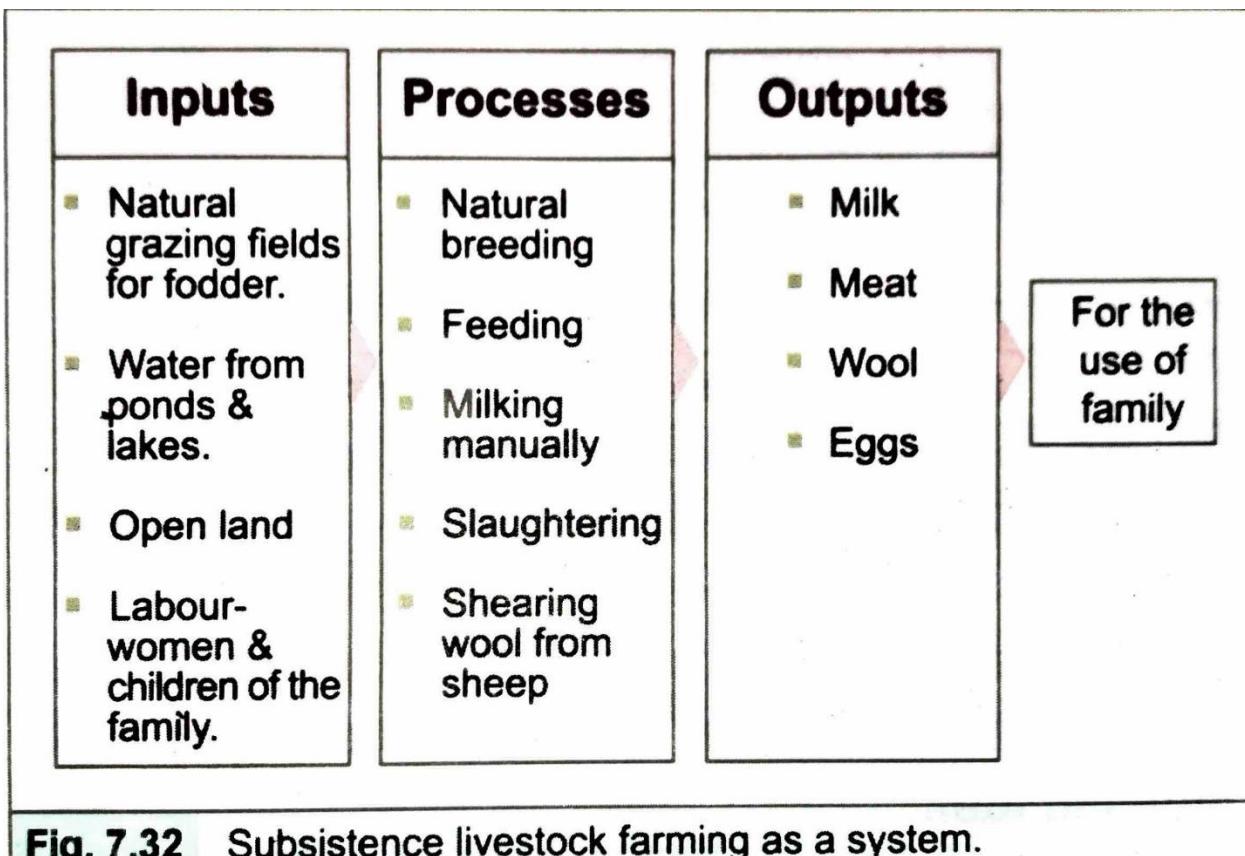
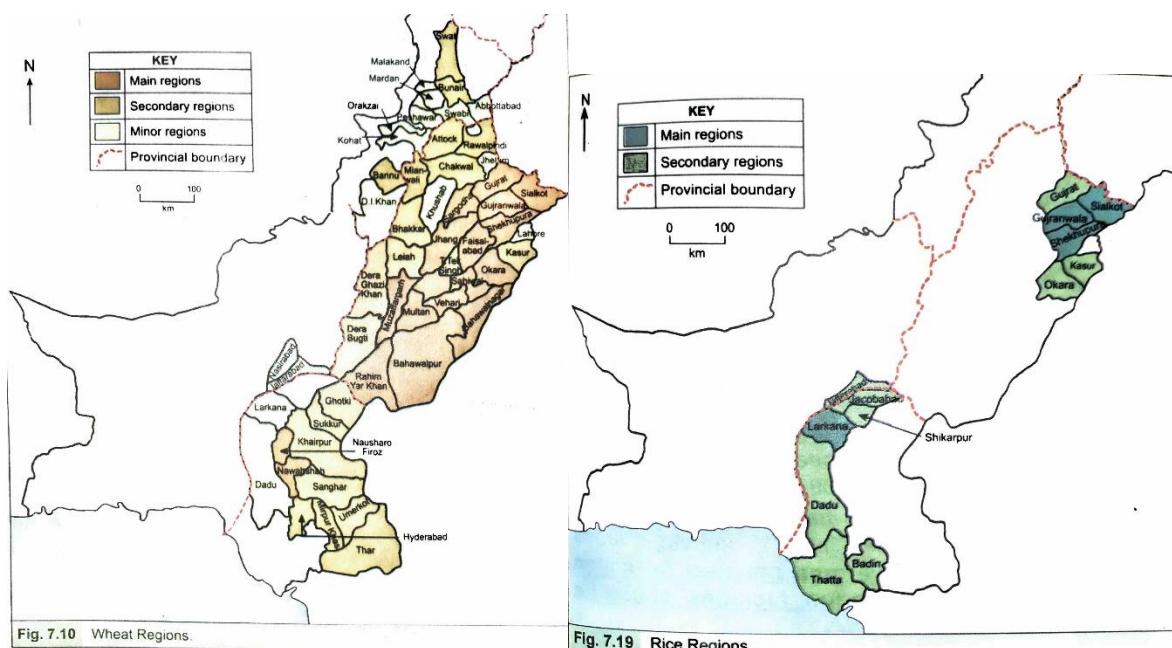


Fig. 7.32 Subsistence livestock farming as a system.

- identify on a map the main areas where cotton, rice, sugar cane and wheat are grown, and the main areas where buffalo, cattle, goats, sheep and poultry are reared



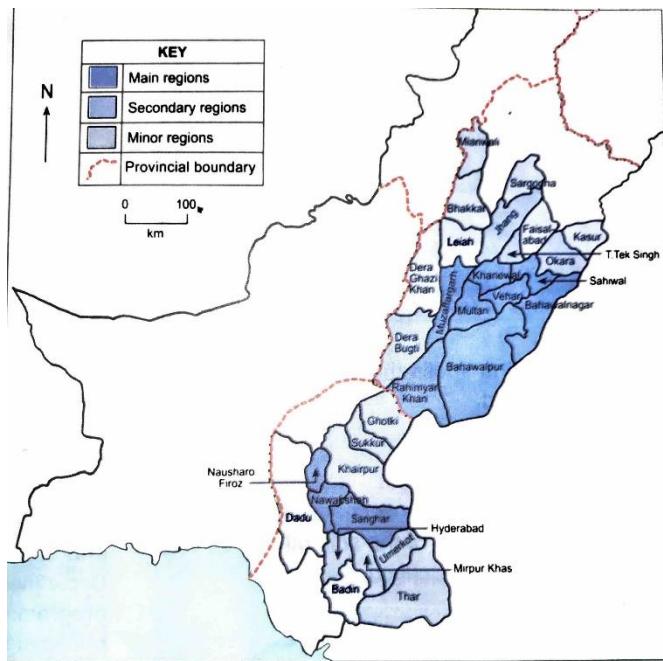


Fig. 7.20 Cotton Regions.

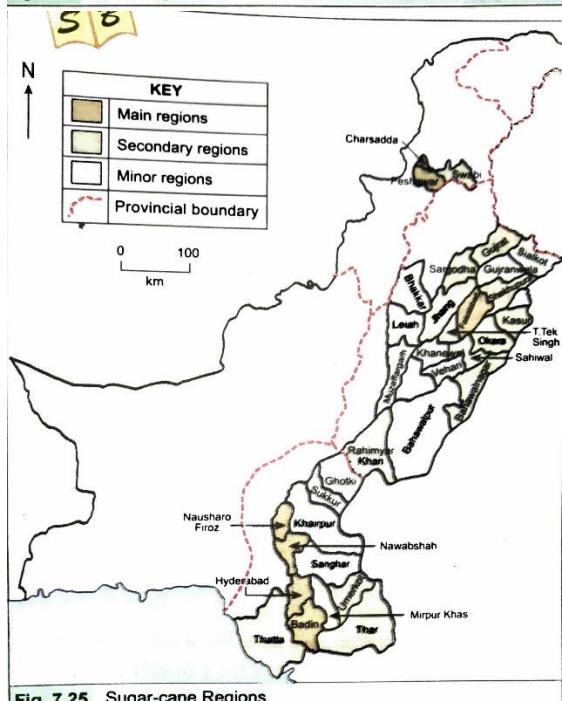


Fig. 7.25 Sugar-cane Regions.

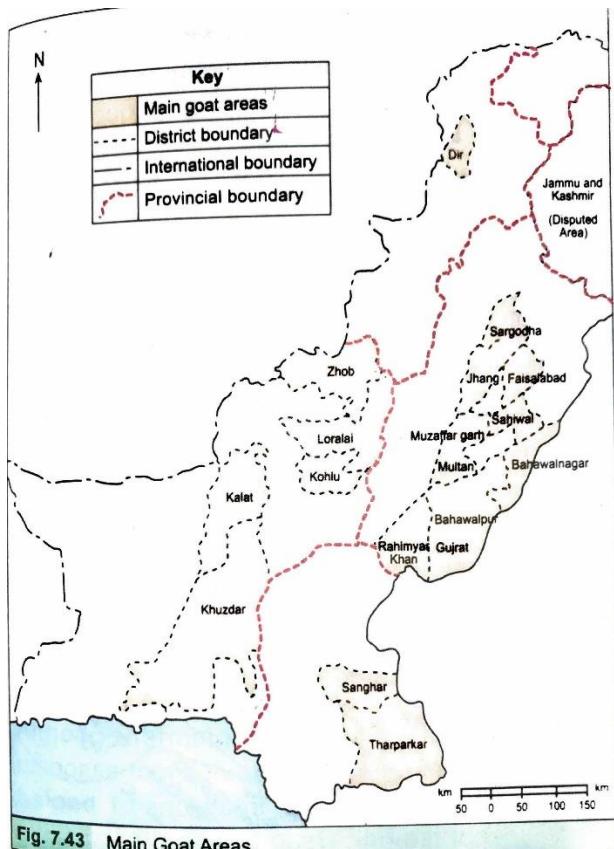


Fig. 7.43 Main Goat Areas.

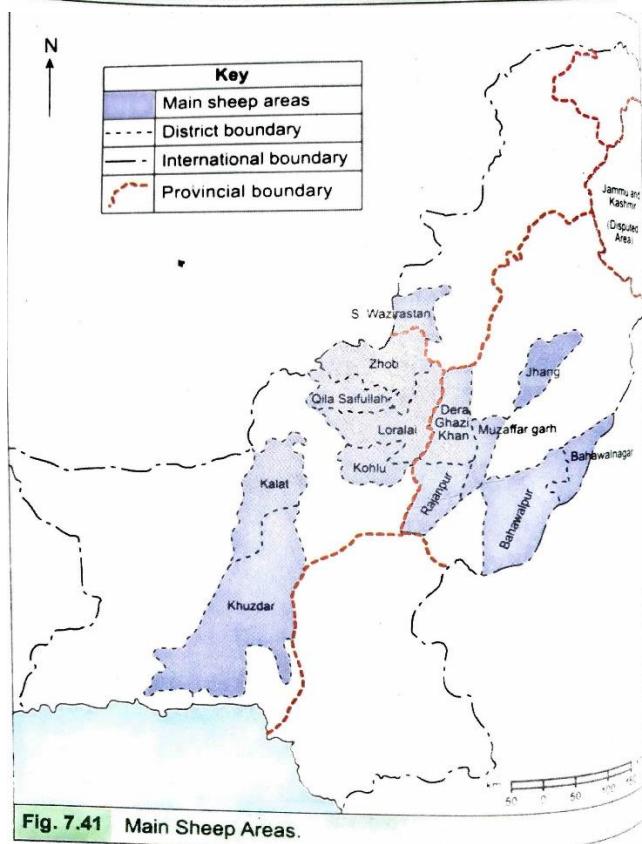
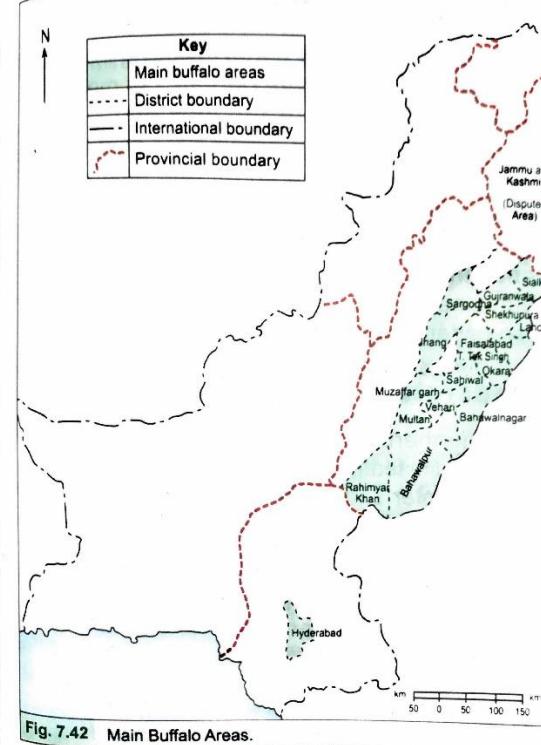
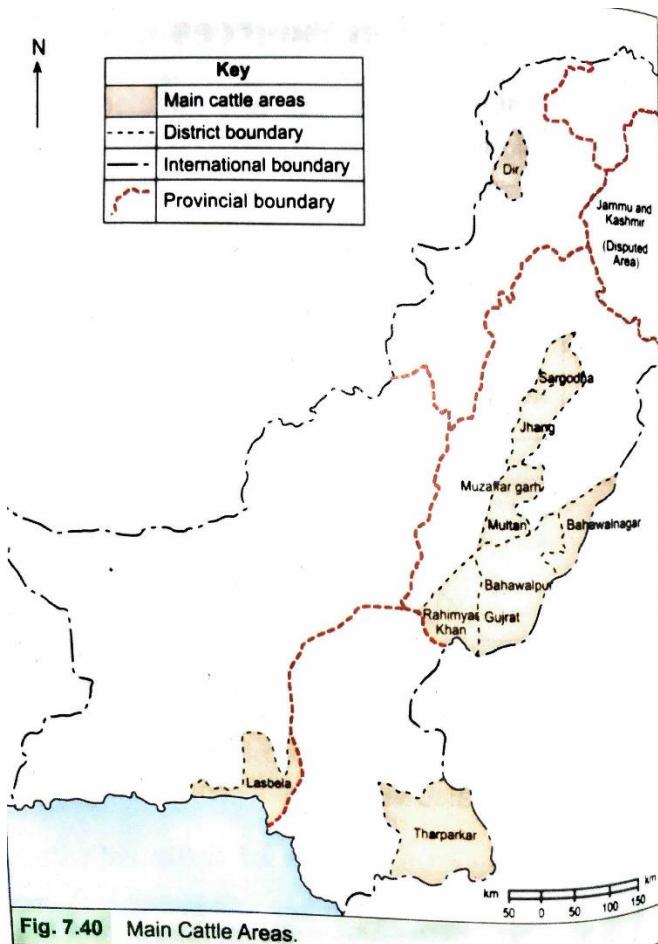


Fig. 7.41 Main Sheep Areas.



- state the uses of the crops named above

Wheat: Make Chapati, main course of local food. Cereals, biscuits, etc. are also made.

Rice: Main course of local food. Cereals, snacks, etc. are also made.

Sugar Cane: Sugar cane juice, sugar (Brown and white both), Bagasse (bi-product; chipboard), Molasses (base of acids)

Cotton: Cotton buds, Cotton Yarn, Cotton cloth, Garments.

- state the main products of the livestock named above and the uses of those products

Main products of livestock includes, Milk, Manure, Leather or skin, wool, eggs, hides, meat.

Uses: Milk is drunk itself or used to make oil, cheese and yogurt. Manure is used as fuel or organic fertilizer. Leather is used for the manufacture of jackets and shoes while woolen shawls are made. Eggs itself is used and is moreover a raw material of many bakery products

- Identify the main areas for the cultivation and growth of each of the following: apples, apricots, bananas, dates, maize, mangoes, millet, oilseeds, oranges, pulses, tobacco and vegetables. Know why they are grown there and state an important use of each.

Apples	Mastung	30-32 degrees Fahrenheit, at least 8 hours of sun during day	Jam
Apricot	Sawat, Chitral	Sunlight, loamy soil	Apricot oil is used for cosmetics and apricot juice is used as medicine
Banana	Lower Sindh (hyderabad, thaata, nawabshah)	Hot temperature, loamy soil, humidity and frost free periods	Chips, flavors
Dates	Multan, DJ khan, sukkur	Dry to hot temperature and warm nights	Used as a medicine sometimes and is also eaten raw.
Oranges	Punjab, KPK, Sindh, Balochistan	High temperature, high sunlight	Jams, flavors, juices
Pulses	Punjab	Warm temperature, moist air	Used to make soups and food course
Maize	Punjab, Sargodha, Jheng	Warm temperatures, high rainfall	Usually used to make animal feed, is also used in making of products like starch and cereals
Mango	Mirpur Khas	Low rainfall, low humidity and well-drained soil.	Jams, juice to drink, flavorings
Millet	Thatta, Mirpur	Warm temperature, fertile soil with 5/6 pH at least.	Used to make bread, beer and cereals
Tobacco	Peshawar, Multan, Gujranwala	20 -30 degree C temperature with a frost free period	Used for smoking of cigarettes and leafs are used as antiseptic

- **explain how natural and human factors affect production on small-scale subsistence farms, including:**
 - rice grown using traditional methods of ploughing, transplanting, irrigating, harvesting and threshing on small, fragmented holdings using family labor
 - wheat grown in areas dependent upon rainfall (barani farming areas)
 - dates and vegetables grown using karez irrigation in a desert oasis

Rice cultivated using primitive methods have of course low yields. Let's break it down- ploughing is first process, it must be done finely, so that soil may get air properly and sustain the nutrients along with water but traditional ploughing methods aren't that fine. Transplanting done by hand may break the roots of germinated seedling and that will hamper its growth. Old irrigation methods may result in waterlogging and thus salinity. Further, they may not be able to suffice the need. Primitive harvesting methods, results in some of the crop to ripen more than needed as the process is slow and crops harvested at last will suffer these things.

Wheat needs about 1000mm-1500mm of rainfall and rest has to be made up by irrigation but in Barani farming, if rainfall is low then the crop will fail due to malnutrition.

Karez constructed as a series of well-like vertical shafts, connected by sloping tunnels, which tap into subterranean water in a manner that efficiently delivers large quantities of water to the surface by gravity, without need for pumping. However, they are also dependent on rainwater so like wheat it'll also fail.

- **explain how natural factors, including climatic requirements, and human factors affect the production of cotton, rice, sugar cane (kharif crops) and of wheat (a rabi crop) under the cash crop farming system**

Factors Affecting Agricultural Production

Pakistan is predominantly an agricultural country with a variety of crops being grown. Farmers' decisions about which crop to grow or which animal to rear and what method to use to produce the output, depend upon an understanding of the most favorable physical and human factors

Natural (Physical) Factors

Topography

Usually the flatter the land, the larger and more efficient is the farm. The more valuable crops like wheat, cotton and sugar-cane are successfully cultivated on these flat lands. Large commercial farms are rare in the mountainous regions and large areas of such farms there are non-existent. Output tends to decline as the land gets steeper and higher.

Soils

Rich soils produce high farming output. Alluvial and Loess (fine soil deposited by wind) are best suited for farming.

The River Indus and its tributaries spread alluvium on their banks making the soil rich and fertile. Since the building of the dams and barrages this does not happen so often. Soils that are rich in humus are also best for farming. Although Pakistan's soil lacks organic matter this deficiency can be met by using nitrogenous fertilizers. These are making soils suitable for cultivation of many crops.

Water including Rainfall

The areas located to the north, including the Potwar Plateau, receive adequate rainfall. For most of the year this area tends to produce crops without irrigation and has good grazing for animals. The drier areas towards the south and east are only suited to arable farming with the help of irrigation. Water for irrigation comes from the snow-fed and monsoon-fed rivers flowing from the Northern Mountains or from groundwater, sometimes from deep underground.

Temperature

In the northern areas, the length of the growing season is limited from April to September whereas, in the sunnier south, cereals and fruit can ripen throughout the year.

Pests and Diseases

Pests and diseases are likely to attack crops if preventative and curative measures are not taken. This problem is more common for small-scale subsistence farmers than for the large cash crop farmers. The small-scale subsistence farmers cannot afford to buy pesticides and insecticides. An attack by pests and diseases reduces agricultural output. Sometimes a farmer's whole crop may be destroyed, leaving him in distress.

Human Factors

Irrigation Facilities

If rainfall is not sufficient or reliable, farming can still thrive with irrigation. Even in humid regions irrigation is used to improve yields. The development of irrigation systems is discussed in Unit 3. Here it is just emphasized that, with the extension of irrigation facilities, crops can be grown twice or thrice a year and the cultivable area increases. Some vegetable and salad crops can even be grown up to ten times in a year. Even the deserts of Sindh (Thar) and Punjab (Thal) have been reclaimed and made productive. Recently, some areas of Balochistan have also been provided with irrigation facilities e.g. Lasbela district.

However, canal irrigation can also cause problems, for example those of waterlogging and salinity which have destroyed large cultivable areas in Sindh and Punjab. There is an urgent need to implement waterlogging and salinity control programs in an efficient and effective way. The installation of tube wells is increasing in those areas where the water-table is high. Apart from supplying water for irrigation, it also solves the problem of waterlogging and salinity.

Despite having one of the best canal networks in the world, there is huge wastage in the irrigation process. Many of the canals were built during the British period, and they need rehabilitation and remodeling. Cleaning and maintenance of canals is not done on a regular basis. A lot of water seeps into the ground through the unlined canals causing water wastage. In order to have a better yield, a regular supply of water to the fields is required.

Fertilizers

The application of fertilizers (traditional manure or chemical fertilizers) has increased output. Nitrogenous fertilizers are used extensively. They are 75% of the total fertilizers used, as the soils are deficient in organic matters. Phosphate and potash constitute the remaining 25%.

Mechanization

The Introduction of machines like tractors, tillers, combine harvesters, threshers, reapers and transplanters for rice has increased agricultural output but has led to a sharp decline in number of people employed in agriculture sector

Although farming is not fully mechanized, the response to mechanization is encouraging. It has helped to increase the farmers' incomes by minimizing pre- and post-harvest losses. It has also generated non-farm employment. As a part of agricultural support, the Government provides a scheme of Green Tractors and tube wells to be financed through the Agricultural Development Bank of Pakistan (ADB), to provide tractors at concessionary rates and in installments.

High-yielding Varieties Of Seeds (HYVs)

The use of high-yielding varieties also increases output by 10 - 20%, if fertilizer is applied and sufficient water is supplied. The HYVs are extensively used on commercial farms.

Marketing of Agricultural Products

Of Agricultural directing agricultural marketing is produce the business from the activity farms to the people who consume it. It includes transportation, processing, storage, wholesale and retail.

Agricultural marketing is disorganized with a lack of transport facilities and a large number of intermediaries, resulting in an increase in costs and reducing output.

Size of Farm

The size of a subsistence farm is small. Population pressures and laws of inheritance have led to the break-up of farms into small cultivation units. These small, fragmented farms are uneconomic. Their drawbacks are:

- Machinery cannot be used.
- Small and fragmented holdings are difficult to supervise.
- Loans cannot be obtained to develop small holdings.

- Irrigation is difficult on small and discontinuous farms.
- Experiments cannot be carried out for increasing production.

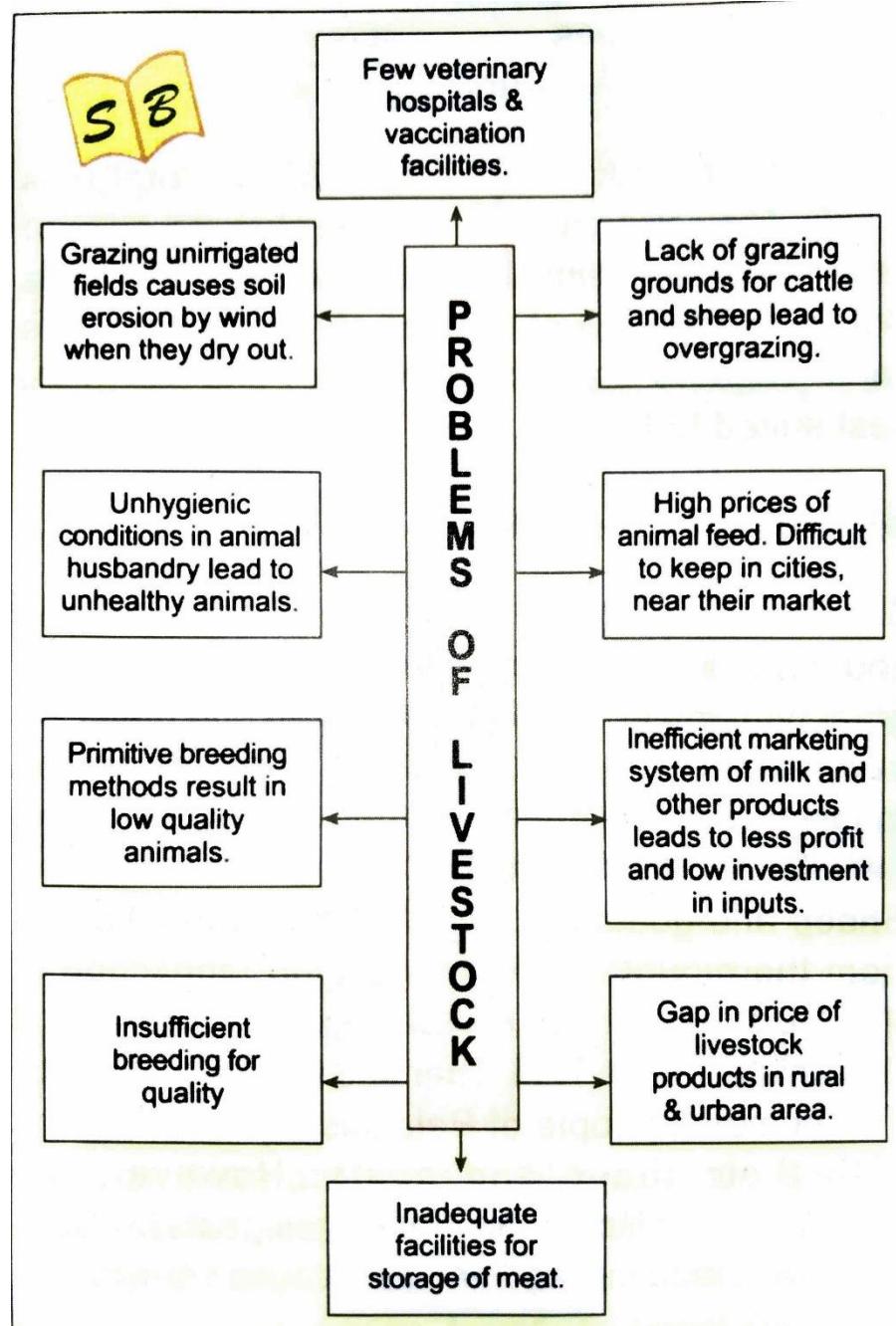
The output of a smallholding is small so profits are low. Owners of small holdings are trapped in a vicious cycle. They are unable to improve their farm inputs resulting in low production and low profit.

The solution lies in consolidation of holdings. The government has fixed the minimum holding at 5.0 hectares of irrigated land at the present level of technology (Holding Act 1960).

Plant Protection Programs

Pests and insects inflict heavy losses on crops. Plant protection programs can be preventative and curative. Preventative measures prepare treated seeds to be resistant to diseases and protection measures include aerial and ground spraying with insecticides against pests and diseases. The Plant Protection Departments maintains vigilance surveys for the control of locusts in the country, particularly in the desert areas. The public sector provides pest scouting advisory services and aerial spraying.

- explain how natural and human factors affect livestock farming (poultry farming, the keeping of buffalo and cattle, the keeping of livestock) on small-scale subsistence farms and the keeping of cattle, goats and sheep on a nomadic or semi-nomadic basis, including transhumance



- **describe the different types of irrigation and explain the advantages and disadvantages of each for small-scale subsistence farming, and for the growing of cotton, rice, sugar cane and wheat:**
 - **canal irrigation – karez, inundation and perennial canal**
 - **lift irrigation – Persian wheel and tubewell**
 - **understand the roles of dams, barrages, link canals, distribution canals, field channels and bunds**

Karez system provides water without any water being lost through evaporation but it's dependent upon rainwater so it's not a reliable source of water especially for rice which needs rainfall up to 2200mm.

Inundation canals provides water to areas which are from a distance from a certain water body, so that cultivation may take place especially for small scale farmers who can't afford other expensive sources of irrigation but at the same time inundation canals gets water only when water table is high enough in those water bodies, so high water requiring crops such as rice may be damaged.

Perennial canals provides water to areas away from dams or barrages and allow cultivation in there but due to siltation water flow could be decreased. Furthermore, in winter even less water may be available.

Persian wheel is an efficient method to draw water from water bodies effectively using animal draft power but a small scale farmer will also have to breed cattle to use such methods which will add to his expense.

Tube well can draw water from as below as 92m so a lot of water will be available to crops but they are expensive to build and electricity is required to power the pumps which not only adds to expense of a small scale farmer but electricity may also be available in those areas.

Dams are part of multipurpose hydel projects which not only stores the water and distributes it accordingly, thus managing the flow and preventing floods but also generate electricity. Other than this they act as tourist spots and can be used for fish breeding.

BARRAGES

Barrages store water to be used for irrigation in arable farming. These long structures are also used for flood control. Example: Marala barrage in River Chenab which supplies water to Ravi Link Canal and Upper Chenab Canal.

How does a barrage work?

Gates are closed, barrage stores water and holds it. This water is linked to canals which distribute in a network of small canals.

Differences between a dam and a barrage?

- a. barrages are lower in height than dams
- b. barrages are longer than dams
- c. dams can help with generation of electricity while barrages cannot
- d. barrages can be built in flat areas while dams need narrow/deep valleys

LINK CANALS

These are the main carriers of water from western rivers and from rivers to canals. Example: Marala Ravi Link Canal

FIELD CHANNELS

It means the canal off taking from any of main canal or branch or any water course that supplies water to each field up to areas of 10 hectares

BUNDS

These are circles of stones placed on the ground to hold water on the soil rather than letting it run quickly over the surface

- **explain the causes of waterlogging and salinity, and:**
 - **explain how land damaged by it can be restored**
 - **evaluate how agricultural practice and water management can be improved to prevent it happening**

There are many problems faced by water supply. Water logging and salinity is one of them. It is caused when water table raised under the soil thus when water is evaporated salt is left behind that makes land uncultivable, it's usually a result of seepage of water from rivers. It can be solved by lining of canals or by planting eucalyptus tree, which absorbs excess water. Add Gypsum to soil will also help it and so will closing of canals that don't have much use. SCARP is entrusted to deal with it.

Siltation is another hinder. It's when soil is eroded due to fast flowing rivers along the mountains and banks of rivers the silt is then deposited at bottom of river or Dam, thus reducing the capacity and making floods more likely to occur. Further, the turbines in dams may also get damaged and as capacity of rivers is reduced the water supply will also decrease. It can be solved by lining of canals, planting trees on banks to hold fast to soil, raising the wall of dams and raise embankments of rivers. Applying silt trap before entrance of dam will prevent silt from even entering it.

Water pollution is a result of untreated discharge of toxic waste which includes toxicants such as Sulphur into rivers or nearby water bodies. The spillage of oil from ships is another cause along with Chemicals (Pesticides, Insecticides and Nitrogen Fertilizers) that are washed off to water bodies. NGO's must spread awareness about consequences of such acts so that people refrain from it. Moreover, government should enforce strict laws regarding treatment of waste before its discharge.

Encouragement of usage of organic fertilizers may also help or the whole concept of organic farming.

- **understand how government action has helped to increase production through land reforms, the promotion of training and the use of machinery, chemicals, improved seeds and other means**

Land reforms are made by government, which are mentioned in image below but they were of little avail due to corrupt administration and cunning schemes of major land owners. However, government took other steps too which includes development and manufacturing fertilizers to add to

fertility of soil under Pakistan Agricultural Research Council. Agricultural Development Bank of Pakistan provided loans for mechanization and One Window operation made it far easier for farmers to access it as accordingly on Mondays and Thursdays all the officials involved in the process were present at a common spot. Regular checks for pests were also carried out. Advisory services were also made available along with aerial sprays.

- **understand and evaluate the possibilities for and problems of the development of agriculture and its sustainability**

The agriculture in Pakistan can be developed; fertilizers which adds to the fertility, if produced locally they'll be cheaply available, thus more people can afford it, resulting in increased yields. They will be developed by already established, Pakistan Agricultural Research Council. Further, loans to mechanize the farms, will also help to increase yields. Agricultural Development Bank of Pakistan will issues such loans, which is also already established. Pesticides, Insecticides, areal sprays will also help to fight devastating pests, insects and diseases such as the leaf curls. Irrigations facilities can be improved, so that barren lands could be cultivated. Not only will that but, the problem of water logging and salinity will also be solved that makes cultivation impossible. However, they all cost much and will be a burden on economy, it'll also take a lot of time.

In order to make agriculture sustainable, several things could be done;

- We can use organic farming methods; instead of fertilizers, animal manure. Similarly, instead of insecticides we can get birds that eat those insects but don't damage the plant.
- The government and private institutions must develop new, highly productive and environmentally sustainable production technologies and systems.
- The problems of waterlogging and salinity must be addressed promptly to protect the cultivable land through various schemes.
- Soil management through afforestation projects is another measure to maintain the fertility of the soil by improving its organic contents. Moreover, to avoid soil erosion, the forests should not be cut down from the slopes of the hills. Over-cropping or multi-cropping should not be allowed if it is leading to exhaustion of soil nutrients.
- Reclamation of deserts with the help of irrigation techniques.
- The avoidance of poor farming practices. Subsistence farmers living in different topographical regions have acquired invaluable traditional knowledge and cultivating techniques. If these are linked with modern technology they can contribute to developing sustainable farming systems. The key to further advances lies in coordination between farmers and research services. This will help to discover environment-friendly techniques for sustainable agriculture. Connecting rural people to knowledge networks, particularly when allowing them to learn from each other, is essential for the development of sustainable farming systems.

5. Industrial Development

Candidates should:

- understand the meaning of the terms raw materials, refined, processed, manufactured and value-added
- understand the meaning of the terms infrastructure and services
- be able to define the terms primary industry, secondary industry, and tertiary industry

PRIMARY INDUSTRIES

Primary industry is defined as an industry that is concerned with extracting the natural resources on the earth so that they can be converted into consumable products

SECONDARY INDUSTRIES

Secondary industries are those that take the raw materials produced by the primary sector and process them into manufactured goods and products.

TERTIARY INDUSTRIES

The tertiary industry is the services sector of an economy, encompassing medical providers, educators, financial services, haircuts, and personal trainers, among many others.

INFRASTRUCTURE

It refers to fundamental physical and technological frame works that a region or industry establishes for its economy to function properly.

SERVICES

A service is an "(intangible) act or use for which a consumer, firm, or government is willing to pay." Examples include work done by barbers, doctors, lawyers, mechanics, banks, insurance companies, and so on.

RAW MATERIAL

The basic material from which a product is made is called raw materials. Such a cotton may be used as a raw material to produce products such as cloth

REFINED PRODUCT

A refined product is made when we reduce the impurity in a substance for example crude oil is refined into gasoline which is the refined product

PROCESSED

This refers to any improvement made to a

MANUFACTURED

Manufacturing is the creation or production of goods with the help of equipment, labor, machines, tools, and chemical or biological processing or formulation. It is the essence of secondary sector of the economy.

VALUE- ADDED

This is the additional features or economic value that a company adds to its products before offering them to customers. This attracts more customers which boosts revenue and profits.

- understand the definitions used in Pakistan to distinguish between large-scale industry, small-scale industry and cottage industry

Industries	Features
Primary Industry	It is concerned with the collecting or making available of material provided by nature, e.g. agriculture, fishing, mining, quarrying.
Secondary Industry (Processing and Manufacturing Industry.)	It is concerned with transforming materials provided by the primary industries into products more directly useful to people.
1) Small-scale cottage / Craft Industry	The traditional or craft industry normally does not use modern technology and is often organized on a family basis.
2) Small and Medium scale Factory	It uses modern technology and is organized into firms or companies which operate plants, factories or workshops.
3) Large-scale Factory Industry	Large-scale manufacturing converts raw materials such as cotton, timber, rubber, copper, bauxite and limestone into manufactured goods like shirts, paper, tyres, copper wire, aluminium and cement. Through greater automation and standardized mass production, large-scale manufacturing has a much higher output per worker.
Tertiary Industry Service Industries	Industry varies greatly in terms of size and complexity. It ranges from small-scale industry to a multinational company that operates in many different countries and produces many different products e.g. I.C.I., McDonald's, Toyota.
Tertiary Industry Service Industries	They provide services such as banking insurance, transport and hotels.

- state the main products of the listed industries and whether they are destined for the domestic market and/or for the export market

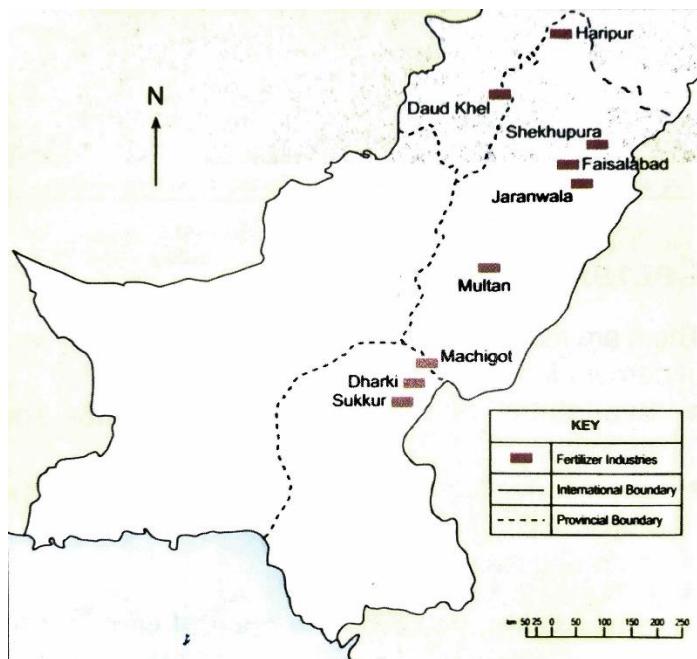
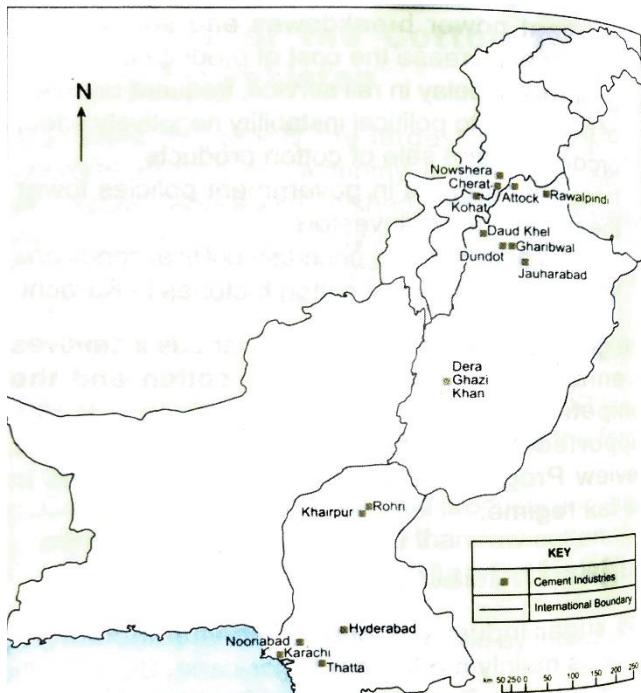
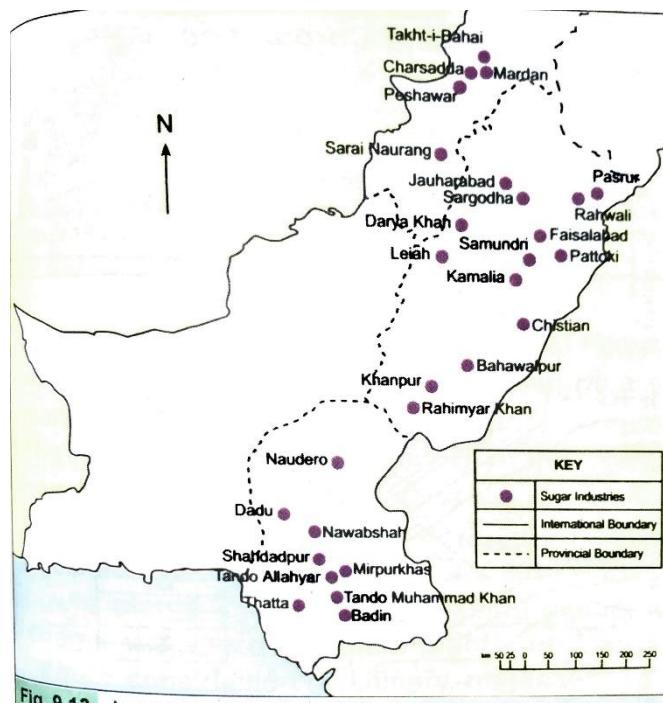
Industry	Products	Destination
Cement	Cement	Both Export and Local but mainly local
Cotton	Raw cotton, cotton cloth, cotton yarn, garments	Both Export (one of the major exports) and Local
Sugar	Bagasses, molasses, sugar	Both export and domestic market
Crafts	Pots, glasses, plates	local
Fertilizer	nitrogenous fertilizers	local
Iron and Steel	Stainless Steel, Sheets, Iron bars, etc.	Both but mainly local
Brick	Bricks	local
Sports goods	Cricket bats, footballs, guards, etc.	export
Surgical goods	scissors, surgical blades, knives and scalpels.	export

- state the main locations of the listed industries and explain the factors influencing location and development – capital, site, sources of raw materials, power, water, labor, communications, government policy and other means

The selection of a particular location

Location Factor	Feasibility Considerations
Physical	
a) Site requirement	Is there cheap land available of the correct size, level and well-drained? Can the land be changed to meet our needs?
b) Natural routes	Is there a natural land or sea route, which provides speedy and cheap transportation for raw material & industrial goods?
Human	
c) Access to market	What is the distance between the site and the market? What is the cheapest form of transport available?
d) Availability of raw material	Are sufficient raw materials available at an affordable price? Will the supply of raw materials be reliable?
e) Skilled labour	Is the required number of workers with necessary skills available?
f) Power supply	What sources of power are available and at what cost?
g) Industrial linkage	Are there any industries in the area that we can benefit from?
h) Capital	Is capital available for developmental purposes?
i) Government policies	Does the government offer any incentives to develop a new industry ?

Location	Factors affecting Location of Cotton Textile Industries in Pakistan
Karachi	Sufficient labour is available from all over the country. Imported machinery is saved from additional transportation cost, as Karachi is located at the port. No extra transport charges on export of cotton goods. A large domestic market for cotton products because cotton is the most comfortable fabric to wear in the hot and humid climate of Karachi and adjoining areas. Availability of power supplied by Korangi Thermal Power Station, Karachi Nuclear Power Plant and Bin Qasim Thermal Power Station. Linked to the rest of the country by an efficient transport system. Availability of capital and experienced entrepreneurs.
Faisalabad	Located close to the cotton belt of Punjab. Labour force available from the adjoining areas. Large local market in thickly populated province of Punjab. Favourable government policies e.g for infrastructure.
Hyderabad	Located in the cotton producing areas of lower Sindh. Large local market in Sindh. Not far from the port of Karachi for importing machinery and exporting products.
Other Centres	Domestic market. Enjoy favourable government policies like tax holidays and other incentives.



Factors considered for location of Pakistan Steel Mill at Pipri near Karachi.		Description
Physical		
A. Site		Flat, cheap, unused land was available next to Gharo Creek at Pipri.
B. Natural Routes		Port Qasim Fig 9.18 has a natural harbour that facilitates imports and exports.
Human		
C. Capital		The former USSR provided economic assistance in the form of technology and capital.
D. Raw materials		Iron ore, manganese and most of the coking coal is imported through nearby Port Qasim. Limestone, needed as a flux, is brought by road from the Murli Hills near Thatta. Large quantities of water are required in the process of making steel; it is brought from Lake Haleji, 50 kms to the east (Salt water from the nearby creek is not suitable!).
E. Energy		Port Qasim and Karachi have the highest electricity generating capacity in the country. Pipri thermal power station produces 21% and Korangi thermal power station produces 15% of the total thermal energy produced. In addition, Karachi has a Nuclear Power Station.
F. Labour		Skilled and unskilled labour is available locally from Karachi.
G. Markets		Many industries that use steel products are located in Karachi. It also supplies cold rolled sheets, galvanized sheets, pig iron, coils, slabs and coaltar to other parts of the country. Over half of the steel produced at Pipri is used in Punjab.
H. Transport		Pipri is connected to the main Karachi-Kotri railway. Metalled roads also connect this area to the main road system (Fig 9.18).
Fig. 9.20 Why Pakistan Steel Mill is located at Pipri near Karachi.		

- understand the differences between the formal sector and informal sector of industry

Formal Sector	Informal Sector
Employed by institution	Self employment
Capital intensive with few workers Generally mechanized	Labour intensive using mainly hand tools Very few modern machines are used
Regular working hours and certain wages	Irregular working hours and uncertain wages
Relatively guaranteed standard in quality of goods	Often low standard in quality of goods
Work is located in offices or factories	Work done at home (cottage industries) or on the streets
Legal and registered	Often non-registered
Normally males	Mostly females and children

Fig. 9.31

- understand the range of services provided by the informal sector, and their advantages and disadvantages to the development of Pakistan

Informal Sector	
Advantages	Disadvantages
Meets the local demand by supplying low priced industrial goods.	Is not registered with the government so no revenue to the government in form of taxes.
Provides employment to a large number of the population.	At times produces sub-standard goods.
Makes use of local raw material thus no burden on imports.	Has little potential for further growth due to limited capital and unskilled labour.
Industrial waste can be utilized to produce more industrial goods.	Encourages child labour-children deprived of education.
Provides a door to door supply of everyday use items by street vendors.	Health problems for workers as Labour Laws are not followed.
	Low wages are paid to workers.
	Uncertain and unreliable employment
	Generally a poor quality working environment

Fig. 9.32

[Range of services are mentioned in next bullet point]

- understand the importance of both the formal and informal sectors, and evaluate the contributions of both sectors to the development of the listed industries

Both the Formal and Informal Sectors promote industrial growth in Pakistan. The Formal Sector includes many local and multi-national companies which are registered with the government. The examples of Formal Sector industries are Pakistan Steel Mills, Cotton Textile Mills, Pharmaceutical Companies, Engro Corporation, Unilever, Procter and Gamble, PARCO (Pak Oil Arab Refinery Company), Macdonald, KFC etc. These industrial units make use of modern technology, follow international standards and produce standardized goods. The Formal Sector plays a positive role in the industrial expansion of Pakistan. These industries contribute to goods and services for the domestic and international markets, provide employment and contribute to the GDP (Gross Domestic Product).

The Informal Sector includes only local industrial units which are not registered with the government. Examples of the Informal Sector are cottage industries such as carpets, rugs, embroidery, pottery, ceramics, traditional textile units, unregistered food processing units etc. They also contribute to industrial expansion but in many cases produce sub-standard industrial products. Lack of standardization and no quality control lower the confidence of consumers and reduce demand for these goods. The profit of industry is curtailed and consequently in many cases. It negatively affects the industrial growth. However, despite the weak structure, the informal sector is constantly expanding because it supplies low priced goods to the people

- **state and explain how the governing authorities promote industrial growth**

After the independence Jinnah produced his industrial statement which called upon development industries besides agriculture, thus Pakistan Industrial Development Cooperation (PIDC) was established and under which Pakistan Small Industries Cooperation (PSIC) was also established. They both set up many industries and adopted policies that would encourage the private investment such as Liberal tax concession. Protection to selected infant industries against the competition by foreign producers. Setting up of industrial estates with infrastructure facilities. Technical training for people. Export bonus scheme. Concession on import of raw material and machinery. Loans for setting up industries.

From 1972-1977 all the industries were nationalized and that was a serious setback for industrial development. Then in 1977, policies that were adopted included, No further nationalization. Public sector's activities limited to on-going projects. Therefore, Public sector's share reduced to 19.5% and private sector's increased to 80.5%. After 1988, Liberalization was called to order and all the industries would be operated by private sector, while government will assist it with EPZs, Industrial States, etc.

- **name examples of export processing zones and other industrial estates, explain the reasons for their development and describe their characteristics**

Export Processing Zones (EPZs): EPZs are developed in Export processing Zones Authority and are distributed across the Pakistan such as in Lahore, Karachi (Landhi), Sialkot and Risalpur. The objective of their development is to boost industrialization, increase country's exports by creating facilities for both local and foreign investors (such as duty-free imports, freedom from normal import restrictions, no sales tax) to set up export-oriented units. They further creates jobs and also result in transfer of technology as when foreign companies set up their units therein, they use their technology for production. To set up a EPZ there are certain requirements; It should be near a sea port or a dry port to facilitate the transportation of imported and exported goods. There must be consistency in government policies, to get the confidence of investors. Links to the area from where raw material is transported. Air transport and other means of transport must be available for marketing of finished goods.

- **assess the feasibility of using global communications to enhance employment opportunities in service industries, e.g. call centers**

Call Centers: PTCL is established to provide the connectivity for establishment of call centers across Pakistan, which is the basic requirement for their development. There's a need for call centers as many local and offshore companies are operating service-sector based businesses such as hotels, banks, etc. They all must have customer support service. People in Pakistan are proficient in spoken English. Flexible

call center timings and vanities in call centers for part-time also encourage their development. However, there are some factors that hinder such progress, they include;

- Call Centers only cater for the business and industry in urban areas while around 67% of Pakistan's population lives in rural areas with no access to call centers.
 - Call Centers operate on computers and very few workers are needed to operate the system so large-scale employment cannot be generated. Call Centers use specialized computer softwares due to which only computer-skilled labor meets the employment criteria.
 - The expansion of Call Centers is closely linked to growth in business and industry. If a country is in a state of economic recession, fewer Call Centers will be needed.
-
- **state and describe briefly, with an example of each, some of the natural and cultural attractions of Pakistan that are, or could be made available to tourists**

Attraction in Pakistan: According to a survey conducted by United Nations Development Program and World Trade Organization in 1999 that Pakistan have potential for development of High Adventure Tourism, which doesn't require clean cities, civil amenities, developed beaches and hotels. Thus, they are easier to develop.

However, there are other splendid attraction spots in Pakistan, such as Kaghan Valley; Shogran is famous for its spectacular view and scenery. Fishing is main sport therein due to Kunhar River. Other than Lake Saif-ul-Maluk is also an attraction there. Swat Valley, Gilgit Valley, Skardu, Hunza Valley and Chitral are among other attractions. Moreover, in Pakistan there are archaeological attraction too, due to its rich heritage, they include; Moen-jo-Daro, Taxila & Harrpa. Historic sites includes; Lahore fort, Badshahi Mosque, Shalimar Gardens, Khyber Pass & Tombs of famous personalities such as Allama Iqbal.

Modern building includes Faisal Mosque, Parliament house, Presidential Palace in Islamabad along with dams such as Tarbela and Kalabagh. Salt mine at Khewra is also one of them.

- **Assess the feasibility of developing tourism as a means of increasing employment, development, gross national product (GNP) and gross domestic product (GDP).**

The development of tourism industry depends on the following factors

1. The Presence of Tourist Attractions

The development of tourism in Pakistan primarily depends on the presence of tourist destinations within easy travelling distances between them in order to encourage foreign tourists to visit Pakistan. There is no doubt that Pakistan has genuinely impressive natural, historical and cultural attractions, which may be captivating for the tourists. However, all of these places may not be easily accessible to the tourists due to inadequate transport facilities.

2. Security

Owing to the low level of security, there is, at present, a constant decline in the number of tourists visiting Pakistan. Official records suggest that over 350,000 tourists come to Pakistan every year though the number has been on the decline, especially since the middle 1990s. Even the 350,000 figure is highly inflated because it includes business travelers and Pakistanis living abroad who come to visit their friends on foreign passports. Compare these figures with China or Spain, which get over 40 million tourist arrivals every year.

After September 11, 2001, many foreign tourists have been reluctant to visit Pakistan due to the possible terrorist attacks on foreign tourists. It is not worthwhile to develop tourism unless the level of security is improved in Pakistan.

3. Availability of Capital

Availability of capital for tourism determines the level of its development. The distribution of funds allocated for the development of the tourist industry seems to be inadequate. Much more is spent on advertisements than on the development of infrastructure facilities.

4. The Infrastructure

Infrastructure facilities like all-weather roads, electricity, water supply, hospitals, food supply, and proper sewage disposal systems are essential for the development of tourism. If these facilities are lacking, tourists will be reluctant to visit. In Pakistan, although natural unexplored beauty and a unique cultural heritage attract some tourists, nevertheless the lack of infrastructure facilities de-motivates the less adventurous tourists.

5. Management

Mismanagement of tourist attractions has made some of the popular ones unattractive for domestic and foreign tourists. For example Murree, which was once popular as a tourist point due to its easy accessibility, has started losing its natural charm due to deforestation, congestion, inadequate sewage disposal and environmental pollution.

6. Marketing and Publicity

In this era of globalization, marketing is very important for the promotion of any industry. No matter how excellent your product, if it is not known to the consumer then its maximum potential cannot be realized. Recently there has been some improvement in domestic and foreign marketing after the introduction of Pakistan Tourism Development Corporation's websites. In modern times, publicity can be easily and most effectively done by developing websites. However, marketing and publicity can be further improved.

7. Transport and Communications;

Some of the remote northern areas in Pakistan still remain unexplored due to the lack of transport facilities. For example Kaghan and Naran are difficult to reach, as the roads are not properly maintained. Most of the roads in mountainous areas are non-metalled (kuchha). There is risk of landslides and flashfloods. Airports have been opened at Chitral, Saidu Sharif, Gilgit and Skardu but flights are dependent on the weather. If helicopter services are provided for the tourists visiting the northern areas, then they will not be stranded. This single point will enhance tourism, as the tourist will no longer be afraid of being stranded in the remote northern areas.

8. Government Priorities;

The government policies to develop tourism determine the extent of its development. Some of the economic experts question whether, in a country like Pakistan, where developmental programs cover only a few areas and many of the mineral deposits remain untapped, it is worthwhile to spend huge amounts on tourism facilities. However, it may be worthwhile to develop 'targeted tourism'; that means, to develop those tourist points which are cost-effective and which can bring greater economic benefits.

The Pakistan Tourism Development Corporation is an organization set up for the promotion of tourism in Pakistan. It was established in 1970. Its role in the development of a tourism infrastructure is to concentrate on the opening up of those areas which have a tremendous potential, but where the private sector is reluctant to venture. Initially the PTDC has concentrated on developing small motels in northern areas of Pakistan, Khyber Pakhtunkhwa, near and around the historical and archeological sites that are away from cities, and on major tourist routes such as the Karakoram Highway. These projects have enlarged the tourist potential of Pakistan.

6. Trade

- **name the main exports and imports**

Major exports includes Textile Products (Cotton, Cotton Yarn, Cotton Cloth, Garments, Bedding Lelin) Rugs, Carpets, Sports goods, surgical equipment, vegetables, fish, leather and leather products & fruits.

- **Describe the changes in the types/amounts/value of goods exported and imported in recent years.**
- **Explain the effect of changing trends in exports and imports on Pakistan's balance of trade and economy.**

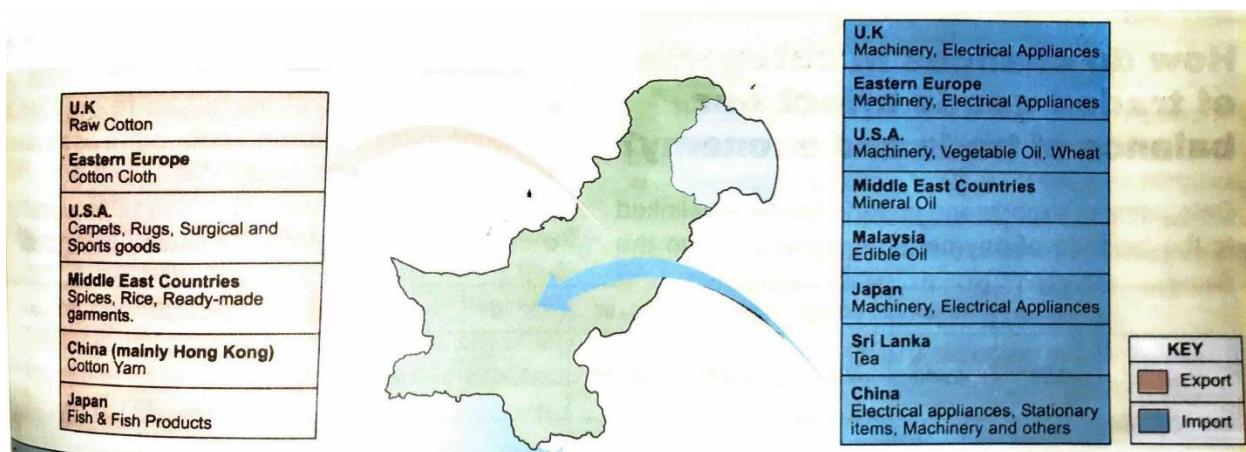
Recently the trends in imports and exports have reformed in Pakistan. Previously, Pakistan as an agricultural country used to import most the machinery (such as Road Machinery) and consumer goods (Ovens, cars, etc.) – these all are manufactured products and cost very high and therefore, was a burden on economy and foreign exchange reserves. On the other hand as an undeveloped country Pakistan exported raw material more, which Pakistan was blessed with. However, now due to industrial development, Pakistan is manufacturing most of the machinery (Heavy machinery is made at Heavy machinery complex and weapons are made at Heavy forge factory) as well as consumer goods and at the same time these industries manufacture value-added goods (i.e. Raw Cotton is manufactured into Cotton cloth, which have higher price in market, thus more profit) and these don't only reduce imports but are also exported, earning more revenue. These changing trends effects the economy as when we are importing high value goods and exporting low value goods, we're more likely to get negative balance of payments and to cover that we either have to use reserves or get loans. After reserves gets exhausted, then again we've to turn to loans. When all this is happening, the money that was to be used at industrial development, is now used to cover the difference in payments, thus development is halted. Loans are hard to pay back due to less industrial growth and if they aren't paid back, it'll result in sanctions and embargos that will further hinder growth, leading to unemployment in country. Therefore the whole economy is devastated. Now, as we are importing less and exporting value-added products, then our economy is reviving.

That trend is a result of development of Export processing zones set by Export Processing Zones Authority, which encourages the industrial development by providing facilities such as sea transport, reliable power supply, etc. Export Promotion Bureau also helps by creating awareness among the manufacturers, exploring & identifying market opportunities and assisting local entrepreneurs to secure entries in international market.

- know and understand the meaning of GNP and GDP and the difference between them

Gross Domestic Product (GDP) refers to revenue generated by all the individuals, companies including service sector regardless of who own them; they may be multinational companies or local businesses. However, on the other hand Gross National Product (GNP) refers to revenue generated by nationals of a particular country, no-matter where they are working and where they are settled. What they must have is the nationality of that particular country.

- name and locate Pakistan's main trading partners, and name the goods Pakistan exported to them or imported from them



- Understand the factors that may promote and limit trade, including trading blocs, trade barriers and currency exchange rates.

If with reference to trading blocs, they promote the trade between groups of countries which mutually agree on certain terms to encourage trade between them; they includes making the local market more exposed to each other, ease of business visas, elimination of duties, tariffs and other taxes to make the trade cheaper.

Trade barriers hinder the trade and these barrier includes high tariffs (taxes imposed on imported goods making them expensive, thus importers find them harder to sell, so they don't import them), quotas (The restriction on a certain quantity on a particular good or type of goods, that importer can import per annum or per month) and embargos (it's when a country don't sell a certain product to a particular country or a country bans the import of a certain good).

Currency exchange rates may hinder or promote trade as value of our currency against US Dollars or the local currency of the country we're importing goods from determines the price of that product in our country, upon which depends whether it'll be hard or easy to sell. If that value is low, then it'll cost higher and if value is constantly getting deceased then despite of stable price in that country, the expense will increase. If the value is that low or is higher, then we'll find imported goods cheaper.

- understand the factors which may promote or hinder trade with other countries, and explain why it is difficult for Pakistan as a developing country to maintain or increase its share of trade with other countries

Pakistan is member of SAARC, ECO and ASEAN but none of them is a major bloc, so not many business opportunities got available for country. Pakistan as a developing country can't be an effective part of any major trading bloc as i.e. European Union imposed sanctions on Pakistan because of terrorism and child labor and similar thing was done by US in 1996, when they withdrew General System of Preferences from Pakistani carpets and rugs. Pakistan don't have production standards comply with EU i.e. 80+ EU countries embargoed Pakistani canned fish. Due to political instability and subsequent policy changes, agreements are not fulfilled. Pakistan is also a member of World Trade Organization but faces many problems and benefits therein;



WTO; A Step Towards Globalization of International Trade

7. Transport and communication

- **explain the factors which help and hinder the location, maintenance and development of roads, railways and airports**

Rail:

The road network is best developed along the rivers because railway tracks are easier to build and develop on the plains. Large land in north and west of Pakistan are covered with mountain ranges with steep slopes and rough uneven land. Railway lines are difficult to set up in hilly areas. In southeast deserts like Cholistan and Tharparker are located; railway in these deserts is not earning profit due to low population. Kharan desert is located in south-west has no railway network.

Roads:

The road network is denser and spread over a greater area than the rail and air networks. It is especially dense on the plains of Punjab and on the plains along both sides of the Indus in Sindh. In Balochistan, the road transport system has a very low, the main problems are steep slopes and rugged landscape. Roads are usually built along rivers. A number of bridges and tunnels are needed. In winter roads are blocked by snowfall. Rock slides and landslides create problems. Building roads in mountainous areas is costly. Blasting rocks and cutting hill slopes need a lot of time and effort.

Factors Contributing to the Development of Air Transport

Internal Factors

Air transport is faster than rail and road. It is the most effective mode of transport for high value lightweight goods. People who value time and can afford the higher cost prefer to go by air.

The rail and road network is concentrated in the plains. In the mountainous regions like the Northern Area not all the roads are metalled and frequent landslides hamper the traffic. PIA's air routes to places like Gilgit and Skardu make these areas more accessible.

There is a rise in the general living standard of the people due to industrialization and urbanization. More people can afford to travel by air.

External Factors

- In recent years, air cargo transport has increased to the Middle East and consists mainly of perishable items, like fruits and vegetables.
- Improvement in communication has turned the world into a global village, with more passengers from all walks of life using air travel. Migration has also increased.
- During recent years air transport facilities have improved greatly with the provision of the latest international quality equipment. For example the installation of moving walkways in the Jinnah terminal at Karachi.

However, unsuitable climate, snowfall, fog, snow storms can disturb air transport in high mountain ranges can cause accident. Northern areas are thinly populated with little industry, commercial activities

and affordable population. Karakoram highway has also affected business of air transport due to cheap road transport available now.

- **describe improvements that have recently taken place in road, rail and air communications, and consider the feasibility of new developments**

Railways:

Double railway track is set up from Karachi to Lahore. Computerized ticketing system is started. Several meter gauge and narrow gauge railway tracks are changed in to broad gauge railway like Hyderabad to Mirpur. Steam engines are replaced by diesel engines. Electric train is started from Lahore to Khanawal. Karachi circular railway is started for local passengers. Air conditioned Shalimar express is started from Karachi to Lahore. Mughalpura railway workshop Lahore, Locomotive (railway engine) factory Rasulpur and Carriage (wagon) factory Islamabad are set up.

Roads:

Roads are widened and mileage of metalled roads is increased. Rural areas are connected. National highway between Karachi and Lahore is doubled. Indus highway is setup on west bank of River Indus a shorter way from Karachi to Peshawar. Coastal highway is setup from Karachi to Gawadar. R.C.D highway from Quetta to Iran is established. K.K.H from Rawalpindi to China is setup. Motorway from Faisalabad to Peshawar is setup. Super highway connects Karachi and Hyderabad. Roads are setup because building railway is costly. Rural roads were un-metalloid for quick transportation of agriculture products roads are metalloid. Roads also have increased exports to China and Iran. Education and health facilities are available to remote areas.

Airports:

Airports have been developed in cities with export oriented manufacturing industries such as Sialkot, this made the transport easier and also lowered the burden on airports in metropolitan cities like Lahore. Improved Radar and communication systems provide better navigation and aviation. New and latest planes, provide customers with comfort.

Feasibility to develop Railways further;

In order to develop the railways further we need to check the factors which lead to decline in railways and they include;

- Lack of investment
- Crumbling condition of rails which repel the travelers to use them
- Operational inefficiencies in timings
- Over staffing, so whatever funds are available are also wasted
- Poor reservation system

All these factors if corrected will result in improved railway service but this costs a lot. One way of doing that is privatization of railways, so that private limited companies may also invest in there and as it's

their business they would try their utter most to make it profitable and it could only be possible by solving these problems.

Development of roads;

Development of roads is costly if the government do it themselves but if they establish 'Special Industrial Estates' – the investors themselves built such infrastructure in return for tax holidays and other relaxations for business. The toll collected from highways could be increased a little, that no one would object and that increased sum of revenue could be used for maintenance of roads i.e. coating them with asphalt to make them neater and weather resistant. The roads could also be widened.

Development of Air transport:

The development can only take place if the airlines have enough money to improve their services. However, Pakistan have a lot of tourist attractions as mentioned previous chapters, if these attraction are developed more, then more tourists will visit, and they are more likely to use PIA or other local flights as they are local, so they would've direct flights, which saves time. This would generate more revenue for airlines. Cutting of the trade restriction will promote trade, and thus businessmen will travel cross-borders more often using airlines, not only that but increased business will result more money regulations around the country, improving the living standards, so more people can afford air transport . Similarly, the increase in export of perishable goods such as food items and medical drug will also lead to such developments.

- **compare the advantages and disadvantages of road, rail and air transport within Pakistan for both goods and people**

Railways:

Advantages: Transport by railway is cheaper, safer, suitable for long journeys; suitable to carry bulky (heavy) goods in large quantities. Railway reduces traffic on road and causes less pollution.

Disadvantages: costly to build and maintain, do not provide door to door service, transshipment of goods is inconvenient, the danger of theft and breakage of goods. Railways cannot be set up in hilly areas. The mileage of the railway has increased little in Pakistan.

Roads:

Advantages: Roads are easier to build and maintain, roads provide door to door transport, are accessible and goes almost everywhere, lorries are easily available, built and maintain cheaper, connect rural areas, industrial estates can be established along roads, roads vehicles are cheaper. Road promotes defense and helps maintain law and order. Increase trade.

Disadvantages: Road vehicles create pollution, there is a danger of theft, and the number of accidents is high, goods are damaged on poor quality roads.

Air Transport:

Advantages: Air transport is faster, safe, and comfortable preferred by people who value time and afford the high costs. It is more useful to transport perishable goods and precious goods. Air service connects remote mountainous towns like Gilgit and Skardu. Air service provides aid like food and medicine to areas hit by natural disasters like floods and earthquakes.

Disadvantages: Air transport is expensive, only a few airports are established in Pakistan, and can carry light goods in small quantities. Goods are needed to be transported from airport to destination added to expenses. Flights are sometimes canceled due to bad weather like snow, fog or lightning. Huge investment is needed to maintain aircraft and train skilled personnel.

- **explain the factors which affect the location and development of cross-border roads and railways, seaports and airports**

The cross border roads and railways are developed, when 2 countries have good diplomatic relations, or for example RCD Highway was developed after regional cooperation for development was signed between Iran, Turkey and Pakistan. Their location depends upon the feasibility whether such developments could be made in a particular area for example in mountains it's very hard to make such infrastructure. High tourism exchange between two countries may also lead to such development. Similarly air ports are also developed to promote trade and tourism, especially if the trade is in perishable goods like medical drugs and fruits. They are usually built in metropolitan cities (where businessmen travel) or export oriented manufacturing cities. Sea is the cheapest form of transportation of heavy and bulky items, it is used throughout the world as trade in such items is quite common, so sea ports are built along the coast.

Case Studies for development for Airports and Gwadar Port:

Airports:

International Airports	Physical	Human
Karachi	<ul style="list-style-type: none"> ▪ Located in the south. Air travel is shorter to countries located to the south, especially the Middle East. ▪ No relief or climatic problems so flights are permitted throughout the year ▪ On a direct flight path between the west and east. ▪ Large flat land for construction of runways (for taking off and landing of aeroplanes) 	<ul style="list-style-type: none"> ▪ Provincial capital (Sindh) ▪ Densely populated city- has the greatest number of passengers available for international flights. ▪ Being a trade and industrial centre, goods and personnel require fast transport around the world. ▪ More investment opportunities attract foreign investors who prefer to travel by air transport.
Lahore	<ul style="list-style-type: none"> ▪ Located on the eastern border of Pakistan – provides short air travel to India. ▪ Large flat land for construction of runways (for taking off and landing of aeroplanes) 	<ul style="list-style-type: none"> ▪ Provincial capital (Punjab) ▪ Better infrastructure facilities attracting richer people who prefer to travel by air. ▪ Industrial and trade centre. ▪ Convenient for the Punjab, the most populous province.
Islamabad	<ul style="list-style-type: none"> ▪ Located in the north of Pakistan, provides a short route to China, Afghanistan. ▪ Large flat land for construction of runways (for taking off and landing of aeroplanes) 	<ul style="list-style-type: none"> ▪ Federal capital ▪ Frequent visits of foreign and diplomatic delegates adding to the number of passengers.
Peshawar	<ul style="list-style-type: none"> ▪ Located to the northwest of Pakistan with a short route to Afghanistan 	<ul style="list-style-type: none"> ▪ Provincial capital ▪ Availability of passengers who can afford to travel by air.
Quetta	<ul style="list-style-type: none"> ▪ Located in the southwest of Pakistan with an easy access to Iran. 	<ul style="list-style-type: none"> ▪ Provincial capital ▪ Availability of passengers
Gwadar	<ul style="list-style-type: none"> ▪ A short route to the Middle East countries 	<ul style="list-style-type: none"> ▪ Facilitates development of the Gwadar port

Gwadar Port:

The economic interests of the largest province in the country, Balochistan, demand that it has a seaport of its own to encourage its economic development. The port will facilitate exports of its large fruit crop. In addition its mineral output is to be exploited by the Chinese who are to provide financial assistance for this.

If the ports of Keamari and Bin Qasim are affected by a prolonged strike or by a natural calamity then Gwadar can become a substitute port.

Gwadar can serve as an entire port for Central Asia if Afghanistan allows Central Asian goods to pass through its territory. This can generate revenue for Afghanistan and Pakistan by collecting large sums as transit fees.

Central Asian Republics could also open warehouses in Gwadar for the export of their goods and for storing imported goods for later transport, thus increasing Pakistan's revenue. Afghanistan could also store its goods for export and do so in an area far less crowded and costly than at Karachi port.

Gwadar, as a flourishing port, should help in the development of a number of ancillary industries in the region, apart from the industries spawned by the Fish Harbor there.

- identify on a map those roads (including the name of the pass they use, where relevant) and railways which cross the international boundary and are in use for at least part of the year

Railways:

Railway routes crossing the international boundary

-On eastern side, two routes lead to India.

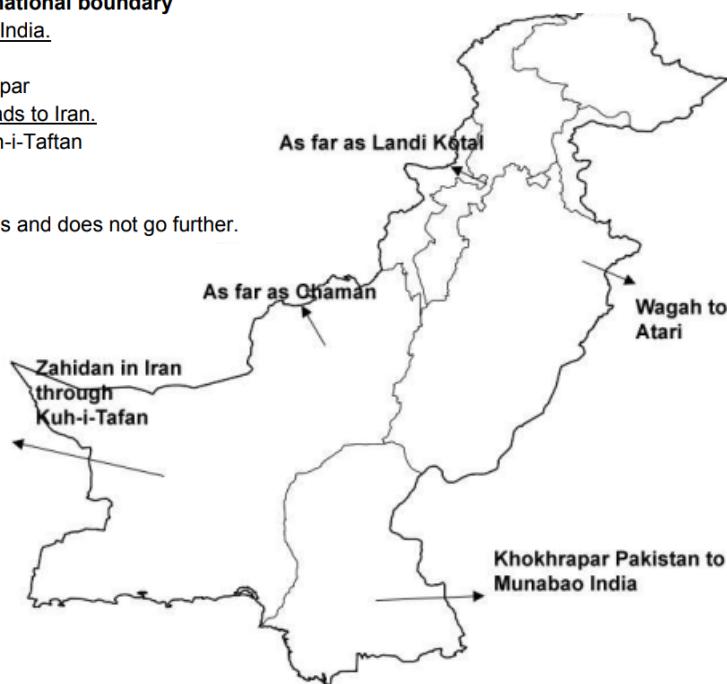
- i) Lahore to Dehli via wagah
- ii) Khokhrapar to India viz Khokhrapar

-On western side, Only one route leads to Iran.

- i) Quetta to Zahidan in Iran via Kuh-i-Taftan

-On the extreme north to China.

- i) No rail link
- ii) At Dargai in NWFP, rail link stops and does not go further.



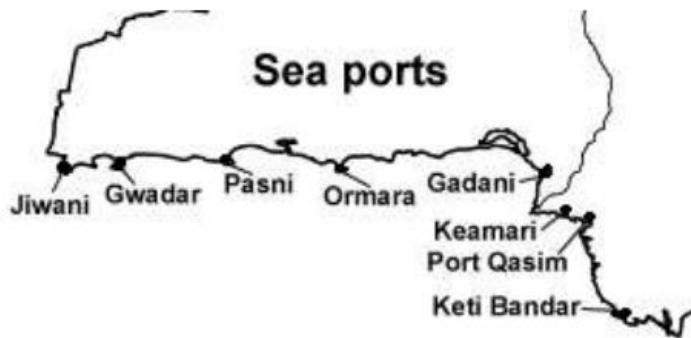
Roads:

Motorways/highways

- Makran Coastal highway:- Karachi - Gwadar
- N5 (national Highway):- Karachi-Hyderabad-Multan-Faislabad-Lahore-Islamabad-Peshawar
- GTR (grand trunk road):- Lahore-Islamabad-Peshawar
- Karakoram Highway (through Khunjerab pass):- Tibet(china) to Pakistan
- Indus Highway (N-55):- Karachi – Peshawar



- identify on a map the ports of Keamari, Qasim and Gwadar, and the cities with international airports



International Airports includes;

1. Jinnah Intl. Airport, Karachi,
2. Benazir Bhutto Airport, Rawalpindi/Islamabad
3. Allama Iqbal Intl. Airport, Lahore,
4. Multan Intl. Airport, Multan
5. Bacha Khan Intl. Airport, Peshawar
6. Sialkot Intl. Airport, Sialkot,
7. Faisalabad Intl. Airport, Faisalabad
8. Quetta Intl. Airport, Quetta
9. Gawadar Intl. Airport, Gawadar
10. Sheikh Zayed Int. Airport, RahimYarkhan
11. Bahawalpur Airport, Bahawalpur

- Explain what is meant by the term dry port, name an example of one and explain why they have been developed in many cities of Pakistan.

A dry port provides services for the handling and temporary storage of containers, general and/or bulk cargoes that enters or leaves the dry port by any mode of transport such as road, railways, inland waterways or airports. They are located in inland cities, far off places from sea. Examples include, Dry port in Lahore on Canal Road, Dry port of Faisalabad, Sialkot, etc. Requirements for dry ports include;

- Open space for parking
- Custom staff for checking and collecting taxes on import and export goods.
- Security.
- Road and railway link.
- Cold storage to store perishable goods.

Dry ports speed up the process of import and export. Exporter can hand over their export goods to dry port, where these goods are checked by custom staff, taxes and duties are charged, goods are transported by road or railway to sea port where these goods are loaded on ship without checking and transported to their destination. Dry ports reduce the burden of work on sea ports and save time of importers and exporters. Dry ports also handle import goods.

IMPORTANCE OF TRANSPORT SYSTEM

From an economic point of view, an efficient transport system brings additional buyers and sellers into contact with each other resulting in expansion of trade.

With the development of transport, rural and urban areas come into contact. Surplus agricultural goods are transported to the cities and manufactured goods moved to the villages.

An efficient transport system also leads to a specialization in production, which enlarges production and reduces cost per unit. Rural areas specialize in the production of agricultural goods and urban areas in industrial goods. By means of transport, agricultural goods are supplied to urban areas and industrial goods to rural areas.

Transport also helps in mobilizing the work force, particularly from rural to urban areas. This reduces extra pressure on land and unemployment in the villages.

Well-developed transport opens up investment opportunities in less developed areas. For example, inaccessible areas (e.g. Balochistan Plateau, Western Mountains) could be developed economically.

Mineral wealth of the more remote regions could be explored, extracted and sold. For example, after the construction of RCD Highway, which passes through Nushki, Dalbandin and Nok Kundi (south western Balochistan), work on mineral exploration has been started by government and multi-national companies. So far the minerals explored in this area are copper, marble and iron-ore.

Expansion and improvement of roads encourage industrial and agricultural growth which in turn encourages new settlements. In Eastern Punjab the rail and road networks are the most developed.

Areas along the rivers have become centres of agricultural production. More people are attracted to this area and a number of collecting and distributing centres for agricultural products have developed. Along the roads and rail tracks many industrial estates have also been established.

The above economic activities, which encourage the use of resources, can bring greater economic prosperity through:

an increase in employment opportunities, a rise in GDP (Gross Domestic Product), the opening of new markets, a general rise in living standards of the people.

From a social point of view, transport helps to spread education, for example, students could travel to distant educational institutions.

As people of different areas come into contact with each other, cultural interaction increases and promotes unity. This helps to reduce prejudices and hatred. If transport facilities are available, government and social welfare agencies can more easily carry out their plans to improve health standards, education and general awareness of the people in more remote areas.

Politically an efficient system helps the government to maintain law and order even in remote areas. Speedy remedial measures could be taken to tackle a problem. This helps to promote close contact between the government and the people.

- **explain the importance of radio, television, phones, fax machines, emails and the internet in the fields of education, industry, services and trade**

In terms of education, they've helped to make world a global village so people can learn distantly and will not be deprived of the opportunities not available near them i.e. people want to get international degrees but financial crisis may hinder that, University of Arizona, US is offering remote learning so that people from all over the world could get a US degree. Internet also provides students with worldwide resources, expanding their knowledge. In class, facilities such as smart boards, projectors and internet enable to access eBooks and watch videos, 3D animations for better understanding.

As for industries and services, Internet provide companies with information about latest tech so that they can order it and import it, to improve their own products. Furthermore, it also helps in management as some of the multinational companies handle their business in a country without their officials being present in there through internet communication and directing them virtually. One of the most crucial need of business is marketing, which was way harder before and even confined to a limited area but due to internet and other tech we now have several means of marketing such a commercial advisement, Social media marketing on platforms such as Twitter, Instagram, YouTube, etc. Email marketing is also one of them. Freelance which is only possible due to internet now people can find employment remotely and businesses can find employees from anywhere around the world.

Ecommerce, can be done electronically but launching e-commerce websites, where people can shop online. In terms of bigger businesses, internet makes the import easier as we can communicate with our vendors.

- **understand the problems of providing telecommunications in some parts of Pakistan**

The telecommunications industry has brought a revolution in all sectors of the economy especially in the tertiary industry which is highly dependent on information technology (IT). IT requires electricity and connectivity and both of them may be absent in some areas.

Information technology faces strong resistance from the older generations. They find it hard to use computers and other gadgets and are less interested in introducing modern devices at their work places.

People are usually illiterate in such areas, so they can't use computers which are mainly in English, which is indispensable part of IT.

Computers are imported and are expensive so people who are usually poor I these will not be able to afford them.

- **Evaluate the role of telecommunications in the development of Pakistan.**

Apart from the problems mentioned above there are some other problems in IT industry;

As computers and other IT devices are far more efficient and consume far less time than workers, so fewer workers are needed in offices. This decreases employment opportunities in the country. It means unemployment, which is lethal for GDP & GNP.

Telecommunications are largely dependent on a steady supply of electricity. Load shedding and frequent power breakdowns slow the work in the offices. This hampers its development in cities.

Easy access to some websites may harm local culture and value systems.

A country's sensitive data is vulnerable to cyberattacks by foreign countries and individuals. Computers and other IT devices are capital intensive goods which are quite expensive when used on a large scale.

Computers which are imported put burdens on economy and due to their cost people in urban areas also may not be able to get them

However, despite of that, IT has played an important role in development of Pakistan as Software Company is a small-scale industry which can be started by one skilled IT professional with a computer whereas, to establish industries such as pharmaceuticals and oil-refining, a lot of capital is needed for buildings and machinery.

This means that the start-up costs of a software company are relatively low. However, the profit per skilled worker can be quite high. One estimate is that just one IT professional can generate \$30 000 of software exports per year.

Information technology has opened up vast new avenues for developing countries, such as Pakistan, to use the creativity of their young generation through education and training, and to make full use of their talented youth for national development.

Freelance market provide international employment opportunities, thus reducing the unemployment rate. Distant learning enable people to get international degrees, which makes it easier for them to find jobs.

Ecommerce and advisement enhances the business, so they generate more money, giving more taxes, which are to be used for development

8. Population

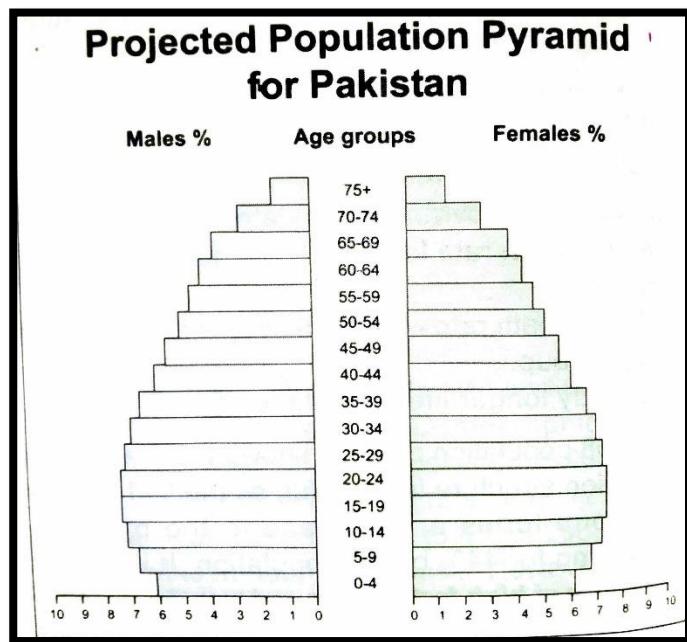
- explain and evaluate the effects of the present and projected population structures on the economy and development of Pakistan

At Present time:

There are high birth rates, which hinders the economic development as there are more people to avail the facilities such as infrastructure, food, etc. that means more money had to be spent on them rather than developmental projects. Furthermore, people ageing from 15-60 years are considered as working population, but unfortunately nowadays they are few in number and at the same time there is an increase in 60+ dependents, which is another obstacle on the path to prosperity.

Projected Population:

[Projected population is represented in pyramid below]. There are low birth rates, so people can be provided with facilities efficiently and funds for developmental projects will be available. Moreover, working population has also increased, which further backs the development. However, ageing people are still high due to improved living standards and medical facilities, but using their expertise and experience, youngster can be guided.



- **explain the social, educational, economic and political factors which contribute to population growth over time**

In Pakistan, there are high inflation rates along with low wages that makes a single person doing low-paid jobs unable to cope with family expenditure, so they want more children, so they can work also.

Early marriages is one of the factors as it increases the productivity time span, so a women are likely to get pregnant more often.

During Afghan war of 1977, 3.7 million people fled to Pakistan, they themselves were an increase to the population but their off springs are a further addition.

In Pakistan, Ullema (Islamic Scholars) are influence and some of them negates the use of condoms and other form of contraceptives, so many people refrain from using them. Other than this, people find these contraceptives and birth control methods expensive.

Majority of the population is illiterate, so they are unaware of problems caused by high populations.

In some cases, parents get daughters but in order to continue their heritage and take off their family business, they want son, so they keep trying for it and it results in several children; dependents.

- **Explain the problems for development caused by population growth over time, consider its sustainability and evaluate possible solutions to these problems.**

The relation between high population and development is quite complicated. If there is high population, it means more food is required and if we can't produce it ourselves, then we've to import it, which is a burden on foreign exchange reserves. As the population will grow, so will the demand of jobs but as money is spent to sustain such population, then less money is spent on industrial development, which means less jobs available, that results in under and unemployment [The effects of unemployment and underemployment are mentioned later in this chapter]

Facilities such as medical will also require more money and if funds aren't available they there'll be decrease in medical standards. Similarly, education sector also needs to be developed, and if not developed, then people will be deprived of education, making it even harder for them to find jobs. When people won't be able to find jobs they will turn towards crimes and terrorism – both of these things are highly condemned in international trade and Pakistan may face sanctions along with other trade restriction due to that. Same is the case with child labor, which will also grow and it highly condemned by trading blocs such as European Union.

It'll also result in electrical shortages, which is crucial for industrial development.

Solutions:

1. Population welfare programs like Women's Association, Behbud Association, Green Star Clinics and Child Welfare Association are receiving encouraging response from the public.

2. During recent years NGOs have started programs in collaboration with the government for population welfare. I am positive about their success
3. Increase in literacy rate. Spread of education rural electrification and building of all-weather roads will change the outlook of villages and this will decrease the rate of population growth as more employment opportunities will be created
4. I think we should get the services of "Ulemas" to convince the people that population control is not against the religion.
5. More educational institutions should be set up for females. This will delay the age of marriage and will reduce the birth rate.
6. We have to fight a battle for the better utilization of natural and human resources of the country so that the rate of economic development outstrips the rate of population growth, that includes the higher literacy rates, exploration of natural resources, industrial development so that labor work force could be used.

- **describe and explain, the main causes of population movements, including rural-urban migration, seasonal migration, emigration and immigration (including refugees)**

Rural Urban Migration:

Rural Push Factors	Urban Pull Factors
● Pressure on land, disguised unemployment, and division of land among sons.	● Better employment opportunities, especially in factories.
● Overpopulation due to high birth rate. Poor quality of life.	● Expectation about better quality of life.
● Limited food production on small-scale subsistence farms due to over-grazing or misuse of the land, resulting in soil erosion or exhaustion. In many areas land has become uncultivable due to waterlogging and salinity.	● More reliable sources of food.
● Mechanization causes reduction in job availability.	● Attraction of entertainment places and bright lights.
● Natural disasters such as floods (areas around Indus and Jhelum), thunderstorms (Potwar Plateau and Vale of Peshawar) destroy villages and crops.	● Better chances of civic services like transport, health, education etc.

Seasonal Migration:

Seasonal migration is common within some areas of Pakistan. There are a number of causes:

In mountainous region especially in northern and north-western Mountains 'Transhumance' is practiced i.e., moving the flocks up to the cooler highlands in summer and returning to the plains in the cold winters. Moreover, many areas in the extreme north are not accessible due to landslides and heavy snowfall hampering transport links. This also leads to seasonal migration to the warmer plains during winter.

In some areas of Pakistan such as in parts of Punjab and Sindh, seasonal and unpredictable droughts occur that lead to severe water shortages if stored water is not available. Due to extremely low or no rainfall for a long period of time, subsistence and small-scale crop cultivation may not be possible. Due to lack of food and employment, many poor families migrate to urban areas to support their families during these months.

In the past few years Pakistan has had moderate to severe floods from July to September. Many settlements closer to the River Indus and its tributaries are badly affected. Settlements have been destroyed; livestock and agricultural crops damaged and people have been left homeless. A number of 'flood victims' move to safer areas during the monsoon season and move back to their homes once the rainy season is over.

Seasonal Migration is also practiced in Sindh and Punjab during the harvesting season. In April and May when wheat crop is ripe and ready to be harvested people from nearby areas move to large commercial wheat farms for employment. The same thing happens when cotton and sugarcane are ready for picking and harvesting.

Some agro-based factories, such as sugar and cotton processing mills, also hire seasonal workers. They require a labor force right after the harvesting season for 3 to 4 months. Such workers may also migrate to other areas for employment once their job is done.

Emigration and Immigration:

There is unemployment or underemployment especially among educated and ambitious young people, who want better reward for their services,

The developmental projects in the Middle East opened up job opportunities for the skilled and unskilled laborers in the 80s and 90s,

the glamorous life-style of the advanced countries, especially of USA, has attracted educated and talented young people, corruption, delayed justice, favoritism and high crime rates in Pakistan have created unrest among young people,

The recent policy of the Canadian government to attract more Asians as their country is under the constant threat of depopulation.

There are uncertain political conditions due to growing terrorism and economic crisis.

Refugees are usually encouraged by critical events such as wars (i.e. Afghan war 1977), civil wars, famine, etc.

- **describe and explain the effects of these population movements, including shanty developments in cities, tent cities and the de-population of rural areas**

There are several dire consequences of these movements;

1. Development of shanty dwellings is one of them as people who migrate don't have much money to spend on housing so they live in tents, which lack facilities such as clean water supply, which doesn't spread diseases but also deterioration of cities as they're a negative impact on the view of city. It further leads to unplanned growth of cities and in those newly established areas there aren't any civic amenities.
2. The new dwellings will be built by cutting down the trees, which adversely impacts the ecology. Moreover, in urban areas motor vehicles are used which result in more carbon emissions.
3. The people who migrated were previously practicing agriculture in rural areas, so when they leave there are less people to continue that practice and that may lead to food shortages. Therefore, we ultimately need to import it which is a burden on foreign exchange and also hamper the economic development.
4. When people won't have jobs the crime rate will increase.
5. Psychological problems may also occur as due to stressful life in cities and people may get drug addict and depressed. All these factors will result in child abuse.

However, there are some positive impacts of these migrations;

1. Life in rural area will get better as now there are few people to avail the facilities available.
2. Labor workforce will get abundant in urban area, if they're available cheaply, that encourages the industrial development as it attracts local and foreign investors

- **Understand the effects of population movements and evaluate the measures which may be taken to help solve the problems created, such as self-help schemes, provision of clean water and other services (including adverse outcomes such as poor housing).**

Self-Help Schemes

It is usually a government sponsored scheme under which members of a community are encouraged to better themselves through means such as creating self-employment, growing their own food, arranging for a clean water supply, or making their own shelter. The members contribute their labor and/or materials while the government (or some agency) provides equipment, infrastructure, land, etc.

Disadvantages

- Construction material is very expensive and very often such projects cannot be completed due to high costs.
- Low income groups have low savings and hardly any finances available to contribute.

- Corruption or mishandling of funds is very common in such projects even if finances are arranged. Such projects take time to complete due to administrative delays and financial constraints.
- Strong leadership is required to engage people in developmental works but it is not always available.
- If housing facilities are available, more people are attracted from rural to urban areas thus increasing the burden on civic resources.
- Change of governments and political instability may affect negatively on such projects.
- Sometimes, people living in such localities differ from each other and do not cooperate in community services.
- Such communities are not developed by experienced and skilled people so the issues of mismanagement may halt the developmental project.

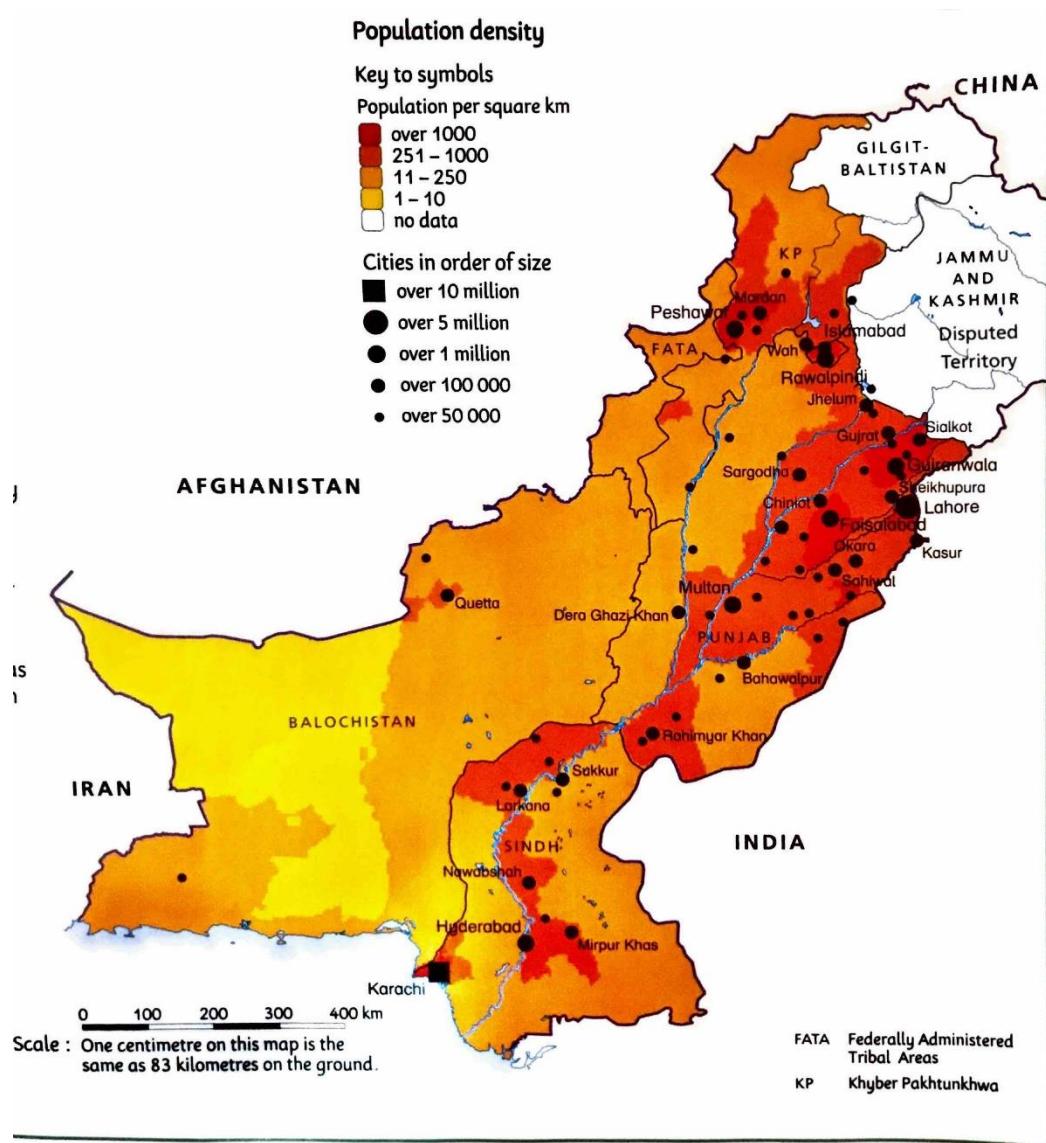
Other measures to deal with the problems:

- Providing the rural areas with irrigation facilities, cheap fertilizers developed by Pakistan Agricultural Research Council as well as transportation facilities so that people may generate their income therein, and they don't have to migrate.
- Infrastructure facilities such as education, hospitals, etc. should be developed therein as they are one of the pull factors for these migrations and furthermore, it'll also create jobs in these areas.
- **distinguish between distribution of population and density of population**

Population Density: It refers to number of people living per unit area

Population Distribution: It refers to spread of people in an area, like which part of the country has more living in there.

- Recognize the variations in both distribution of population and density of population between the Provinces (including the Northern Area) and within the Provinces (including within the Northern Area)



- Explain the physical, economic, social and political factors which contribute to these variations.

Physical	Examples of areas/cities with high population density		Examples of areas with low population density	
Natural Topography	Flat or undulating	Punjab & Sindh	Steep or rugged mountains	Karakoram, Himalayas, Hindu Kush, Chagai Hills
	Doabs located in Punjab	Sargodha, Faisalabad, Jhang, Sahiwal, Khushab etc.		
Climate	Moderate /tolerable temperature throughout the year.	Karachi, Lahore, Peshawar	Extreme temperature	Kharan Desert, Mountain areas over 4000 metres
	Moderate monsoon rainfall	Northern Punjab & Khyber Pakhtunkhwa	Less than 125 mm annual rainfall	Kharan, Kachhi and Nara deserts
Natural Vegetation			Barren lands Mangroves	South-western Balochistan, Swamps along coast of Indus Delta
Soil	Deep, fertile alluvium spread by rivers.	Areas around rivers.	Thin soils, bare rock and glacially eroded areas.	South –western Balochistan and Baltistan.
Natural Resources	Mineral resources	There are no areas in Pakistan which have a high density due to mineral exploitation.	Minerals not explored.	Part of Balochistan.
Water supply	Rivers, lakes	Punjab & Sindh.	Non-availability of water.	Kharan, Thar and Cholistan deserts.
Natural Routes	Gaps through mountains, confluence of valleys, natural harbours.	Peshawar (Khyber Pass), Quetta (Bolan Pass), Karachi	Mountain barrier.	Safed Koh, Hindu Kush and Karakoram Mountains.

Human	Examples of areas/cities with high population density		Examples of areas with low population density	
Economic	Efficient transport system (road, rail & air network)	Karachi, Lahore Rawalpindi, Faisalabad	Poor transport links	Kech District, Kharan Desert, Chagai Hills and Baltistan.
	Port facilities	Karachi	Limited facilities for port	Most of the Balochistan coast.
	Industrial areas established early.	Karachi	Lack of industrial development	Khuzdar and Sibi Districts.
	Trade & business centres	Karachi, Lahore Rawalpindi	Limited trade & business opportunities.	South-western Balochistan, High valleys in Northern Mountains.
	Tourism development	Murree, Swat, Kaghan	Lack of tourism development	FATA Areas, Waziristan Hills
	HEP supplies, thermal stations.	Peshawar, Islamabad Karachi	Unreliable power supplies.	Rural areas of southern Khyber Pakhtunkhwa.
	Reclamation of land	Bahawalpur (part of Cholistan desert) and Thal Desert	Loss of land through, deforestation, soil erosion, waterlogging and salinity	Rural areas of Lower Sindh.
Political	Favourable government policies	Around industrial estates on Lahore to Islamabad Motorway.	Lack of government investments	Kharan Desert
	New Towns	Islamabad, Extensions of Lahore, Karachi & Faisalabad		
Social	Better accommodation facilities	Karachi, Lahore Islamabad, Faisalabad	Poor housing facilities	Rural areas of Khyber Pakhtunkhwa and Sindh
	Education & Health facilities	Karachi Islamabad Rawalpindi	Limited education & health facilities	Rural areas of all the provinces especially Balochistan
	Rural - urban migration.	Karachi, Hyderabad, Quetta, Lahore, Islamabad.	Depopulation of rural areas	Rural areas of all the Provinces.

- **define the terms primary, secondary and tertiary in relation to occupations**

Primary: This refers to the jobs related to extraction of natural resources as the raw material for other industries, employment here is mainly labor as both agricultural practices, and livestock farming along with mining requires physical work.

Secondary: It refers to job related to manufacturing industry and employment opportunities in this sector varies from labor workforce who manufacture the things to quality control officers, supervisors and directors.

Tertiary: Tertiary industry is the service sector, people may either work in an organization or be self employed by freelancing. The work is done mostly in high standard environment. Examples includes, data scientists, marketing, hospitals (doctors, nurses and receptionists), education (Principle, teachers, and other staff such as HR)

- **describe and explain the proportions of the workforce engaged in each of the primary, secondary and tertiary sectors, and any changes in these proportions that may have taken place or may be taking place**

[YOU DON'T NEED TO STATE ANY FACTS, THEY'LL BE PROVIDED IN QUESTION] Pakistan is an agro-based economy, with agricultural industry employing most of the labor workforce which is a part of primary sector. Despite of the fact that it is low paying job but still so many people are engaged as they don't have education required for better employment. However, with the passage of time, education have developed in Pakistan and literacy rates have increased so people are moving towards tertiary sector finding high-paid job in local corporates or international freelance market. At the same time, people move from rural to urban areas, where they acquire skills such as in fabrications so they get employed in secondary sector which is relatively high paying.

- **understand and explain the causes of rural and urban unemployment and underemployment (that is, people who are not fully employed), and understand the problems for development created by underemployment and unemployment**

Causes:

- a. Population growth: the population is growing so fast that the number of people are exceeding the number of jobs available causing some people to remain unemployed.
- b. Technology: Since machinery (such as tractors and threshers) is being introduced in field of agriculture, the demand of manual labor is reduced. This causes less farm workers to be needed.
- c. Rural-Urban migration: When a lot of people migrate to urban areas it causes lack of employment opportunities for people in urban areas.
- d. Political Instability: The frequent changes of governments causes some employment schemes to be stopped. Even an unfavorable environment causes lack of employment opportunities.

- e. More technology: Since there is an advancement in many fields, computers have taken place of humans in many sectors as they are quicker. In the past when two people were needed for a job, now one computer can alone handle the compiling tasks.

Effects

- The unemployment and underemployment hinder the economic development by influencing GDP and GNP – detail is mentioned later in this chapter
- When people won't have jobs the crime rate will increase.
- Psychological problems may also occur as due to financial crisis and people may get drug addict and depressed. All this factors will result in child abuse.
- **Understand that unemployment and underemployment can be factors that influence GNP and GDP**

When there is a high unemployment rate it results in consumer's expenditure being less, thus less taxes are collected from people which ultimately reduces the GDP and GNP. In order to make up for the lack of funds, government increases taxes but that further reduces the expenditure. Therefore, to pay for the imports or ongoing projects, we've to turn towards reserves, which will eventually last, then we've to go foreign aids but they also have a limit, which makes loans the only option. At this point we must not neglect the fact that due to lack of funds the economic development is reduced and after reserves are exhausted our stock market is collapsed as well as our currency had lost its value, all these factors makes it harder for a country to pay back its loans and if they aren't paid back, it'll result in trade embargos and sanctions, so the produced goods won't go into the international resulting in bankruptcy. This is how it impacts the GDP & GNP.

- **Understand and evaluate the importance for Pakistan's development of literacy, education and training for both males and females, in rural as well as urban areas.**

Increase in literacy ratio will reduce the pressure on land in rural areas and may help people to choose other occupations especially the ones that require basic education.

Literate and trained labor force can make economic activities more productive than the illiterate and unskilled manpower as they get high-paid jobs.

If the education system can fulfill the market demand for specialized labor, there will be no gap between demand and supply of labor force.

Literate manpower will have better employment opportunities in the country and abroad. Literate People who will move abroad will contribute to GNP by bringing foreign exchange to Pakistan in the form of remittances.

A literate population is more concerned about the standard of living. It is more likely to understand and appreciate the advantages of a small family. This will also increase employment opportunities and all the dire consequences of high population mentioned earlier will be avoided.

The availability of literate people in a country will attract the local and foreign investors to set up businesses, thus creating employment opportunities.

Literate people can even bring foreign exchange, without going abroad by freelance market and stock exchange.

Enrollment of young people in training institutions where agriculture is taught as the basic subject along with the formal education at primary and secondary level and model farms attached to these institutions for practical demonstrations, will give them experience and teach them techniques for better practices, producing better yields. Workshops provide technical training to repair and maintain the agricultural machinery. Rural areas have the potential for even greater development of cottage industries. Training centers for such industries will help to provide enough employment opportunities for the rural population.

People getting specialized training according to the requirement of particular manufacturers, a good understanding of the basic function of the plant, maintenance of plant and machinery, safety measures and emergency procedures, handling of new, sophisticated machines through practical demonstration, will make them more efficient employees and they'll get jobs more easily.