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## Chapter-3 Geography

### Drainage

- 'Drainage' is a term signifying the river system of an area.
- A drainage basin or river basin is an area which is drained by a single river system.
- An upland that separates two drainage systems that are next to each other is called a water divide.
- On the basis of origin there are two river systems of India — The Himalayan rivers and the Peninsular rivers.
- Himalayan rivers are rain fed and snowed, so they have water in them throughout the year, i.e. they are perennial.
- Himalayan rivers create meanders, oxbow lakes and other depositional features on their course.
- Peninsular rivers are seasonal; mostly depending on rainfall.
- Most of the rivers of peninsular India originate in the Western Ghats and flow towards the Bay of Bengal.

#### The Himalayan Rivers

- A river along with its tributaries may be called a river system.
- The major Himalayan rivers are the Indus, the Ganga and the Brahmaputra.

#### The Indus River System

- Rising near Lake Mansarovar in Tibet, the Indus enters India in the Ladakh district of Jammu and Kashmir.
- Rivers Satluj, Beas, Ravi, Chenab and Jhelum join Indus near Mithankot, Pakistan and flow southwards to fall into the Arabian Sea, east of Karachi.
- With a total length of 2900 km, the Indus is one of the longest rivers of the world.

#### The Ganga River System

- The headwaters of the Ganga are called 'Bhagirathi'.
- Bhagirathi is fed by the Gangotri Glacier and joined by the Alaknanda at Devprayag.
- Ganga meets the tributaries from the Himalayas such as Ghaghara, Gandak and Kosi.
- A major river Yamuna, arising from Yamunotri Glacier in the Himalayas, joins Ganga at Allahabad.
- Other tributaries — Chambal, Betwa and Son — come from Peninsular uplands to join Ganga.
- Ganga is joined by Brahmaputra and flows through Bangladesh to reach the Bay of Bengal.
- The delta formed when the Ganga and the Brahmaputra flow into the Bay of Bengal is known as the Sunderban Delta.
- The length of the Ganga is over 2500 km and it develops large meanders.

#### The Brahmaputra River System

- Originating in Tibet, very close to the sources of Indus and Satluj, Brahmaputra enters India in Arunachal Pradesh to flow to Assam joined by many tributaries.
  - The tributaries that join Brahmaputra are Dibang, Lohit, and Kenula.
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- The Brahmaputra has a braided channel in its entire length in Assam to form many riverine islands.
  - Unlike other north Indian rivers, the Brahmaputra is marked by huge deposits of silt on its bed, causing the riverbed to rise.

### **The Peninsular Rivers**

- The major rivers of the peninsula — Mahanadi, Godavari, Krishna and Kaveri — flow eastwards to drain into the Bay of Bengal.
- The Tapi and Narmada are the only rivers which flow west to make estuaries and drain into the Arabian Sea.
- The drainage basins of the peninsular rivers are comparatively small in size.

### **The Godavari Basin**

- Godavari begins in Nasik district of Maharashtra and is the largest peninsular river.
- Its large basin covers most parts of Maharashtra, Madhya Pradesh, Orissa and Andhra Pradesh.
- The tributaries which join the Godavari include Purna, Wardha, Pranhita, Manjra, Wanganga and Penganga.
- Because of its length and the area it covers, Godavari is also known as the Dakshin Ganga.
- Godavari drains into the Bay of Bengal.

### **The Mahanadi Basin**

- The Mahanadi, a 860 km long river, rises in Chhattisgarh to flow through Orissa to reach the Bay of Bengal.
- Mahanadi river basin is shared by Maharashtra, Orissa, Jharkhand and Chhattisgarh.

### **The Krishna Basin**

- The 1400 km long Krishna river rises from a spring near Mahabaleshwar to reach the Bay of Bengal.
- The tributaries of Krishna include Bhima, Musi, Ghatprabha, Koyana and Tungabhadra. The Krishna basin is shared by Maharashtra, Karnataka and Andhra Pradesh.

### **The Narmada Basin**

- Rising in the Amarkantak hills, Narmada flows to create a gorge in marble rocks of Madhya Pradesh.
- Narmada flows towards the west in a rift valley formed due to faulting.

**The Tapi Basin:** Originating in Betul, Madhya Pradesh, Tapi flows through a basin that covers Madhya Pradesh, Gujarat and Maharashtra. The main west flowing rivers are Sabarmati, Mahi, Bharatpuzha and Periyar.

**The Kaveri Basin:** Originating in the Brahmagiri range of the Western Ghats, the Kaveri reaches the Bay of Bengal at Kaveripatnam, sharing its basin with Karnataka, Tamil Nadu and Kerala.

### **Lakes**

- Most lakes are permanent while others contain water only during the rainy season.
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- Some lakes are result of the glacial action and ice sheets and some may have been formed by wind, river action and human activities.
  - A river meandering across a floodplain forms cut-offs that later develop into oxbow lakes.
  - Glacial lakes are formed when glaciers dig out a basin which is later filled with snowmelt.
  - Some lakes like Wular Lake in Jammu and Kashmir result from tectonic activity.
  - Apart from natural lakes, the damming of the rivers for the generation of hydel power has also led to the formation of lakes.
  - Lakes help to regulate river water flow, prevent flooding, aid to develop hydel power, moderate climate, maintain aquatic ecosystem, enhance natural beauty, develop tourism and provide recreation.

### **Role of rivers in the economy**

- Rivers are natural sources of water.
- Settlements on the river banks have developed into cities.
- Rivers are used for irrigation, navigation, hydro-power generation, all vital for India, an agricultural economy.

### **River Pollution**

- Quality of river water is affected by the growing domestic, municipal, industrial and agricultural demand.
  - A heavy load of untreated sewage and industrial effluents are emptied into the river affecting the river's self-cleansing property.
  - Concern over rising pollution in our rivers led to the launching of various action plans to clean the rivers.
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