

Last Minute Revision Guide – P2

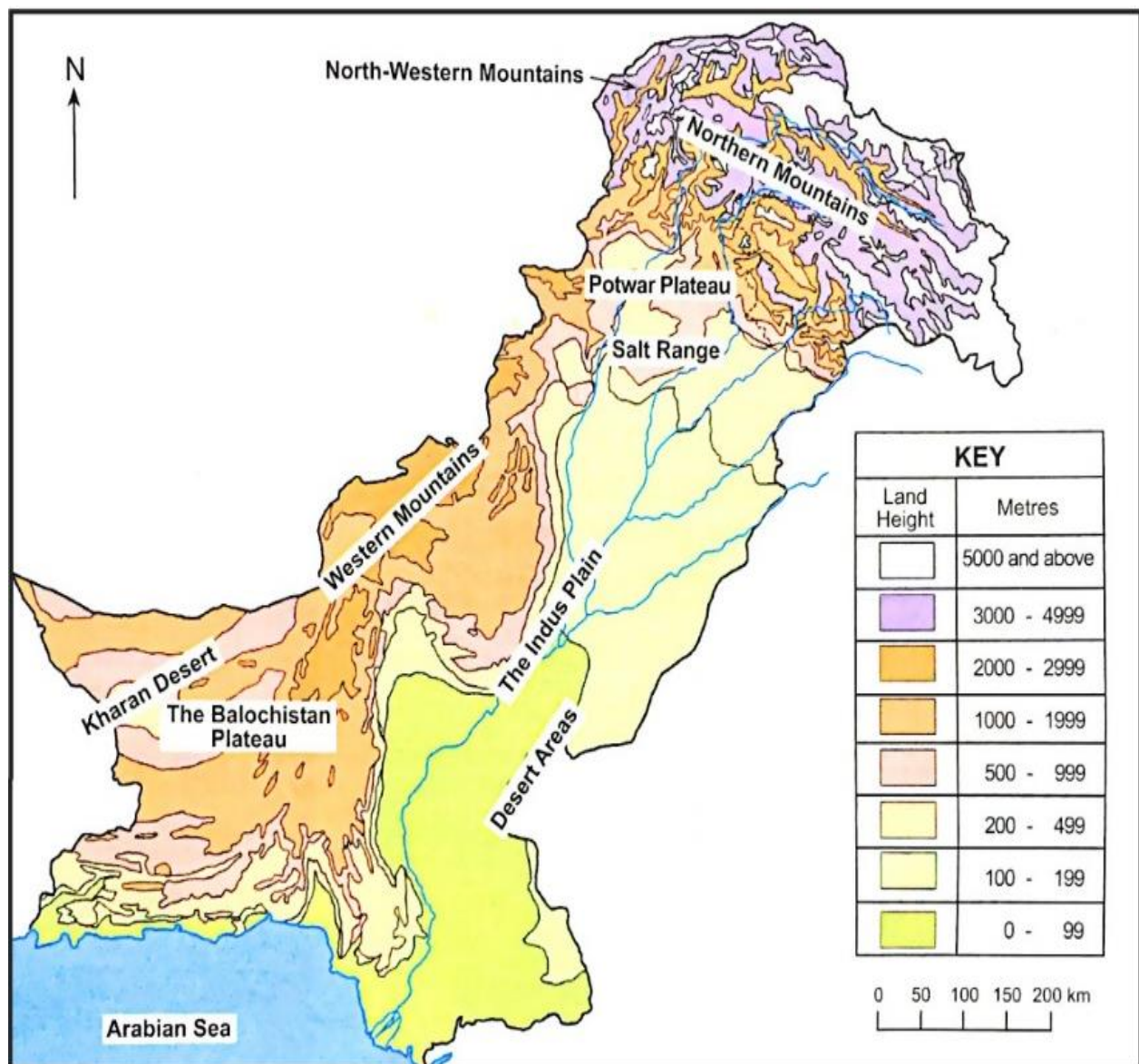
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☆ Topography

Topography is the study of natural surface features of land and also study of artificial features of land. Pakistan topography can be divided into 6 major parts.

- The Northern and North Western Mountain Ranges
- The Western Mountain Ranges
- The Baluchistan Plateaus
- Potwar Plateau and Salt Range
- The Indus Plain
- Desert Areas



✓ **The northern and north western mountain ranges:**

- *Karakoram range:* consists of deep narrow valleys with sharp peaks. The average height of mountains here is 6000 meters with K2 (8611m) being the second highest peak of world located in this range. The weather is extremely snowy because of high altitude. People practice the lifestyle of nomadic farming with agriculture being rare in those valleys where water is plentiful.
- *Himalayan range:* runs from east to west direction containing mountains with an average height of 4000 meters. They are divided into:
 1. Siwaliks
 2. Less or lower Himalayans
 3. Central Himalayans

The main characteristics of such mountains are steep sided peaks, huge glaciers and snow-covered peaks. The highest peak of this range is Nanga Parbat which is about 8126m high.

- *Hindu Kush range:* lies on the borders of Afghanistan and China meeting Pakistan. These mountain ranges have an average height of 5000 meters and they run in a north to south direction. The highest mountain range here is Tirich Mir (7690m). The fast-flowing rivers are the unique feature of this mountain range. Several passes here connect to different cities of Pakistan. Mountains here are bare of vegetation, and some rich valleys here are found in south east such as Kohistan, the Panjkora valley, Dir district etc.
- Glaciers, waterfalls, gorges, V shaped valleys, streams, snowcapped peaks are some of the topographical features of this mountain range.

✓ **The western mountain ranges:**

- Safed Koh range, Waziristan hills, Sulaiman and Kirthar range.
- Safed Koh range runs in an east-west direction with Kohat valley and Kurram pass being the unique place in it. It is a fertile range irrigated by canals. Wheat, sugarcane and rice are grown here.
- Waziristan hills is a highly mineralized region forming a border between Pakistan and Afghanistan.
- Bannu valley and Dera Ismail Khan are the famous towns here.
- Sulaiman and Kirthar range lies to the west of River Indus. Takht-i-Sulaiman is the highest peak (3383m) there.
- Passes of Western mountains include Khyber Pass, Kurram pass, Tochi and Gomal pass and Bolan pass.

✓ **Balochistan plateau:**

- It consists of basins of northern Baluchistan, western Baluchistan, mountain ranges and coastal areas.
- *Northern Baluchistan:* consists of basins named as Zhob and Loralai located between Toba Kakkar ranges. Occasional rains bring deposition of materials forming alluvial fans on piedmont plains.
- *Western Baluchistan:* contains basins between mountain ranges known to be Chagai hills, Ras Koh, siahan and central Makran. The basins formed here are temporary rarely when rain falls because precipitation here is even lower than the eastern side. These basins are called inland drainage basins. Salt lakes and salt pans are also unique feature of it.
- Baluchistan mountain ranges contains barren mountains with low altitude (600-3010m). Some of these mineralized ranges include Ras Koh range, Hala range, Toba Kakar range, siahan range.
- Coastal part is divided into two areas. The eastern side is known to be Lasbela plain, and western side is Makran coast range. Hab, hingol, dasht are main rivers in these regions.

✓ **The Potwar plateau and the salt range:**

- These two ranges are located between river Indus and river Jhelum.
- These are flat undulating lands devoid of ridges and hills.
- Hills like Kala Chitta and Khairi Murat and rivers like Soan river are the dominant feature of this area.
- Potwar plateau is rich in minerals but bad in topography.
- Ravines, troughs and depressions on lands are common in this part.
- Jhelum, Chakwal, Kalabagh and Mianwali districts are called salt range because of a salt mine Khewra located between these mountains.
- Sakesar peak, Kallar kahar and Khabeki lake are the tourist attraction.

✓ **Indus plain:**

- Indus plain is found in Punjab between river Indus and its tributaries.
- This plain's topographical feature includes active and old flood plains, alluvial terraces, and piedmont plains.
- *Active flood plains:* are narrow strips of land on alternate sides of river which is very fertile, rich in alluvium and drained with water. Meanders, ox bow lakes and levees are important features of active flood plains.
- *Old flood plain:* is an area between the alluvial terrace and they are flooded because of heavy rainfall once or twice a year. Old alluvium is deposited and land features are same as active flood plains.

- *Alluvial terraces*: are slightly higher uplands between rivers. Examples: Sandal bar on Rachna doab, Ganji bar on Bari doab etc. These flat terraces are considered ideal for agricultural activities such as farming, construction and building of transport links.
- Piedmont plains, tidal deltas and rolling sand plains are some other topographical features of Indus plain.
- It is the most favored region of Pakistan because of its fertile region in farming, a very well-developed system of canal irrigation and better availability of electricity, transport networks and industries to provide raw materials.

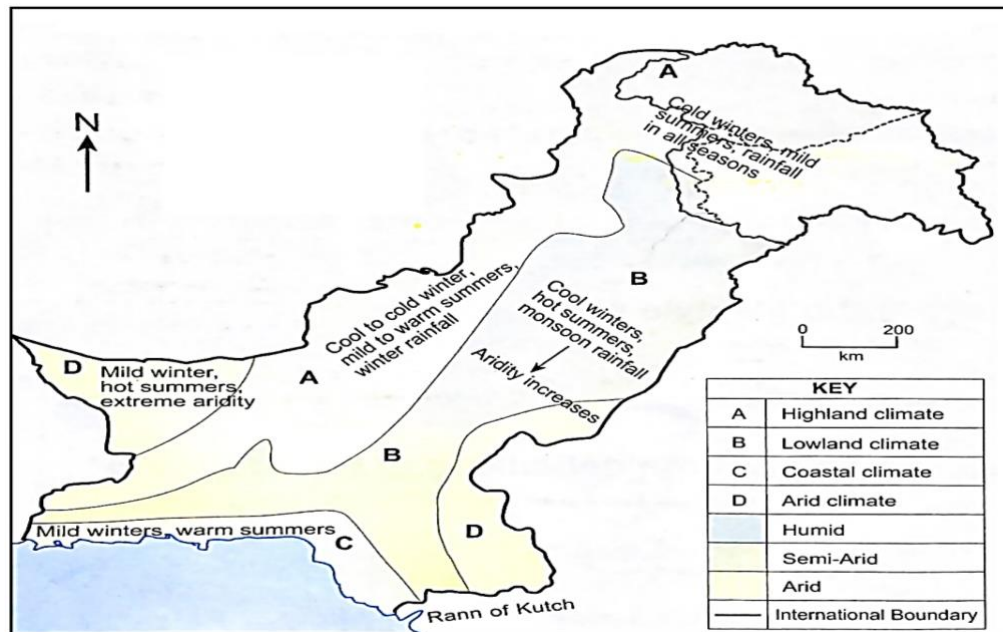
✓ **Desert areas:**

- The Thal dessert located between river Indus and Jhelum.
- The Thar dessert located between south eastern Pakistan.
- The Kharaan dessert.
- Due to high intensity of winds in these deserted areas, several features are formed such as rolling sand dunes, weathering of rocks etc.
- Lack of water and bare vegetation with nomadic lifestyle of people is common in this area.

☆ Climate

Pakistan's climatic zone can be divided into 4 regions

- Highland climate
- Lowland climate
- coastal climate
- Arid climate



✓ Pakistan's climatic zone:

- *Highland region*: includes north and northwestern area. The region is of high altitude with mountains ranging from 2000m to 8000m. Precipitation is higher in northern side than in western side. Summers are short and wet in northern area but consequently dry and warm in western side.
- *Lowland climate*: includes Indus plain. The overall climate there is extremely hot in summers, cool in winters with average monsoon rainfalls. Northern and north western Indus plain is wetter.
- *Coastal climate*: includes Indus delta, Karachi and Markan coast into its region. The climate here is highly influenced by sea breezes and maritime influence. These breezes prevent temperature in summer to warm up a lot and temperature in winters to drop down a lot. Rainfall is less than average throughout the year.
- *Arid climate*: is experienced in south western and south eastern areas of Baluchistan. Hot dusty winds, scanty rainfall and extreme heat and dryness is the permanent weather here.

✓ **Climatic elements:**

- Temperature of Pakistan is affected by latitudinal effect, continental effect, altitude, cloud cover and the angle of sun. Areas closer to the equator are warmer than other places because of the direct rays of sun targeting them. In Pakistan during winters northern hemisphere faces opposite from sun and in summers it faces towards sun resulting in longer days and shorter nights in summers and shorter days and longer nights in winters
- Western depressions, monsoon winds, convectional currents, relief rainfall and tropical cyclones are the sources of rainfalls in Pakistan.
- Monsoon winds are seasonal rainfall. In summers these winds are known as south west monsoon winds which is the main source of rainfall in Pakistan. This phenomenon occurs when extreme heat in summer heats up land and warm air above land rises because of less density and attracts cold air from the ocean bringing rain bearing winds and causing heavy rainfall. North east monsoon winds blow in winters from land towards sea because in winters ocean is warmer than land creating high pressure areas. These winds are usually dry and bring minimum amount of rainfall.
- Western depressions winds develop in Mediterranean Sea and brings rain in western areas of Pakistan in winter season mainly from December to march. Quetta receives most rainfall from western depressions.
- Convectional currents cause rainfall in Pakistan often as thunder storms. Convectional rain brings rainfall in north and north western side of Pakistan not in the southern side of Pakistan due to temperature inversion layer. Peshawar and Rawalpindi receive rainfall from these currents.
- Relief rainfall depends on altitude of the land. It occurs when moist air moves up the mountain and cools down causing heavy precipitation on the other side or the windward side of slope. Murree, Kakul and other high-altitude regions receive rainfall from this method.

✓ **Effectiveness of rainfall:**

- The most effective and main rainfall sources in Pakistan are from monsoon winds and western depressions.
- On many occasions heavy rainfall water also drains away as floods.
- Crop planning is also very difficult because of variable timings of rainfall from year to year.
- Winter rainfalls are more beneficial to farmers because of light showers but the amount and time period of it is not sufficient so farming in Pakistan is mostly dependent upon irrigation system.

✓ **Lifestyle of people in different climatic regions:**

- High land zone climate in north and north western part of Pakistan is all about cold winters and mild summers throughout the year. Vegetation is minimal in these areas and people earn through indoor activities like carpet making, pottery making etc. Lifestyle of people there is practiced as a transhumance way which is moving up with their flocks in highlands during summers and returning back to plain flat areas in winters. Accessibility and economic activities are limited and difficult in this area because of extremely cold weather. Western side is also bare of vegetation but some fruits like apples, mangoes and grapes are grown in high altitude areas with green valleys.
- Arid zone of Pakistan falls under two areas which is Kharan desert and South eastern desert. Climate throughout the year is extremely hot summers, mild short winters and low than average rainfall annually. Agriculture is not favorable here because of lack of moisture content and people practice nomadic way of lifestyle i.e., moving with their animals in search of food and water for animals and themselves. Karez system is practiced here which is preserving water underground for irrigation. Highland of Baluchistan have cooler climate and fruits such as grapes, apples, peaches and melons are grown here. In western part of southern Punjab rice, wheat and cotton are cultivated.
- Lowland zone is the fertile plain of Punjab drained by river Indus and its tributaries. Daytimes are extremely hot in summers but winters are cool. In terms of agriculture Punjab is the most productive region for agriculture in Pakistan because of well-developed canal irrigation system around rivers and crops like wheat, millet, sugar cane and cotton are grown here. Farmers practice agriculture here and the area is densely populated.
- Coastal region of Pakistan is in Sindh and Makran range of Baluchistan. Karachi in Sindh has mild climate with annually low temperature throughout the year. Summers are hot and winters are mild whereas at Makran coast range climate is dry and hot. Humidity prevails along coast with average of low rainfall (250mm) yearly. Due to mild climate economic activities are carried throughout the year, farming is also possible due to irrigation canals and sea ports and industries work continuously all over the year. Fishing community also works on Makran coastal range except in wild monsoon months.
- River floods and thunderstorms are some of after math of heavy rainfall.

☆ Water

✓ River system of Pakistan:

- The Indus River system:
 - ♦ Indus river system is the largest and most valuable river system of Pakistan running in south western side and entering Pakistan.
 - ♦ The tributaries of river are divided into two parts eastern and western. Sutlej, Ravi, Chenab and Jhelum are dominant eastern tributaries of Indus system rising in Himalayans and passing through Kashmir and entering Punjab plain.
 - ♦ All the eastern tributaries join together at *Panjnad* which joins river Indus at Mithankot.
 - ♦ Indus river holds the highest volume of water because one of the world's largest glaciers (Hindu Kush and Karakorum) melts into this river. Dams and barrages on the river control the discharge of excessive water.
 - ♦ Western side of river Indus tributaries are smaller in length and volume of water. Tochi, Gomal and Kurram rarely contains any water but river Swat and Kabul contains significant volume of water. In summers the volume of water increases due to melting of glaciers.
- Rivers of Baluchistan:
 - ♦ Rivers of Baluchistan includes Zhob, Khandar and the Kalachi river which flows on eastwards side.
 - ♦ Rivers like Loralai, Chakar, Bolan and Mula are absorbed into Kachhi Sibi plain.
 - ♦ Rivers like Hub, Piroli and Hingol drain into Arabian sea.
 - ♦ The overall size and volume of water in rivers of Baluchistan is relatively lower than the Indus River system. They remain dry throughout the year and flows during monsoon season only.



✓ **Importance of rivers to Pakistan:**

- The canals leading out from barrages and dams from these rivers supply water throughout the year and make farming and industrial activities possible.
- These rivers provide water for domestic activities also, fishing activities are also practiced in these rivers.
- In agricultural sector water is used for irrigation. Irrigation system in Pakistan has developed to much extent since past few years.
- Some of the fast-flowing rivers also helps to generate hydro-electricity in mountainous areas.
- Water is required in multiple industries like in pharmaceutical and chemical industries.
- In thermal power stations huge quantity of water is used to turn the turbines.
- It also provides water to rain deprived areas such as south eastern Sindh.

✓ **Conventional system of irrigation in Pakistan:**

- These conventional irrigation methods are limited in their benefits because they cannot irrigate a vast area in quick time. Some methods need manual labor or animals while some methods like inundation canals are seasonal i.e., works in only high rainy season.

They include:

- ♦ *Shaduf* which means drawing water from wells with a bucket which is attached to a pole on one side and the weight on other side. It is a physically tough method which can irrigate a very small portion of area and this method is not used today.
- ♦ *Charsa system* is a lot like shaduf except the fact that animal power instead of human is used to lift the water from well.
- ♦ *Karez system* is an underground method to bring the water to surface of land. A horizontal underground canal quite long is dug in foothills to bring water up the ground and the water is shared by multiple farmers to irrigate their land.
- ♦ *Inundation canals* are long canals taken from large rivers which provide water to fields when the rivers are in flood condition.

✓ **Modern system of irrigation in Pakistan:**

- *Perennial canals* are the ones which are linked to dams and barrages and provide a water throughout the year to irrigate field.
- *Tube wells* are electrically operated pumps which raise water from deep underground even from the depth of 92 meters to irrigate farm lands. Negative point of using this method is that it lowers the water table in the ground.
- *Sprinklers* are used to water plants in field placed centrally. It helps to irrigate farmlands quickly and efficiently also preventing excessive wastage of water.

- Tankers are vehicles which collect water from ponds and lakes and provide water to household emergencies.

✓ **Problems of irrigation:**

- Water logging and salinity is one of the other problems of irrigation. Pumping up the water from ground increases the height of water table and with water the salts in it also rises up. The water which has reached up the surface gets evaporated leaving behind pans of salt making the area uncultivable. The rising of water table is called water logging and salty patches left behind refers to salinity.
- Some solutions to these problems are:
 - ♦ Lining of canals to control leakage of water.
 - ♦ Planting eucalyptus trees so that roots can absorb water deep down the ground.
 - ♦ Using canal when needed and not keeping them open throughout the year.
 - ♦ Installing tube wells to lower the water table.
 - ♦ Programmes like **SCARP** and **WAPDA** carry out projects to reduce the effects of water logging and salinity.

✓ **Link Canals of Pakistan:**

- Marala Ravi canal
- Trimmu Sindhnaï canal
- Balloki Suleimani
- Chashma Jhelum canal
- Taunsa Panjnad.

✓ **Dams of Pakistan:**

- Two major dams of Pakistan are:
 - ♦ Mangla dam is located on river Jhelum, it is multipurpose dam designed to control and save excessive water during flood times. It is also a center of tourist attraction and a center of fishing.
 - ♦ Tarbela dam is built on Indus River. It has a huge reservoir of 243 km and its height is 143 m. It is world's largest earth filled dam with two big spill ways which are a major tourist attraction.
- Other dams of Pakistan include:
 - ♦ Warsak dam on river Kabul near Peshawar.
 - ♦ Kurram Gari dam on Kurram.
 - ♦ Banu rivers
 - ♦ Rawal dam
 - ♦ Kanpur dam
 - ♦ Nari Bolan dam

✓ **Barrages:**

- Barrages are similar to dams and are used for same purpose as dams, in-fact their construction cost is less than of a dam and it can also be constructed on flat plains.
- They can also serve as an ideal place for human settlements.
- Some famous barrages of Pakistan are:
 - ♦ Marala barrage
 - ♦ Rasul barrage
 - ♦ Jinnah barrage
 - ♦ Chashma barrage
 - ♦ Sukkar barrage

✓ **How is water used as a source of economic development for Pakistan?**

- Water is the main raw material of some of the industries of Pakistan. It is used in manufacturing industries of steel, thermal power stations, textile industries, pharmaceutical industries, HEP generating industries etc.
- These industries are significant for economic upgrowth and generates large employment for labor in countries.
- These industries also provide electricity to country and produce local goods for people and export items for trading.
- Agriculture is the biggest income generating sector of Pakistan that needs huge supply of water mainly through irrigation. Crops like wheat, rice, sugar cane, cotton with fruits and vegetables not just meet the need of food for local population but also contribute up to 25% in GDP.
- Industries such as cotton textiles, food processing, leather making industries also use these agricultural products as raw materials. They are also exported to boost GNP of Pakistan.
- For domestic usage clean water is also a necessity for the citizens of the country.

☆ Forest

- Forestry is a primary profession to obtain raw materials from the nature and forest are mass areas of land covered by trees. It is a plant community dominated by trees of woody vegetation.
- Forests are divided into two categories:
 - ♦ Productive forest: are natural forest which are commercially valuable in terms of woods and raw materials of industries.
 - ♦ Protection forest: are natural forest to hold the soil, prevent erosion and keep a balanced and stable environment.

✓ Importance of Forests:

- They balance the overall air of environment by absorbing the pollutants and releasing oxygen, they prevent soil erosion and regulates flow of water into rivers to prevent flooding.
- They are a source to provide raw materials to several industries and provide woods like timber for transportation and indirectly generates employment for people in forest-based industries.
- Plants are also used as herbs and medicines in pharmaceutical industries.

✓ Types of forests:

- Alpine forests:
 - ♦ Found in northern areas like Chitral, Dir and Kohistan of Pakistan.
 - ♦ They have upwards branches and extended growth to absorb maximum amount of sunlight their roots spread sideways on thin soil to absorb maximum nutrition.
 - ♦ They are not very commercially valuable and are used as a fuel wood.
- Coniferous forests:
 - ♦ Found in colder regions/ northern areas like KPK, Islamabad, Murree and in some cities of Baluchistan like Quetta.
 - ♦ They are famous as evergreen forest as they survive very well in extremely low temperatures.
 - ♦ They are conical in shape with sloping branches downwards which prevents snow to freeze on trees.
 - ♦ The leaves are small in size but thick and leathery in texture which prevents excessive transpiration and leaf fall which leads to less humus formation.
 - ♦ Coniferous trees are important source of timber for furniture industries and a big central wildlife habitat.
 - ♦ It adds to scenic beauty of area promoting tourism.

- Mangroves:
 - ♦ Found in coastal areas of Sindh and Baluchistan.
 - ♦ They are leathery in texture to minimize transpiration.
 - ♦ Their gnarled roots protrude above the surface of soil to extract maximum oxygen and survive efficiently in salty sea water.
 - ♦ They are stunted in growth because of waste being dumped in coastal areas.
 - ♦ They are of great benefits to people because they supply firewood to community, they are the safe breeding ground for many fish, some of the mangroves also supply timber to people in addition to these camels and livestock also feeds on its leaves.
 - ♦ These forests on coastal plains also act as a barrier against earth quakes, tsunamis and storms.
 - ♦ It acts as a productive and protective forest both.
 - ♦ Mangroves are of great importance to Pakistan and are getting exploited in Pakistan due to several reasons like sea water pollution, removal of sand from beach, excessive cutting of mangroves for wood.
 - ♦ **WWF** (worldwide fund) and **IUCN** (international union for the conservation of nature) are working on some projects to conserve and rehabilitate mangroves.
- Tropical thorn forests:
 - ♦ Found in Punjab and Sindh plains and on southern and western Baluchistan.
 - ♦ The forest is mainly dominated by thorny hardwood and they are scanty vegetation due to water shortage.
 - ♦ They have deep roots to search for water and they are stunted in height.
 - ♦ They are not economically valuable and are just used as firewood.
- Sub-tropical scrub vegetation:
 - ♦ Found in foothills of lower Himalayans and are present in Sulaiman and Kirthar ranges. They are also found in Makran coast range and in western mountains like Peshawar, Kohat and Waziristan areas.
 - ♦ These species leaves are broad and are thorny in nature.
 - ♦ They supply firewood and are used for grazing purpose by animals.
- Irrigated forests:
 - ♦ Found near Changa Manga near Lahore, Wan Bachan in Thal area and in Sahiwal districts.
 - ♦ They are also economically favored forest as they provide species of woods like shishum, babul and eucalyptus wood which provides food for industries.

✓ **Deforestation:**

- Causes:
 - ♦ Rapid increase in population and urbanization has caused demand of wood to increase which leads to more cutting of trees.
 - ♦ Large tracts of forests are cleared for mining and agricultural activities.
 - ♦ Wood-based industries use wood to produce local goods and export products.
 - ♦ More than 70% of rural population of Pakistan depends on fire wood for cooking purpose which leads to excessive cutting of trees.
 - ♦ Over grazing of land by cattle causes scrub vegetation to decline.
- Effects of deforestation:
 - ♦ Degeneration of environment and loss of limited and valuable resources.
 - ♦ The main after effect of deforestation is soil erosion specially on foot hills of mountains. When rain falls and there are no trees to hold soil and gushing down sand and silt with it, it gathers in reservoirs of dams and barrages which effects the water storage capacity and electricity generation through hydroelectric power plants negatively.
 - ♦ It also blocks irrigation channels and harms fisheries also.
 - ♦ Negatively effects tourism like in Swat Mingora tourists have raised concerns over large destruction of tracts of forest every year they visit the city.
 - ♦ Natural habitat of animals also gets destroyed and many endangered species extinct because of it.
- Solutions:
 - ♦ Supplying irrigation facilities to these areas with effective force.
 - ♦ Reserving a separate land for fuel food only.
 - ♦ Creating awareness among people through NGOs.
 - ♦ Supplying natural gas to northern and rural areas so that it prevents cutting down of trees.
 - ♦ By improving the methods of raising nurseries and plantations.
 - ♦ Strict enforcements of laws to cut trees without using heavy machinery.
 - ♦ Terracing on steep slopes i.e., cutting steps on to hill sides and placing bundles of stones in front of each terrace field helps to reduce soil erosion.
 - ♦ Contour ploughing is a method to plant trees parallel to the contours on the side of hill.

✓ **Sustainable forestry:**

- It means to meet the needs of the present without compromising the needs of future population i.e., planting trees continuously. Some methods of sustainable forestry include:
 - ♦ Every tree cut down should be immediately replaced with a sapling.
 - ♦ Trees should be cut down accordingly to their rate of growth.
 - ♦ If a large area of forest is cut down for urbanization, mining or any other purpose then another area should be planted to replace it.

☆ Mineral Resources

Minerals are inorganic natural substances and natural resources of country.

✓ Mining Process:

- Refers to the ways in which minerals are dug.
- Open cast mining is the method to extract the minerals from the surface of earth using excavators and power shovels.
- Underground mining is subdivided into two methods.
 - ♦ Adit mining is an opening dug in hilly areas where mineral seam is present on hill side. The miners go deep inside the hill horizontally to dig out coal further after digging it out from the opening. Horizontal tunnels are dug in hill side to reach deeper inside. Sor field near Quetta is an example of this.
 - ♦ Shaft mining is somewhat similar to Adit mining except the fact that instead of horizontal, vertical shafts are dug down. Tunnels then dug horizontally to the layers and seams of minerals. The method is expensive and quite dangerous due to ventilation problems and risk of outburst of poisonous gases.

✓ Types of minerals:

- Metallic minerals:
 - ♦ These are the most valuable minerals to mankind.
 - ♦ These are cut or blasted from surrounding rock and the excess rock from it is removed.
 - ♦ Metallic minerals are harder and tougher than non-metallic minerals.
 - ♦ They can change their shape, compressed and stretched without breaking and they are good conductors of heat and electricity.
 - ♦ They are also generally more reactive with acid and water.
 - ♦ Some of the metallic minerals are listed below:

Metallic Minerals	Uses
Chromite	Gives hardness to steel and is used for constructing bridges and railway carriages. It is also used to make engineering tools and steel products.
Copper	It is used to make electric wires, and electrical appliances and they are also used in making alloys of metals and water pipes.
Iron ore	It is used in steel making, construction and transport industry.
Manganese	It is used in paints and batteries.
Celestite	It is used in tracer bullets, fireworks, paints and plastic industries.

- Non-metallic minerals:
 - ♦ These minerals are less valuable than the metallic ones and are softer and rougher.
 - ♦ They break when they are compressed or stretched and they are also poor conductor of heat and electricity.
 - ♦ There are several types of nonmetallic minerals. Some of them are listed below:

Non-metallic Minerals	Uses
Rock salt	It is used for cooking and for manufacturing of different sodas like caustic soda, soda ash, bicarbonate of soda etc.
Limestone	It is a major raw material for cement, glass, soap, bleaching powder, paints etc. It is also used to produce alcohol fuel from sugar cane waste.
Coal	It is mainly used in brick kilns, and also used to generate electricity in thermal power stations.
Gypsum	It is used in manufacturing of paints, fertilizers, and used in cement and plaster of Paris making industry.
Mineral oil	It is used as a lubricant in machines and as a power fuel.
Clays	China clay which is used in ceramic industries; fire clay is used to make fire bricks and insulating bricks; fuller earths clay is used to manufacture steel and in the process of oil refining.

✓ **Minerals for economic development in Pakistan:**

- Nonmetallic minerals are used in construction industries to develop infrastructure of country.
- Nonmetallic minerals like coal, natural gas and oil are used to generate electricity in thermal power stations.
- Metallic minerals are used as raw materials in high value industries and used to make tools for agriculture.
- Minerals also play an important role in agricultural industries such as cement is used in lining of canals and in building reservoirs in dams for irrigation purposes.
- Mining industries also generates large work force for employment.
- Exporting minerals and products manufactured from these minerals increases GDP (gross natural product) of a country and improves balance of payment.

✓ **Negative effects of mining:**

- Vegetation needs to be cut down when minerals are extracted and ground need to be dug which results in natural land to be deformed and soil erosion.
- Underground mining causes depressions if let unfilled water may accumulate in them because of rainfall.
- Rocks are also blasted during mining process which results in noise and land pollution.
- Traditional method of mining may cause death of many miners due to suffocation and outburst of poisonous gases.
- Mineral's waste might be washed down into nearby rivers and lakes causing water pollution.

✓ **Solutions:**

- After mining land should be levelled and depressions should be filled after digging it up.
- The miners should be given special protective majors for mining in dangerous places.
- The area around mining sector should be properly planted with trees for fresh air and water resource should be set up nearby for miners.
- All mining waste should be treated properly before disposing them.
- Living conditions of miners should be improved and all sorts of facilities should be provided to them.

☆ Fishing Industry

- Fishing is one of the oldest occupations in Pakistan and it is also known as **aqua culture**.
- Its total share to GDP is 0.9% but Pakistan earns 6% of its total foreign exchange from it.

✓ Types of fishing:

- Marine fishing in Pakistan is done on Sindh coast (30 %) and Makran coast (70 %) and it is divided into two parts:
 - ♦ *Subsistence farming*: type of fish farming in which fisherman does fishing and consume fish for its family as a main component of its diet. Conventional methods of fishing are used. Traditional fishing equipment like nets, nylon ropes, floats and winches.
 - ♦ *Commercial fishing*: type of fish farming in where fish is sold to market to generate income. Gwadar and Karachi are the main market for fish. New techniques of fishing like mechanized boats and gill netters are used. Sindh coast have multiple facilities like sheltered harbors and better export and processing facilities. Makran coast is still being developed for better facilities. Examples of fish include: Sharks, Cat-fish, Drums, Rays etc.
- Inland fishing is practiced in rivers and lakes of countries, reservoirs of dams and irrigation channels. Example of fish include Manaseer, Palla, Thala, Rahhu etc.

✓ Fish Centres:

- The main fishing centers in Pakistan are:
 - ♦ Mancher lake in Dadu district.
 - ♦ Haleji lake in west of Thatta.
 - ♦ Reservoirs of Mangla tarbela dams.
 - ♦ River Indus at Sukkar, Kotri and Thatta.
- Gwadar fishing center is the main center of fishing for Pakistan's economy. More than half of the Gwadar work force is indirectly or directly involved in fishing industry.
- Drums, catfish, croakers, shrimps, herring, mackerel are some of the species obtained from there.

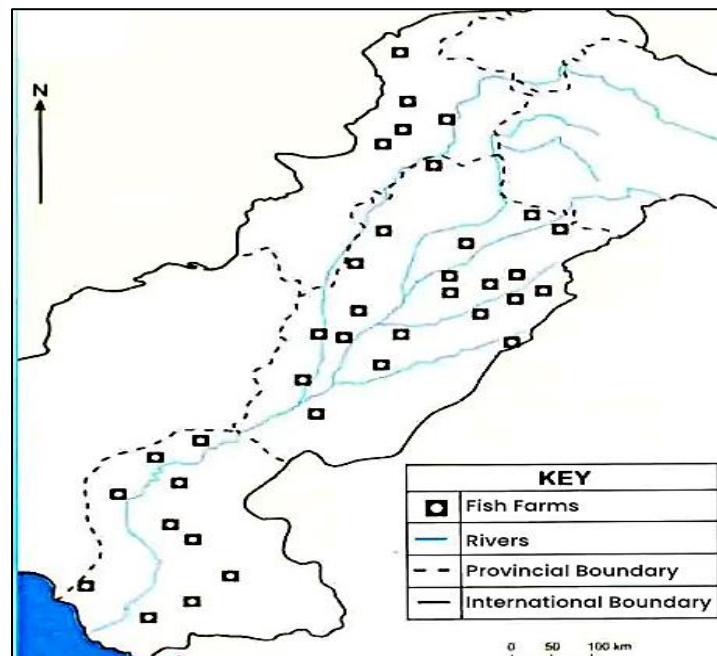
✓ Problems faced by fishing industry:

- Pollution of marine water because of industries near coastal areas such as: heavy metals, cadmium, aluminum, nickel etc.
- Over fishing is also another major problem in fishing industries where fishing is also done in breeding seasons.
- Mangroves which are a natural breeding ground for fish are also cut down which threatens fish population.

- Lack of finance for fishing industries and not using modern techniques is also another issue in fishing industries.

✓ **Fish Farms:**

- Fish farms are rectangular ponds made by humans.
- These are constructed with such ways which promotes the growth and fertilization of fish.
- Fish farming has several effects like on physical environment like:
 - ♦ Water table is lowered when excessive water is pumped up to fill these farms.
 - ♦ Salt in these waters also rises damaging the land around these farms unsuitable for agriculture.
 - ♦ Chemicals like pest and diseases control and hormones for better breeding of fish might wash into nearby rivers and fields polluting them.



✓ **Sustainable fishing:**

- Sustainable fishing means fishing in such a way that fish population does not fall short for future generation.
- Factors taken for sustainable fishing includes:
 - ♦ Implementing laws to ban the usage of nets with extremely tiny holes which catch baby fish.
 - ♦ Not allowing foreign trawlers to fish in Arabian sea.
 - ♦ Protect mangroves.



- These majors will eventually help to expand fishing industries, enhance trading of fish products, and generate employment in related fish-based industries.

☆ Agricultural Development

- Agriculture is a primary and most important sector of Pakistan which generates most income and boost up the economy of Pakistan.
- ✓ **Farming in Pakistan:**
- Small scale subsistence farming produces food for farmers and their families working on fields. The surplus crops produce is sold to market to generate income. Labor on fields is done by family members and natural factors (rain, manure, soil) and traditional tools are used. If climatic conditions are favorable crops like wheat and maize are grown well and extra material is sold to markets to cover the expenses of families and for buying some fertilizers, seeds and pesticides for the field.
 - Cash crop farming/ Commercial farming is a type of large-scale farming on which crops are grown to sale. Farmers prefers crops like wheat, cotton, rice and sugar cane to grow. Farming techniques like use of fertilizers, high quality seeds, canal water and skilled water is used to grow maximum crops and generate maximum profits. Other variety of crops like tobacco and oilseeds are also grown.
- ✓ **Types of crops:**
- Rabi crops sown in winter season and harvested in summer season like wheat, barley, grams and pulses.
 - Kharif crops are sown in summers and harvested in winters like rice, sugar cane, millets, maize etc.
- ✓ **Main crops of Pakistan:**
- Wheat:
 - ♦ It is the most grown crop in Pakistan and main component of diet for majority of people.
 - ♦ It is grown in canal irrigated area of Punjab where soil is fertile and rich in alluvium and temperature is favorable. It is also grown on barani lands near Potwar plateau.
 - ♦ Wheat does not need a lot of water to grow and after irrigating the farm land and sowing the seeds it is harvested after 3 months.
 - ♦ It needs temperature between 10-30 °C for growing and ripening with moderate rainfall and loamy soil plus flat land.
 - Rice:
 - ♦ It is the second most important crop for Pakistan.
 - ♦ It is grown on plains of Sindh and Punjab and on terraced fields of northern areas.
 - ♦ They need plenty of water to grow.

- ♦ The fields in which rice are transplanted are flooded to the depth of 37cm after they have grown up to 9 inches.
- ♦ At the time of harvesting water is drained off and rice are threshed.
- ♦ Some of high-quality rice like Irri Pak rice is also exported.
- ♦ Rice requires temperature between 20-30 degrees and a heavy rainfall. Soil should be loamy and irrigation facilities with good labor is required.
- Cotton:
 - ♦ It is known as the king of fiber is widely used in textile industry of Pakistan.
 - ♦ Cotton seeds are sown with distance apart and irrigation is done twice on it.
 - ♦ They ripe in months of October till November and then are harvested.
 - ♦ Seeds from cotton balls are separated from mass and seeds are used as animal feed while cotton is made into bails.
 - ♦ Best temperature for cotton growth is 25–35-degree Celsius and good amount of rainfall above 1000mm is required.
 - ♦ Medium loamy soil and chemical fertilizers are added in soil for better growth.
 - ♦ Machineries, pesticides and fertilizers are some of the human inputs.
 - ♦ Lasbela is the new cotton producing center in Pakistan.
 - ♦ Pak upland, nayyab-78 and b-557 are few varieties of cotton crop.
- Sugar cane:
 - ♦ It is also an important crop and raw material for brown sugar and Gur.
 - ♦ If the land is well irrigated sugar cane crops can grow up to the height of 7 feet and after harvesting it grows new shoots call ratoons which are also harvested after growing.
 - ♦ Bagasse and molasses are two by products of sugar cane which are used to make chip boards, animals feeds, baker's yeast and synthetic rubber.
 - ♦ Temperature required for sugarcanes is from 25-35 °C.
 - ♦ Plenty of rainfall around 1520 mm is required.
 - ♦ Clayey soil with silt is the most suitable one with lots of nutrients.
- Maize, millets, oilseeds and fruits like bananas, mangoes, oranges, grapes, almonds, apples etc. are also grown in Pakistan.
- ✓ **Livestock farming:**
 - It is basically rearing of animals on grazing lands known as Shamilats.
 - There are 3 types of livestock farming:
 - ♦ *Nomadic farming* is practiced in deserts of Punjab and Sindh. People rearing them move from place to place in search of food and water and settle on areas which have grazing fields. They get milk and meat from their animals and camels are used to carry their belongings from place to place.

- ♦ *Transhumance farming* is practiced in northern areas of Pakistan where animals are kept on high lands in summer and are brought down to lower pastures in winters. Goat, sheep and cattle are kept, yak and dzho are kept in Himalayans. Meat, milk and wool are outputs of these animals.
- ♦ *Settled farming* is also practiced in plains of Punjab and Sindh where cows are kept for milk to make dairy products and hens are used for eggs and meat.

✓ **Importance of livestock farming:**

- Meat and milk are provided for local population and from these things' ghee, butter and cheese are also made for local population.
- They provide raw materials like skins, wool and bones for industries.
- Livestock also contributes 10% to the GDP and these animals are also used in draught power and on farming fields for ploughing, threshing and harvesting purposes.

✓ **Natural factors that affect agricultural production:**

- Topography of an area determines production of crops like flatter land is more efficient for farming. Output of crops decline as the land gets higher or steeper.
- Alluvial rich soil and loess soil are best for farming. Alluvium rich soil on the banks of river Indus is also very rich and fertile for crops.
- Adequate amount of rainfall with proper irrigation facilities is really important for agriculture.
- Warm and slightly cool temperature is good for growth of crops.
- Crops can be attacked by pests and diseases but using pesticides can prevent crops from rotting.

✓ **Human factors that affect agricultural production:**

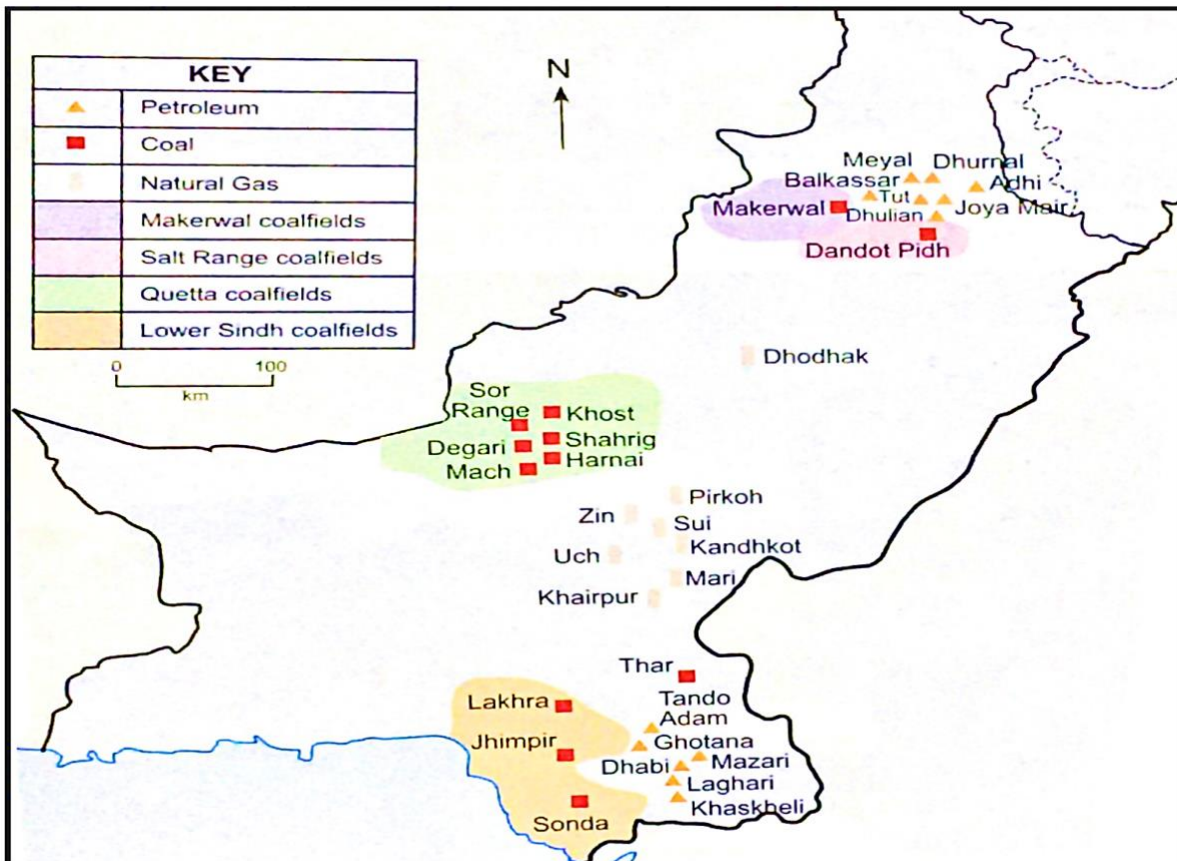
- Providing irrigation facilities and canal irrigation to crops because rainfall in Pakistan is not very efficient and timely for crops.
- Fertilizers can increase the production and yield of crops in quicker way.
- Mechanization on farmlands reduces time taken in harvesting, threshing and reaping the crops.
- However, with these factors also comes the problems like:
 - ♦ Excessive irrigation can cause water table to rise, ground water to reduce and problems like water logging and salinity to occur.
 - ♦ Excessive use of fertilizers and pesticides can cause water pollution if washed into rivers/lakes and also can cause harmful effect on our body if we eat these chemical-based crops.
 - ♦ Removal of vegetation to turn them into farming areas can cause soil erosion.

✓ **Sustainable development in agricultural sector:**

- Problems of water logging and salinity should be solved promptly so that large areas of cultivable land don't get destroyed because of it.
- Desert areas should be turned into agricultural land if proper irrigation facilities are provided.
- Government and private organizations should apply new and productive methods with technology-based ideas on farming sector.
- Seminars and awareness campaigns should be conducted in rural areas for farmers to teach them better and advanced way of farming and aware them of things which can be harmful for their fields and crops.

☆ Power Resources

- Energy can come from renewable and non-renewable resources.
- Coal, oil, natural gas and nuclear power are nonrenewable resources of energy whereas water, wind, sunlight are renewable energy resources.



✓ Non-renewable energy sources:

- Coal:
 - ♦ It is a fossil fuel formed due to decomposition of natural vegetation.
 - ♦ There are 4 types of coal, Anthracite, Bituminous, Lignite and Peat.
 - ♦ Coal is relatively a cheap fossil fuel found in abundant quantity in Pakistan and therefore organizations like Pakistan mineral development corporation, Punjab mineral development corporation and few private companies are developing ideas to use coal as a fuel and use in cement industries instead of natural gas.
 - ♦ It is also used in iron and steel industries after converting it into coke.
 - ♦ Coal can also be used for power generation in plants which can reduce energy and electricity crises to much extent.

- ◆ However, coal power plants near rivers and coastal areas can cause immense amount of pollution which can harm marine life and people obtaining water from these resources.
- Mineral oil:
 - ◆ It is one of the most important fossil fuels which is obtained from decomposition of marine life and vegetation over millions of years.
 - ◆ The oil unlike coal is trapped deep underground so a derrick is used to extract it after identifying its location.
 - ◆ The crude oil extracted cannot be used in its original state that is why it is refined into products like petrol, diesel, kerosene etc.
 - ◆ Pakistan imports huge quantity of oil because demands of it cannot be meet.
 - ◆ It is not just used as a fuel but also as a lubricant and its by products are also very useful.
 - ◆ White oil pipeline project (WOPP), Pak Arab refinery company (PARCO), oil and gas development corporation and companies like these are working in Pakistan for mineral oil extraction and usage.
- Natural gas:
 - ◆ It is also an important fuel which is found trapped above the oil-bearing rocks under the ground.
 - ◆ This gas is made up of methane, ethane, propane and butane.
 - ◆ It was discovered by the Sui in Baluchistan by PPL (Pakistan petroleum limited).
 - ◆ It can also be used as LPG (liquified petroleum gas) in mountainous areas.
- Nuclear energy:
 - ◆ It is the energy released from atoms and it is very powerful. This helps to generate electricity in the same way as fossil fuels I.e., both uses heat energy to produce heat and turn the turbines.
 - ◆ The Karachi nuclear power plant and Chashma nuclear power plant are two nuclear power stations in Pakistan.
 - ◆ Drawbacks: harmful rays are produced from fuel rods, waste can remain radioactive for several years, and very expensive.
 - ◆ Benefits: nuclear energy generates 3 million times more energy than coals, and for industrialization nuclear energy is very substantial.
- ✓ **Renewable energy sources:**
 - Hydroelectric power (HEP):
 - ◆ It uses the force of flowing water to turn the turbines from which shaft is connected which spins to generate electricity.

- ♦ The electric current through transformers transfers electricity to power line and from them to home.
- ♦ They are mainly constructed on Tarbela, Mangla and Warsak dams.
- Solar power energy:
 - ♦ Traps energy from sunlight and generate steam from it.
 - ♦ It is safe, renewable and pollution free source of energy.
 - ♦ It is quite expensive and needs continuous hours of sunlight.
- Wind power:
 - ♦ It uses wind energy to create affordable, environmental, and inexhaustible source of energy.
 - ♦ The wind moves blades of wind mills which transfer kinetic energy of wind into mechanical power through turbines.
 - ♦ Only areas like coastal and mountainous areas with high wind velocity can use this method.
- Geothermal power energy:
 - ♦ It is the heat energy derived from the earth's core.
 - ♦ It works in a way that holes are drilled under the land to pump hot water out which is used to drive or turn turbines.
 - ♦ It is a renewable and sustainable form of energy.
- Tidal power:
 - ♦ It is the method to produce energy due to the movement of tides.
 - ♦ A huge tide comes every 24 hours which is used to turn turbines.
 - ♦ It is a non-polluting and renewable source of energy.
- Biomass:
 - ♦ It means organic material from decayed vegetation and cow dung which is used as fuel.
 - ♦ It causes air pollution and problems because methane gas is produced from cow dung.
 - ♦ People in villages use this method for cooking and heating purposes.
- ✓ **Importance of power resources for economy of Pakistan:**
 - All industries in Pakistan needs electricity. Good supply of power in Pakistan can increase production of goods and increase in GDP.
 - Agriculture also needs modernization and tube wells; machineries can only work efficiently if there is good supply of electricity.
 - Mineral's exploration and extraction also need fuel to operate. If proper energy is provided country's economy can improve and employment can also be generated.

- Proper utilization of power resources can improve balance of payment as imports will be reduced.
 - Society can also be modernized with the usage of better and more electrical appliances.
- ✓ **Sustainable development of power resources:**
- Renewable resources of energy should be developed on modern lines.
 - Wastage of power should be strictly checked by government.
 - Awareness programs should be created on conservation and wastage of electricity.
 - Faulty transmission lines should be repaired to reduce wastage of electricity.
 - Nonrenewable resources of energy should be protected and conserved.

☆ Industrial Development

- Secondary industry means changing raw materials from the primary industry into finished products.
- Every industry has some inputs, processes and outputs. Inputs of secondary industry are:
 - ♦ Capital; finance to start a factory.
 - ♦ Enterprise; skills needed for ideas.
 - ♦ Land; place where industry is located.
 - ♦ Power; for machineries.
 - ♦ Labor; to work in factories.
- Raw materials are the basic asset required to produce products in industries. They may be processed or manufactured as well. For example, wheat in agriculture industry, cotton in cotton textiles industry and crude oil in power resources industry.
- Metallica minerals like gold, silver, iron and nonmetallic minerals like limestone, marble, sulfur etc., also serves as raw materials.

✓ Important industries of Pakistan:

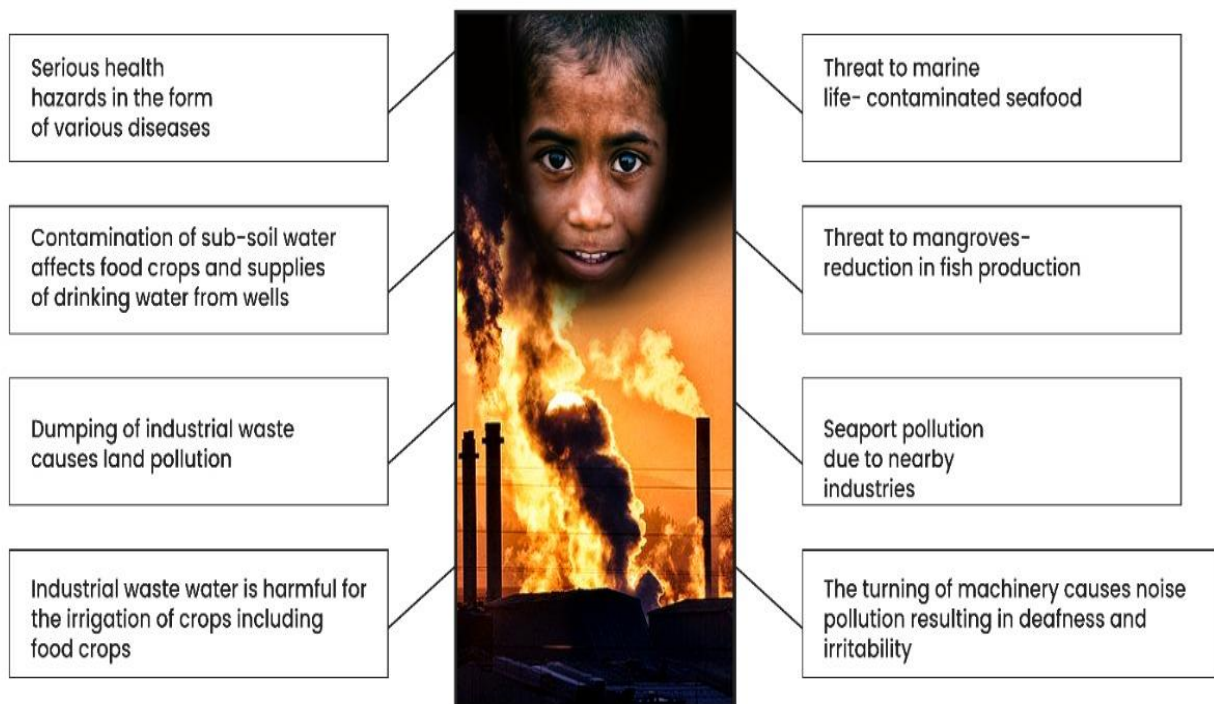
- Cotton textiles industry:
 - ♦ Largest industry of Pakistan which provides employment to 50% of the work force in country.
 - ♦ Karachi, Hyderabad and Faisalabad are important cities of cotton industry.
 - ♦ It contributes greatly to GDP of Pakistan even 60% of the export goods of Pakistan comprises of textile.
 - ♦ Value added products and raw cotton both are exported and this industry employs large number of skilled and unskilled labor.
 - ♦ Some problems in cotton textile industry includes: shortage of raw cotton due to leaf curl virus attacking crops, outdated textile machinery, power break downs and shortage of electricity, and recession placed by international markets on Pakistan due to lack of quality etc.
- Sugar industry:
 - ♦ Sugar mills are mainly located in Punjab, KPK and Sindh.
 - ♦ By products of sugar cane are bagasse which is used to make chip boards, paper and animal feed, molasses is used to manufacture various acids in chemical industries

- Fertilizer industry:
 - ♦ Materials like sulfur, phosphate and gypsum are used as raw materials to manufacture fertilizers in fertilizers industry.
 - ♦ Fertilizers are greatly used in Pakistan especially nitrogenous fertilizers because soil is not very fertile in Pakistan.
- Steel industry:
 - ♦ It is the most important industry for a country going under industrialization.
 - ♦ Pakistan steel mill corporation is the main steel mill industry in Pakistan.
 - ♦ This industry provides raw materials to engineering and construction industry, another important steel industry in Pakistan is Heavy mechanical complex and Heavy Forge factory which manufactures defense system products and power plants products for Pakistan.
- ✓ **Special industrial zones:**
 - Schemes which plan to promote trade and support manufacturing of products.
 - They are developed in those areas where all infrastructural facilities are available with electricity supply.
 - The government offers incentives like tax exemptions on imported products, security, holidays etc.
- ✓ **Formal and informal sectors in Pakistan:**
 - Promotes industrial growth, which includes local and international industries both.
 - Formal sectors are properly managed by an institution with proper working hours and wages. It is legal and registered.
 - Informal sector is self-employed with irregular working hours and wages. It is non-registered.
- ✓ **Cottage Industries/ Small scale industries:**
 - Cottage industries are important industries set up in rural areas of Pakistan which holds immense importance and value in cities and towns.
 - These are small scale industries set up both in rural and urban areas providing products to markets.
 - Some of these are:
 - ♦ *Sports goods industry*: located in Sialkot using raw materials like rubber, leather, wood pulp, to make sports good. Unskilled labor and no machinery are used. These goods are exported to other countries.

- ♦ *Surgical instrument industry:* is located in Sialkot and Lahore. These produce highly sophisticated products and this cottage industry contributes 70 % to total exports of this type.
- ♦ *Brick kiln industry:* exist in Punjab which produces fire bricks for construction industries. They are very labor-intensive industries which provides large number of employments. But these industries cause extensive air pollution, and health hazards.
- Problems associated with these industries include: limited profits, high production cost, lack of electricity in rural areas, lack of skilled labor, lack of standard and modern machinery.

✓ **Industrial pollution:**

- Industrial pollution can affect people in a very harmful way like land pollution due to industrial waste, pollution at marines and seaport because of coastal industries, noise pollution and health hazards due to inhalation of polluted gases.



- Industrial pollution can be controlled in following ways like:
 - ♦ Treating industrial waste before disposing it.
 - ♦ Planting maximum number of green shady trees around industrial areas for a fresher environment.

- ♦ Strict laws should be implemented to ban dumping of industrial waste into Arabian sea by local and foreign industries.
- ♦ Create awareness programs and seminars to educate people on environmental protection and losses.
- ♦ Government has taken some actions by formulating Pakistan Environmental Protection Act (PEPA) and drafting NEQs to protect environment.

✓ **Tertiary industry:**

- Also known by the name of service industry.
- The main tertiary industry in Pakistan is tourism industry.
- It is a business which aims to provide recreational facilities and accommodation facilities for the people who are travelling for pleasure or any work.
- Developing countries of world make maximum usage of their tourism industry because it grows at very fast rate, generates good amount of income and gives employment.
- During extreme heat waves in plains of Punjab and Sindh families visit places like Murre, Swat, Khagan and Chitral.
- Major tourist attraction in Pakistan is in northern areas such as: Keghan valley, Swat valley, Skardu, Hunza valley, Gilgit valley and Chitral.
- Cultural attraction in Pakistan includes:
 - ♦ Archeological places like Moen jo Daro, Harappa, and Taxila.
 - ♦ Historical sites include Shalimar gardens in Lahore, Forts of Baltit, Khyber Pass etc.
 - ♦ Modern buildings like Faisal Mosque, Minar-e-Pakistan, parliament building in Islamabad etc.

✓ **Factors of developing tourism in Pakistan:**

- Providing security and safe environment for all national and international tourist.
- Presence of natural, historical and cultural tourist attractions.
- Availability of good amount of capital dedicated to tourist industry.
- Proper infrastructural facilities such as good water and electricity supply, strong all-weather roads, hospitals and food streets nearby should be provided.
- Good management of tourist attractions.
- Extraordinary level of marketing and publicity.
- Government responsibility and priorities like 'Pakistan Tourism Development Corporation' an organization works for promotion of tourism industry.

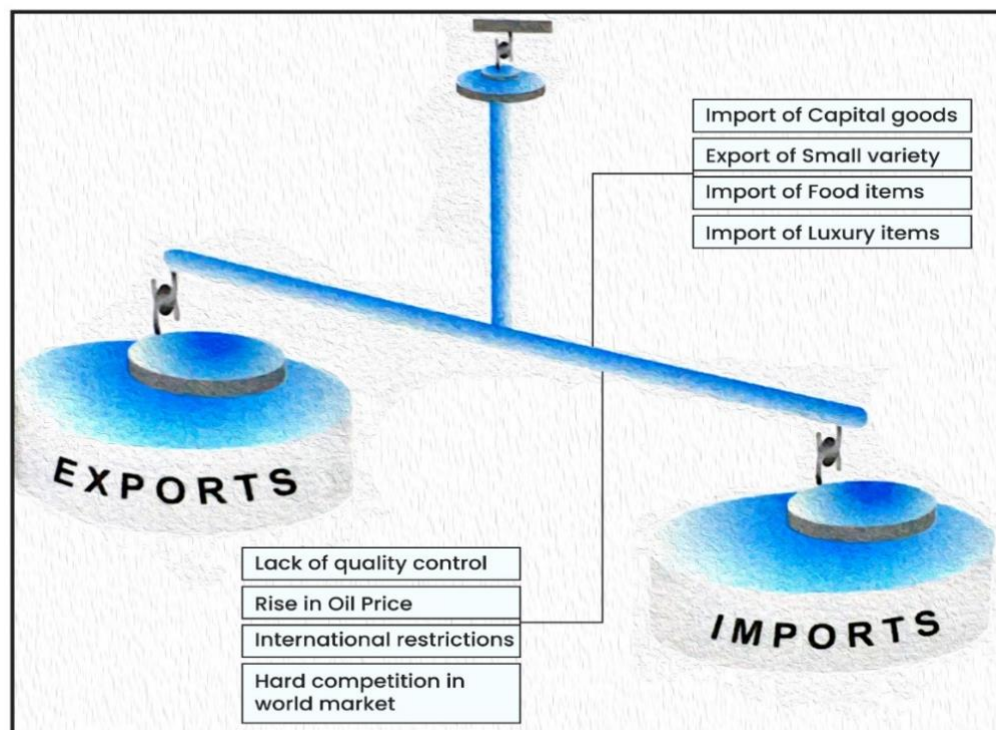
★ Trade

- Trade is basically exchange of goods and services between two or more countries. It can also be done within the countries between different cities.
 - Trade promotes employment, establish good relations between two countries and also specialize a country with its unique products.
 - Some other benefits of trade include:
 - ◆ GDP, income and economy of a country gets boosted.
 - ◆ Foreign exchange is earned.
 - ◆ Domestic resources are used to meet the demands of export products.
 - ◆ Information technology comes from developed countries to developing countries.
 - GDP stands for gross domestic products which focuses on domestic production in the country whether by own Pakistanis or by international people.
 - GNP stands for gross national products which is responsible for products produced by Pakistani companies whether they are located inside the country or outside.
 - The main trading blocs in Pakistan are SAARC (South Asian association for regional corporation), ECO (Economic cooperation organization) and ASEAN (Association of Southeast Asian Nations).
- ✓ **Exports:**
- Major exports of Pakistan include raw cotton, fruits, vegetables, fish, leather, cotton yarn, carpets, rugs, sports and surgical goods, readymade garments etc.
 - Export of Pakistan is largely concentrated to five main countries which are USA, Germany, UK, China and Afghanistan.
 - Exporting value added goods to other countries instead of raw cotton can increase Pakistan's position in foreign regions.
- ✓ **Imports:**
- Imports of Pakistan includes wheat, sugar, pulses, agricultural and industrial machineries, petrol and petroleum products, fertilizers and chemicals, iron and steel products, and synthetic fibers.
 - Pakistan has a negative balance of payment because values of imports crosses values of exports due to industrialization, rapid increase in population and unfavorable exchange rates.
 - Main countries from which Pakistan imports are Saudia Arabia, UAE, USA, Germany, Japan and China.
 - Imports of high value goods by Pakistan negatively effects Pakistan economy in following ways:

- ◆ Negative balance of payment causes debts and loans to be taken by country.
- ◆ Foreign assistance increases.
- ◆ Development projects slow down.
- ◆ High taxes are imposed on products which decreases their demand due to high prices.
- ◆ Nonpayment of loans can cause trade embargo by other countries.

✓ **Why Pakistan always has negative balance of payment?**

- Pakistan imports mainly consists of capital goods which increases its bill.
- Our goods lack in standard and quality so they cannot compete in market.
- Consumer goods are highly imported in Pakistan which increases its bills.
- Exports of Pakistan mainly revolve around cotton, rice and leather products which depends on farming and if climatic conditions are not goods exports decrease largely.
- Wheat and other edible items need to be imported as country cannot meet demands of food by its people.
- Trade barriers by some countries are placed on Pakistan from countries like US due to child labor, health and hygiene issues.



✓ **How to improve balance of payment?**

- Increasing exports by adding high value adding products.
- Increase variety of export products.
- Strict measures should be imposed to check the quality of products before exporting them.
- Setting up export processing zones in the country.
- Reduce taxes on export products to provide incentives to exporters.

✓ **Export processing zones:**

- EPZ are industrial companies which manufacture products of export quality.
- The aim of these zones is to boost industrialization, create employment, encouraging local and foreigner people to invest in Pakistan.

☆ **Transport and Telecommunication**

- There are four major ways of transport in Pakistan; rail, road, air and water.

✓ **Railways:**

- The network of railways in Pakistan is vastly extended from Karachi to Peshawar on 11,899 km track.
- Railways in Pakistan can be easily constructed on plains and carries a multi gauge system.
- Railway in Pakistan is disrupted because:
 - ♦ Lack of investment in railway stations.
 - ♦ Corruption.
 - ♦ Poor management and inefficiency in timings.
 - ♦ Worn out railways, station and sleepers.
 - ♦ Using one single track instead of dual ones.
- Development of Pakistan railways is done in following ways:
 - ♦ Replacing steam engines with diesel engines.
 - ♦ Constructing repair workshops for developing railways.
 - ♦ Introducing trains like Shalimar express which are faster and efficient.
 - ♦ Developing Karachi Circular Railway to make transportation of goods and passengers within city in an easier way.
 - ♦ Computerizing ticket collecting system for efficiency.
- Dry ports are used for cities in a country which are far away from sea ports to promote foreign trade. These ports in cities helps to speed up import and export processes like checking, storage, transportation etc. They reduce work load at Karachi port and port Qasim, ensures smooth collection of payments, specialises a city in foreign trades. Main cities of dry ports in Pakistan are Lahore, Multan, Rawalpindi, Quetta, Peshawar, Larkana etc.

✓ **Road transport:**

- The most common and popular mode of transport in Pakistan.
- It is done with vehicles like cars, taxis, buses, motor bikes etc.
- KPK and Baluchistan has less road networks because of rugged landscape and topography.
- 'National highway authority' of Pakistan is responsible for all the maintenance of roads and highways.
- Some of the important roads of Pakistan are:
 - ♦ The National Highway.
 - ♦ The Grand Truck Road.

- ♦ The Indus Highway.
- ♦ The RCD Highway.
- ♦ Lahore to Quetta Road.
- ♦ Sukkar to Quetta Road
- ♦ Karakoram highway.
- ♦ Karachi to Gwadar Road.
- Motorways of Pakistan are divided into 4 parts:
 - ♦ Islamabad to Lahore motorway.
 - ♦ Islamabad to Peshawar motorway M-1.
 - ♦ Rawalpindi to Faisalabad motorway M-3.
 - ♦ Karachi to Hyderabad motorway.
- Road transport is easier and inexpensive, and is preferred to travel over short distances from one place to another.
- Carries high value goods and can be built on rugged topograph.

✓ **Air transport:**

- Air transport is used to travel quickly from one place to another, and its carries low volume but higher value goods.
- PIA (Pakistan international airlines) is the most established, efficient and famous airline company in Pakistan. The Civil Aviation Authority take cares of civil aviation in Pakistan.
- Air transport is faster than rail and road transport but is costly.
- They are inaccessible in mountainous areas and are mainly concentrated on plains. The airport at Karachi is the busiest in city.

✓ **Water transport:**

- Slow mode of transport which carry high bulky goods from one place to another.
- Sea port like Kemari in Karachi and Port Qasim handles the most trade activities.
- Kemari sea port at Karachi is the deep-sea international sea port which receives bulk of tankers, containers and cargo ships. It also has number of wharfs.
- Port Qasim at Garo creek is second most deep-sea port of Pakistan, it deals with steel mills of Pakistan handling things with modern machinery. It is also developed as Industrial zone on port.
- Pakistan national shipping corporation (PNSC) which deals with the problems related to maritime shipping industry.
- Gwadar port is constructed on Makran coast in Baluchistan with the assistance of China. The Gwadar port can serve good for economy in following ways:
 - ♦ Baluchistan economy can be improved because the city has its own sea port so trade activities can be carried out easily.

- ♦ In times of strikes and other problems Gwadar port can serve as an alternative.
- ♦ It can also serve as an entry port for central Asian goods if Afghanistan allows these goods to pass through.

✓ **Telecommunication:**

- As the name suggests includes devices like computers, telephones, televisions etc. These devices enable long distance communication services.
- Internet is the most advanced service of telecommunication center.
- Most famous telecommunication systems in Pakistan are PTCL (Pakistan telecommunication company limited), PTA (Pakistan telecommunication authority), NTC, BPC, Pakistan post office etc.
- Telecommunications serves great benefits like:
 - ♦ Online education and research strategies.
 - ♦ New technology to improve standard of products.
 - ♦ Advertising ideas.
 - ♦ Creating market opportunities.
 - ♦ Electronic modes of payment and transactions
- Some of the disadvantages are:
 - ♦ Employment opportunities decrease.
 - ♦ Load shedding hampers electronic work.
 - ♦ Cultural and local values may get harmed.
 - ♦ Cyber-attacks might become common, computers.
 - ♦ IT devices are not really affordable.

☆ Population

- The population of a country is the count of birth rate and death rates in a country.
- Pakistan faces the problem of high population in the country due to several reasons like:
 - ♦ Ineffective family planning programs.
 - ♦ Muslims believe that the greater the number of kids the larger rizq.
 - ♦ Illiterate population not aware of the economic burden.
 - ♦ A huge number of Afghan refugees entering Pakistan in the 1990s.
 - ♦ Strong desire to have a number of sons in a family.
- Population growth can be controlled by increasing literacy rates, setting up educational institutes for women to delay their marriage and reduce fertility rates, NGOs creating awareness about the rapid increase in population and burden on the economy, etc.
- High population leads to a number of problems like shortage of food resources and water supply, electricity crises, a burden on transport facilities, educational institutes, health care, and unemployment and rise in crime problems.
- Population structure is the statistic that shows the %age of males and females in different age groups.
- Employment in Pakistan is divided into three parts; Primary, Secondary and Tertiary. The primary sector in Pakistan employs a large number of people, the secondary sector employs about 24 % of the labor force and the tertiary sector employs around 42 % of the labor force.
- In Pakistan, the problem of disguised employment occurs which means when the workforce is greater than the work available.

✓ Unemployment:

- Unemployment in Pakistan is a major problem and this can be solved if literacy rates in Pakistan increase.
- This literate and trained workforce can make economic development more rapid, and trained people can find good job opportunities abroad which can bring foreign exchange in the country.
- The reason behind unemployment in a country is
 - ♦ Rapid increase in population.
 - ♦ Mechanization in the agriculture industry.
 - ♦ Excessive use of information technology.
 - ♦ A large number of rural to urban migration.
 - ♦ Lack of government planning and instability.
- Unemployment affects economic development in very negative ways like:
 - ♦ Low GDP and GNP.
 - ♦ Decrease in the amount of tax collection.

- ◆ Unemployment increases the problems of the high dependency ratio of the population due to the high rate of birth and unemployed female working force.
- ◆ Due to less revenue and tax collection government cannot invest much in the economy and industries.

✓ **Population density:**

- Population density means the number of people per unit square area.
- Factors that affect the population density of an area are natural topography, climate, soil, and natural vegetation, the water supply of an area, and natural resources.
- In Pakistan rural to urban migration is very common due to several reasons.
- Problems resulting from rural to urban migration include housing problems, environmental problems, and degeneration, increase in criminal activities due to unemployment, and pressure on already lacking facilities like also infrastructural ones.
- Self-help schemes are schemes in which government helps and encourage community members of weak societies and areas to improve their living conditions with their own methods and hard work. The government provides facilities like infrastructure, land, and fund while labor and hard work are of community members. Khuda ki Basti and Orangi pilot projects are two of the most successful and running self-help schemes in Pakistan.

