

Water Management:-

Geography Class 41

19th December, 2023 at 1:00 PM

A BRIEF OVERVIEW OF THE PREVIOUS CLASS (1:19 PM)

RAINWATER HARVESTING (1:29 PM)

- A technique of collection and storage of rainwater in natural reservoirs or infiltration of surface water into subsurface aquifers.
- The methods of rainwater harvesting involve rooftop collection, means at its own location **in situ** recharge using recharge pits, surface water collection, storage, and recharge using ponds, lakes and check dams.

WATERSHED DEVELOPMENT (1:41 PM)

- A watershed is an area of land where all of the water that is under it or drains off it collects into one water body.
- Watershed development implies rational utilization of land and water resources for optimum and sustained production with minimum hazard to national resources.
- It involves the conservation and management of both surface and groundwater using watersheds as **a single unit**.

INTERLINKING OF RIVERS (1:49 PM)

- It's based on **K . L . Rao's** scheme of interlinking of rivers.
- It involved the transfer of water from the Surface basin of the Himalayas to the deficit basin of the peninsular region by developing 30 river links connecting 37 rivers.
- 14 links in the Himalayan and 16 in the peninsular region.
- **Benefits:**
 - Controls flood in the north and drought in the South.
 - Reducing water stress.
 - Expansion of the area of the irrigation network.
 - Groundwater recharge and enhances agricultural productivity
 - Inland fishing.
 - Hydroelectric power generation
 - Drinking water supply to cities.
- **Issues associated:**
 - **Environmental issues:**
 - Such as loss of biodiversity due to submergence and deforestation.
 - Impact the riverine ecology of both surplus and deficit basins, across the delta affects salinity, mangroves, delta, etc
 - **Economic issues:** - High cost of construction and maintenance.
 - **Administrative issues** -increase in conflict internal as well as international, Displacement of tribals, etc

• Inland water transportation system can also be revived.

NATURAL VEGETATION (2:12 PM)

- **World natural vegetation types:**
- **1) Tropical evergreen forest:**
 - Layered arrangement of vegetation, limited sunlight at the ground, low undergrowth, High biodiversity, no specific season of shedding leaves.
 - Regions- Amazon basin, equator, Venezuela and Columbia, parts of Central America, Congo basin, southeast Asian islands such as Indonesia, Malaysia, etc
- **2) Tropical deciduous forest:**
 - It is also called monsoon vegetation and sheds leaves during the dry season.
 - Region: - Towards the North and south of the equator, south Asia, Indochina, eastern Africa, northern Australia, and Southeast Brazil.
- **3) Mediterranean type of vegetation:**
 - Short bushes, small height, develop a deep root system.
 - No leaf shedding season, drought-resistant vegetation.
 - Examples of tree olives, oranges, grapes, and other citrus fruits.
 - Region- Around the Mediterranean region, California, Southwestern Africa, central Chile, SW, and southern Australia
- **4) Coniferous forest:**
 - Known for coniferous trees and needle-like leaves.
 - They remain evergreen.
 - They are also called boreal forests or taiga forests.
 - It's one of the largest stretches of vegetation on the surface of the earth nearly one-third but low diversity of less.
 - Region- Siberia, Europe Russia, Poland, Scandinavia, Canada and USA.

- **5)Mixed Forest:**

- Mix of broad leaves and coniferous.
- Uniform and moderate rainfall.
- Temperature is not too cold. Example British type of climate, Laurentian type, China type, etc

LUMBERING ACTIVITY (2:40 PM)

(Lumbering activity refers to the process of cutting, felling, and processing trees for wood and timber.)

- **Conditions favoring lumbering activity in temperate regions:**

- Coniferous trees are Soft wood hence easy to cut and work upon on an industrial scale.
- Low biodiversity hence clear-felling is possible.
- Density of the forest is low hence easy to extract and transport.
- Easy replacement of vegetation in coniferous forests.
- Availability of technology for the lumbering industry.

NATURAL VEGETATION OF INDIA (3:22 PM)

- Broadly Natural vegetation of India is classified into 5 types :
- 1) Tropical evergreen:
- Divided into three types:
- I) Wet evergreen: ^{rainfall is} conditions are about 250 cm and above. richest biodiversity. ^{also for semi evergreen} A&N, rest of NE India, Western ghats, parts of WB, Odisha, Assam.
- Example- mahogany, Ebony tree, Rosewood tree, ^{also known as water tree} Laurel tree, jackfruit, Jamun tree, Rubber tree, and Irul Tree.
- II) Semievergreen:
- Conditions-> Rainfall greater than 200 cm. Surrounding the wet evergreen.
- III) Dry evergreen- ^(N-E monsoon happens there and summer is dry there)
- Coromandel Coast with Winter precipitation.
- Example- tamarind tree, neem Tree, Jamun tree, toddy palm.
- 2) Tropical deciduous: precipitation between 200 to 70 Cm.
- Two types:
- I) Moist deciduous (200 to 100 cm)
- Region:- eastern MP < parts of Odisha, Jharkhand, and Chattisgarh and parts of Karnataka and Maharashtra.
- Trees: Teak, Sal, Sheesham, Rosewood, almond tree, sandalwood.
- II) Dry deciduous (100 to 70 cm.);
- It covers a wide area from the Himalayas to Kanyakumari except for the regions of tropical thorn and moist deciduous.
- Trees: Red sanders (Found only in India- TN, AP, and Karnataka Trijunction. needed red soil, dry conditions, hilly region), Bamboo, Sandalwood, Sheesham etc

- **3) Tropical thorn:**

- Precipitation less than 70 ^{cm} ~~mm~~
- Also Known as xerophytic trees with adaptation:-Thorn instead of leaves, Green stems, stores water in water, controlled opening of stomata, short bushes.
- Region-Rajasthan, Gujarat, Parts of Punjab and Haryana, rainshadow region of western ghats, etc
- Trees:- Khair, Babool tree, Axlewood, Prosopis Juliflora, Neam, Sheesham.

- **4) Montane forest:**

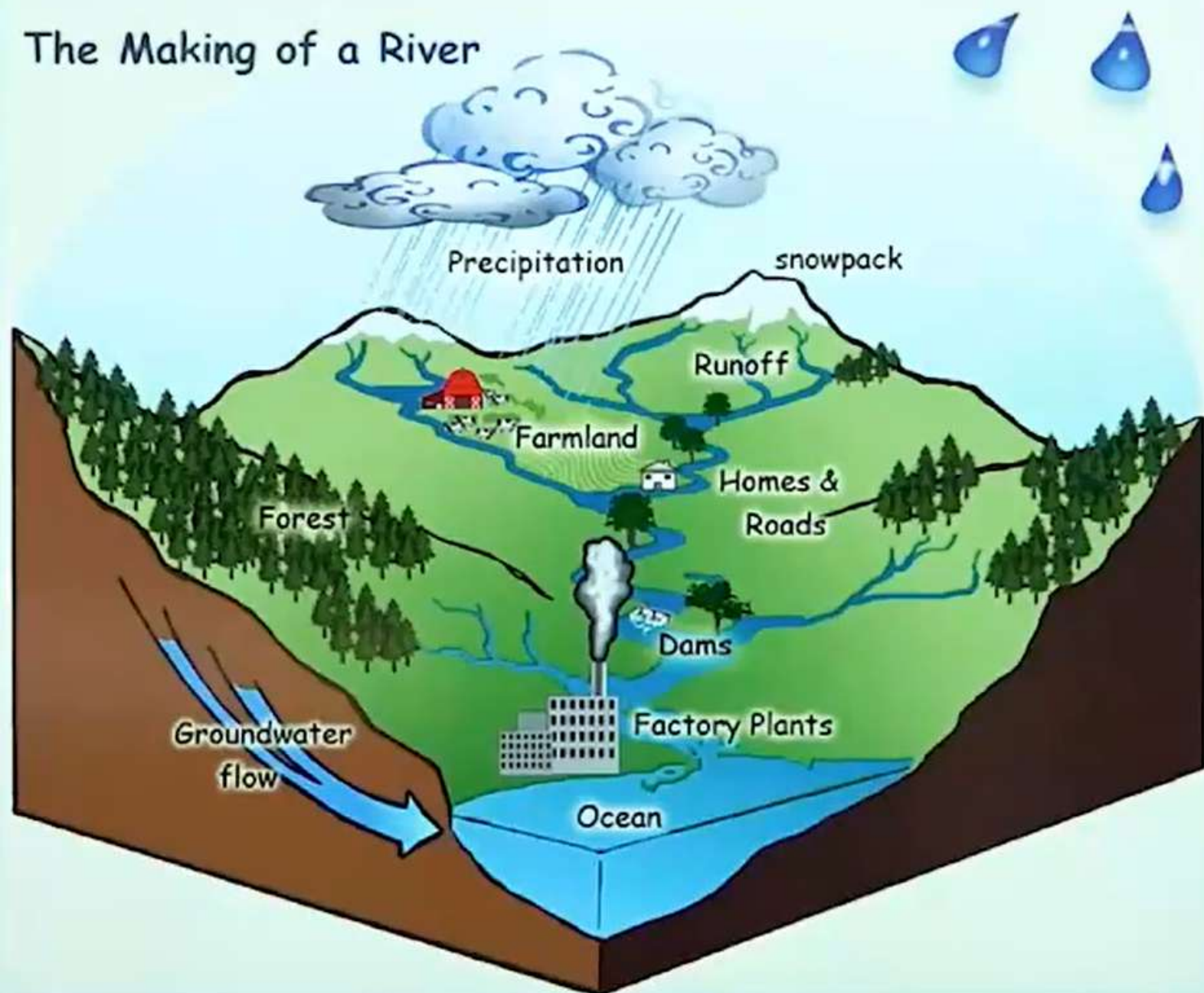
- Found in high altitude. (Low Temperature)
- Mountain vegetation with increasing altitude (Moist, mixed (up to 1500 m), coniferous (1500 to 3500 m), alpine (3500 to 4500 m),
- Summer grassland is called Bugyal.
- **Tree->** Oak, Deodar trees, Chir pine, Rhododendron, Juniper, Maplewood.
- **Region->** Entire Himalayas, parts of Vindhya and Satpura, parts of western Ghat.
- **5) Littoral and swamps**

THE TOPIC OF THE NEXT CLASS-

littoral and swamps, Mangroves, agriculture etc

WHAT IS A WATERSHED?

The Making of a River



Inter Basin Water Transfer Links

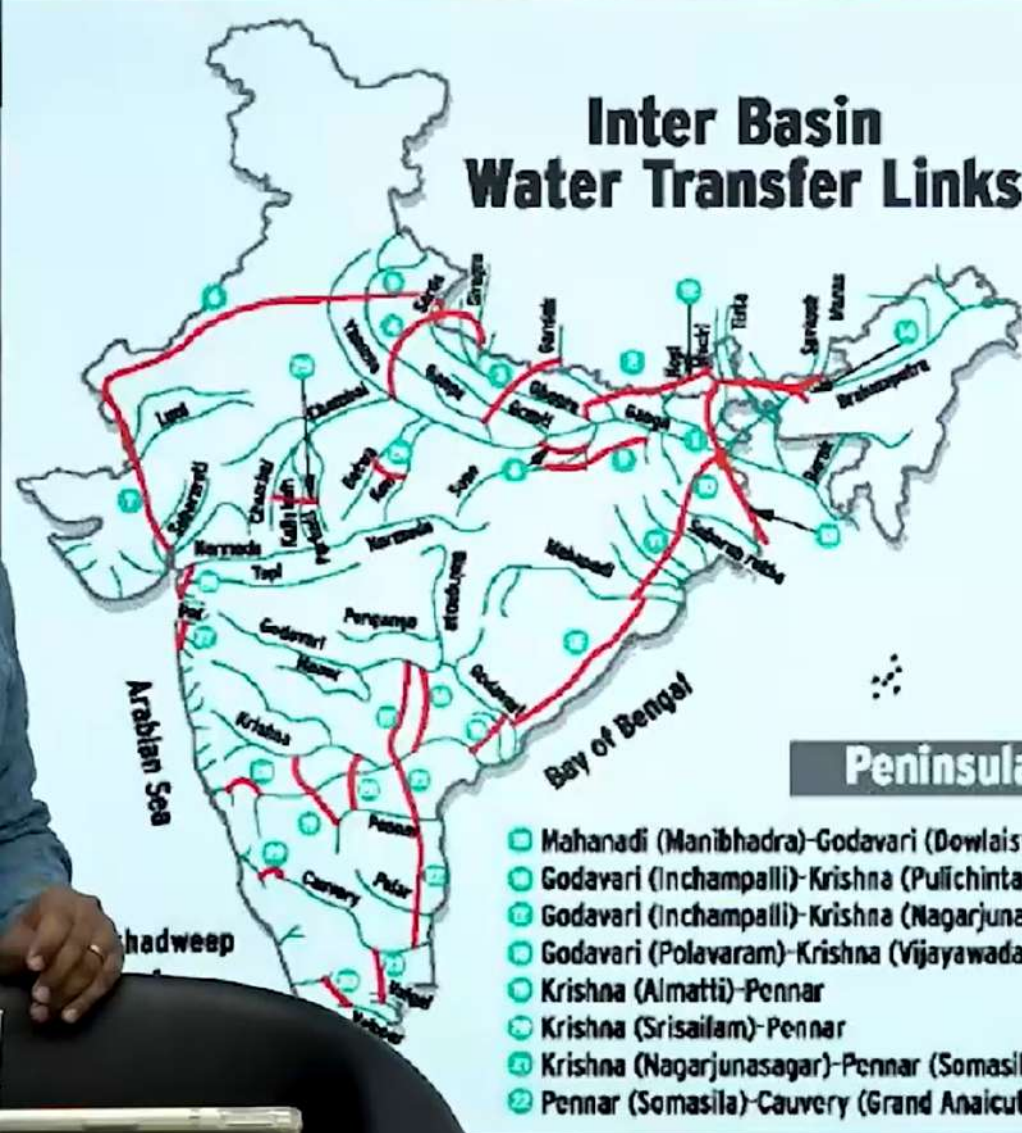
Himalayan component

- 1 Manas-Sankosh-Tista-Ganga
- 2 Kosi-Ghagra
- 3 Gandak-Ganga
- 4 Ghagra-Yamuna
- 5 Sarda-Yamuna
- 6 Yamuna-Rajasthan
- 7 Rajasthan-Sabarmati
- 8 Chunar-Sone Barrage
- 9 Sone dam-southern tributaries of Ganga
- 10 Ganga-Damodar-Subernarekha
- 11 Subernarekha-Mahanadi
- 12 Kosi-Mechi
- 13 Farakka-Sunderbans
- 14 Jogighopa-Tista-Farakka (alternative to 1)

Water transfer link

Peninsular component

- | | |
|--|-------------------------------------|
| 15 Mahanadi (Manibhadra)-Godavari (Dowlaiswaram) | 25 Cauvery (Kattalai)-Vaigai-Gundar |
| 16 Godavari (Inchampalli)-Krishna (Pulichintala) | 26 Ken-Betwa |
| 17 Godavari (Inchampalli)-Krishna (Nagarjunasagar) | 27 Parbati-Kalsindh-Chambal |
| 18 Godavari (Polavaram)-Krishna (Vijayawada) | 28 Par-Tapi-Narmada |
| 19 Krishna (Almatti)-Pennar | 29 Damanganga-Pinjal |
| 20 Krishna (Srisaifam)-Pennar | 30 Bedti-Varda |
| 21 Krishna (Nagarjunasagar)-Pennar (Somasila) | 31 Netravati-Hemavati |
| 22 Pennar (Somasila)-Cauvery (Grand Anaicut) | 32 Pamba-Achankovil-Vaippar |



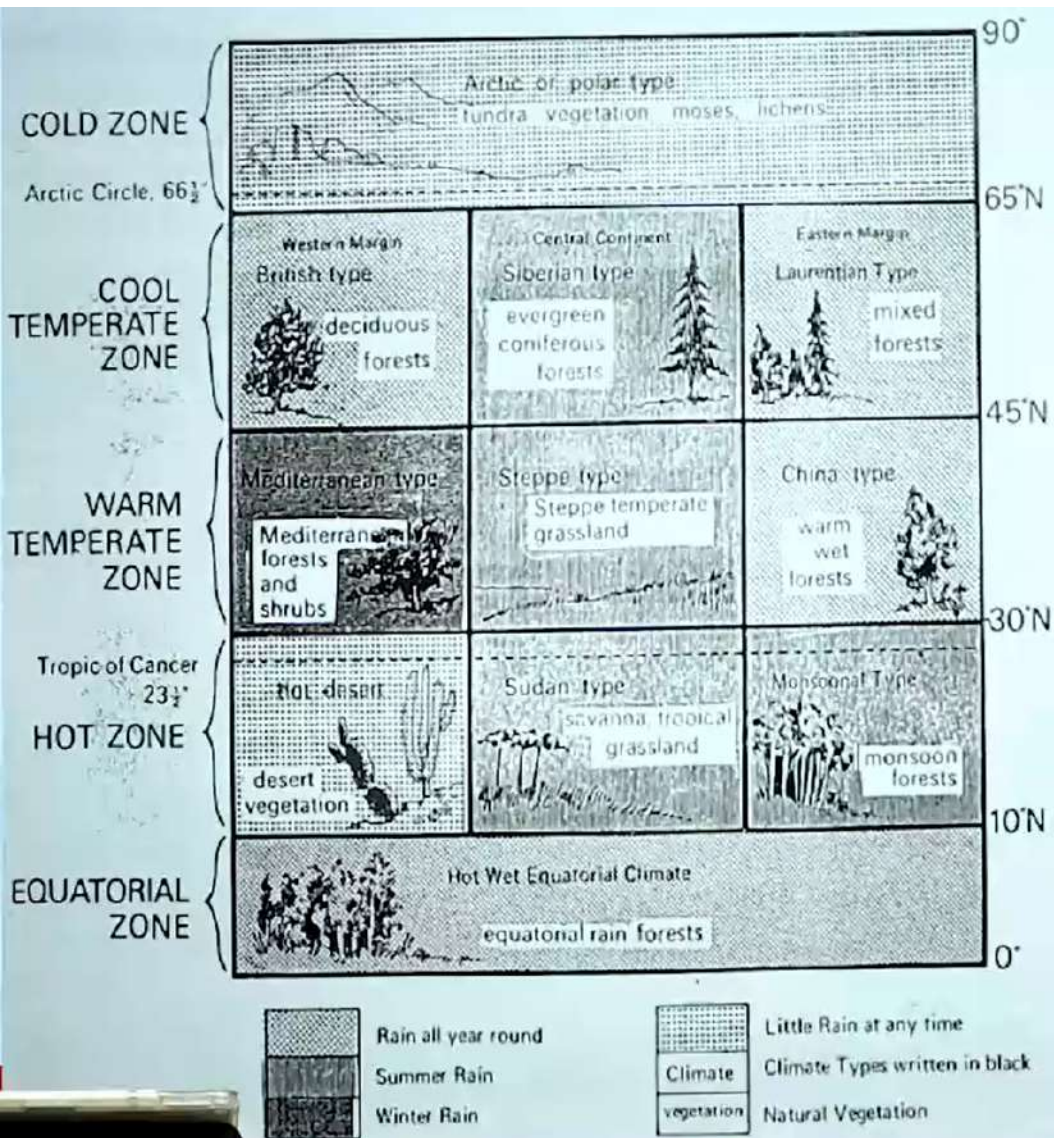
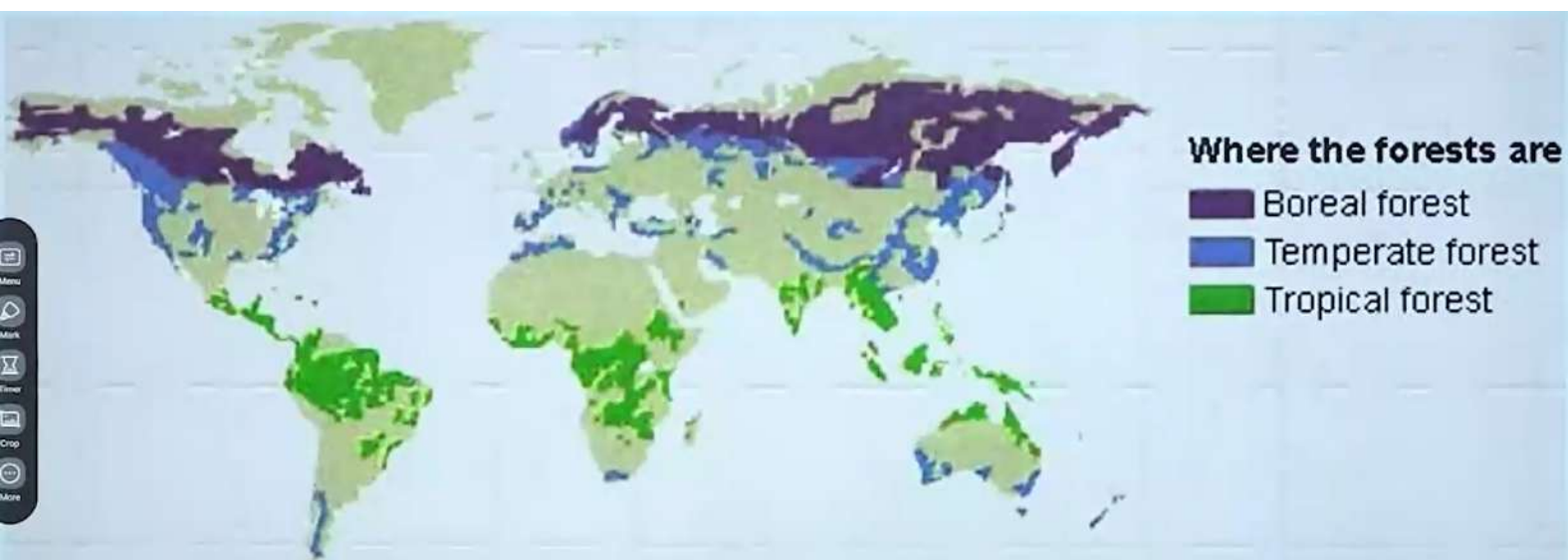


Fig. 120 Scheme of the world's climatic types (with seasonal rainfall and natural vegetation also indicated)



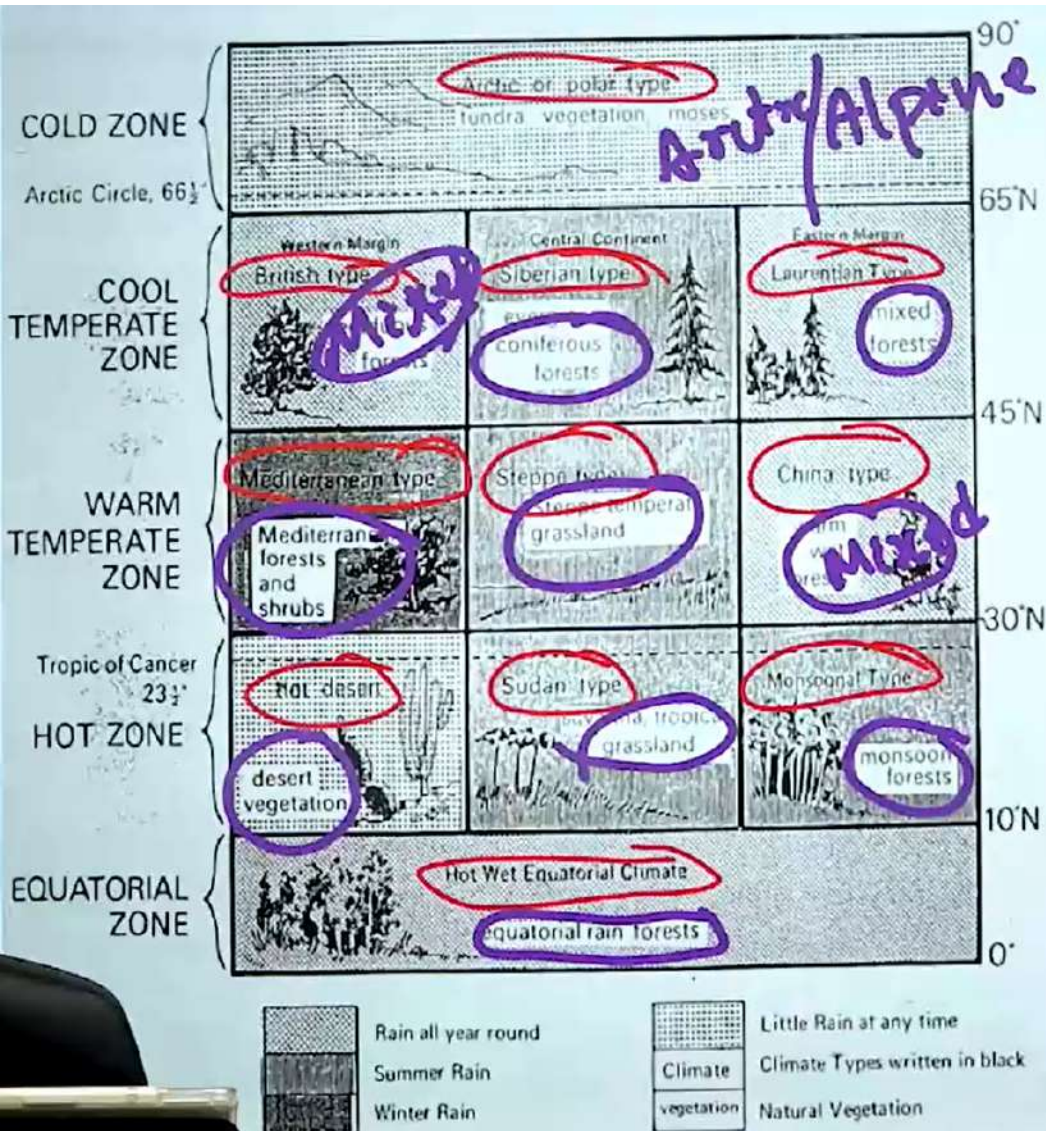
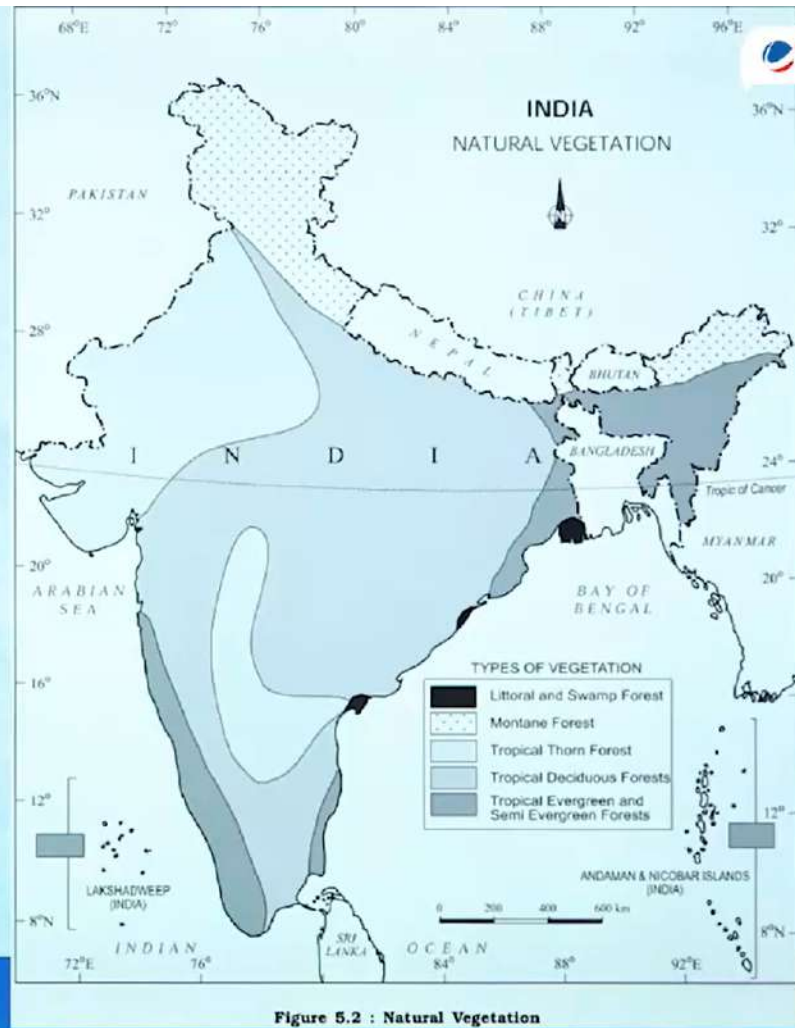


Fig. 120 Scheme of the world's climatic types (with seasonal rainfall and natural vegetation also indicated)



Natural Vegetation of India



Natural Vegetation of India

- ① Trop. Evergreen
- ② Trop. Deciduous
- ③ Trop. Thorn
- ④ Montane
- ⑤ Littoral & Swamps

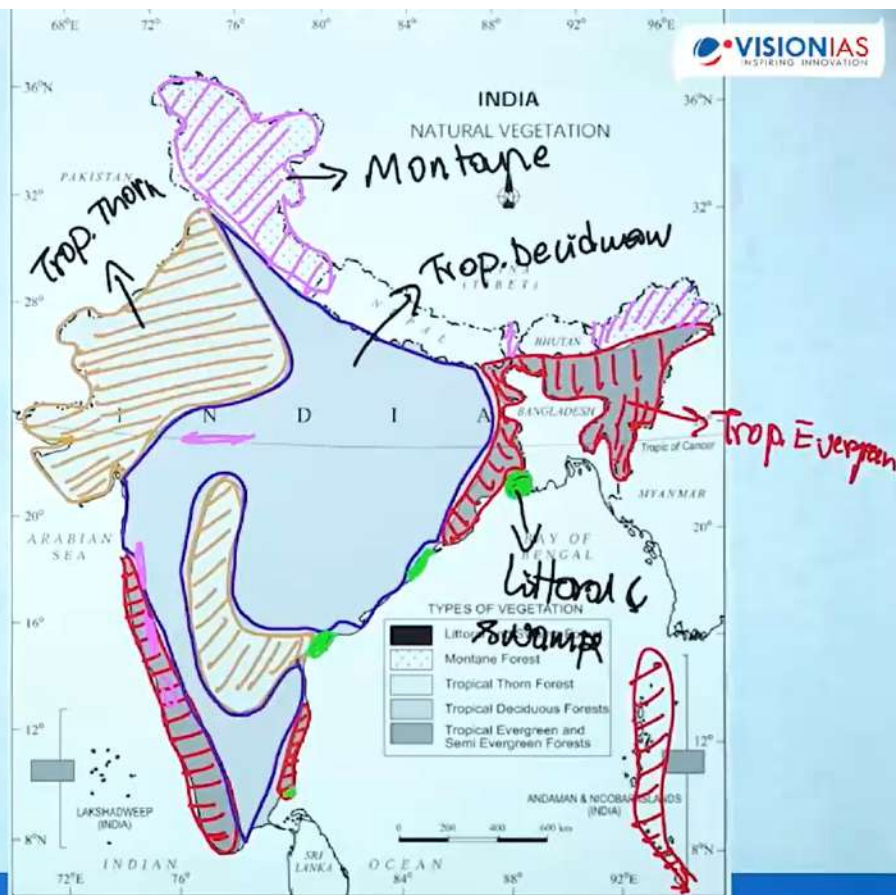


Figure 5.2 : Natural Vegetation