

# List of important cities on river (India)

The following is a list of the cities in India through which major rivers flow.

S.No.	City	River	State
1	Gangakhed	Godavari	Maharashtra
2	Agra	Yamuna	Uttar Pradesh
3	Ahmedabad	Sabarmati	Gujarat
4	Allahabad	At the confluence of Ganga, Yamuna and Saraswati	Uttar Pradesh
5	Ayodhya	Sarayu	Uttar Pradesh
6	Badrinath	Alaknanda	Uttarakhand
7	Banki	Mahanadi	Odisha
8	Cuttack	Mahanadi	Odisha
9	Baranagar	Ganges	West Bengal
10	Brahmapur	Rushikulya	Odisha
11	Chhatrapur	Rushikulya	Odisha
12	Bhagalpur	Ganges	Bihar
13	Kolkata	Hooghly	West Bengal
14	Cuttack	Mahanadi	Odisha
15	New Delhi	Yamuna	Delhi
16	Dibrugarh	Brahmaputra	Assam
17	Deesa	Banas	Gujarat
18	Ferozpur	Sutlej	Punjab
19	Guwahati	Brahmaputra	Assam
20	Haridwar	Ganges	Uttarakhand
21	Hyderabad	Musi	Telangana
22	Jabalpur	Narmada	Madhya Pradesh
23	Kanpur	Ganges	Uttar Pradesh
24	Kota	Chambal	Rajasthan
25	Jammu	Tawi	Jammu & Kashmir
26	Jaunpur	Gomti	Uttar Pradesh
27	Patna	Ganges	Bihar
28	Rajahmundry	Godavari	Andhra Pradesh
29	Srinagar	Jhelum	Jammu & Kashmir
30	Surat	Tapi	Gujarat
31	Varanasi	Ganges	Uttar Pradesh
32	Vijayawada	Krishna	Andhra Pradesh
33	Vadodara	Vishwamitri	Gujarat

S.No.	City	River	State
34	Mathura	Yamuna	Uttar Pradesh
35	Modasa	Mazum	Gujarat
36	Mirzapur	Ganga	Uttar Pradesh
37	Morbi	Machchu	Gujarat
38	Auraiya	Yamuna	Uttar Pradesh
39	Etawah	Yamuna	Uttar Pradesh
40	Bangalore	Vrishabhavathi	Karnataka
41	Farrukhabad	Ganges	Uttar Pradesh
42	Rangpo	Teesta	Sikkim
43	Rajkot	Aji	Gujarat
44	Gaya	Falgu (Neeranjana)	Bihar
45	Fatehgarh	Ganges	Uttar Pradesh
46	Kannauj	Ganges	Uttar Pradesh
47	Mangalore	Netravati, Gurupura	Karnataka
48	Shimoga	Tunga River	Karnataka
49	Bhadravathi	Bhadra	Karnataka
50	Hospet	Tungabhadra	Karnataka
51	Karwar	Kali	Karnataka
52	Bagalkot	Ghataprabha	Karnataka
53	Honnavar	Sharavathi	Karnataka
54	Himmatnagar	Hathmati	Gujarat
55	Gwalior	Chambal	Madhya Pradesh
56	Gorakhpur	Rapti	Uttar Pradesh
57	Lucknow	Gomti	Uttar Pradesh
58	Kanpur Cantonment	Ganges	Uttar Pradesh
59	Shuklaganj	Ganges	Uttar Pradesh
60	Chakeri	Ganges	Uttar Pradesh
61	Malegaon	Girna River	Maharashtra
62	Sambalpur	Mahanadi	Odisha
63	Rourkela	Brahmani	Odisha
64	Patan	Saraswati	Gujarat
65	Pune	Mula, Mutha	Maharashtra
66	Valsad	Auranga	Gujarat
67	Madurai	Vaigai	Tamil Nadu
68	Thiruchirapalli	Kaveri	Tamil Nadu
69	Chennai	Cooum, Adyar	Tamil Nadu
70	Coimbatore	Noyyal	Tamil Nadu

S.No.	City	River	State
71	Erode	Kaveri	Tamil Nadu
72	Tirunelveli	Thamirabarani	Tamil Nadu
73	Bharuch	Narmada	Gujarat
74	Karjat	Ulhas	Maharashtra
75	Nashik	Godavari	Maharashtra
76	Mahad	Savitri	Maharashtra
77	Nanded	Godavari	Maharashtra
78	Navsari	Purna	Gujarat
79	Kolhapur	Panchaganga	Maharashtra
80	Nellore	Pennar	Andhra Pradesh
81	Kurnool	Tungabhadra	Andhra Pradesh
82	Karimnagar	Manair	Telangana
83	Ramagundam	Godavari	Telangana
84	Sangli	Krishna	Maharashtra
85	Karad	Krishna, Koyna	Maharashtra
86	Hajipur	Ganges	Bihar
87	Ujjain	Shipra	Madhya Pradesh <sup>[1]</sup>
88	Ashta	Parwati <sup>[2]</sup>	Madhya Pradesh
89	Kanchipuram	Vegavathi, Palar	Tamil Nadu
90	Thanjavur	Vennaaru, Vadavaaru	Tamil Nadu
91	Murshidabad	Hooghly	West Bengal
92	Munger	Ganges	Bihar
93	Jamalpur	Ganges	Bihar
94	Purnia	Koshi	Bihar
95	Golegaon	Godavari	Maharashtra
96	Budaun	Sot	Uttar Pradesh
97	Amaravati	Krishna	Andhra Pradesh

## **Godavari River**

**State** Maharashtra, Chhattisgarh, Telangana, Andhra Pradesh, Odisha

**Region** West India and South India

### **Source**

- location Brahmagiri Mountain, Tryambakeshwar, Nashik, Maharashtra, India
- coordinates 19°55′48″N 73°31′39″E
- elevation 920 m (3,020 ft)

### **Mouth** Bay of Bengal

- location Antarvedi, East Godavari, Andhra Pradesh, India
- coordinates 17°0′N 81°48′E
- elevation 0 m (0 ft)

**Length** 1,465 km (910 mi)

**Basin size** 312,812 km<sup>2</sup> (120,777 sq mi)

The **Godavari** is India's second longest river after the Ganga. Its source is in Triambakeshwar, Maharashtra. It flows east for 1,465 kilometres (910 mi), draining the states of Maharashtra (48.6%), Telangana (18.8%), Andhra Pradesh (4.5%), Chhattisgarh (10.9%), Odisha (5.7%), ultimately emptying into the Bay of Bengal through its extensive network of tributaries.[4] Measuring up to 312,812 km<sup>2</sup> (120,777 sq mi), it forms one of the largest river basins in the Indian subcontinent, with only the Ganga and Indus rivers having a larger drainage basin. In terms of length, catchment area and discharge, the Godavari is the largest in peninsular India, and had been dubbed as the **Vridha Ganga**.

The river has been revered in Hindu scriptures for many millennia and continues to harbour and nourish a rich cultural heritage. In the past few decades, the river has been barricaded by a number of barrages and dams, keeping a head of water (depth) which lowers evaporation. Its broad river delta houses 729 persons/km<sup>2</sup> – nearly twice the Indian average population density and has substantial risk of flooding, which in lower parts would be exacerbated if the global sea level were to rise.

## **Yamuna**

**Source** Saptrishi kund

- location Banderpooch peaks, Uttarkashi district, Uttarakhand, India
- coordinates 31°01′0.12″N 78°27′0″E
- elevation 3,293 m (10,804 ft)

**Mouth** Triveni sangam

**Length** 1,376 km (855 mi)

**Basin size** 366,223 km<sup>2</sup> (141,399 sq mi)

**Cities** Yamuna Nagar, Delhi, Faridabad, Mathura, Agra, Etawah, Prayagraj

The **Yamuna**, also known as the **Jumna** or **Jamna**, is the second largest tributary river of the Ganges (Ganga) and the longest tributary in India. Originating from the Yamunotri Glacier at a height of 6,387 metres (20,955 ft) on the southwestern slopes of Banderpooch peaks of the Lower Himalaya in Uttarakhand, it travels a total length of 1,376 kilometres (855 mi) and has a drainage system of 366,223 square kilometres (141,399 sq mi), 40.2% of the entire Ganges Basin. It merges with the Ganges at Triveni Sangam, Prayagraj, which is a site of the Kumbh Mela, a Hindu festival held every 12 years.

It crosses several states: Haryana and Uttar Pradesh, passing by Uttarakhand and later Delhi, and meeting its tributaries on the way, including Tons, Chambal, its longest tributary which has its own large basin, followed by Sindh, the Betwa, and Ken. From Uttarakhand, the river flows into the state of Himachal Pradesh. After passing Paonta Sahib, Yamuna flows along the boundary of Haryana and Uttar Pradesh and after exiting Haryana it continues to flow till it merges with the river Ganga (Ganges) at Sangam or Prayag in Allahbad (Uttar Pradesh). It helps create the highly fertile alluvial Yamuna- Ganges Doab region between itself and the Ganges in the Indo-Gangetic plain. Nearly 57 million people depend on the Yamuna's waters. With an annual flow of about 10,000 cubic billion metres (cbm; 8.1 billion acre-ft)

and usage of 4,400 cbm (of which irrigation constitutes 96 percent), the river accounts for more than 70 percent of Delhi's water supply. Like the Ganges, the Yamuna is highly venerated in Hinduism she is the daughter of the Sun Deva, Surya, and the sister of Yama, the Deva of Death, hence also known as Yami. According to popular legends, bathing in its sacred waters frees one from the torments of death.

At the Hathni Kund Barrage, its waters are diverted into two large canals: the Western Yamuna Canal flowing towards Haryana and the Eastern Yamuna Canal towards Uttar Pradesh. Beyond that point the Yamuna is joined only by the Somb, a seasonal rivulet from Haryana, and by the highly polluted Hindon River near Noida, so that it continues only as a trickling sewage-bearing drain before joining the Chambal at Pachnada in the Etawah District of Uttar Pradesh. The water of Yamuna is of "reasonably good quality" through its length from Yamunotri in the Himalayas to Wazirabad barrage in Delhi, about 375 kilometres (233 mi); below this, the discharge of wastewater through 15 drains between Wazirabad barrage and Okhla barrage renders the river severely polluted.

One official described the river as a "sewage drain" with biochemical oxygen demand (BOD) values ranging from 14 to 28 mg/l and high coliform content.<sup>[5]</sup> There are three main sources of pollution in the river: household and municipal disposal sites, soil erosion resulting from deforestation occurring to make way for agriculture, and resulting chemical wash-off from fertilizers, herbicides, and pesticides and runoff from commercial activity and industrial sites. The Yamuna from its origin at Yamunotri to Okhla barrage is called the Upper Yamuna.

## **Sabarmati River**

**Cities** Ahmedabad, Gandhinagar

### **Source**

- location Aravalli Range, Udaipur District, Rajasthan, India
- elevation 782 m (2,566 ft)

### **Mouth**

- location Gulf of Khambhat, Gujarat, India

**Length** 371 km (231 mi)[1]

**Basin size** 30,680 km<sup>2</sup> (11,850 sq mi)

The **Sabarmati river** is one of the major west-flowing rivers in India.[3] It originates in the Aravalli Range of the Udaipur District of Rajasthan and meets the Gulf of Khambhat of Arabian Sea after travelling 371 km (231 mi) in a southwesterly direction across Rajasthan and Gujarat. 48 km (30 mi) of the river length is in Rajasthan, while 323 km (201 mi) is in Gujarat.

The catchment area of the Sabarmati basin is 21,674 km<sup>2</sup> (8,368 sq mi) out of which 4,124 km<sup>2</sup> (1,592 sq mi) lies in Rajasthan State and the remaining 18,550 km<sup>2</sup> (7,160 sq mi) in Gujarat.[4] The basin is located in a semi-arid zone with rainfall ranging from 450 to 800 mm (18 to 31 in) in different parts of the basin.[5] The river traverses three geomorphic zones: rocky uplands, middle alluvial plains, and lower estuarine zone.

The major tributaries are the Watrak, Wakal, Hathmati, Harnav, and Sei rivers. Average annual water availability in the Sabarmati basin is 308 m<sup>3</sup> (10,900 cu ft) per capita, which is significantly lower than the national average of 1,545 m<sup>3</sup> (54,600 cu ft) per capita.[8] The Sabarmati is a seasonal river whose flows are dominated by the monsoon, with little or no flows post-monsoon.[5] An average flow of 33 m<sup>3</sup> (1,200 cu ft) per second was measured at Ahmedabad during the period 1968-1979. Over the past century, the flood of August 1973 is considered to be the largest flood, when a flow of 14,150 m<sup>3</sup> (500,000 cu ft) per second was measured at Dharoi.

# The River Ganges

**Source** Gangotri Glacier

- location Uttarakhand, India
- coordinates 30°59'N 78°55'E
- elevation 4,356 m (14,291 ft)

**Country** India, Bangladesh (as Padma)

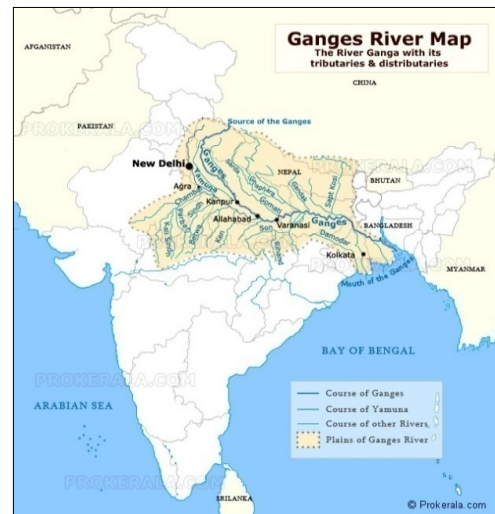
**Mouth** Bay of Bengal

- location Ganges Delta

**Length** 2,601 km (1,616 mi)

**Basin size** 1,320,000 km<sup>2</sup> (510,000 sq mi)

**Cities** Rishikesh, Haridwar, Bijnor, Farrukhabad, Kannauj, Bithoor, Kanpur, Jajmau, Prayagraj, Varanasi, Patna, Hajipur, Katihar, Murshidabad, Plassey, Nabadwip, Kolkata, Baranagar, Rajshahi, Dhaka, Chandpur, Chittagong



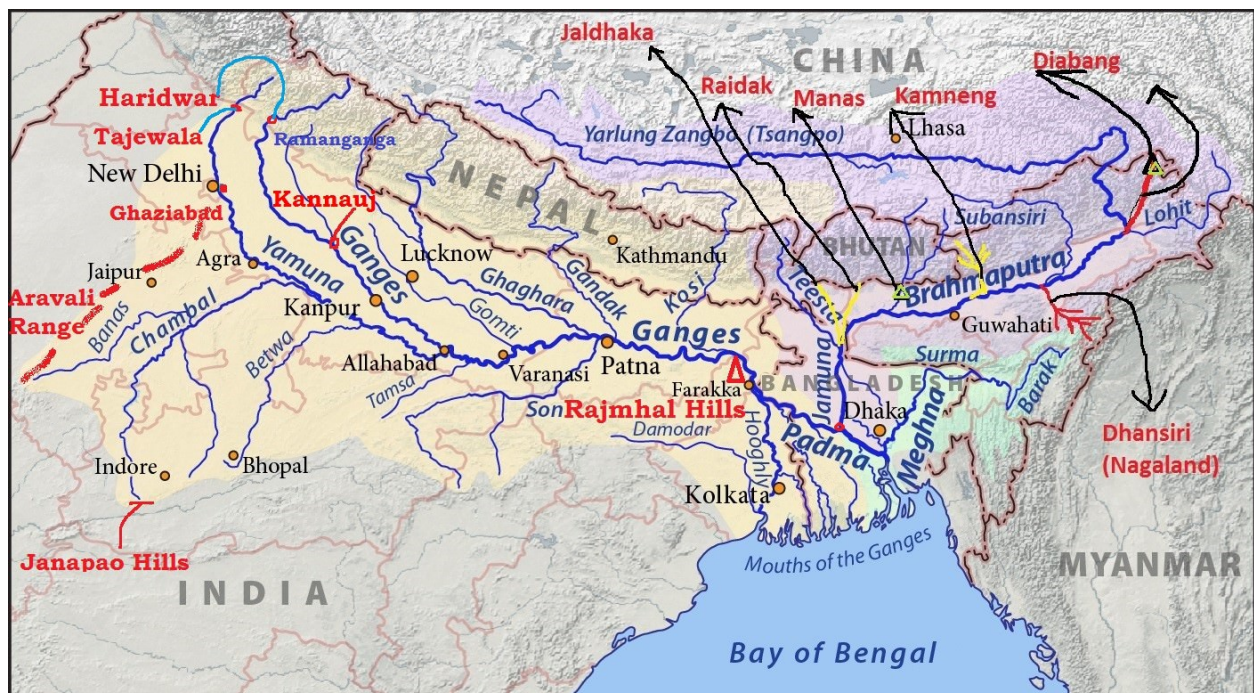
The **Ganges** or **Ganga** is a trans-boundary river of Asia which flows through India and Bangladesh. The 2,601 km (1,616 mi) river originates from the Gangotri Glacier of western Himalayas in the Indian state of Uttarakhand, and flows south and east through the Gangetic Plain of India and Bangladesh, eventually emptying into the Bay of Bengal.

The Ganges is a lifeline to millions who live along its course. It is a sacred river and worshipped as the goddess *Ganga* in Hinduism. It has been important historically; many former provincial or imperial capitals (such as Patliputra, Kannauj, Kara, Kashi, Allahabad, Murshidabad, Munger, Baharampur, Kampilya and Kolkata) have been located on its banks.

The Ganges is threatened by severe pollution. This poses a danger not only to humans but also to animals; the Ganges is home to approximately 140 species of fish and 90 species of amphibians. The river also contains reptiles and mammals, including critically endangered species such as the Gharial and South Asian river



dolphin. The levels of fecal coliform bacteria from human waste in the river near Varanasi are more than a hundred times the Indian government's official limit. The Ganga Action Plan, an environmental initiative to clean up the river, has been considered a failure which is variously attributed to corruption, a lack of will in the government, poor technical expertise, environmental planning[d] and a lack of support from the native religious authorities.



## Course

The upper phase of the river Ganges begins at the confluence of the Bhagirathi and Alaknanda rivers in the town of Devprayag in the Garhwal division of the Indian state of Uttarakhand. The Bhagirathi is considered to be the source in Hindu culture and mythology, although the Alaknanda is longer, and therefore, hydro-logically the source stream[11][12]. The headwaters of the Alaknanda are formed by snow melt from peaks such as Nanda Devi, Trisul, and Kamet. The Bhagirathi rises at the foot of Gangotri Glacier, at Gomukh, at an elevation of 3,892 m (12,769 ft) and being mythologically referred to as residing in the matted locks of Shiva; symbolically Tapovan, which is a meadow of ethereal beauty at the feet of Mount Shivling, just 5 km (3.1 mi) away.

Although many small streams comprise the headwaters of the Ganges; the six longest and their five confluences are considered sacred. The six headstreams are the Alaknanda, Dhauliganga, Nandakini, Pindar, Mandakini and Bhagirathi. Their confluences, known as the Panch Prayag, are all along the Alaknanda. They are, in downstream order, Vishnuprayag, where the Dhauliganga joins the Alaknanda; Nandprayag, where the Nandakini joins; Karnaprayag, where the Pindar joins; Rudraprayag, where the Mandakini joins; and finally, Devprayag, where the Bhagirathi joins the After flowing for 256.90 km (159.63 mi) [14] through its narrow Himalayan valley, the Ganges emerges from the mountains at Rishikesh, then debouches onto the Gangetic Plain at the pilgrimage town of Haridwar.[11] At Haridwar, a dam diverts

some of its waters into the Ganges Canal, which irrigates the *Doab* region of Uttar Pradesh, whereas the river, whose course has been roughly southwest until this point, now begins to flow southeast through the plains of northern India.

The Ganges river follows an 900 km (560 mi) arching course passing through the cities of Kannauj, Farukhabad, and Kanpur. Along the way it is joined by the Ramganga, which contributes an average annual flow of about 500 m<sup>3</sup>/s (18,000 cu ft/s) to the river.[15] The Ganges joins the river Yamuna at the Triveni Sangam at Allahabad, a confluence considered holy in Hinduism. At their confluence the Yamuna is larger than the Ganges, contributing about 2,950 m<sup>3</sup>/s (104,000 cu ft/s),[15] or about 58.5% of the combined flow.

Now flowing east, the river meets the Tamsa River (also called *Tons*), which flows north from the Kaimur Range and contributes an average flow of about 190 m<sup>3</sup>/s (6,700 cu ft/s). After the Tamsa, the Gomti River joins, flowing south from the Himalayas. The Gomti contributes an average annual flow of about 234 m<sup>3</sup>/s (8,300 cu ft/s). Then the Ghaghara River (Karnali River), also flowing south from the Himalayas of Nepal, joins. The Ghaghara (Karnali), with its average annual flow of about 2,990 m<sup>3</sup>/s (106,000 cu ft/s), is the largest tributary of the Ganges. After the Ghaghara confluence, the Ganges is joined from the south by the Son River, which contributes about 1,000 m<sup>3</sup>/s (35,000 cu ft/s). The Gandaki River, then the Kosi River, join from the north flowing from Nepal, contributing about 1,654 m<sup>3</sup>/s (58,400 cu ft/s) and 2,166 m<sup>3</sup>/s (76,500 cu ft/s) respectively. The Kosi is the third

largest tributary of the Ganges, after Ghaghara (Karnali) and Yamuna.[15] The Kosi merges into the Ganges near Kursela in Bihar.

Along the way between Prayagraj and Malda, West Bengal, the Ganges river passes the towns of Chunar, Mirzapur, Varanasi, Ghazipur, Patna, Chapra, Hajipur, Munger, Sahibganj, Rajmahal, Bhagalpur, Ballia, Buxar, Simaria, Sultanganj, and Farakka. At Bhagalpur, the river begins to flow south-southeast and at Farakka, it begins its attrition with the branching away of its first distributary, the Bhāgirathi-Hooghly, which goes on to become the Hooghly River. Just before the border with Bangladesh the Farakka Barrage controls the flow of Ganges, diverting some of the water into a feeder canal linked to the Hooghly for the purpose of keeping it relatively silt-free. The Hooghly River is formed by the confluence of the Bhagirathi River and Ajay River at Katwa, and Hooghly has a number of tributaries of its own. The largest is the Damodar River, which is 676 km (420 mi) long, with a drainage basin of 25,820 km<sup>2</sup> (9,970 sq mi).[17] The Hooghly River empties into the Bay of Bengal near Sagar Island.[18] Between Malda and the Bay of Bengal, the Hooghly river passes the towns and cities of Murshidabad, Nabadwip, Kolkata and Howrah.

After entering Bangladesh, the main branch of the Ganges river is known as the Padma. The Padma is joined by the Jamuna River, the largest distributary of the Brahmaputra. Further downstream, the Padma joins the Meghna River, the second largest distributary of the Brahmaputra, and takes on the Meghna's name as it enters the Meghna Estuary, which empties into the Bay of Bengal. Here it forms the 1,430 by 3,000 km (890 by 1,860 mi) Bengal Fan, the world's largest submarine fan,[19] which alone accounts for 10–20% of the global burial of organic carbon.

The Ganges Delta, formed mainly by the large, sediment-laden flows of the Ganges and Brahmaputra rivers, is the world's largest delta, at about 64,000 km<sup>2</sup> (25,000 sq mi).[21] It stretches 400 km (250 mi) along the Bay of Bengal.[

Only the Amazon and Congo rivers have a greater average discharge than the combined flow of the Ganges, the Brahmaputra, and the Surma-Meghna river system.[22] In full flood only the Amazon is larger.

## Geology

The Indian subcontinent lies atop the Indian tectonic plate, a minor plate within the Indo-Australian Plate.<sup>[24]</sup> Its defining geological processes commenced seventy-five million years ago, when, as a part of the southern supercontinent Gondwana, it began a northeastwards drift—lasting fifty million years —across the then unformed Indian Ocean.<sup>[24]</sup> The subcontinent's subsequent collision with the Eurasian Plate and subduction under it, gave rise to the Himalayas, the planet's highest mountain ranges.<sup>[24]</sup> In the former seabed immediately south of the emerging Himalayas, plate movement created a vast trough, which, having gradually been filled with sediment borne by the Indus and its tributaries and the Ganges and its tributaries,<sup>[25]</sup> now forms the Indo-Gangetic Plain.<sup>[26]</sup> The Indo-Gangetic Plain is geologically known as a foredeep or foreland basin.

## Hydrology

Major left-bank tributaries include Gomti River, Ghaghara River, Gandaki river, and Kosi river; major right-bank tributaries include Yamuna river, Son river, Punpun and Damodar. The hydrology of the Ganges River is very complicated, especially in the Ganges Delta region. One result is different ways to determine the river's length, its discharge, and the size of its drainage basin.

The name *Ganges* is used for the river between the confluence of the Bhagirathi and Alaknanda rivers, in the Himalayas, and the first bifurcation of the river, near the Farakka Barrage and the India-Bangladesh Border. The length of the Ganges is frequently said to be slightly over 2,600 km (1,600 mi) long, about 2,601 km (1,616 mi),<sup>[28]</sup> 2,525 km (1,569 mi) or 2,650 km (1,650 mi). In these cases the river's source is usually assumed to be the source of the Bhagirathi River, Gangotri Glacier at Gomukh and its mouth being the mouth of the Meghna River on the Bay of Bengal. Sometimes the source of the Ganges is considered to be at Haridwar, where its Himalayan headwater streams debouch onto the Gangetic Plain.

In some cases, the length of the Ganges is given by its Hooghly River distributary, which is longer than its main outlet via the Meghna River, resulting in a total length of about 2,704 km (1,680 mi), if taken from the source of the Bhagirathi, or 2,321.50

km (1,442.51 mi), if from Haridwar to the Hooghly's mouth. In other cases the length is said to be about 2,304 km (1,432 mi), from the source of the Bhagirathi to the Bangladesh border, where its name changes to *Padma*.

For similar reasons, sources differ over the size of the river's drainage basin. The basin covers parts of four countries, India, Nepal, China, and Bangladesh; eleven Indian states, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Punjab, Haryana, Rajasthan, West Bengal, and the Union Territory of Delhi.<sup>[34]</sup> The Gangesbasin, including the delta but not the Brahmaputra or Meghna

basins, is about 1,080,000 km<sup>2</sup> (420,000 sq mi), of which 861,000 km<sup>2</sup> (332,000 sq mi) is in India (about 80%), 140,000 km<sup>2</sup> (54,000 sq mi) in Nepal (13%), 46,000 km<sup>2</sup> (18,000 sq mi) in Bangladesh (4%), and 33,000 km<sup>2</sup> (13,000 sq mi) in China (3%). Sometimes the Ganges and Brahmaputra–Meghna drainage basins are combined for a total of about 1,600,000 km<sup>2</sup> (620,000 sq mi) or 1,621,000 km<sup>2</sup> (626,000 sq mi). The combined Ganges-Brahmaputra- Meghna basin (abbreviated GBM or GMB) drainage basin is spread across Bangladesh, Bhutan, India, Nepal, and China.

The Ganges basin ranges from the Himalaya and the Transhimalaya in the north, to the northern slopes of the Vindhya range in the south, from the eastern slopes of the Aravalli in the west to the Chota Nagpur plateau and the Sunderbans delta in the east. A significant portion of the discharge from the Ganges comes from the Himalayan mountain system. Within the Himalaya, the Ganges basin spreads almost 1,200 km from the Yamuna-Satluj divide along the Simla ridge forming the boundary with the Indus basin in the west to the Singalila Ridge along the Nepal-Sikkim border forming the boundary with the Brahmaputra basin in the east. This section of the Himalaya contains 9 of the 14 highest peaks in the world over 8,000m in height, including Mount Everest which is the high point of the Ganges basin. The other peaks over 8,000m in the basin are Kangchenjunga, Lhotse, Makalu, Cho Oyu, Dhaulagiri, Manaslu, Annapurna and Shishapangma. The Himalayan portion of the basin includes the south-eastern portion of the state of Himachal Pradesh, the entire state of Uttarakhand, the entire country of Nepal and the extreme north-western portion of the state of West Bengal.

The discharge of the Ganges also differs by source. Frequently, discharge is described for the mouth of the Meghna River, thus combining the Ganges with the Brahmaputra and Meghna. This results in a total average annual discharge of about 38,000 m<sup>3</sup>/s (1,300,000 cu ft/s), or 42,470 m<sup>3</sup>/s (1,500,000 cu ft/s). In other cases the average annual discharges of the Ganges, Brahmaputra, and Meghna are given separately, at about 16,650 m<sup>3</sup>/s (588,000 cu ft/s) for the Ganges, about 19,820 m<sup>3</sup>/s (700,000 cu ft/s) for the Brahmaputra, and about 5,100 m<sup>3</sup>/s (180,000 cu ft/s) for the Meghna.

The maximum peak discharge of the Ganges, as recorded at Hardinge Bridge in Bangladesh, exceeded 70,000 m<sup>3</sup>/s (2,500,000 cu ft/s). The minimum recorded at the same place was about 180 m<sup>3</sup>/s (6,400 cu ft/s), in 1997.

The hydrologic cycle in the Ganges basin is governed by the Southwest Monsoon. About 84% of the total rainfall occurs in the monsoon from June to September. Consequently, streamflow in the Ganges is highly seasonal. The average dry season to monsoon discharge ratio is about 1:6, as measured at Hardinge Bridge. This strong seasonal variation underlies many problems of land and water resource development in the region. The seasonality of flow is so acute it can cause both drought and floods. Bangladesh, in particular, frequently experiences drought during the dry season and regularly suffers extreme floods during the monsoon.

In the Ganges Delta many large rivers come together, both merging and bifurcating in a complicated network of channels. The two largest rivers, the Ganges and Brahmaputra, both split into distributary channels, the largest of which merge with other large rivers before themselves joining the Bay of Bengal. But this current channel pattern was not always the case. Over time the rivers in Ganges Delta have often changed course, sometimes altering the network of channels in significant ways.

Before the late 12th century the Bhagirathi-Hooghly distributary was the main channel of the Ganges and the Padma was only a minor spill-channel. The main flow of the river reached the sea not via the modern Hooghly River but rather by the Adi

Ganga. Between the 12th and 16th centuries the Bhagirathi-Hooghly and Padma channels were more or less equally significant. After the 16th century the Padma grew to become the main channel of the Ganges. It is thought that the Bhagirathi-Hooghly became increasingly choked with silt, causing the main flow of the Ganges to shift to the southeast and the Padma River. By the end of the 18th century the Padma had become the main distributary of the Ganges. One result of this shift to the Padma was that the Ganges now joined the Meghna and Brahmaputra rivers before emptying into the Bay of Bengal. The present confluence of the Ganges and Meghna was formed very recently, about 150 years ago.

Also near the end of the 18th century, the course of the lower Brahmaputra changed dramatically, significantly altering its relationship with the Ganges. In 1787 there was a great flood on the Teesta River, which at the time was a tributary of the Ganges-Padma River. The flood of 1787 caused the Teesta to undergo a sudden change course, an avulsion, shifting east to join the Brahmaputra and causing the Brahmaputra to shift its course south, cutting a new channel. This new main channel of the Brahmaputra is called the Jamuna River. It flows south to join the Ganges-Padma. During ancient times, the main flow of the Brahmaputra was more easterly, passing by the city of Mymensingh and joining the Meghna River. Today this channel is a small distributary but retains the name Brahmaputra, sometimes Old Brahmaputra. The site of the old Brahmaputra-Meghna confluence, in the locality of Langalbandh, is still considered sacred by Hindus. Near the confluence is a major early historic site called Wari-Bateshwar.

In the rainy season of 1809, the lower channel of the Bhagirathi, leading to Kolkata, had been entirely shut; but in the following year it opened again and was nearly of the same size with the upper channel but both however suffered a considerable diminution, owing probably to the new communication opened below the Jalanggi on the upper channel.

## History

The Late Harappan period, about 1900–1300 BCE, saw the spread of Harappan settlement eastward from the Indus River basin to the Ganges-Yamuna doab,

although none crossed the Ganges to settle its eastern bank. The disintegration of the Harappan civilisation, in the early 2nd millennium BC, marks the point when the centre of Indian civilisation shifted from the Indus basin to the Ganges basin.<sup>[51]</sup> There may be links between the Late Harappan settlement of the Ganges basin and the archaeological culture known as "Cemetery H" and the Indo-Aryan people of the Vedic period.

This river is the longest and the most sacred in India. But during the early Vedic Period and in the *Rigveda*, the Indus and the Sarasvati River were given more spiritual importance, not the Ganges. But also, it is important to know that the later three Vedas gave much more importance to the Ganges, showing the change in cultural and religious

views due to the events of that time. The Gangetic Plain became the centre of successive powerful states; from the Maurya Empire to the Mughal Empire.

The first European traveller to mention the Ganges was the Greek envoy Megasthenes (ca. 350–290 BCE). He did so several times in his work *Indica*: "India, again, possesses many rivers both large and navigable, which, having their sources in the mountains which stretch along the northern frontier, traverse the level country, and not a few of these, after uniting with each other, fall into the river called the Ganges. Now this river, which at its source is 30 stadia broad, flows from north to south, and empties its waters into the ocean forming the eastern boundary of the Gangaridai, a nation which possesses a vast force of the largest-sized elephants." (Diodorus II.37).

In 1951 a water sharing dispute arose between India and East Pakistan (now Bangladesh), after India declared its intention to build the Farakka Barrage. The original purpose of the barrage, which was completed in 1975, was to divert up to 1,100 m<sup>3</sup>/s (39,000 cu ft/s) of water from the Ganges to the Bhagirathi-Hooghly distributary in order to restore navigability at the Port of Kolkata. It was assumed that during the worst dry season the Ganges flow would be around 1,400 to 1,600 m<sup>3</sup>/s (49,000 to 57,000 cu ft/s), thus leaving 280 to 420 m<sup>3</sup>/s (9,900 to 14,800 cu ft/s) for the then East Pakistan. East Pakistan objected and a protracted dispute ensued. In 1996 a 30-year treaty was signed with Bangladesh. The terms of the



agreement are complicated, but in essence they state that if the Ganges flow at Farakka was less than 2,000 m<sup>3</sup>/s (71,000 cu ft/s) then India and Bangladesh would each receive 50% of the water, with each receiving at least 1,000 m<sup>3</sup>/s (35,000 cu ft/s) for alternating ten-day periods. However, within a year the flow at Farakka fell to levels far below the historic average, making it impossible to implement the guaranteed sharing of water. In March 1997, flow of the Ganges in Bangladesh dropped to its lowest ever, 180 m<sup>3</sup>/s (6,400 cu ft/s). Dry season flows returned to normal levels in the years following, but efforts were made to address the problem. One plan is for another barrage to be built in Bangladesh at Pangsha, west of Dhaka. This barrage would help Bangladesh better utilise its share of the waters of the Ganges.

## **Religious and cultural significance**

### **Embodiment of sacredness**

The Ganges is a sacred river to Hindus along every fragment of its length. All along its course, Hindus bathe in its waters, paying homage to their ancestors and to their gods by cupping the water in their hands, lifting it and letting it fall back into the river; they offer flowers and rose petals and float shallow clay dishes filled with oil and lit with wicks (diyas). On the journey back home from the Ganges, they carry small quantities of river water with them for use in rituals; Ganga Jal, literally "the water of the Ganges".

The Ganges is the embodiment of all sacred waters in Hindu mythology. Local rivers are said to be like the Ganges, and are sometimes called the local Ganges. The Godavari River of Maharashtra in Western India is called the Ganges of the South or the 'Dakshin Ganga'; the Godavari is the Ganges that was led by the sage Gautama to flow through Central India. The Ganges is invoked whenever water is used in Hindu ritual, and is therefore present in all sacred waters. In spite of this, nothing is more stirring for a Hindu than a dip in the actual river, which is thought to remit sins, especially at one of the famous tirthas such as Gangotri, Haridwar, Prayag, or Varanasi. The symbolic and religious importance of the Ganges is one of the few things that Hindus, even their skeptics, have agreed upon. Jawaharlal Nehru, a

religious iconoclast himself, asked for a handful of his ashes to be thrown into the Ganges. "The Ganga," he wrote in his will, "is the river of India, beloved of her people, round which are intertwined her racial memories, her hopes and fears, her songs of triumph, her victories and her defeats. She has been a symbol of India's age-long culture and civilization, ever-changing, ever-flowing, and yet ever the same Ganga.

## **Course of Ganga**

Source: <https://nmcg.nic.in/courseofganga.aspx>

- ★ Bhagirathi is the source stream of Ganga. It emanates from Gangotri Glacier at Gaumukh at an elevation of 3,892 m (12,770 feet). Many small streams comprise the headwaters of Ganga. The important among these are Alaknanda, Dhauliganga, Pindar, Mandakini and Bhilangana. At Devprayag, where Alaknanda joins Bhagirathi, the river acquires the name Ganga. It traverses a course of 2525 km before flowing into the Bay of Bengal. It has a large number of tributaries joining it during this journey.
- ★ In Uttarakhand, Tehri dam has been built on Bhagirathi for hydropower generation resulting in regulated additional water discharge during the dry months. At Haridwar, Ganga opens to the Gangetic Plains, where a barrage diverts a large quantity of its waters into the Upper Ganga Canal, to provide water for irrigation. At Bijnore, another barrage diverts water into the Madhya Ganga Canal but only during monsoon months. At Narora, there is further diversion of water into the Lower Ganga Canal.
- ★ Further down, River Ramganga joins Ganga near Kannauj, adding additional water to the river. Yamuna confluences Ganga at the Sangam in Allahabad, making a major contribution to the river flow. Beyond Allahabad, Ganga is joined by several tributaries, most of which are from the north and a few from the south. In the stretch between Allahabad in U.P. and Malda in West Bengal, Ganga, therefore, has considerable flow. The Farakka barrage in West Bengal regulates the flow of the river, diverting some of the water into a feeder canal

linking Hooghly to keep it relatively silt-free. Downstream of this barrage, River Ganga splits, into two, Bhagirathi (Hooghly) on the right and Padma on the left. Bhagirathi (Hooghly) meets the Bay of Bengal about 150 km downstream of Kolkata. Padma enters Bangladesh and meets river Brahmaputra and Meghna before finally joining the Bay of Bengal.



# Sarayu

## Source

- location Himalayas
- elevation 4,150 m (13,620 ft)

## Mouth

- location Tributary of Ganges

**Length** 350 km (220 mi)

**Basin size** Eastern Kumaon – Western Nepal

The Sarayu is a river that flows through the Indian states of Uttarakhand and Uttar Pradesh. The Sarayu river of India forms at the confluence of the Karnali (or Ghaghara) and Mahakali (or Sharda) in Bahraich District. The Mahakali or Sharda forms the western Indo-Nepal border. Ayodhya is situated on the banks of river Sarayu. Some mapmakers consider the Sarayu to be just a section of the lower Ghaghara River.

On Ram Navami, the festival that celebrates the birthday of Lord Rama, thousands of people take a dip in the Sarayu River at Ayodhya.

## Alaknanda River

**Source** Confluence of Satopanth Glacier and Bhagirathi Kharak Glacier

- elevation 3,880 m (12,730 ft)

**2nd**

**source**

Bhagirathi River

**Mouth** Ganges

- location Devprayag, Uttarakhand, India

- elevation 475 m (1,558 ft)

**Length** 195 km (121 mi)

**Basin size** 10,882 km<sup>2</sup> (4,202 sq mi)

The **Alaknanda** is a Himalayan river in the Indian state of Uttarakhand and one of the two headstreams of the Ganges, the major river of Northern India and the holy river of Hinduism. In hydrology, the Alaknanda is considered the source stream of the Ganges on account of its greater length and discharge; however, in Hindu mythology and culture, the other headstream, the Bhagirathi, is considered the source stream.

The Alaknanda is considered to rise at the confluence and foot of the Satopanth and Bhagirath Kharak glaciers in Uttarakhand and meet the Sarasvati River tributary at Mana, India, 21 km from Tibet. Three km below Mana the Alaknanda flows past the Hindu pilgrimage centre of Badrinath.

The origin of Alaknanda River is of special interest to the tourists who visit the important pilgrimages in Uttarakhand. The Ganges as Alaknanda rises in the southern Himalayas on the Indian side of the Tibet border. On the Satopanth Glacier 6 km up from Alaknanda's origin at its snout, the triangular Lake Satopanth is found at a height of 4350 m and it is named after the Hindu trinity Lord Brahma, Lord Vishnu, Lord Shiva.

The five main tributaries joining with Alaknanda in order includes Dhauliganga, Nandakini, Pindar, Mandakini and Bhagirathi all rising in the northern mountainous regions of Uttarakhand. After the last tributary merging at Devprayag the river is known as the Ganges. The Alaknanda contributes a significantly

larger portion to the flow of the Ganges than the Bhagirathi.

The Alaknanda river is among the best for river rafting in the world due to its high rafting grade.

The Alaknanda system drains parts of Chamoli, Tehri, and Pauri districts.

**Badrinath** RishiGanga River meet Alaknanda Badrinath, one of the holy destinations for Hindus in India is located near to the bank of the Alaknanda River. This place is surrounded by two mountain ranges of Nar and Narayan on either sides and Neelkanth peak located at the back of Narayan range.

**Govindgath** :. Laxman Ganga meet Alaknanda

### **Panch Prayag**

Several rivers in the Garhwal region merge with the Alaknanda at places called prayag or 'holy confluence of rivers'. These are:

1. Vishnuprayag, where the Alaknanda is met by the Dhauliganga River
2. Nandaprayag, where it is met by the Nandakini River
3. Karnaprayag, where it is met by the Pindar River
4. Rudraprayag, where it is met by the Mandakini River
5. Devprayag, where it meets the Bhagirathi River and officially becomes the Ganges

# Mahanadi

## Source

- location Sihawa, Dhamtari, Dandakaranya, Chhattisgarh, India
- coordinates 20.11°N 81.91°E
- elevation 890 m (2,920 ft)

## Mouth

- location False Point, Jagatsinghpur, Delta, Odisha, India
- elevation 0 m (0 ft)

**Length** 858 km (533 mi)

**Basin size** 141,600 km<sup>2</sup> (54,700 sq mi)

**Cities** Rajim, Sambalpur, Cuttack, Sonapur, Birmaharajpur, Subalaya, Kantilo, Boudh, Cuttack, Banki

The **Mahanadi** is a major river in East Central India. It drains an area of around 141,600 square kilometres (54,700 sq mi) and has a total course of 858 kilometres (533 mi) Mahanadi is also known for the Hirakud Dam. The river flows through the states of Chhattisgarh and Odisha.

The word Mahanadi is a compound of the Sanskrit words *maha* ("great") and *nadi* ("river"). In different era, this river was known by several names, such as:

Ancient era – Kanaknandini

Dwapar yug – Chitrotpala ( Similar name in matasya Purana)

Treta yug – Nilotpala ( Similar name in vayu Purana)

Mahabharata era – Mahananda

Kalyug – Mahanadi or Mahashweta



# Rushikulya River

## Source

- location Daringbadi, Kandhamal, Odisha, India
- coordinates 19.07°N 84.01°E

## Mouth Puruna Bandha, bay of Bengal

- location Chhatrapur, Ganjam, Odisha, India
- elevation 0 m (0 ft)

## Length 165 km (103 mi)

The **Rushikulya River** is one of the major rivers in the state of Odisha and covers entire catchment area in the districts of Kandhamal and Ganjam of Odisha. The Rushikulya originates at an elevation of about 1000 metres from Daringbadi hills of the Eastern Ghats range. The place from where the river originates, Daringbadi is called the ' Kashmir of Odisha '. The river lies within the geographical coordinates of 19.07 to 20.19 north latitude and 84.01 to 85.06 east longitude. It meets the Bay of Bengal at Puruna Bandha in Ganjam. Its tributaries are the Baghua, the Dhanei, the Badanadi etc. It has no delta as such at its mouth.

## Hooghly River

**Length** 260 kilometres

**Depth**

- maximum 117 m

**Bridges** Vidyasagar Setu (Second Hooghly Bridge) Rabindra Setu (Howrah Bridge) Nivedita Setu Vivekananda Setu (Ballybridge) Sampreeti Bridge Jubilee Bridge Ishwar Gupta Setu Gourango Setu Ramendra Sundar Tribedi Setu Jangipur Bhagirathi Bridge.

The **Hooghly River** (*Hugli*; Anglicized alternatively spelled *Hoogli* or *Hugli*) or the **Bhāgirathi-Hooghly**, originally and in local tongues the 'Ganga', and also called Kati-Ganga, is an approximately 260-kilometre-long (160 mi) distributary of the Ganges River in West Bengal, India. The Ganges splits into the Padma and the Hooghly near Giria, Murshidabad. Today there is a further man-made bifurcation of the river upstream at Farakka. The Padma flows eastward into Bangladesh, whereas the Hooghly flows south through West Bengal. The river flows through the Rarh region, the lower deltaic districts of West Bengal, and eventually into the Bay of Bengal. The upper riparian zone of the river is called Bhagirathi while the lower riparian zone is called Hooghly. Major rivers that drain into the Bhagirathi-Hooghly include Mayurakshi, Jalangi, Ajay, Damodar, Rupnarayan and Haldi rivers other than the Ganges. Kolkata and Hugli-Chinsura, the headquarters of Hooghly (district), are located on the banks of this river.

# Brahmaputra River

**Source** ANGSI Glacier, Manasarovar

- location: **Himalayas**
- coordinates 30°23'N 82°0'E
- elevation 5,210 m (17,090 ft)

**Mouth** Ganges

- location Ganges Delta
- coordinates 25°13'24"N 89°41'41"E
- elevation 0 m (0 ft)

**Length** 3,080.25 km (1,913.98 mi)

**Basin size** 712,035 km<sup>2</sup> (274,918 sq mi)

**City** Guwahati, Dibrugarh, Tezpur, Dhubri

The **Brahmaputra** called **Yarlung Tsangpo** in Tibet, **Siang/Dihang River** in Arunachal Pradesh and **Luit** or **Dilao** in Assam, is a trans-boundary river which flows through China, India and Bangladesh. It is the ninth largest river in the world by discharge, and the 15<sup>th</sup> longest.

With its origin in the Manasarovar Lake region, near the Mount Kailash, located on the northern side of the Himalayas in Burang County of Tibet as the Yarlung Tsangpo River,[1] it flows along southern Tibet to break through the Himalayas in great gorges (including the Yarlung Tsangpo Grand Canyon) and into Arunachal Pradesh (India).[3] It flows southwest through the Assam Valley as Brahmaputra and south through Bangladesh as the Jamuna (not to be mistaken with Yamuna of India).

In the vast Ganges Delta, it merges with the Padma, the popular name of the river Ganges in Bangladesh, and finally, after merging with Padma, it becomes the Meghna and from here, it flows as Meghna river before emptying into the Bay of Bengal.

About 1,913.98 mi (3,080.25 km) long, the Brahmaputra is an important river for irrigation and transportation in the region. The average depth of the river is 38 m (124 ft) and maximum depth is 120 m (380 ft). The river is prone to catastrophic flooding in the Spring when the Himalayan snow melts. The average discharge of the river is about 19,800 m<sup>3</sup>/s (700,000 cu ft/s), and floods can reach over 100,000 m<sup>3</sup>/s (3,500,000 cu ft/s). It is a classic example of a braided river and is highly susceptible to channel migration and avulsion. It is also one of the few rivers in the world that exhibits a tidal bore. It is navigable for most of its length.

The river drains the Himalayan east of the Indo- Nepal border, south-central portion of the Tibetan plateau above the Ganga basin, south-eastern portion of Tibet, the Patkai-Bum hills, the northern slopes of the Meghalaya hills, the Assam plains, and the northern portion of Bangladesh. The basin, especially south of Tibet, is characterized by high levels of rainfall. Kangchenjunga (8,586 m) is the only peak above 8,000 m, hence is the highest point within the Brahmaputra basin.

The Brahmaputra's upper course was long unknown, and its identity with the Yarlung Tsangpo was only established by exploration in 1884–86. This river is often called the Tsangpo-Brahmaputra river.

The lower reaches are sacred to Hindus. While most rivers on the Indian subcontinent have female names, this river has a rare male name. Brahmaputra means "son of Brahma" in Sanskrit (*putra* means "son").

## **Banas River**

**State** Rajasthan

**Cities** Kumbhalgarh in Rajsamand district, Mewar, Chambal near the village of Rameshwar in Sawai Madhopur

**Source** aravalli ranges

- location Kumbhalgarh, Rajsamand district, Rajasthan, India

- coordinates 25°09′09″N 73°35′10″E

**Mouth** Chambal-Banas sangam confluence

- location near the village of Rameshwar, Sawai Madhopur, Rajasthan, India

The **Banas** is a river which lies entirely within the state of Rajasthan in western India. It is a tributary of the Chambal River, itself a tributary of the Yamuna, which in turn merges into the Ganga. The Banas is approximately 512 kilometres in length.

The name "Banaas" literally translates as "forest-hope" (Ban-aas) meaning "Hope-of-the-forest" or 'Van Ki Aasha.' The river originates in the Veron ka Math situated in Khamnor Hills of the Aravalli Range, about 5 km from Kumbhalgarh in Rajsamand district. It flows northeast through the Mewar region of Rajasthan, then across Hadavati before meeting the Chambal near the village of Rameshwar in Sawai Madhopur District.

The Banas drains a basin of 45,833 km<sup>2</sup>, and lies entirely within Rajasthan. It drains the east slope of the central portion of the Aravalli Range, and the basin includes all or part of Ajmer, Bhilwara, Bundi, Chittorgarh, Dausa, Jaipur, Pali, Rajsamand, Sawai Madhopur, Sirohi, Tonk, and Udaipur districts. The cities of Nathdwara, Jahazpur, and Tonk lie on the river. Major tributaries include the right bank tributaries of Berach and Menali and the left bank tributaries of Kothari, Khari, Dai, Dheel River, Sohadara River, Morel and Kalisil.

The Banas is a seasonal river that dries up during the summer, but it is nonetheless used for irrigation. The Bisalpur-Jaipur project (a dam across the Banas at Deoli,

about 40 km from Tonk) was completed by the Government of Rajasthan in 2009 and it provides drinking water from the Banas to Jaipur city.

## Sutlej

**State** Tibet, Himachal Pradesh, Punjab, Bahawalpur district, Punjab

**Source** Langqên Zangbo

- location Tibet
- coordinates 30°50′39″N 81°12′17″E
- elevation 4,575 m (15,010 ft)

**Mouth** Confluence with Chenab to form the Panjnad River

- location Near Khairpur, Bahawalpur district, Punjab, Pakistan
- coordinates 29°23′23″N 71°3′42″E
- elevation 102 m (335 ft)

**Length** 1,500 km (930 mi) approx.

**Basin size** 395,000 km<sup>2</sup> (153,000 sq mi)approx.

The Sutlej River is the longest of the five rivers that flow through the historic crossroads region of Punjab in northern India and Pakistan. The Sutlej River is also known as Satadree. It is the easternmost tributary of the Indus River.

The waters of the Sutlej are allocated to India under the Indus Waters Treaty between India and Pakistan, and are mostly diverted to irrigation canals in India. The mean annual flow is 14 million acre feet (MAF) in the upstream of Ropar barrage

located across the Sutlej River downstream of Bhakra dam. There are several major hydroelectric projects on the Sutlej, including the 1,325 MW Bhakra Dam, the 1,000 MW Karcham Wangtoo Hydroelectric Plant, and the 1,500 MW Nathpa Jhakri Dam. The river basin area in India is located in Himachal Pradesh, Punjab, Jammu and Kashmir and Haryana states.

## Musi River (India)

**Musi River** or Musinuru is a tributary of the Krishna River in the Deccan Plateau flowing through Telangana state in India. Hyderabad stands on the banks of Musi river, which divides the historic old city and the new city. Himayat Sagar and Osman Sagar are dams built on it which used to act as source of water for Hyderabad. The river was known as Nerva during Qutub Shahi period.

The Musi river was the cause of frequent flood devastation of Hyderabad city until the early decades of the 20th century. On Tuesday 28 September 1908, Hyderabad witnessed disastrous floods of the River Musi, flowing through the city. In one day, 17 inches of rainfall was recorded and the water level at Afzalgunj was about 11 feet (3.4 m) high. These floods caused huge devastation to Hyderabad and killed around 15,000 people.

The modern era of the development of the twin cities began soon after these floods in 1908. This necessitated planned, phased development. Abdallah Ahmed Bin Mahfooz submitted his report on 1 October 1909, with recommendations on preventing a recurrence of floods and improving civic amenities. However there are conflicting reports that Sir M. Visvesvaraya was engaged by the erstwhile Nizam to help design the drainage system and prevent floods. Nizam VII constituted a City Improve Trust in 1912. He built a flood control system on the river. A dam was built in 1920 across the river, ten miles (16 km) upstream from the city called Osman Sagar. In 1927 another reservoir was built on Esi (a tributary of Musi) and named Himayat Sagar. These lakes prevented the flooding of the River Musi and are major drinking water sources for Hyderabad city.



## Narmada River

**Source** Narmada Kund

- location vindhyachal parvat Amarkantak Plateau, Anuppur district, Central India, Madhya Pradesh
- coordinates 22°40'0"N 81°45'0"E
- elevation 1,048 m (3,438 ft)

**Mouth** Gulf of Khambhat (Arabian Sea)

- location Bharuch District, Gujarat
- coordinates 21°39'3.77"N 72°48'42.8"E
- elevation 0 m (0 ft)

**Length** 1,312 km (815 mi)approx.

**City** Jabalpur, Dindori, Narsinghpur Harda, Mandhata, Barwani, Omkareshwar, Barwaha, Maheshwar, Mandla, Bharuch, Rajpipla, Sinor (Vadodara District), Dabhoi (Vadodara District), Karjan (Vadodara District), Dharampuri

River Narmada is between Satpuda Mountain range and Vindhyachal Mountain range.

The **Narmada River**, also called the *Rewa* and previously also known as *Nerbudda*, is a river in central India after the Odavari, and the Krishna. It is also known as "Life Line of Madhya Pradesh and Gujarat" for its huge contribution to the state of Madhya Pradesh and Gujarat in many ways. Narmada rises from Amarkantak Plateau near Anuppur district Madhya Pradesh. It forms the traditional boundary between North India and South India and flows westwards over a length of 1,312 km (815.2 mi) before draining through the Gulf of Khambhat into the Arabian Sea, 30 km (18.6 mi) west of Bharuch city of Gujarat.

It is one of only three major rivers in peninsular India that run from east to west (longest west flowing river), along with the Tapi River and the Mahi River. It is one of the rivers in India that flows in a rift valley, flowing west between the Satpura and Vindhya ranges. The other rivers which flow through rift valley include Damodar River in Chota Nagpur Plateau and Tapi. The Tapi River and Mahi River also flow through rift valleys, but between different ranges. It flows through the states of Madhya Pradesh (1,077 km (669.2 mi)), and Maharashtra, (74 km (46.0 mi)), (39 km (24.2 mi)) (actually along the border between Madhya Pradesh and Maharashtra (39 km (24.2 mi)) and then the border between Maharashtra and Gujarat (74 km (46.0 mi)) and in Gujarat (161 km (100.0 mi)).

The *Periplus Maris Erythraei* (c. 80 AD) calls it the Nammadus, and the British Raj called it the Nerbudda or Narbada. *Narmada* is a Sanskrit word meaning "*the Giver of Pleasure*".

## **Chambal River**

**State** Madhya Pradesh, Rajasthan, Uttar Pradesh

**Source** Janapav Hills

- location Vindhya Ranges, Mhow, Madhya Pradesh, India
- coordinates 22°27'N 75°31'E
- elevation 843 m (2,766 ft)

**Mouth** Yamuna River

- location Sahon, Bhind (M.P.) and Jalaun Etawah (U.P.), Madhya Pradesh, India
- coordinates 26°29'20"N 79°15'10"E
- elevation 122 m (400 ft)

**Length** 1,024 km (636 mi)

**Basin size** 143,219 km<sup>2</sup> (55,297 sq mi)

The Chambal River is a tributary of the Yamuna River in central India, and thus forms part of the greater Gangetic drainage system. The river flows north-northeast through Madhya Pradesh, running for a time through Rajasthan, then forming the boundary between Rajasthan and Madhya Pradesh before turning southeast to join the Yamuna in Uttar Pradesh state.

It is a legendary river and finds mention in ancient scriptures. The perennial Chambal originates at Janapav, south of Mhow town, near Manpur Indore, on the south slope of the Vindhya Range in Madhya Pradesh. The Chambal and its tributaries drain the Malwa region of northwestern Madhya Pradesh, while its tributary, the Banas, which rises in the Aravalli Range, drains southeastern Rajasthan. It ends at a confluence of five rivers, including the Chambal, Kwari, Yamuna, Sind, Pahuj, at Pachnada near Bhareilly in Uttar Pradesh state, at the border of Bhind and Etawah districts.

The Chambal River is considered pollution free,[3] and hosts an amazing riverine faunal assemblage including 2 species of crocodilians – the mugger and gharial, 8 species of freshwater turtles, smooth-coated otters, gangetic river dolphins, skimmers, black-bellied terns, sarus cranes and black-necked storks, amongst others.

The 1,024 kilometres (636 mi) long Chambal River originates from the Singar Chouri peak on the northern slopes of the Vindhyan escarpment near Mandav, 67.5 kilometres (41.9 mi) South-West of Mhow in Indore District, Madhya Pradesh state, at an elevation of about 843 metres (2,766 ft). The river flows first in a northerly direction through Madhya Pradesh (M.P.) for about 376 kilometres (234 mi) and then in a generally north-easterly direction for 249 kilometres (155 mi) through Rajasthan. The Chambal flows for another 216 kilometres (134 mi) between M.P. and Rajasthan and a further 150 kilometres (93 mi) between M.P. and Uttar Pradesh (U.P.). It enters U.P. and flows for about 33 kilometres (21 mi) before joining the Yamuna River in Jalaun District at an elevation of 122 metres (400 ft), to form a part of the greater Gangetic drainage system.

## **Tawi River**

Tawi is a river that flows through the city of Jammu. Tawi river is considered sacred and holy, as is the case with most rivers in India.

Tawi river originates from the lap of Kailash Kund glacier and adjoining area southwest of Bhadarwah in Doda district. Its catchment is delineated by latitude 32°35'-33°5'N and longitude 74°35'-75°45'E. The catchment area of the river up to Indian border (Jammu) is 2168 km<sup>2</sup> and falls in the districts of Jammu, Udhampur and a small part of Doda. Elevation in the catchment varies between 400 and 4000 m.

The flow of water in the river has been decreasing in recent years as the source glacier (Kailash Kund glacier) has been retreating.

## Gomti River

**Source** Gomat Taal

- location Middle Ganga Plain
- coordinates 25°30'29"N 83°10'11"E
- elevation 200 m (660 ft)

**Length** 900 km (560 mi)

The **Gomti**, **Gumti** or **Gomati** River is a tributary of the Ganges. According to Hindu history, the river is the daughter of the Hindu sage Vashist; bathing in the Gomti on Ekadashi (the eleventh day of the two lunar phases of the Hindu calendar month) can wash away sins. According to *Bhagavata Purana* one of Hinduism's major religious works, the Gomti is one of India's transcendental rivers.[2] The rare Gomti Chakra is found there.

The Gomti, a monsoon- and groundwater-fed river, originates from Gomat Taal (formally known as Fulhaar jheel) near Madho Tanda, Pilibhit, India. It extends 960 kilometres (600 mi) through Uttar Pradesh and meets the Ganges near Saidpur, Kaithi, 27 kilometres (17 mi) from Varanasi district.

It meets a small river, the Gaihaee, 20 kilometres (12 mi) from its origin. The Gomti is a narrow stream until it reaches Mohammadi Kheri, a tehsil of Lakhimpur Kheri district (about 100 km from its origin), where it is joined by tributaries such as the Sukheta, Choha and Andhra Choha. The river is then well-defined, with the Kathina tributary joining it at Mailani and Sarayan joining it at a village in Sitapur district. A major tributary is the Sai River, which joins the Gomti near Jaunpur. The Markandey Mahadeo temple is at the confluence of the Gomti and the Ganges.

After 240 kilometres (150 mi) the Gomti enters Lucknow, meandering through the city for about 12 kilometres (7 mi) and supplying its water. In the Lucknow area, 25 city drains pour untreated sewage into the river. At the downstream end, the Gomti barrage converts the river into a lake.

In addition to Lucknow, Lakhimpur Kheri, Sultanpur Kerakat and Jaunpur are the most prominent of the 15 towns in the river's catchment basin. The river cuts the Sultanpur district and Jaunpur in half, becoming wider in the city.

## **Tapti River**

**Source** Multai

**Mouth** Gulf of Khambhat (Arabian Sea)

- location Dumas, Surat, Gujarat

**Length** 724 km (450 mi)approx.

**Cities** Multai, Burhanpur, Bhusawal, Surat

The **Tapti River** (or **Tapi**) is a river in central India between the Godavari and Narmada rivers which flows westwards before draining into the Arabian Sea. The river has a length of 724km and flows through the states of Maharashtra, Gujarat and Madhya Pradesh. It flows through Surat, and is crossed by the Magdalla, ONGC Bridge.

On 7 August 1968, before the construction of the Ukai Dam to bring its waters under control and provide hydroelectric power, the Tapti River overflowed its banks during heavy rains during the monsoon season. More than 1,000 people drowned in the flood, and the city of Surat was submerged beneath 10 feet of water for several days. After the floodwaters receded, at least 1,000 more people died in Gujarat state during a cholera epidemic from the contamination of the drinking water

The river is supposedly named after the goddess Tapati, the daughter of Surya, the Sun god and Chhaya. Tapati is the sister of Shani, Bhadra, Yamuna and Yama.



## Krishna River

**State** Maharashtra, Karnataka, Telangana, Andhra Pradesh Source Near Mahabaleshwar, Jor village

- location Satara district, Maharashtra, India
- coordinates 17°59′18.8″N 73°38′16.7″E
- elevation 914 m (2,999 ft)Geographic headwaters

**Mouth** Bay Of Bengal

- location Hamsaladeevi, Krishna district, Andhra Pradesh, India
- coordinates 15°44′10.8″N 80°55′12.1″E
- elevation 0 m (0 ft)

**Length** 1,400 km (870 mi)approx.

**Basin size** 258,948 km<sup>2</sup> (99,980 sq mi)

The Krishna River is the fourth-biggest river in terms of water inflows and river basin area in India, after the Ganga, Godavari and Brahmaputra. The river is almost 1,400 kilometres (870 mi) long. The river is also called Krishnaveni. It is one of the major sources of irrigation for Maharashtra, Karnataka, Telangana and Andhra Pradesh.[3

The Krishna river originates in the Western Ghats near Mahabaleshwar at an elevation of about 1,300 metres (4,300 ft), in the state of Maharashtra in central India. It is one of the longest rivers in India. The Krishna river is around 1,400 kilometres (870 mi) in length (282 kilometres (175 mi) in Maharashtra).

The river's source is at Mahabaleshwar near Jor village in the extreme north of Wai Taluka, Satara District, Maharashtra in the west and empties into the Bay of Bengal at Hamasaladeevi (near Koduru) in Andhra Pradesh, on the east coast. It flows through the state of Karnataka before entering Telangana State. The delta of this river is one of the most fertile regions in India and was the home to ancient

Satavahana and Ikshvaku Sun Dynasty kings. Vijayawada is the largest city on the Krishna.

It causes heavy soil erosion during the monsoon floods. It flows fast and furious, often reaching depths of over 75 feet (23 m). Ironically, there is a saying in Marathi:

"*Santh vaahate Krishnamaai*" (संथ वाहते कृष्णमाई) which means "quiet and slow flows Krishna". This term is used to describe that a person should be as quiet as Krishna. In Karnataka state it also called Krishne In Telugu speaking states of Andhra Pradesh and Telangana, "Krishnaveni" is a common name given to a girl child, referring to the Krishna river.

## **Vishwamitri River**

Originating from Pavagadh in the Panchmahal District of Gujarat, The Vishwamitri River flows mainly through the west of the city of Vadodara. The name of this river is said to have been derived from the name of the great saint Vishwamitra.

Two other tributaries namely Dhadhar and Khanpur merge into it before it amalgamates with the Gulf of Khambhat. Human settlement dating back to 1000 B.C has been found on the bank of river Vishwamitri which ascertains the existence of Stone Age Era. Also in the beginning of the Christian era, a small township was developed on a mound on the banks of this river which later came to be known as Ankotakka (currently known as Akota) while the mound is popular as Dhantekri. The Vishwamitri River was key to the settlement of Vadodara.

This river system is containing three major tributaries: Vishwamitri, Dhadhar and Jambuva. All the three tributaries originate from Pavagadh hills and Jambughoda forests. This river system includes the Sayaji Sarovar on the Vishwamitri River near Ajwa, and the Dev Dam on the Dhadhar Branch. Its flow is from East to West in between two large perennial rivers Mahi and Narmada.[5] The Vishwamitri River banks are home to a lot of places of historical importance like Chhatri, Pratappura Sarovar, Old Bridge, Suspension Bridge, Boat House. Vishwamitri is a home to the mugger or marsh crocodiles which (*Crocodylus palustris*) is one of the threatened reptile species in India and legally protected under Schedule I of the Indian Wildlife (Protection) Act, 1972. In spite of heavy pollution load and large human disturbances the presence of the crocodile in large numbers indicate the unique ecological significance of this river.

## **Kali River (Karnataka)**

**State** Karnataka

**Source** diggi

- location Karnataka, India

**Mouth**

- location Arabian Sea, India

**Length** 184 km (114 mi)

The **Kali River** or **Kali nadi** is a river flowing through Uttara Kannada district of Karnataka state in India.[2] The river rises near Diggi, a small village in Uttar Kannada district. The river is the lifeline to some 4 lakh people in the Uttara

Kannada district and supports the livelihoods of tens of thousands of people including fishermen on the coast of Karwar. There are many dams built across this river for the generation of electricity. One of the important dams build across Kali river is the Supa Dam at Ganeshgudi. The river runs 184 kilometers before joining Arabian Sea.

Significant and picturesque, the Sadashivgad fort is now a popular tourist destination located by the coastal highway Kali river bridge, which has been built above the confluence of the river and the Arabian Sea.

The National Highway NH-17 continues on the Kali Bridge built over Kali River and the road continues to split the Sadashivgad granite rock hill to connect Karnataka to Goa.

In Aug 2019 due to excessive rains in the region it caused flooding and loss of property and animal life due to the floods which took place when a huge amount of water was discharged on the downstream area. Many people lost their houses and moved to rehabilitation services provided by the government.

## Sharavati

**State** Karnataka

**Cities** Sagar, Honnavar

**Source** Ambutheertha

- location Thirthahalli Taluk, Shimoga, Karnataka
- coordinates 13°47'33"N 75°10'35"E
- elevation 730 m (2,400 ft)

**Mouth** Arabian Sea

- location Honnavar, Uttara Kannada, Karnataka
- coordinates 14°17'57"N 74°25'25"E
- elevation 0 ft (0 m)

**Length** 128 km (80 mi)

**Basin size** 2,985 km<sup>2</sup> (1,153 sq mi)

**Sharavati** is a river which originates and flows entirely within the state of Karnataka in India. It is one of the few westward flowing rivers of India and a major part of the river basin lies in the Western Ghats. The famous Jog Falls, located about 24 km from Sagara, are formed by this river. The river itself and the region around it are rich in biodiversity and are home to many rare species of flora and fauna.

The river Sharavati originates at a place called Ambutheertha in the Thirthahalli taluk. According to ancient legend, the god Rama shot at the ground with his Ambu (translates to bow and arrow) because his wife, Sita, was thirsty. When his arrow hit the ground, water poured out (translates to Thirtha) and quenched her thirst. Because the river, according to the legend, originated with this event, the river is called "Sharavati" as "Shara" translates to arrow.

The total length of the river is around 128 km (80 mi) and it joins the Arabian Sea at Honnavar in Uttara Kannada district. On its way, the Sharavati forms the Jog Falls where the river falls from a height of 253 m. The river is dammed at Linganamakki; the portion of the river above the dam is upstream and the remaining is downstream. The major tributaries of the river are Nandihole, Haridravathi, Mavinahole, Hilkunji,

Yennehole, Hurlihole, and Nagodihole. Sharavati river basin falls into two districts of Karnataka namely Uttara Kannada and Shimoga. The upstream river basin is extended to two taluks i e Hosanagar and Sagar. The entire basin has an area of 2,985.66 km<sup>2</sup> (1,153 sq mi). with upstream being 1,988.99 km<sup>2</sup> (768 sq mi). and the downstream being 996.67 km<sup>2</sup> (385 sq mi).

## Kaveri

**State** Karnataka, Tamil Nadu

**Source** Talakaveri, Kodagu, Western Ghats, Karnataka

- location Karnataka, India
- coordinates 12°23'N 75°29'E
- elevation 1,341 m (4,400 ft)

**Mouth** Bay of Bengal

- location Poompuhar, Tamil Nadu, India
- coordinates 11°21'40"N 79°49'46"E
- elevation 0 m (0 ft)

**Length** 805 km (500 mi)

**Basin size** 81,155 km<sup>2</sup> (31,334 sq mi)

**Kaveri** (also known as **Cauvery**, the anglicized name), is an Indian river flowing through the states of Karnataka and Tamil Nadu. The Kaveri river rises at Talakaveri on the Brahmagiri range in the Western Ghats, Kodagu district of the state of Karnataka, at an elevation of 1341m above mean sea level and flows for about 800 km before its outfall into the Bay of Bengal. It is the third largest river – after Godavari and Krishna – in South India and the largest in the State of Tamil Nadu which, on its course, bisects the state into North and South. The Kaveri is sacred river to the people of South India and is worshipped as the Goddess Kaveramma. The Kaveri is also one of the seven holy rivers of India.

The catchment area of Kaveri basin is estimated to be 81,155 square kilometres (31,334 sq mi) with many tributaries including Harangi, Hemavati, Kabini, Bhavani, Lakshmana Tirtha, Noyyal and Arkavati. The river basin covers three states and a Union Territory as follows: Tamil Nadu, 43,868 square kilometres (16,938 sq mi); Karnataka, 34,273 square kilometres (13,233 sq mi); Kerala, 2,866 square kilometres (1,107 sq mi), and Puducherry, 148 square kilometres (57 sq mi). Rising in Talakaveri in Kodagu, Karnataka, it flows southeast some 800 kilometres (500 mi) to enter the Bay of Bengal. In Chamarajanagar district it forms the island of Shivanasamudra, on

either side of which are the scenic Shivanasamudra Falls that descend about 100 metres (330 ft). The river is the source for an extensive irrigation system and for hydroelectric power. The river has supported irrigated agriculture for centuries and served as the lifeblood of the ancient kingdoms and modern cities of South India. Access to the river's waters has pitted Indian states against each other for decades. It was profusely described in the Tamil Sangam literature and is held in great reverence in Hinduism.



## Panchganga River

**State** Maharashtra

**Cities** Kolhapur, Ichalkaranji, Kurundvad

**Source** Prayag Sangam

- location Chikhli, India
- coordinates 16°44′4″N 74°10′33″E

**Mouth** Narsobawadi

- location Narsobawadi, India
- coordinates 16°31′22″N 74°36′3″E

**Length** 80.7 km (50.1 mi)

The **Panchganga River** is one of the important rivers of India located in Maharashtra. In English, the name translates as "Five Rivers". It is a major tributary of Krishna River, with which it joins at Narsobawadi.

The Panchganga River flows through the borders of Kolhapur. It starts from Prayag Sangam (Village: Chikhli, Taluka: Karr, Dist:Kolhapur). The Panchganga is formed, as has been noted already, by four streams, the Kasari, the Kumbhi, the Tulsi and the Bhogawati. Local tradition believes in an underground stream Saraswati which together with the other four streams make the Panchganga.

The Prayag Sangam confluence marks the beginning of the Panchganga river proper which after receiving the waters of the four tributaries continues in a larger pattern with the flow of waters received from the rivers. From North of Kolhapur it has a wide alluvial plain. After developing this plain the river resumes its course eastwards.

## Koshi River

**State** Shigatse Prefecture, Province No. 1, Bihar

**Cities** Supaul (Bhaptiyahi), Purnia, Katihar

**Source** Sun Koshi, Arun and Tamor form Saptakoshi

- location Tribenighat, Nepal
- coordinates 26°54′47″N 87°09′25″E

**Mouth** Ganges

- location near Kursela, Bihar, India
- coordinates 25°24′43″N 87°15′32″E

**Length** 729 km (453 mi)

**Basin size** 74,500 km<sup>2</sup> (28,800 sq mi)

The **Koshi** or **Kosi River** drains the northern slopes of the Himalayas in Tibet and the southern slopes in Nepal. From a major confluence of tributaries north of the Chatra Gorge onwards, the Koshi River is also known as **Saptakoshi** (Nepali: सप्तकोशी, *saptakoshī*) for its seven upper tributaries. These include the Tamor River originating from the Kanchenjunga area in the east and Arun River and Sun Koshi from Tibet. The Sun Koshi's tributaries from east to west are Dudh Koshi, Bhote Koshi, Tamakoshi River, Likhu Khola and Indravati. The Saptakoshi crosses into northern Bihar where it branches into distributaries before joining the Ganges near Kursela in Katihar district.

The Koshi is 720 km (450 mi) long and drains an area of about 74,500 km<sup>2</sup> (28,800 sq mi) in Tibet, Nepal and Bihar. In the past, several authors proposed that the river has shifted its course for more than 133 km (83 mi) from east to west during the last 200 years. But a review of 28 historical maps dating 1760 to 1960 revealed a slight eastward shift for a long duration, and that the shifting was random and oscillating in nature.

The river basin is surrounded by ridges which separate it from the Yarlung Tsangpo River in the north, the Gandaki in the west and the Mahananda in the east. The river is joined by major tributaries in the Mahabharat Range approximately 48 km (30 mi)

north of the Indo-Nepal border. Below the Siwaliks, the river has built up a megafan some 15,000 km<sup>2</sup> (5,800 sq mi) in extent, breaking into more than 12 distinct channels, all with shifting courses due to flooding. Kamalā, Bāgmati (Kareh) and Budhi Gandak are major tributaries of Koshi in India, besides minor tributaries such as Bhutahi Balān.

Its unstable nature has been attributed to the heavy silt it carries during the monsoon season and flooding in India has extreme effects. Fishing is an important enterprise on the river but fishing resources are being depleted and youth are leaving for other areas of work.