

Chapter 3

Drainage

❖ Drainage Systems in India

- Flow of water from a higher to a lower level is called drainage. It also refers to the river system of any particular area.
- The Indian River system is divided into two groups- **the Himalayan Rivers** and **the Peninsular Rivers**.
- **The Himalayan Rivers**
 - They have water all throughout the year and originate from the mountains in the north. They flow through the mountains and form gorges.
 - Himalayan rivers cover long routes before falling into the sea.
 - Erosion activities in the upper courses. Hence, they bring loads of sand and silt on their way down and deposit it in the lower courses.
- In the middle and lower courses, these rivers form meanders, oxbow lakes and deltas.

The Peninsular Rivers

- Seasonal rivers i.e. they depend on rainfall.
- They have short courses as compared to the Himalayan Rivers.
- They flow through the plateaus and low hills and hence, they are not as fast flowing as the Himalayan rivers.

❖ The Himalayan Rivers

• The Indus River System

- Originates from Lake Mansarovar in Tibet and enters India through Ladakh in Jammu and Kashmir.
- The Zaskar, the Nubhra, the Shyok and the Hunza join the Indus in Kashmir.
- The Satluj, the Ravi, the Chenab, the Beas and the Jhelum together join Indus at Mithankot in Pakistan. Indus merges with the Arabian Sea near Karachi in Pakistan.
- Length is 2900 km. It is one of the longest rivers in the world.

• The Ganga River System

- The Ganga originates from the Gangotri Glacier in Uttarakhand in the form of Bhagirathi river.
- The Bhagirathi and the Alaknanda rivers join together at Devprayag and form the Ganga river.

- The Ganga enters the plains at Haridwar in Uttarakhand.
- Major tributaries of the Ganga are the Yamuna, the Ghaghara, the Gandak and the Kosi.
- The Yamuna originates from the Yamunotri Glacier in the Himalayas and joins Ganga at Allahabad.
- The Kosi, the Ghaghara and the Gandak originate from the Nepal Himalayas. They are flood prone rivers and cause heavy damage to life and property during floods.
- The Chambal, the Betwa and the Son are the tributaries of the Ganga that originate from the peninsular plateau.
- The Northernmost point of the Ganga delta is Farakka in West Bengal. The river splits here and Bhagirathi-Hooghly (distributary) flows south into the Bay of Bengal; the main stream is joined by the Brahmaputra in Bangladesh and eventually falls into the Bay of Bengal forming the Sunderbans delta. Length of the Ganga is 2400 km.
- **The Brahmaputra River System**
 - The Brahmaputra originates in Tibet, very close to the origins of the Indus and the Satluj.
 - It flows from West to East parallel to the Himalayas and enters India through Arunachal Pradesh after taking a U-turn at Namcha Barwa.
 - It is called Dihang in Arunachal Pradesh and is joined by tributaries such as the Lohit and the Dibang. These together form the Brahmaputra in Assam.
 - Brahmaputra creates many riverine islands, the largest in the world being Majuli (in Assam).
 - The Brahmaputra is a flood prone river owing to huge deposits of silt on its bed that cause the overflowing of the river during monsoons.

❖ The Peninsular Rivers

- The Western Ghats form the main water divide in Peninsular India. The rivers that originate towards its West flow Westwards and fall into the Arabian Sea and those rising towards its East flow Eastwards and join the Bay of Bengal.
- **The Narmada Basin**
 - The Narmada river originates from the Amarkantak hills in Madhya Pradesh and drifts to the west in a rift valley.
 - Creates striking sites on its way to the sea such as the Dhuadhar falls where the river falls over sharp rocks and the Marble rocks near Jabalpur where the river flows through a gorge.

- Flows through Gujarat and Madhya Pradesh before merging in the Arabian Sea.
- **The Tapi Basin**
 - Originates from the Satpura ranges in Madhya Pradesh.
 - Small river.
 - Flows through a rift valley.
 - Covers certain parts of Maharashtra, Madhya Pradesh and Gujarat.
 - The main rivers of this basin that flows towards the West are Periyar, Bharathpuzha, Mahi and Sabarmati.
- **The Godavari Basin**
 - The largest peninsular river. Length is 1500 km..
 - It rises from the Western Ghats in Maharashtra.
 - Covers parts of Maharashtra, Orissa, Madhya Pradesh and Andhra Pradesh.
 - It is joined by tributaries such as the Wardha, the Purna, the Pranhita, the Manjra, the Wainganga and the Penganga.
 - For the length and the area it covers, it is also called 'Dakshin Ganga'.
 - Falls into the Bay of Bengal.
- **The Mahanadi Basin**
 - Rises from the highlands of Chhattisgarh and flows through Orissa before falling into the Bay of Bengal.
 - Length is 860 km.
- **The Krishna Basin**
 - Originates from Mahabaleshwar in Maharashtra.
 - Length is 1400 km.
 - Main tributaries are the Koyana, the Tungabhadra, the Musi, the Bhima and the Ghatprabha.
 - Its basin covers Maharashtra, Andhra Pradesh and Karnataka.
- **The Kaveri Basin**
 - Originates from the Brahmagiri range of the Western Ghats.
 - With tributaries such as the Bhavani, the Amravati, the Kabini and the Hemavati, the basin covers parts of Kerala, Tamil Nadu and Karnataka.
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 - Brahmani, Damoder, Baitrani and Subarnrekha are some of the small rivers that flow towards the east.
 - Length is 760 km.

❖ LAKES

- Majority of the lakes in India are permanent and the remaining contain water only during monsoons.
- The meandering of rivers form cut-offs that *ox-bow lakes*.
- the Sambhar Lake in Rajasthan is a seasonal lake whose water is used for producing salt.
- Fresh water lakes normally originate in the Himalayan region. eg. The Dal Lake, Nainital, Bhimtal, Barapani and Loktak.
- Largest fresh water lake in India is the Wular Lake in Jammu and Kashmir.
- Guru Gobind Sagar Lake (Bhakra Nangal Project) is an artificial lake formed by damming of rivers for generating hydel power.
- **Uses of Lakes**
 - Stops the occurrence of floods during monsoons.
 - Helps in hydel power generation.
 - Instrumental in maintaining the aquatic ecosystem.
 - Adds to the natural beauty of a place and provides for recreational activities.

❖ ROLE OF RIVERS IN THE ECONOMY

- Natural resource, important for human activities like irrigation, hydro-power, navigation and agriculture.
- Led to the settlement of civilizations at river banks from ancient times, most of which now have become cities.

❖ RIVER POLLUTION

- Growing demands of human needs have been steadily affecting the quality of river water. Volume of water has been decreasing as more and more water is being used.
- Industrial wastes and sewage are dumped into water bodies, thus polluting them further.
- Various action plans like the Ganga Action Plan (GAP) for cleaning the polluted water bodies have failed to achieve the desired results.

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