

THE NATURAL TOPOGRAPHY, INCLUDING DRAINAGE

TOPOGRAPHY:

- It is the study of surface features of the land.
- Pakistan can be categorized into six topographical areas:

⇒ Northern & North-Western Mountains:

- Karakorams
- Himalayas
- Hindu Kush

⇒ Western Mountains:

- Waziristan Hills
- Sulaiman Range
- Kirthar Range
- Safed Koh Ranges

⇒ Balochistan Plateau

⇒ Potwar Plateau and Salt Ranges

5 ⇒ Indus Plain

⇒ Desert Areas

- Kharan Desert
- Thal Desert
- Thar Desert

NORTHERN & NORTH-WESTERN MOUNTAINS:

Relief:

- It includes Karakoram, Himalaya, and the Hindu Kush.
- These ranges run from west to east.
- Its height changes from 6000 m to 8475 m; south to the north respectively.
- It has deep narrow valleys namely Kaghan, Baltistan and Chitral.
- It also has snow capped, sharp and steep-sided peaks like Nanga Parbat, Tirich Mir, and K-2.
- It has Siachen, Baltoro, and Batura that are huge glaciers (snowfields).
- It has high passes including Khunjerab, Shandur, and Lawarai.

Economy and People:

- In summers when the snow peaks melt, the water drain into River Indus and its tributaries.
- This drainage helps in the irrigation of Indus plain.
- These mountains are a source of valuable minerals, fruits, and timber.
- There are historic passes that connect Pakistan to Afghanistan and China.
- There is also a natural border between CAS republics and China.
- The mountains protect against the cold winds from CAS making the climate bearable.
- The beautiful scenery attracts tourists and promoting the resort business in Gilgit, Hunza, Murree, Naran, etc.
- These mountains also provide the raw material for chemicals, furniture, paper, etc.

Drainage:

- Eastern tributaries include Jhelum, Chenab, River Indus, Ravi, Beas, and Sutlej.
- Western tributaries include Kabul and Swat.

Topographical Features

High mountains / East to west ranges / Parallel ranges / Decrease in height from north- south / High peaks / Snow fields areas / Steep slopes / Deep valley gorges / Alluvial fans / pigment / High passes / Serrated landscape / landslides / Barren or bare rocks / Gullies gorges

WESTERN MOUNTAINS

Relief

- Kirthar, Safed Koh, Waziristan, and Sulaiman are the parallel ranges that run from south to north.
- The height expands from 2000 m to 4712 m; south to the north respectively.
- There are several valleys and low-lying basins including Bannu valley, Kohat valley, and the valley of Peshawar.
- The peaks there are not very big in height.
- Safed Koh is the only peak that is covered in snow.
- There are many historic passes including Bolan, Gomal, Khyber, Tochi, and Khurram.
- There are not many glaciers.

Economy and People:

- The water drains in the western rivers and helps in the cultivation of sugarcane, rice, and wheat.

The passes connect Pakistan to Afghanistan. The passes also connect Karachi to Sibbi.

- These mountains create a defensive wall between Pakistan and Afghanistan.
- These mountains are rich in boulders, clay, limestone ridges and sandstones.
- These mountains prevent Pakistan from western depressions. There are important military centers namely Kohat and Bannu.

Drainage

- The drainages include Khurram, Hab, Lyari, Tochi, Zhob, and Gomal.
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- ¢ Western tributaries of Indus plain
- * Enough water throughout the year
- * But more in summer due to melting of snow
- ¢ Meanders
- ¢ Water falls
- * Rivers Kurrum, Tochi Gomal and Zhob
- ¢ All are seasonal rivers
- * Kabul and Swat are the main rivers

Topographical Features

- * High mountains e.g. Safed Koh up to 4000m
- ¢ But not as high as northern mountains
- * Alluvial fans
- * Steep slopes
- * Deep valleys
- * High passes e.g. (Khyber, Tochi, Gomal and Bolan)
- * Parallel ranges
- * Areas of snow fields
- * Barren areas bare rocks
- * Gorges' gullies
- << Scree
- ¢ Ravines

POTWAR PLATEAU

Economy and People:

- It is rich in soapstones, marble, non-metallic minerals, limestone, gypsum, dolomite, and clay.
- It has oil and gas fields namely, Attock Oil Refinery.
- On Potwar Plateau, through rainwater gram, wheat, barley, and maize are cultivated.

Drainage:

- The drainage includes River Soan, Uchali, Khabeki, and KallarKahar.
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- * Tributaries
- * Notably soan river
- * Salty lakes e.g. Kallar Kahar
- * Inland drainage
- * Seasonal and temporary

Topographical Features

- * Badland Topography
- ¢ Dissected / eroded
- * Floored valleys
- * With deep slides
- * Ravines ' gullies
- ¢ Flat' undulating surface

Relief

- It is an open plateau with undulating land and an extensive flat area.
- Its height varies from 300 m to 600 m.
- It has residual hills namely Khairi Murat and Kala Chitta ranging up to 1000 m.
- It has a badland topography i. e. troughs, ravines and landscapes of ridges.
- It has parallel salt ranges from 750 m to 900 m.

MORE ON POTWAR PLATEAU

- * It is open, undulating land with an extensive flat area. It borders the western parts of Azad Kashmir and the southern parts of Khyber-Pakhtunkhwa.
- * The land of Potwar was attributed as golden sparrow by EIC.
- ° The plateau includes the current 4 districts of Jhelum, Chakwal, Rawalpindi, and Attock. The height of the Potwar plateau mainly varies from 300 to 600 meters above sea level. Residual hills such as Kala Chitta and Khairi Murat rise to just over 1000 meters.

The Soan river forms channels and alluvial plains, mainly used for agriculture.

The Potwar Plateau is rich in minerals like gypsum, limestone, coal, oil, and rock salt.

SALT RANGES

Introduction

(the Salt Range and Potwar Plateau)

- The ° Salt Range ts the series of hills and low mountains between the valleys of the Indus and Jhelum rivers, located in northern Punjab.
 - Potwar Plateau is situated in Rawalpindi, Attock. and Jhelum districts. It lies between the Indus, and Jhelum rivers and is bounded on the north by the Hazara Hills and on the south by the Salt Range.
 - The salt range in the south separate Potwar from the Punjab plains
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Climate and Vegetation

- The climate of the region is continental and arid, changing from tropic to subtropic.
 - During summer, monsoon brings the largest amount of precipitation (more than 50% annually).
 - Soil of the salt range is saline due to which agriculture is very limited. The little vegetation that exists is due to irrigation using the water of lakes and springs.
 - A small mass of forest has been conserved in the south. Range.
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Salt range: The range covers Jhelum, Chakwal, Kalabagh and Mianwali districts. It is mainly known because of the famous salt mines at Khewra, a small town about 160 km from Islamabad. It ranges up to more than 1,600 feet (490 m) in thickness. The range is approximately 186 miles (300 km) long from east to west and its width in the central and eastern parts are from 5 to 19 miles. Its average height is 2,200 feet. Its highest altitude point is at Sakesar mountain which is 4,992 feet (1,527m). In addition to the salt deposits, the Salt Range contains coal, gypsum, limestone, and other minerals.

On the southern slope of the Salt Range are located the largest deposits of rock salts at Khewra, Warchha, and Kalabagh. Coal deposits are found at Dandot, Pidh, and Makarwal Kheji. Traces of petroleum are associated with limestone and sandstone deposits in the western part of the Salt Range. Large deposits of high-grade gypsum are found near Jilalapur. Kallar kahar and Khabeki lakes add scenic beauty.

Economic Activities

Potwar Plateau and salt range are rich in non-metallic minerals which provide raw materials to the cement, ceramics and chemical industries. A number of oil and gas fields are also located in this region. Attock Oil Refinery has been set up to refine oil from the oil fields of Potwar Plateau. Farming in this region depends on rainfall. The rugged landscape does not allow canal irrigation. Mostly wheat, barley, maize and gram are cultivated here. Some areas are developed (like Islamabad, Jhelum, Chakwal) which encourage high population density and are accessible by road, rail and air transport.

Khewra Salt Mines

* Economically salt and coal mines are the most important. It is Pakistan's largest and world's 2nd largest salt mines. The mine is part of a salt range that originated 800 million years ago. by the evaporation of shallow sea followed by geological movement Salt reserves were discovered by the horses of Alexander's army, when they were found licking the stones. Trading of the salt started during the Mughal era. British took over the territory and developed the mine and introduced the better excavation of salt. The underground mine covers an area of 110sq.km

BALUCHISTAN PLATEAU

Relief

- It has ridges and eroded landscape.
- It has barren mountain ranges including Toba Kakar, Hala, Ras Koh and Makran Coast from 600 m to 3010 m.
- There several irregular depressions including Loralai and Zhob basins.
- On the western side, there are inland drainage basins.
- There is a Lasbela plain that is marked by sand dunes and gravel.
- It has Makran Coast which a narrow coastal plain.

Drainage

- The drainages include Hingol, Dasht, Hab, and Paroli.
- There are also temporary salt lakes namely Hamun-i-Lora and Hamun-i-Mashkal.

inland/small rivers/temporary or seasonal/salty lakes or hamnus

Economy and People

- In Kharan and Punjgore, there are gold and antimony deposits.
- There are also gas, crude oil, and coal deposits.
- The economy is through livestock and its products and fishing at Ormara, Gwadar, and Pasni.
- There is also a vegetable seed industry.

Topography of Baluchistan Plateau

* Upto 3010m high/ Kharan desert / Flatland/Rolling sand dunes* Bare rock/ Parallel ranges /Toba Kakar Range /Central Brahui Range/ Chaghi range/ Ras Koh/ Siahan Range/ Central Makran Range/Makran Coastal range/ Hala Range/Pab Range/Kachi Sibi Plains/Lasbela Plain.

Natural Topography of Mountains of Baluchistan

* E.g. Toba Kakar Range/With steep slopes/Deep valleys/Piedmont Plains/Rugged/Basins/Coastal/ flat/sandy.

MORE INFORMATION ON BALOCHISTAN PLATEAU

Rivers and their Drainage

* Rivers like Zhob, Khandar, and the Kalachi drains into Indus river because they flows East wards.
‡ Loralai, Chakar, Bolan and Mula are absorbed in Kachi Sibi Plain.
‡ Hab, Porali, Dasht, Hingol and Mashkel drains into Arabian Sea.
‡ There are many other rivers as well which flows westwards and drains into shallow depressions called Hamuns.

Rivers of balochistan

- Dasht
- Gudri
- Bhhari
- Hingol
- Arra
- Nal
- Hab
- Indus then in front (mouth of indus)
- Nara

Balochistan's Economic Potential:

• There are gold and antimony reserves./By using the untapped resources of Balochistan, Pakistan's economy can see an uplift./Using the crude oil, coal and natural gas present in Balochistan electricity can be generated./Many fruits grow in Balochistan including melons, peaches, grapes, apples, dates, pomegranates, peaches and plums./ The economy can be boosted by exporting these fruits to Gulf countries./ Since Balochistan's climate is favorable more vegetable seeds should be grown there./ By increasing the livestock and its products using scientific means because wool and goat skins have high demand in the global market./ Moreover, the export of fish can also be increased by using modern technology at Gwadar, Ormara, and Pasni for fishing./ The Gwadar Sea Port development can also help in the development of the economy.

MORE ON BALOCHISTAN PLATEAU

Shortcoming:

- The weather in Balochistan is extreme and dry making the working condition unfavorable.
- Balochistan has the lowest population density.
- There are not enough skilled individuals and the workforce.
- The province has a shortage of water making it difficult to provide proper irrigation.
- The infrastructure is bad and there are fewer link roads; limiting the travel and trade.
- The people there are not very educated.
- The landscape is eroded with rugged terrain and ridges making it impossible to complete projects on time.

Doabs

- A doab can be found at the confluence of the two rivers i.e. a land.
- Between the river Jhelum and river Sindh, there is Sindh Sagar Doab.
- Between river Chenab and Jhelum, there is Chaj Doab.
- Between river Ravi and Chenab, there is Rachna Doab.
- Between river Sutlej and Ravi, there is Bari Doab.

Importance of Doabs:

- The terrain is flat there.
- The canal water promotes and supports agriculture.
- Urban settlement can be done without hassle.
- There are links to air, rail and road developed.
- Factories and industrial estates are established.
- Moreover, businesses, markets, and storage of raw materials of agriculture are provided.

Doab

* Area between two rivers water

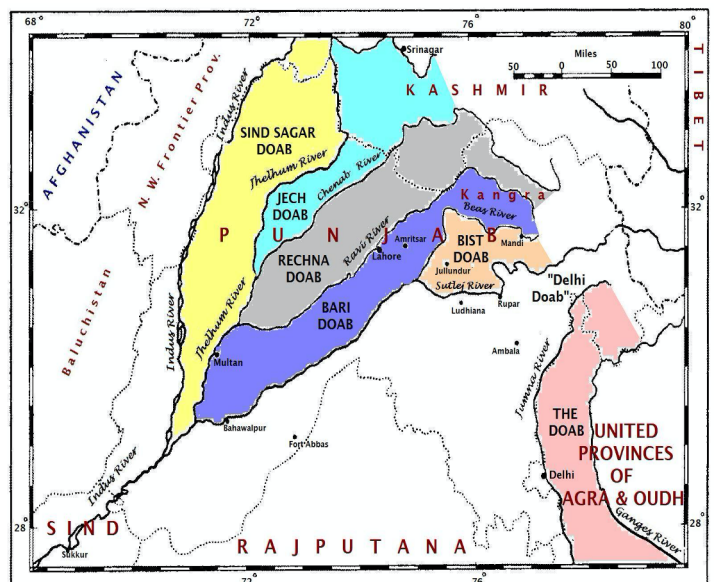
‡ Examples:

* Chaj between J(Jhelum) and Ch (Chenab)

* Sindh Sagar between J(Jhelum) and I (Indus)

rachna between ch(Chenab) and R (Ravi)

‡ Bari between R (Ravi) and S/B (Sutlej/Beas)



INDUS PLAIN

Active Flood Plains:

- 'Bet" or 'Khaddar" is a narrow strip of land on both sides of the river.
- It is flooded almost every year.
- When the season of rain concludes, alluvium can be found in its dry and braided channels.

The Old Flood Plains:

- It is the area between the terraces of alluvial and active flood plains.
- When there is heavy rainfall only then it is flooded.
- Ox-bows abandoned channels and meander scars can be found on these plains.

Topography of UIP and LIP

- ¢ Flat land
- ° Low hills / cuestas
- * AFP/OFP
- * Doabs (Sindh Sagar, Chaj, Rachna & Bari)
- * Bar uplands
- ¢ Rolling sand dunes thar desert
- ¢ Alluvial fans/ piedmont plains

Drainage of UIP and LIP

- ¢ Indus has many tributaries
- ¢ Indus has 4 eastern tributaries (large)
- ¢ Mainly Indus itself
- ¢ Indus has many western tributaries
- ¢ More water contributed by tributaries in UIP
- * Ox- bow lakes, meanders and braided channels
- ¢ Indus delta in LIP
- ¢ Less width (1.4 – 1.6 km) in UIP
- ¢ More width (1.6km) LIP

For extra info:

TOPOGRAPHICAL FEATURES OF THE INDUS PLAIN

Alluvial Terraces:

- These are areas of high grounds.
- They formed by old alluvium erosion.
- They are also known as 'Scalloped Interfluves'.
- They can be found in Bari, Rachna and Chaj Doab in the Upper Indus Plain.
- The alluvial terraces are ideal for agriculture.

Piedmont Plains

- They are formed in the rainy season when streams and rivers deposit alluvium at the foot of the mountain.
- They support agriculture too.
- They are also known as Derajat.
- These rivers deposits alluvium, sand, and gravel.
- These can be found at Himalayan Mountain, Kirthar and Sulaiman.

Tidal Delta:

- It is located in the south of Thatta.
- It is triangular (fan) shaped.
- The distributaries branch out from it like ribs.
- It has mangrove swamps and tidal flats.
- The land is frequently exposed to seawater.
- The land is mostly covered in swamps limiting agriculture.
- Poor infrastructure results in less industrial and commercial activities.
- The undeveloped road makes it difficult to transport in heavy vehicles.
- The frequent tropical cyclones damages shanty homes, agriculture, and fishing.
- These features of the Indus Delta have resulted in a low-density population.

Rolling Sand Plains:

- Rolling sand plains are usually found in desert areas because sand dunes are a feature of deserts.
- In deserts, the wind blows and changes landscape frequently which results in sand dunes.

Cuestas:

- These can be found in the Lower Indus Plains.
- In Sindh, these are limestone made ridges.
- The ridges support the construction of barrages and irrigation

Indus Delta

- ‡ When river Indus reaches near Arabian sea it slows down
- ‡ Throws sediments etc
- ‡ Makes distributaries
- ‡ With swamps / marshy areas
- ‡ Salty water due to sea water
- ‡ Mangroves
- ‡ Drain into the sea

DESERTS

- There are three desert areas in Pakistan:
 - Between river Jhelum and River Indus, there is the Thal Desert which is also known as Sindh Sagar Doab.
 - In the south-eastern part of Pakistan, there is the Thar Desert. This desert can further categorize into Tharparkar, Nara, and the Cholistan.
 - The Kharan Desert can be located in the western Balochistan.

TOPOGRAPHY:

- * Flat land
- * Rolling sand dunes
- * Latitudinal' longitudinal in shape
- * Upto 150m high
- * Bare rock/ barren

DRAINAGE:

- * Seasonal ' temporary
- * Inland
- * Mostly ponds or small lakes/ oasis

Features of the Deserts:

- There is water scarcity because of low rainfall.
- There are fast blowing winds that frequently change the desert.
- Rolling stone dunes, lack of vegetation and rocks are other main features.

