

**DEFINE : PLAINS**

- refers to low-lying relatively flat land surface with very gentle slope and minimum local relief.
- They are important landforms found on the earth surface.
- About 55% of the earth's land surface is occupied by plains.
- Most of the plain have been formed by deposition of sediments brought down by rivers.

**Alluvium : Meaning :**

- latin word : means "to wash against"
- alluvium is loose, unconsolidated sediments of clay, silt and sand

**NORTHERN PLAINS OF INDIA : NPI**

- **Key Physiographic Region of the India**
- **Located :** Between south of the Himalayas and north of the Peninsular plateau
- **Cover :** 7 lakh sq. km area
- **Formed :** deposition of the sediments brought by three main river systems namely: the Indus, the Ganga and the Brahmaputra.
- **Soil :** Fertile Soil - Alluvial (Recent Soil)
- **Length :** These plains extend approximately 3,200 km from the east to the west.
- **Width:** The plain's average width is 150-300 km. It is widest in the west (about 500 km). Its width decreases towards the east.
- **Depth :** Average depth of alluvium deposits varies between 1,000-2,000 m
- The thickness of the deposits varies from place to place, with the maximum depth reaching to about 6,100 m
- The southern boundary is a wavy irregular line along the northern edge of the Peninsular India.
- **States/ UTs :** Punjab, Haryana, Delhi, Chandigarh, Uttar Pradesh, Bihar, parts of Jharkhand and West Bengal, and Assam
- Population: Dense exceeding 500 million.

**REGIONAL DIVISIONS OF NPI: THREE SECTIONS ( Basis- Rivers Systems)**

- Punjab Plains - The Western part region shaped by the Indus River and its tributaries— Jhelum, Chenab, Ravi, Beas, and Sutlej—featuring fertile "doabs (fertile land between two rivers)
- The Ganga plain extends between Ghaggar and Teesta rivers covering Haryana, Uttar Pradesh, Delhi, Bihar, parts of Jharkhand, and West Bengal
- Haryana and Delhi serve as a water divide between the Indus and Ganga river systems
- In the East, particularly in Assam lies the Brahmaputra plain.

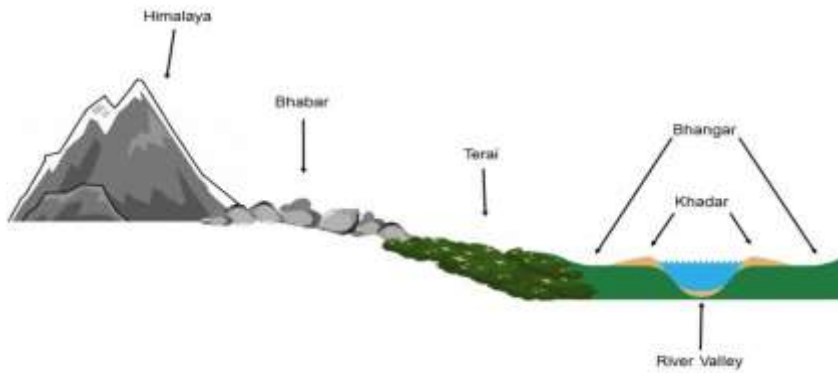
**Examples of Doab :**

1. Sind Sagar Doab - Indus & Jhelum
2. Jech/Chej Doab - Chenab & Jhelum
3. Bari Doab Beas, - Ravi & Satluj
4. Rachna Doab - Ravi & Chenab
5. Jalandhar/Bist Doab - Sutlej & Beas

**Features:**

- monotonous aggradational plain
- The annual rainfall increases from west towards the east
- Between Yamuna at Delhi and Bay of Bengal, nearly 1600km away there is drop of only 200m in elevation
- Its average elevation is about 200 m above mean sea level, highest elevation being 291 m above mean sea level near Ambala (This elevation forms the drainage divide or watershed between Indus system and Ganga system).
- Riverine islands, sandbars, and periodic floods, shifting river channels forming braided streams and deltas. Eg. Sunderbans delta (Ganga & Brahmaputra)
- Majuli (Brahmaputra River) is the world's largest inhabited riverine island
- In Dhubri (Assam), Brahmaputra takes a nearly 90° southward turn before entering Bangladesh.
- Alluvial fan: It is a fan-shaped deposit of sediment (made up of gravel, sand, and silt) that accumulates where a stream or river exits a narrow mountain valley and enters a flatter area
- These fans consisting of coarser sediments have merged together to build up piedmont plain: is a pebble studded zone. ( piedmont : Means foot of the mountain)
- Rivers descending from the Himalayas deposit their load along the foothills in the form of alluvial fans.
- These alluvial fans (often pebbly soils) have merged together to build up the bhabar belt.

## NORTH-SOUTH DIVISION OF NORTHERN PLAINS ( BASED ON RELIEF FEATURES/ TOPOGRAPHIC )



It can be divided into Four major zones from north to south: Bhabar, Terai and alluvial plains (Bhangar & Khadar).

### BHABAR:

- The rivers, after descending from the mountains, deposit rocks and boulders, in a narrow belt of about 8 to 16 km lying parallel to the slopes of the Shiwaliks.
- Streams disappear in this Bhabar belt due to its porosity, porosity is due to deposition of huge number of pebbles and rock debris across the alluvial fans.
- Therefore, the area is marked by dry river courses except in the rainy season.
- The area is not suitable for agriculture, and only big trees with large roots thrive in this belt ( Chir Tree and Sal Tree ( Shorea Robusta)

### TERAI:

- Streams and rivers re-emerge without proper demarcated channel and create a wet, swampy and marshy region.
- This was a thickly forested region with wildlife.
- Corbett NP, , Dudhwa National Park, Valmiki NP, Kaziranga Np is situated in the Terai region.
- Dooars are eastern Terai between West Bengal to eastern Assam .
- Terai Region or Doors are wider in eastern parts in Brahmaputra valley than western part of Northern Plains .
- The terai soils are silty and **rich in nitrogen** and organic matter but are **deficient in phosphate**.

### BHANGAR :

- This region forms the most extensive part of the northern plains, consisting of the oldest alluvial deposits.
- Bhangar lies above the floodplains, resembling elevated terraces. The soil here, known locally as "kankar," is rich in calcium carbonate (calcareous deposits)

### KHADAR:

- The fertile floodplains formed by younger alluvium are called Khadar.
- The soil in this region is renewed periodically by floods, leading to its exceptional fertility.
- These alluvial plains of Bhangar and khadar have relief features - sandbars, meanders, oxbow lakes, and braided channels formed by the rivers

BHANGAR	KHADAR
Older alluvium	New alluvium
Lies above Floodplains	Lies below floodplains
Contain fossils	Not contain fossils
Dark in Colour	Light in Colour
Ex <b>Barind plains</b> in the deltaic region of Bengal and the <b>bhur formations</b> in the middle Ganga and Yamuna doab are regional (Aeolian sandy deposit)	Punjab khadar rich flood plains are locally known as 'Betlands or Bets..

### SIGNIFICANCE OF NPI

- **Key Region for Food Security and Agriculture Productivity due to fertile soil and moderate climate .**
- **Abundant water resources and alluvial soil and flat and gentle slope provide platform for High Population Density**
- Economic Significance: The Great Plains support a variety of industries, including textiles and food processing. Their flat terrain and navigability make it easier to develop infrastructure like roads and railways, which further enhance economic growth.
- Cultural and Political Importance: Region of Ancient capital to New capital. Delhi, Patna and Kolkata have served as the political capitals of the country.
- The plain hosts many religious sites significant to Hindus, Buddhists, Jains, and the Bhakti and Sufi movements.



- **GANGA PLAINS** largest unit of Great Plains in India. Divided in Three sections
- **Western Side** : It Includes Rohilkhand Plains, Ganga Yamuna Doab and Yamuna Chambal Basin. Yamuna Chambal Basin characterised by Badland Region because of gully erosions and ravines and it has worst soil degraded area of India
- **Central Side** : Awadh Plains ( Between River Ghaghra and Gomti)
- Mithila or Kosi Plain: Between Gandak and Kosi
- **Magadh Plain** : east of river son, it is not flood prone region. unlike above two
- Eastern and lower side : Rarh Plains of West Bengal ( River Damodar, Ajar and Mayurkhasi))

**Delta Plain:**

- extension of khader belt called .
- Upland of Delta region called " chars"
- marshy areas of Delta region " Bhils "
- The rivers in their lower course split into numerous channels due to the deposition of silt. These channels are known as distributaries.

**Ex Delta Plains of Lower Ganga Region**

- Included Sunderban Tidal Forest
- it has braided channel, lakes and marshes
- famous for inland fishing
- known for Jute cultivation

**NCR**



## NATIONAL CAPITAL REGION

- created in 1985
- It encompasses Delhi and several districts surrounding it from the states of [Haryana](#), [Uttar Pradesh](#) and [Rajasthan](#)
- As of 2021, there are a total of 24 districts in the NCR in Uttar Pradesh, Haryana and Rajasthan and entire Delhi, spread across an area of 55,083 square kilometres.

## WHAT ARE COUNTER MAGNET AREAS ?

- The Counter Magnet Areas (CMAs) are the urban areas located sufficiently away from the NCR with significant economic growth
- Following are the nine Counter-Magnet Areas to NCR spread across six states:
  - [Hisar](#) and [Ambala](#) in [Haryana](#)
  - [Bareilly](#) and [Kanpur](#) in [Uttar Pradesh](#)
  - [Kota](#) and [Jaipur](#) in [Rajasthan](#)
  - [Patiala](#) in [Punjab](#)
  - [Gwalior](#) in [Madhya Pradesh](#)
  - [Dehradun](#) in [Uttarakhand](#)

## THAR DESERT - PHYSIOGRAPHY



- **Located** : To the northwest of the Aravali hills lies the Great Indian desert
- **Cover** : 2 Lakh Sq km ( 85 % in India and rest in Pakistan )
- **Percentage** : Thar Desert - covers 5 percent of Total geographical area of India
- **States** : Rajasthan ( 60% ) ; Gujarat, Punjab and Haryana.
- **Climate and Rainfall** : This region receives very low rainfall below 150 mm per year. It has arid climate with low vegetation cover
- It is because of these characteristic features that this is also known as Marusthali
- It is believed that during the Mesozoic era, this region was under the sea. This can be corroborated by the evidence available at wood fossils park at Aakal and marine deposits around Brahmsar, near Jaisalmer (The approximate age of the wood-fossils is estimated to be 180 million years).
- Though the underlying rock structure of the desert is an extension of the Peninsular plateau, yet, due to extreme arid conditions, its surface features have been carved by physical weathering and wind actions

## Features Contributing To The Formation Of The Thar Desert

- The Thar Desert lies in a region influenced by a subtropical desert climate, characterized by high temperatures and low precipitation throughout the year
- Rain Shadow Effect: The Aravalli Mountains run in a southwest to northeast direction, blocking the moisture-laden winds coming from the southwest monsoon. This results in very little rainfall reaching the Thar region
- Atmospheric Circulation: The prevailing wind patterns in the region, which include the northeast trade winds and dry westerlies, contribute to the arid conditions by bringing dry air and limiting moisture.
- Low Precipitation and High Temperature , Wind Action

## FEATURES OF THAR DESERT :

- Low precipitation and high evaporation makes it a water deficit region
- Characterised by shifting sand dunes and barchans
- mushroom rocks

- Depressions are formed when the wind blows away the sands. In the depressions where underground water reaches the surface, an oasis is formed. These areas are fertile.
- Most of the rivers in this region are ephemeral.
- Streams appear during the rainy season. Soon after they disappear into the sand as they do not have enough water to reach the sea.
- Luni is the only large river in this region. The Luni river flowing in the southern part of the desert
- The lakes and the playas have brackish water which is the main source of obtaining salt
- Saltwater lakes within the Thar Desert include the [Sambhar](#), Kuchaman, [Didwana](#), [Pachpadra](#), and [Phalodi](#) in Rajasthan and [Kharaghoda](#) in Gujarat

#### Natural Vegetation :

- Tropical Thorn forest - It includes semi-arid areas of south west Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh and Uttar Pradesh.
- Acacias, palms, euphorbias and cacti are the main plant species .
- Important species found are babool, ber, and wild date palm, khair, neem, khejri, palas, etc.
- Tussocky grass grows upto a height of 2 m as the under growth

#### COLD DESERT IN INDIA

- **Located :** Ladakh and Lahual and Spiti Region of Himachal Pradesh
- **Barren Landscape and cold arid due to :** Lies in Rainshadow of Great Himalayas
- **Altitude :** The altitude in Ladakh varies from about 3000m in Kargil to more than 8,000m in the Karakoram (Ladakh -Highest Plateau of India)
- **Features :** Due to its high altitude, the climate is extremely cold and dry. The air at this altitude is so thin that the heat of the sun can be felt intensely
- The area experiences freezing winds and burning hot sunlight
- if you sit in the sun with your feet in the shade, you may suffer from both sunstroke and frost bite at the same time.
- **Drass:** one of the coldest inhabited places on earth is located in Ladakh
- Leh, the capital of Ladakh is well connected both by road and air
- Leh to Kashmir Valley through the Zoji la Pass

#### Human Geography and Economic activities :

- **The people** here are either Muslims or Buddhists. In fact several Buddhists monasteries dot the Ladakhi landscape with their traditional 'gompas'. Some famous monasteries are Hemis, Thiksey, Shey and Lamayuru
- The Chiru or the Tibetan antelope is an endangered species. It is hunted for its wool known as shahtoosh, which is light in weight and extremely warm
- Groves of willows and poplars are seen in the valleys
- The finest cricket bats are made from the wood of the willow trees.
- During the summers, fruit trees such as apples, apricots and walnuts bloom
- Several species of birds are sighted in Ladakh. Robins, redstarts, Tibetan snowcock, raven and hoopoe are common
- The animals of Ladakh are wild goats, wild sheep, yak and special kinds of dogs. The animals are reared to provide for the milk, meat and hides. Yak's milk is used to make cheese and butter. The hair of the sheep and goat is used to make woollens

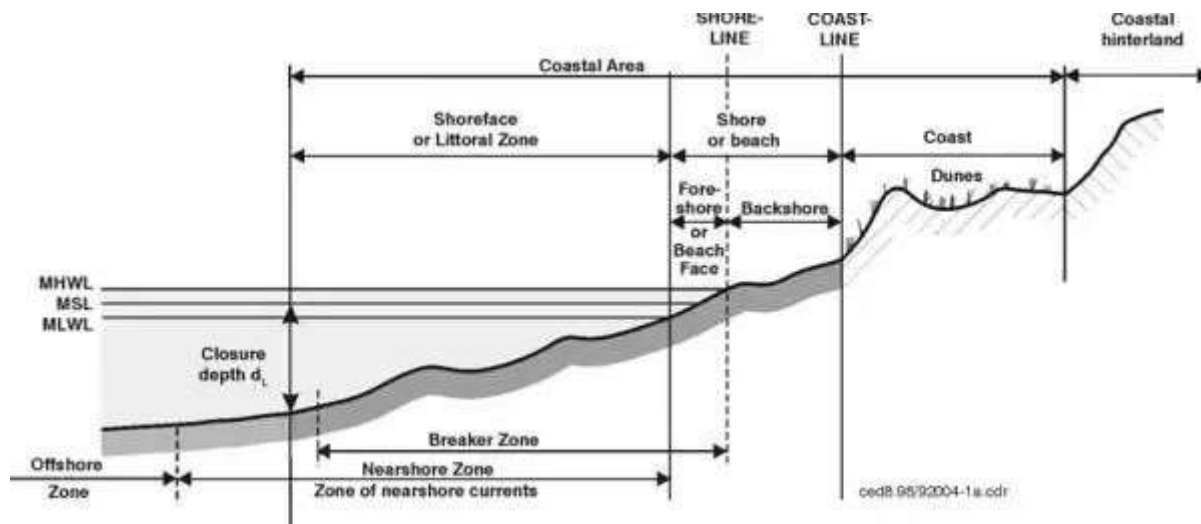
#### DIFFERENCE BETWEEN ALLUVIAL SOIL OF NORTHERN PLAINS AND COASTAL PLAIN

Alluvial Soil of Northern Plains	Alluvial Soil on the Coastal Plain
1. Light in colour	Dark in colour
2. Sandy	Clayey
3. Porous	Non porous
4. Coarse in texture	Fine in texture

#### Why colour Difference?

- The alluvial soil of the northern plains is formed due to the deposition of fine sediments that were brought down by the Himalayan rivers. This soil is light in colour.
- The alluvial soil of the coastal regions is formed due to the deposition of sediments brought mainly from the Deccan Trap region which is volcanic in origin. It is dark in colour

#### COASTAL PLAINS OF INDIA



**KEYWORDS**

- **Coast** : Land along the sea
- **Coastline** : The boundary of the coast where land meets water.
- **Coast line** : The highest level that the sea reaches on land.
- **Shoreline**: the lowest level reached by the sea.( Here beach ends) The fluctuating line between water and the shore.
- **Shore**: The land between the coastline and the shoreline.

**TWO TYPES OF COASTLINE :**

Submergence Coast	Emergence Coast
Called as Retreating coast, High-Rockcoast	Low sedimentary coast , gentle slope
formed either by due to the subsidence of land or the rise of the sea level.	Formed by an uplift of the land or by the lowering of the sea level.
Erosional landforms dominate	Depositional landforms dominate
Coastline appears highly indented	Many deltas , Lagoons , bar , spits, salt marshes, beaches, sea cliff, arches
Due to submergence it is narrow belt	It is wide belt, good for long beaches
Ideal location for natural ports and harbours	Artificial ports
West Coast of India; Konkan Coast (Maharashtra and Goa Coast).	East Coast of India; Coromandel coast (TN coast) and the Malabar coast (Kerala Coast).

- India West Coast is simultaneously emerging and submerging .
- Faulting has submerged the northern portion of the coast Ex Konkan Coast whereas the Southern Portion is emerged coast Ex Malabar Coast

**WHAT IS INDENTED COASTLINE**

- it is irregular type of coastline (zig zag )
- The Coastline having many cuts or indents along their length
- These indents are deep
- The indented coastlines provide sheltered inlets, creeks and estuaries where constructing a port and maintaining it becomes easy and economical.
- Provides ideal location for Ports and Harbours
- Atlantic Ocean has indented coastline

Ireland Capital Dublin Map Showing submergence coastline, and fjord ( glacial valley :type of erosional landforms) . So Ireland and Indented coastlines of Europe provide good natural harbours, whereas African and Indian coastlines are not indented



### HOW IS INDIA'S COASTLINE : INDENTED OR REGULAR ?

- The straight and regular coastline of India is the result of faulting of the Gondwanaland during the Cretaceous period (Continental Drift)
- As such the coast of India does not offer many sites for good natural harbours.
- The Bay of Bengal and the Arabian Sea came into being during the Cretaceous or early Tertiary period after the disintegration of Gondwanaland.



How Lagoons are formed

### HOW LAGOONS ARE FORMED ?

- A lagoon is a shallow body of water protected from a larger body of water (usually the ocean) by sandbars, barrier islands, or coral reefs.
- They are formed due to depositional features ; when a coastal sand deposit creates a barrier that traps water.
- Formed in Emergent Coastline Region Ex Coromondal Coast and Malabar Coast

#### Examples :

- [New Caledonian Barrier Reef lagoon](#) - South Pacific , France : Largest Lagoon in the World
- [Marovo Lagoon](#) is the largest saltwater [lagoon](#) in the world ( Solomon Islands)
- [Chilika Lagoon](#) : largest coastal lagoon in India ( Asia Biggest Brackish water lagoon) Located at 19 Degree North latitude and part of three district (spread over the [Puri](#), [Khordha](#) and [Ganjam](#) districts of [Odisha](#) state on the [east coast](#) of [India](#), at the mouth of the [Daya River](#), flowing into the [Bay of Bengal](#))
- [Pulicat Lake Lagoon](#) : Second largest lagoon in India ; Located at 13 Degree North Latitude, Part of Coromandal Coast and located between Andhra Pradesh- Tamilnadu border .
- [Kaliveli Lake](#): Coastal lake Lagoon in [Viluppuram District](#) Tamilnadu ( Coromandal Coast ) located 12 Degree North Latitude

### WHY KERALA FAMOUS FOR BACKWATER LAGOONS?

- **Malabar Coast of Kerala is Coastline of Emergence**
- Hence it is characterized by **gentle topography facilitating backwater lagoons when the river join the sea**

#### Example :

- **Vembanad-Kol Wetland** is a complex of lagoons, lakes, and rivers spread across the districts of Alappuzha, Kottayam, and Ernakulam. It is the largest lagoon system in Kerala
- **Asthamudi Lake**: Located in the Kollam district of Kerala, Asthamudi Lake is the second-largest lake in Kerala and is connected to the Arabian Sea
- But **Sasthamkotta Lake** is largest freshwater lake of Kerala is not related with Brackish water lake .



**What is Coral Lagoon :**

- Coral Lagoon or Atoll Lagoon : Like coastal lagoons but are separated from the main body of water by coral reefs.  
Ex Minicoy island of Lakshdweep





## About Minicoy

- located on eight degree North latitude
- It is the second largest and southern most island in Lakshadweep, crescent shaped and has one of the largest lagoons

## COASTLINES OF INDIA

- India's EEZ Borders with Eight Countries : Pakistan , Maldives, Srilanka, Bangladesh, Myanmar, Thailand, Malaysia Indonesia.
- The coastal economy also sustains over 4 million fisherfolk and other coastal communities.
- Length of coastline : 7516.6 km, Including Mainland India : 5422.6 km Island Territories: 2094 km
- The coastline of India touches 13 states and Union Territories.

States	Coastline Length
Gujarat	1,214.7 Kms
Andhra Pradesh	974.0 Kms
Tamil Nadu	906.9 Kms
Maharashtra	652.6 Kms
<b>Union Territory</b>	
Andaman & Nicobar Islands (UT)	1,962 Kms

## State-wise Length of Coastline of India

Length of India's Coastline		
State (9) / UT (4)	Length (in km)	
1	Andaman and Nicobar Islands	1962
2	Gujarat	1214.7
3	Andhra Pradesh	973.7
4	Tamil Nadu	906.9
5	Maharashtra	652.6
6	Kerala	569.7
7	Odisha	476.4
8	Karnataka	280
9	Goa	118
10	West Bengal	157.5
11	Lakshadweep Islands	132
12	Puducherry	30.6
13	Dadra-Nagar Haveli & Daman-Diu	42.5
<b>Mainland Coastline</b>		<b>5422.6</b>
<b>Islands Coastline</b>		<b>2094</b>
<b>Total Coastline</b>		<b>7516.6</b>

## News :

India's coastline has grown by **47.6%**, from **7,516 km in 1970** to **11,098 km in 2023-24**. The increase is due to the adoption of new methodologies for measuring coastal features.

Comparison: Old vs. New Measurement Methodology

Aspect	Old Methodology (1970)	New Methodology (2023-24)
Basis of Measurement	Straight-line distances	Included complex coastal formations
Coastal Features Measured	Limited to general shoreline length	Incorporated bays, estuaries, inlets, and other geomorphological features
Technology Used	Basic tools and manual calculations	Advanced geospatial technologies and mapping tools
Accuracy	Relatively less precise	More precise representation of dynamic coastline
Reported Coastline Length	7,516 km	11,098 km

## Statewise Length-New(old) in km

- 1.Gujarat -2340.62 (1217.7)
- 2.Tamil Nadu-1068.69 (906.9)
- 3.Andhra Pradesh- 1053.07 (973.7)
- 4.Maharashtra- 877.97 (652.6)
- 5.West Bengal- 727.02 (157.5)
- 6.Kerala- 600.15 (569.7)
- 7.Odisha- 574.71 (464.4)

8.Karnataka- 343.3 (280)

9.Goa- 193.95 (101)

### In Union Territory

1.A & N -3083.5 (1962)

2.Lakshadweep- 144.8 (132)

3. Daman & Diu (DNDD)- 54.38 (42.5)

4. Puducherry UT(Incl all 4 parts)- 42.65 (47.6 km).

CRITERIA	WESTERN COASTAL PLAINS	EASTERN COASTAL PLAINS
Lies Between	Arabian Sea & Western Ghats	Bay of Bengal & Eastern Ghats
Stretch	Gujarat (mainly from Rann of Kutchh) to Tamil Nadu (mainly Kanyakumari)	Odisha (mainly from Mahanadi river) to Tamil Nadu (mainly Cauvery Delta)
Formation	Submergent coastal plain	Emergent Coastal Plain
Width	Narrow Belt & provides natural conditions for development of ports & harbours. (eg. JNPT, Kandla etc.)	Broader & Continental shelf extending up to 500 km into the sea making it difficult to develop good ports/harbours.
Delta Formation	River flowing don't form any Delta. Major Estuaries - Narmada & Tapi.	Well developed Deltas, including deltas of Mahanadi, Godavari, Krishna & Kaveri.
Division	Kachchh & Kathiawar Coasts - Gujarat Konkan Coast - Maharashtra & Goa Malabar Coast - Karnataka & Kerala	Utkal coast - Odisha Coromandel Coast - Tamil Nadu & parts of Andhra Pradesh.
Important Lakes	Malabar Coast (Kerala) has some lakes, Lagoons & Backwaters, largest being Vembanad Lake.	Utkal Plains, south of Mahanadi Delta - Chilika Lagoon (Largest Brackish water Lagoon of Asia); Pulicat Lake (2 <sup>nd</sup> largest brackish water lagoon of India) Kolleru Lake - between deltas of Godavari & Krishna
Other features	'Kayals' (backwaters) - distinguishing feature - Malabar coast. Famous - for Nehru Trophy - Vallamkali (boat race)	Sriharikota Island Wheeler (Dr. APJ Abdul Kalam) Island.

### WESTERN COASTAL PLAINS OF INDIA

- Extends from Rann of Kachchh, Gujarat to Kanyakumari.
- Length : about 1500 km
- These are narrow plains with an average width of about 65 km.
- The western coast is narrow in middle and gets broader in north and south.
- The rivers in Western Coast do NOT form DELTA.
- The western coast is narrower than the eastern coast.( Reason Submergence coast )
- Due to its submergence, it is a narrow belt and provides natural conditions for developing ports and harbours.
- Kandla, Mazagaon, JLN Port Nava Sheva, Marmagao, Mangalore, Cochin, etc., are some of the important natural ports located along the West Coast
- The West Continental Shelf is at its widest off the Bombay coast. This place is rich in oil.
- Along the Malabar Coast, there are many beautiful lagoons which makes the place a tourist destination.



The western coast is further divided into four categories from North to South

1. **Gujarat coast plains** : Kachchh & Kathiawar coast - . Shaped by the rivers Narmada, Tapti, Mahi, and Sabarmati, this plain covers southern Gujarat and the coastal areas of the Gulf of Khambhat. While the eastern part is fertile, most coastal areas are covered by windblown loess, resulting in a semi-arid landscape.

## 2 Konkan coast

- in Maharashtra, between Daman in the north to Goa in the south.
- it has subducted coastline and has erosional features
- Number of creek and estuaries developed here
- It has some features of marine erosion including cliffs, shoals, reefs and islands in the Arabian Sea.
- The Thane creek around Mumbai is an important embayment (a recess in a coastline forming na bay) which provides an excellent natural harbour.
- Rice and cashew

## 3. Karnataka Coastal Plain

- Goa to Mangalore.
- It is a narrow plain with an average width of 30-50 km, the maximum being 70 km near Mangalore.
- It is submerged coast and has iron deposits
- At some places the streams originating in the Western Ghats descend along steep slopes and make waterfalls.
- The Sharavati while descending over such a steep slope makes an impressive waterfall known as Gersoppa (Jog) Falls which is 271 m high.

## Malabar Plain (Kerala Plain)

- The Kerala Plain is also known as the Malabar Plain.
- Between Mangalore and Kanniyakumari.
- This is much wider than the Karnataka plain. It is a low-lying plain.
- it is Emergent coast and has depositional features .
- The existence of lakes, lagoons, backwaters, spits, etc. is a significant characteristic of the Kerala coast.
- The backwaters, locally known as kayals are the shallow lagoons or inlets of the sea, lying parallel to the coastline.
- The largest among these is the Vembanad Lake which is about 75 km long and 5-10 km wide
  - The famous Nehru Trophy Vallamkali (boat race) is annually held in Punnamada Kayal (Punnamada Lake), a southern extension of the Vembanad Lake in Kerala

## EAST COAST OF INDIA

- Lies between the Eastern Ghats and the Bay of Bengal.
- Extending from Subarnarekha river along the WB-Odisha border to Kanyakumari
- This plain is known as the Northern Circars between the Mahanadi and the Krishna rivers and as Carnatic between the Krishna and the Cauvery rivers.
- It is marked by deltas of rivers like the Mahanadi, the Godavari, the Krishna, and the Cauvery ( fertile , productive region , more population region)
- the delta of the River Krishna is called the 'Granary of South India'.
- Chilka lake and the Pulicat lake (lagoon) are the important geographical features of the east coast.
- Because of the emergent nature , it has less number of ports . The Continent shelf extends up to 500km into the sea, which makes it difficult for the
- development of good port and harbours.



**The Eastern coast is again divided into three categories:**

- **Utkal coast:** The Utkal Plain comprises the coastal areas of Odisha and includes the Mahanadi Delta. A notable feature of this plain is the Chilka Lake, the largest brackish water lake in India.
- **Andhra coast:** The Andhra Plain is situated south of the Utkal Plain and extends to Pulicat Lake. Pulicat Lake is blocked by Sriharikota Island, which is used as an ISRO launch site
- The key feature of this plain is the delta formed by the Godavari and Krishna rivers. The two deltas have merged and formed a single physiographic unit.
- Recently, the combined delta moved toward the sea, shifting Kolleru Lake from a coastal lagoon to an inland position.
- The Andhra Plain coast is straight and lacks good harbours, except for Vishakhapatnam and Machilipatnam.

**Coromandel coast:**

- Tamil Nadu Plain extends from Pulicat Lake to Kanyakumari with an average width of 100 km
- Its most significant feature is the Cauvery Delta " South India's granary"
- Coromandel Coast or Payan Ghat: The combined region of the Tamil Nadu Coast and parts of the Andhra Coast.
- This Indian coastline remains dry in summer and receives rainfall during the winters due to the north-east monsoons.

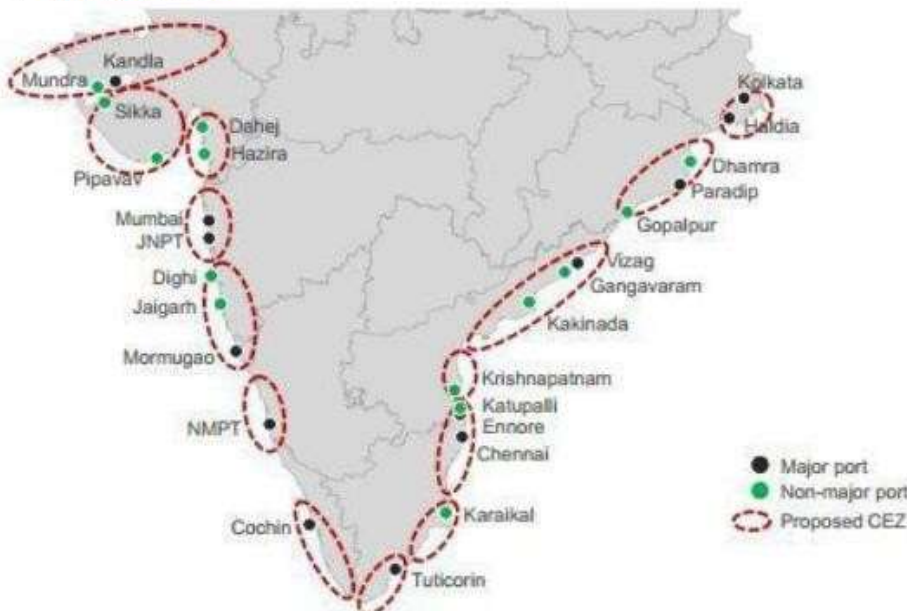
Key Region of East Coast Plains      Extends between

Utkal Coast	between the Chilika Lake and Kolleru Lake
Andhra coast	between the Kolleru Lake and Pulicat Lake
Northern Circars	between the Mahanadi and the Krishna rivers
Carnatic	between the Krishna and the Cauvery rivers
<b>Coromandel coast</b>	extends between Pulicat Lake and Kanyakumari

Que: Which Indian coastline remains dry in summer and receives rainfall during the winter due to the north-east monsoons.?

**The Significance of the Coastal Plains**

- ✓ **Fertile Soil for Agriculture:** Rice is a major crop grown in these areas. Coconut trees thrive along the coastline.
- ✓ **Mineral Oil Deposits:** Sedimentary rocks in these plains are believed to contain substantial deposits of mineral oil.
- ✓ **Monazite Reserves:** The **sands along the Kerala** coast contain significant quantities of **monazite**, a material used in **nuclear power**.
- ✓ **Salt Production:** Low-lying areas in Gujarat are famous for salt production.
- ✓ **Tourist Destinations:** Beaches and backwaters are significant tourist attractions.
- ✓ **Ports for Trade**
- ✓ **Fishing Industry**



## MAJOR PORTS IN INDIA :

- India's 95% of trading by volume is done through maritime transport. It stands at 70% by value.
- India has 13 major ports and 205 notified minor and intermediate ports.
- 12 government-owned and one privately-owned port,
- Among the 12 government-owned ports, six are situated along the western coast, while the remaining six are located on the eastern coast of the country.

The majority of ports in India are located in the below-given states:

1. Maharashtra -53
2. Gujarat -40
3. Tamil Nadu – 15
4. Karnataka – 10

Syama Prasad Mookerjee Port/ Kolkata Port / Diamond Harbour	West Bengal Oldest Port In India	India's only major Riverine port on Hugli river
Paradip Port	Odisha's Jagatsinghpur district	Natural Port
Visakhapatnam Port	Andhra Pradesh	natural harbor Deepest port of India
Kamarajar Port or Ennore Port	Coromondal Coast Tamilnadu	only corporatised major port of India
Chennai Port	Tamilnadu	Artificial Port
V.O. Chidambaranar Port/ Tuticorin Port	Tamilnadu	
Cochin Port	Kerala	Willingdon Island and Vallarpadam Island in Kochi's Lake
New Mangalore Port	Karnataka	
Mormugao Port	Goa	
Mumbai Port	Largest Port by size and Second oldest port	The busiest port in India
Jawaharlal Nehru Port or Nhava Sheva Port	Maharashtra	India's largest container- handling port
Deendayal Port: Kandla Port	Kutch Gujarat	Tidal Port, Biggest Cargo Handling port of India - Free Trade Zone

Note :. Krishnapatnam Port

- Private port
- is known as the deepest port in India
- Located on East coast
- Nellore District of Andhra Pradesh
- It is located about 190 km north of the Chennai Port
- The port has its history back to Vijayanagar Emperor, when Sri Krishnadevaraya used to operate it. So, the name was given to it as *Krishnapatnam Port*.

Tamil Nadu has the highest number of major ports in India.

The list of eastern coast ports in India is given below:

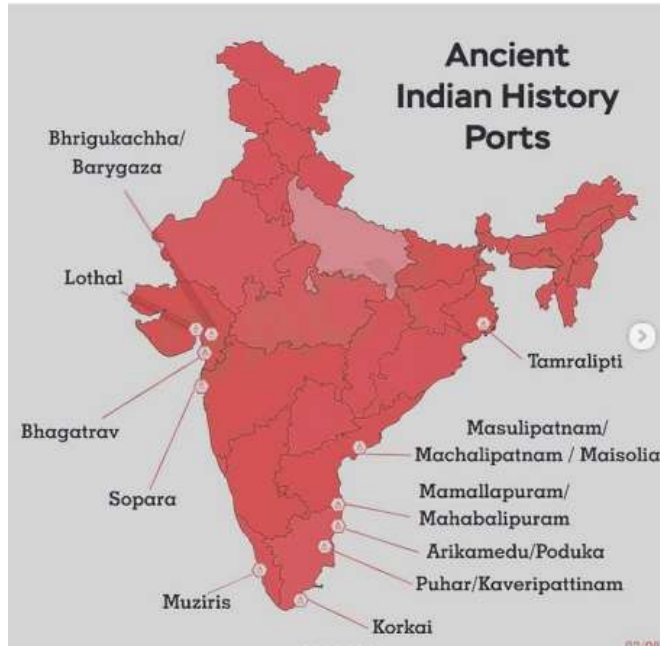
- Chennai Port in Tamil Nadu
- Ennore Port in Tamil Nadu
- Kolkata Port in Kolkata
- Paradip Port in Orissa
- V.O.Chidambaranar Port (also called Tuticorin port) in Tamil Nadu

State	Place	Port
Kerala	Vizhinjam	Vizhinjam International Seaport
Tamil Nadu	Colachel	Colachel Seaport
Maharashtra	Vadhavan(near Dahanu)	Vadhavan Port
Karnataka	Tadadi	Tadadi port
Andhra Pradesh	Machilipatnam	Machilipatnam Port
West Bengal	Sagar Island	Sagar Island Port

- Visakhapatnam Port in Andhra Pradesh

News : Vadhavan Port will be the 13 th Major Port in India . This port has been planned by JNPT as an " All Weather, All Cargo and Satellite Port ", to enhance the capabilities of JNPT

**NEW PORTS UNDER DEVELOPMENT :** Six new mega ports are to be developed under the Sagarmala Project.



#### ANCIENT AND MEDIEVAL PORT OF INDIA

- Lothal, Gujarat
- Dholavira, Gujarat
- Arikamedu, Tamil Nadu
- Mahabalipuram, Tamil Nadu
- Poompuhar, Tamil Nadu
- Kaveripattinam, Tamil Nadu
- Mamallapuram, Tamil Nadu
- Qusad Creek, Gujarat
- Bharuch, Gujarat
- Muziris, Kerala
- Kozhikode, Kerala
- Chaul, Maharashtra
- Haldia, West Bengal
- Goa, Goa
- Surat, Gujarat
- Calicut, Kerala
- Cochin, Kerala
- Diu, Daman and Diu
- Pondicherry, Puducherry
- Gopakapattana, Goa



### DISCUSS THE IMPORTANCE AND ISSUES OF COASTAL PLAINS

Coastal plains hold significant importance for several reasons:

**Economic Importance:** Coastal plains often have fertile soil, making them ideal for agriculture. They are often used for growing crops such as grains, vegetables, and fruits, which contribute to local and national economies. Additionally, coastal plains are often rich in mineral resources such as oil, natural gas, and minerals like sand and gravel, which can be extracted for economic benefit.

**Ecological Importance:** Coastal plains are home to a wide array of plant and animal species, making them important for biodiversity and ecological balance. They provide habitats for various wildlife, including birds, fish, and mammals. Coastal plains also contain wetlands and estuaries, which act as nursery grounds for many marine species.

**Tourist Attractions:** Coastal plains are often attractive tourist destinations due to their natural beauty, beaches, and recreational activities such as fishing, boating, swimming, and water sports. The tourism industry that develops around coastal plains can significantly contribute to the local economy.

**Transportation and Trade:** Coastal plains frequently serve as transportation hubs due to their proximity to water bodies. They provide easy access to ports and harbors, facilitating international trade and commerce. Coastal plains also often have well-developed infrastructure, including highways, railways, and airports, which further enhances their significance as transportation and trade centers.

**Coastal Protection:** Coastal plains play a crucial role in protecting inland areas from erosion, storm surges, and tidal waves. They act as a natural buffer and absorb the impact of storms, protecting coastal communities and infrastructure. Coastal plains also serve as natural barriers against rising sea levels, helping prevent flooding and property damage.

#### KEY ISSUES:

- **Flooding:** Coastal plains in India are prone to frequent and severe flooding due to heavy monsoon rains, leading to loss of life and property damage.
- **Erosion:** The constant pounding of waves and tides erodes the coastline, which can result in loss of land and displacement of coastal communities.
- **Tsunamis:** Coastal plains are highly susceptible to tsunamis, which can cause widespread destruction and loss of life.
- **Saline intrusion:** Coastal plains often experience saline intrusion, where saltwater from the sea infiltrates freshwater sources, making them unfit for irrigation and drinking purposes.
- **Cyclones:** Coastal plains are vulnerable to cyclones, which can cause significant damage to infrastructure, agriculture, and livelihoods.
- **Coastal pollution:** Increased industrialization and urbanization along coastal plains result in the discharge of pollutants into nearby maritime ecosystems, leading to the degradation of marine life and habitats.
- **Coastal erosion:** Beaches are under constant threat of erosion due to rising sea levels, leading to loss of natural beauty and recreational activities.

- **Soil degradation:** Overexploitation of coastal plains for agriculture and infrastructure development can lead to soil erosion and degradation, affecting the productivity and sustainability of land.
  - **Climate change:** Rising sea levels and increased intensity of extreme weather events due to climate change pose a significant threat to coastal plains in terms of increased erosion, flooding, and loss of coastal biodiversity
  - **Destruction of mangroves:** Coastal plains often have mangrove ecosystems, which act as natural buffers against storm surges and provide breeding grounds for marine organisms. However, these ecosystems are often cleared for various economic activities, leading to their destruction.
  - **Loss of biodiversity:** Coastal plains are home to diverse ecosystems, including coral reefs, estuaries, and wetlands. However, habitat destruction, pollution, and overfishing threaten the rich biodiversity found in these areas.
  - **Coastal population growth:** Rapid population growth in coastal plains leads to increased pressure on limited resources and infrastructure, resulting in challenges related to housing, sanitation, and waste management.
  - **Decline in fish populations:** Overfishing and destructive fishing practices in coastal plains have led to a decline in fish, and Mangrove deforestation
  - **Tourism pressures:** Coastal plains in India attract a large number of tourists, leading to overcrowding, pollution, and strain on local resources and infrastructure.
- 



New Vision IAS Academy  
....wings to aspirations