



RIVERS OF INDIA: Origin & Classification

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Who has not seen a river? And who has then, not been moved by a fierce emotion?

- ▶ The **common man** sees its life granting blessed form, the **government or CWC engineer** sees in it as a potential dam project, the **hydropower developers** a site for hydro project, a **farmer** his crop vitality, **fisher folk, boatspeople and river bed cultivators** a source of livelihood, the **industry & urban water utilities** view it as their personal waste basket, the **real estate developer** as a potential land grab site, a **sand miner** as a source of sand and the **distraught villager** his lifeline.

- ▶ A river shifts in colour, shape, size, flow pattern of water, silt, nutrients and biota, in fact all its variables seem to change with time and space. The perceptions differ as one moves from mountains to plains to the deltas. The same stream displays a wide variance of characteristics that depend upon the land it flows through and the micro climate along its banks. Rivers many a times seem to mirror the local flavour of the land they flow through.
- ▶ Today, as we talk of rivers, their rejuvenation and try to figure out their ecological flow and their health quotient , a good beginning to understand the existing rivers would be their classification modules. What defines a river? Which factors are used for their classification? How do we actually classify our rivers?
- ▶ As far as the first of these questions is concerned, none of the official agencies have tried to define a river!



Basin Map of Rivers by Central Water Commission

NIH (National Institute of Hydrology) organises 7 major rivers

Indus, Brahmaputra, Narmada, Tapi, Godavari, Krishna and Mahanadi

Most of the rivers pour their waters into the Bay of Bengal. Some of the rivers whose courses take them through the western part of the country and towards the east of the state of Himachal Pradesh empty into the Arabian Sea. Parts of Ladakh, northern parts of the Aravalli range and the arid parts of the Thar Desert have inland drainage. All major rivers of India originate from one of the three main watersheds.


- ▶ The Himalaya and the Karakoram ranges
- ▶ Vindhya and Satpura ranges and Chotanagpur plateau in central India
- ▶ Sahyadri or Western Ghats in western India

A scenic landscape featuring a calm river or lake. The foreground is filled with numerous dark, rounded rocks of various sizes partially submerged in the water. To the right, some tall, thin reeds or grasses grow out of the water. The middle ground shows a wide expanse of water reflecting the sky. In the background, a dense line of green trees borders the water. The sky is a clear, pale blue with a soft yellow glow on the right side, suggesting a sunrise or sunset.


CLASSIFICATION OF RIVERS


Based on Origin or Source

Depending on the origin or where they begin their journey from, there are

- ▶ ***Himalayan*** (perennial) rivers that rise from the Himalayas
 - ▶ the ***Peninsular*** rivers that originate from the Indian plateau.
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Contd.

- ▶ The Himalayan rivers include **the Ganga, the Indus and the Brahmaputra river systems** along with their tributaries, which are fed throughout the year by melting ice and rainfall. They are swift, have great erosion capacity and carry huge amounts of silt & sand. They meander along the flat land, create large fertile flood plains in their wake and their banks are dotted by major towns and cities.
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- ▶ The peninsular rivers, on the other hand are more or less dependent on rain. These are gentler in their flow, follow a relatively straighter path, have comparatively less gradient and include **Narmada, Tapi, Godavari, Krishna, Cauveri and Mahanadi** rivers, among many others.
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Based on topography

- ▶ ***The Himalayan Rivers*** flow throughout the year, are prone to flooding and include Indus and the Ganga–Brahmaputra–Meghna.
- ▶ ***The Deccan Rivers*** include the Narmada and Tapi rivers that flow westwards into the Arabian Sea, and the Brahmani, Mahanadi, Godavari, Krishna, Pennar & Cauvery that fall into the Bay of Bengal.
- ▶ ***The Coastal Rivers*** are comparatively small in size and numerous in number, with nearly 600 flowing on the west coast itself.
- ▶ ***Rivers of the Inland Drainage Basin*** are centered in western Rajasthan, parts of Kutch in Gujarat and mostly disappear before they reach the sea as the rainfall here is scarce. Some of them drain into salt lakes or simply get lost in the vast desert sands.
- ▶ ***Island Rivers*** Rivers of our islands: A&N islands & Lakshadweep group of islands

Based on basin formed

- ▶ On the basis of the basin formed, our rivers are distributed into 7 river system
- ▶ The ***Indus River System*** originates in Kailash range in Tibet, and includes Zaskar, Shyok, Nubra, Hunza (in Kashmir) along with Jhelum, Chenab, Ravi, Beas and Sutlej as its principal tributaries.
- ▶ the ***Brahmaputra River System***, it was earlier assumed that the Mansarovar lake is the source of the Brahmaputra river, however, now it is confirmed that Angsi Glacier is the main source. Most of the course of the river lies outside the country. In India it flows through Arunachal Pradesh and Assam, where it is joined by several tributaries.

- ▶ The ***Narmada River System*** comprises of the Narmada River that represents the traditional boundary between North & South India and which empties into the Arabian Sea in Bharuch district of Gujarat.
- ▶ Tapi river of the ***Tapi River System*** rises in the eastern Satpura Range of Madhya Pradesh and then empties into the Gulf of Cambay of the Arabian Sea, Gujarat. Its major tributaries are Purna, Girna , Panzara , Waghur , Bori and Aner rivers.
- ▶ Iso called the Vriddh (Old) Ganga or the Dakshin (South) Ganga, Godavari of the ***Godavari River System***, originates at Trambakeshwar, Maharashtra and empties into the Bay of Bengal. Summers find the river dry, while monsoons widen the river course. Its major tributaries include Indravati, Pranahita, Manjira, Bindusara and Sabari rivers.

- ▶ The ***Krishna River System*** includes Krishna river, one of the longest rivers of the country, that originates at Mahabaleswar, Maharashtra, and meets the sea in the Bay of Bengal at Hamasaladeevi, Andhra Pradesh. Tungabhadra River, formed by Tunga and Bhadra rivers, is one of its principal tributary. Others are Koyna, Bhima, Mallaprabha, Ghataprabha, Yerla, Warna, Dindi, Musi and Dudhganga rivers.
- ▶ The ***Kaveri River System*** has the Kaveri (or Cauvery) river whose source is Talakaveri in the Western Ghats and it flows into the Bay of Bengal. It has many tributaries including Shimsha, Hemavati, Arkavathy, Kapila, Honnuhole, Lakshmana Tirtha, Kabini, Lokapavani, Bhavani, Noyyal and Amaravati.
- ▶ The Mahanadi of the ***Mahanadi River System***, a river of eastern India rises in the Satpura Range and flows east into the Bay of Bengal.





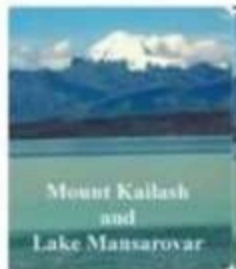
ORIGIN OF RIVERS

| Seral no. | River | Place of origin |
|-----------|-------------|-------------------------------------|
| 1 | Ganga | Gangotri (Uttarakhand) |
| 2 | Yamuna | Yamunotri (Uttarakhand) |
| 3 | Indus | Mansarovar (Tibet) |
| 4 | Narmada | Maikal Hills, Amarkantak (MP) |
| 5 | Tapi/Tapti | Satpura Range, Betul (MP) |
| 6 | Mahanadi | Nagri Town (Chhattisgarh) |
| 7 | Brahmaputra | Chemayungdung (Tibet) |
| 8 | Sutlej | Mt Kailash (Tibet) |
| 9 | Krishna | Mahabaleshwar (Maharashtra) |
| 10 | Godavari | Nasik (Maharashtra) |
| 11 | Cauvery | Brahmagiri Hills, Coorg (Karnataka) |

► Brahmaputra River System

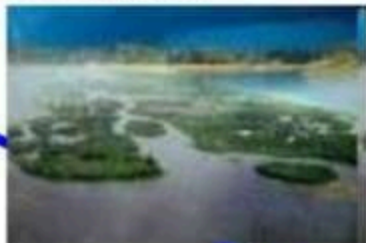
Brahmaputra, one of the major rivers in India, originates in the **Angsi glacier of Himalayas in Tibet**. There it is known as the **Tsangpo River**. It enters in to India in Arunachal Pradesh and is called the **Dibang River**. It is joined by many other tributaries; the **Dibang, the Lohit, the Kenula to form the main Brahmaputra River** and flows its **longest course through Assam**, enters Bangladesh and finally falls into the Bay of Bengal. The Brahmaputra has the greatest volume of water of all the rivers in India.

The origin of Brahmaputra River is in southwestern Tibet as the Yarlung River. The river takes birth at the Mansarovar of the Himalayas, flows through Tibet, China, Burma, India and joins with River Ganges in Bangladesh.



Called the Tsangpo in Tibet, it flows past the towns of Xigatse and Tsedang and then climbs north. It curves around a majestic mountain called the Namche Barwa, shortly before entering India.

Along the Brahmaputra are a thousand chars or river islands. Several nomads live on them who wander from one island to another.



Finally, passing through Bangladesh, it becomes the Padma river and enters the Bay of Bengal in the Sundarbans along with the Ganges.

► Ganga River System

Ganga (Ganges) River system is the largest river system in India. It originates in the Gangotri glaciers. The upstream Bhagirathi joins the other stream named Alaknanda at Devprayag to form River Ganga. Ganga has tributaries on both banks; its right bank tributaries are the Yamuna (which is a major river), and Son. While Gomti, Ghaghara, Gandak, Kosi. are some left bank tributaries. Ganges flows through Indian states of Uttarakhand, Uttar Pradesh, Bihar and West Bengal. It finally reaches the Bay of Bengal.

Ganga is born in the Gangotri glacier at the foothills of the Himalayas (14000 ft) high up in the Himalaya Mountains of Uttaranchal. Gaumukh is the giant ice-cave from where the Ganga originates



The first town she reaches on leaving the mountains is Rishikesh. At this point she is wider and slower. She becomes a 'real' river, no more the turbulent stream that flows through canyons and ravines

Her main flow is through the Gangetic plain: the vast flat land that stretches from the north to south to the state of Uttar Pradesh and from its West all the way to the Eastern state of West Bengal. She is a source of water for agriculture, passing through famous towns such as Varanasi.



Finally, past Kolkata in the east, the Ganges reaches the ocean – creating one of the world largest river deltas and home to the beautiful Sundarban forests.

► Indus River System

The reference of Indus River or Sindhu River is found in the early Hindu Scriptures and mythological texts.. It is known as 'Puranik River'. The river originates in Tibet near Mansarovar Lake. Flowing westwards, it enters India in Jammu and Kashmir, further flows through Himachal Pradesh, Punjab and enters Pakistan. Flowing further westwards, it reaches the Arabian Sea near Karachi. Indus is the largest river in Pakistan and is the country's national river. Its tributaries in India are Zaskar, Nubra and Shyok, and Hunza in Pakistan. Sutlej, Ravi, Beas, Chenab and Jhelum are its other tributaries after which the state of Punjab is named.

► Mahanadi

The Mahanadi is a major river in East-central India. It originates in the Sihava mountains of Chhattisgarh and flows its major course through the state of Orissa (Odisha). This river deposits more silt than any other river in the Indian subcontinent. Mahanadi flows through cities Sambalpur, Cuttack and Bhubaneswar.

▶ Godavari

The Godavari River covers the second longest course in India after the Ganga. The river originates at Triambakeshwar in Maharashtra, and together with its tributaries (Pravara, Indravati, Maner Sabri etc,) flows through the states of Maharashtra, Chhattisgarh, Madhya Pradesh, Orissa (Odisha), Telangana, Andhra Pradesh, Karnataka and Puducherry, to finally flow in to the Bay of Bengal. Thanks to its long course, the river is described as Dakshina Ganga.

► Krishna River

The Krishna is the third longest river in India with a length of about 1300 kms. Originating from Maharashtra's Mahabaleshwar region it flows through Karnataka, Telangana, and Andhra Pradesh to finally pour into the Bay of Bengal.

► Kaveri River

The Kaveri (Cauvery) is a major river in Southern India and originates in Kogadu, Karnataka in the form of a spring at Brahmagiri Hill at Talakaveri. Also known as the Ganges of the South, it is one of the holiest rivers in South India. Kaveri River widens as many tributaries such as Hemavati, Moyari, Shimsha, Arkavati, Honnuhole, Kabini, Bhavani, Noyill and Amaravati join it. The river flows about 800 kilometers across the three states, Karnataka, Kerala and Tamilnadu, slightly touching Puducherry and drains into the Bay of Bengal.

► Yamuna River System

The Yamuna is a major river system in Northern India. The river rises from Yamnotri and flows through Uttrakhand, Uttar Pradesh and Haryana. It passes through Delhi, Mathura, Agra and meets the rivers Chambal, Betwa and Ken to finally join the Ganga at Allahabad.. Major tributaries of Yamuna are Tons, Chambal, Hindon, Betwa and Ken.

The Narmada is born in a small tank called "Narmada Kund" on the Amarkantak Hill in Eastern Madhya Pradesh.



Tiger, Kanha National Park

The Kanha National Park lies close to the Narmada in the Maikal Plateau. Unusual species of birds and animals are found here. This is a protected area and was declared a Tiger Reserve in 1974.

The Sardar Sarovar project is part of a plan to take Narmada's waters to states further away where there is little rainfall and not much water for people and crops.



But the dangers if this plan materializes are many: Earthquakes and flood caused by this man made structure threaten the area around it. In response to these concerns, that the Narmada Bachao Andolan movement grew to try and answer questions like (i) Are big dams more dangerous than useful? (ii) Are there other ways of collecting water for drinking, irrigation and electricity? (iii) Will those who lose their homes be given land somewhere else?

