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Session 9

FISH AND FISHERIES OF HIMALAYAN RIVERINE SYSTEMS IN INDIA

INTRODUCTION

- The main Himalayan river system includes

Ganga

Brahmaputra and

Indus river systems

- The Himalayan rivers form large basins. Many rivers pass through the Himalayas. In plains, they form large meanders, and a variety of **depositional features like floodplains, river cliffs and levees.**
- These rivers are **perennial** as they get water from the **rainfall** as well as the **melting of ice.**

THE GANGA RIVER SYSTEM

- The Ganga river system is the **largest river system in India**. This system alone harbours not less than 265 species of fish. It consists of two rivers namely, the **Ganga** and **Yamuna** and their tributaries.
- The total combined length of the Gangetic river system is 12,500 km. Its total catchment area is 97.6 million ha (9.71 lakh km²). It is one among the largest river systems in the world.
- Its water comprises the **icy cold Himalayan streams** and the **warm, biologically more productive waters of the North Indian plains**.

- This system drains the southern slopes of the central Himalayas and covers the states of Haryana, Uttar pradesh, Bihar, West Bengal and parts of Rajasthan and Madhya pradesh.
- This system harbours the richest freshwater fish fauna of India, ranging from Mahseers and the torrential fishes of hills to the cultivable Gangetic carps, *Hilsa* and other species.

The Ganga

- **Ganga is the longest river of India.** The total length of the Ganga river from its source to its mouth (measured along the Hooghli) is 2525 km of which 1450 km is in the Uttar Pradesh, 445 km in Bihar and 520 km in West Bengal. The remaining 110 km stretch of the Ganga forms the boundary between Uttar Pradesh and Bihar.
- **The Ganga originates as Bhagirathi from the Gangotri glacier in Uttar Kashi District (Uttarkhand)** in the Himalayas about 3129 m above m.s.l. It is joined by the Alaknanda at Devaprayag and the combined flow of the Bhagirathi and the Alaknanda is known as Ganga.



CHINA

Yarlung Zangbo (Tsangpo)

Lhasa

New Delhi

NEPAL

Kathmandu

BHUTAN

Subansiri

Lohit

Jaipur

Agra

Yamuna

Lucknow

Ghaghara

Gandak

Ganges

Teesta

Brahmaputra

Banas

Chambal

Betwa

Kanpur

Allahabad

Varanasi

Patna

Farakka

BANGLADESH

Dhaka

Surma

Guwahati

Indore

Bhopal

Tamsa

Son

Damodar

Hooghly

Padma

Meghna

Barak

Kolkata

Mouths of the Ganges

INDIA

MYANMAR

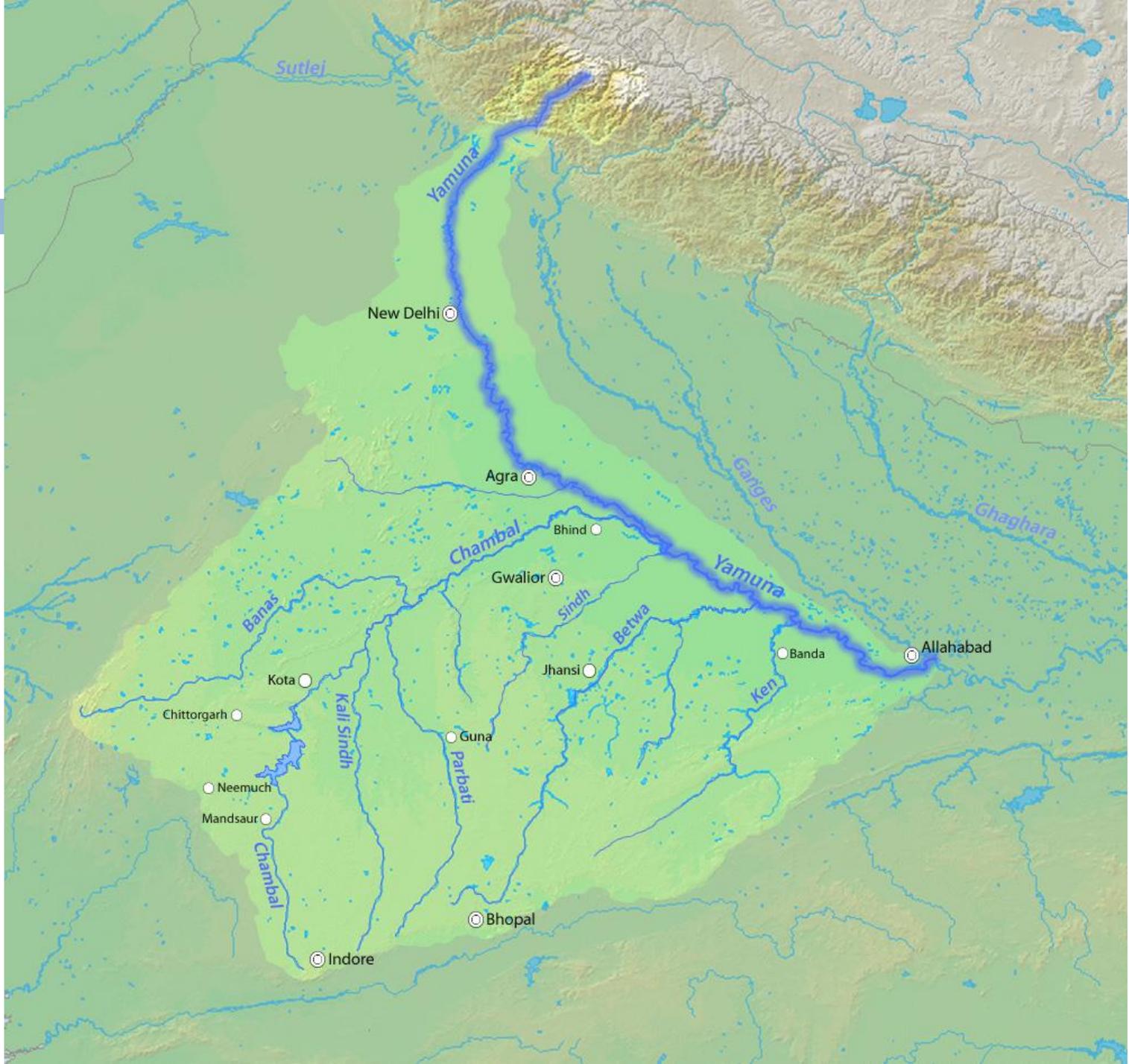
Bay of Bengal

- After traveling 280 km from its source, Ganga enters plains at Haridwar. At Allahabad, about 770 km south-east of Haridwar, Ganga is joined by Yamuna, which is its most important tributary.
- After Farraka in West Bengal, the river ceases to be known as the Ganga. It bifurcates itself into Bhagirathi-Hooghli in West Bengal and **Padma-Meghna in Bangladesh.**
- After traversing 220 km further down in Bangladesh, the Brahmaputra joins it at Goalundo and after meeting Meghna 100 km downstream the Ganga joins the Bay of Bengal.

- Its principal tributaries from the northern drainage are the rivers Ramganga, Gomti and Tons while those from the southern watershed are Chambal, Betwa and Ken (tributaries of the river Yamuna). In Bihar, it receives the very important tributaries like the Ghagra, Gandak, Burhi, Sone, Bagmati and Kosi.

The Yamuna

- The Yamuna is the **largest tributary river of the Ganges in northern India.**
- Originating from the Yamunotri Glacier in Tehri Garwal (Uttar Pradesh) at a height 6,387 m. above m.s.l in the Himalayas, on the south western slopes of Banderpooch peaks, in the Lower Himalayas, it travels a total length of 1,376 kilometers and has a drainage system of 366,223 km².
- Also known as the **Jumna** or **Jamna**, is the second largest tributary river of the Ganges(Ganga) and the longest tributary in India.



- It crosses several states, Uttarakhand, Haryana and Uttar Pradesh, passing by Himachal Pradesh and later Delhi, and meets several of its tributaries on the way, including Tons, its largest and longest tributary, Chambal, which has its own large basin, followed by Sindh, the Betwa, and Ken. It flows through Delhi and joins the Ganga at Allahabad.

Fish and Fisheries of the Ganga river system

- More than 265 species of fishes have been recorded from this river system. The endangered **Ganges River Dolphin** (*Platanista gangetica*) is primarily found in the Ganges and Brahmaputra Rivers and their tributaries in Bangladesh, India and Nepal.
- The head waters of the Ganga system in the upper reaches of the Himalaya have snow trouts, catfishes, mahaseers, lesser barils. Upto an elevation of 1067 m, mahseers, *Tor putitora*, *T. tor* and *Acrossocheilus hexagonolepis*, *Bagarius bagarius* and *Labeo dero* form main food fishes.



Ganges River Dolphin (*Platanista gangetica*)

- In the plains, carps, catfishes (*Osteobangrus aor* and *O. seenghala*, collectively called tengra), *Wallago attu*, *Hilsa ilisha*, *Pangasius*, *Notopterus* etc. constitute the fishery. The prawns, *Macrobrachium malcolmsoni* and *Palaemon lamarrei* are also found.
- The catch statistics over the years indicate some disturbing trends in this riverine fisheries system. The biologically and economically desirable species have started giving way to the low value species, exhibiting an alarming swing in the population structure of the Gangetic carps.

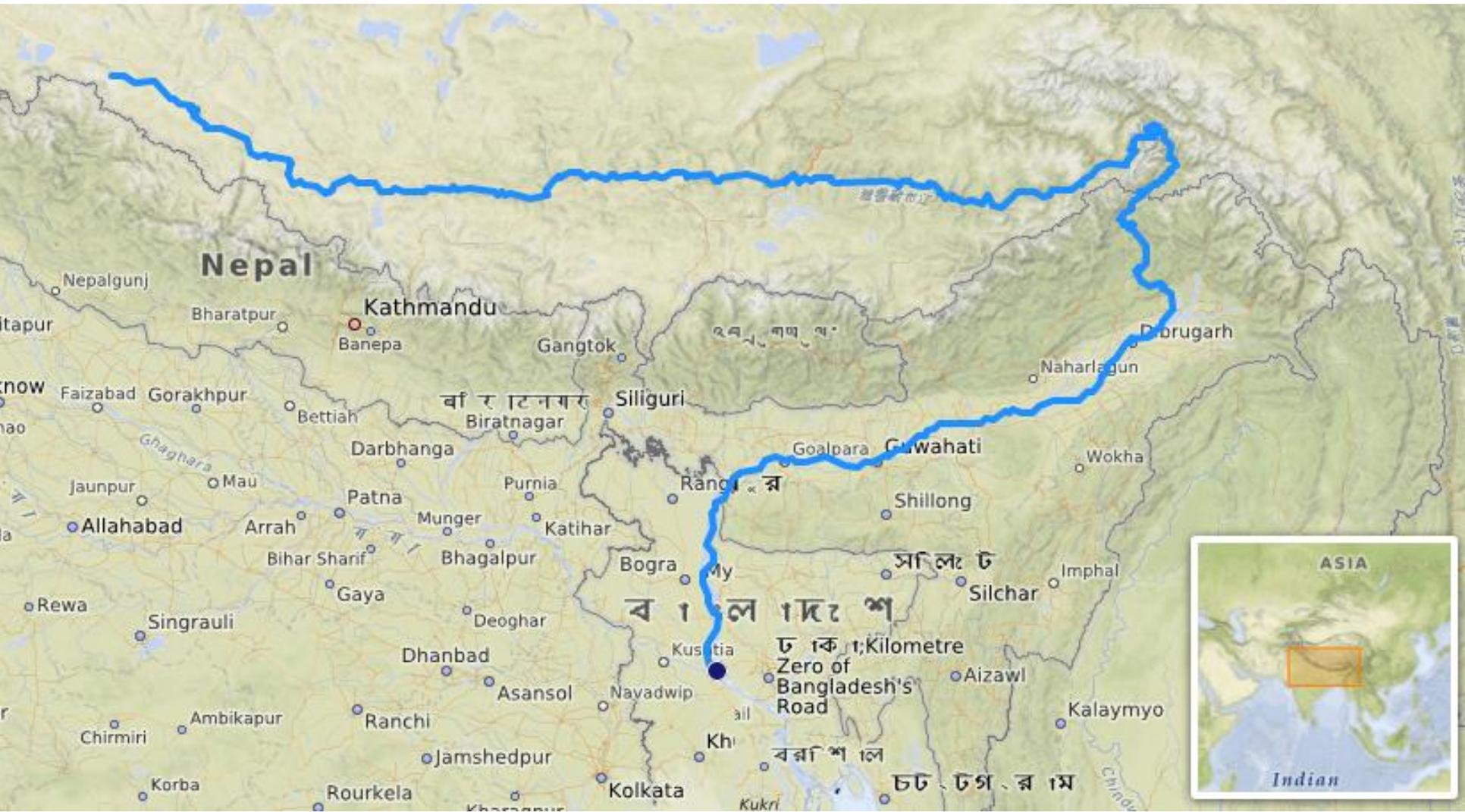
- A survey indicates that contribution of Indian major carps has declined from 44.5% to 8% during the later half of the 20th century. In addition, there is an increasing domination of lower age groups in the commercial catches.
- The fishery of anadromous *Hilsa* have declined by 96% upstream of Farakka after construction of the **Farakka Barrage** in 1974 due to obstruction of the migration route of the fish.

Fishing gears used

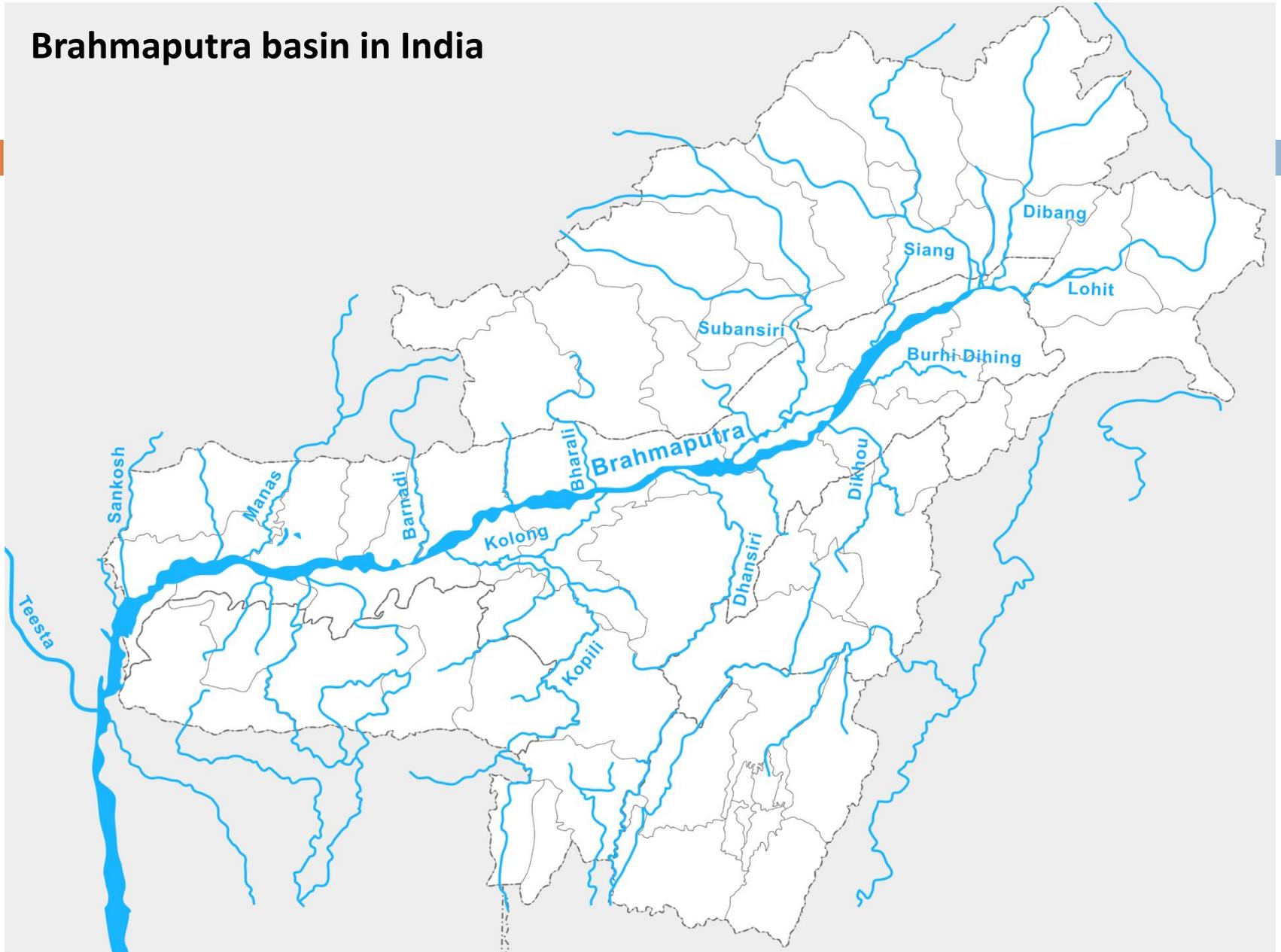
- Fishing gears used in the Gangetic system include **dip net, cast net, purse net, drag net, drift net, trawl net, bag net, long lines, small trap net** etc.

THE BRAHMAPUTRA RIVER SYSTEM

- The combined length of the Brahmaputra riverine system is 4,023 km. It originates from a great glacier near Mansarovar Lake. It is slightly longer than the Indus, but most of its course lies outside India.
- It flows eastward, parallel to the Himalayas. It traverses for its first 1,600 km through Tibet, where it is known as '**Tsangpo**'. There, it receives less volume of water and has less silt. But in India, it passes through a region of heavy rainfall and as such, the river carries a large amount of rainfall and considerable amount of silt.



Brahmaputra basin in India



- After flowing through Tibet, it flows through Arunachal Pradesh, Assam and Bangladesh. Then, it joins the Ganga at Golaundo.
- After confluencing with Ganga, the united rivers flow under the name of Padma reaching the Bay of Bengal through the Great Meghna estuary.
- It has got a large number of tributaries. The Brahmaputra valley is marked for its abandoned river beds, which are subjected to annual inundations. These areas are called, beels.

- It drains the northern slopes of the Central and Eastern Himalayas, Assam, Bhutan, Sikkim and parts of Northwest Bengal.
- The total catchment area of this river in India is 1,87,110 km² (51 million ha). It has a rich fish fauna of torrential streams in its upper reaches (low economic value) and its middle and lower reaches have several species of carps, catfishes and air breathing fishes, anadromous *Hilsa* (high economic value).

Fish and Fisheries of the Brahmaputra river system

- A total of 126 species of fishes belonging to 26 families have been recorded from this system. Of these, 41 species are known to have commercial importance.
- Catfishes (mainly *Wallago attu*) and major (mainly Rohu) and minor carps dominate the commercial catches of upper, middle and lower stretches, while the commercial catch in lower-middle stretch is primarily composed of catfish and miscellaneous catch.

- The species found in the Himalayas include *Tor* spp, *Glyptothorax* spp, *Balitora* spp, *Noemacheilus* spp, *Schizothorax* spp, *Lepidocephalichthys* spp, *Gagata* spp etc. The major fishes present in this system include *Labeo gonius*, *Wallago attu*, *Puntius sarana*, *Notopterus notopeterus*, *N. chitala*, *Mystus seenghala*, *Clupisoma gainia* and *Eutropiichthys vacha*.
- A survey conducted by CIFRI, Barrackpore indicates that there is significant decline in the fishery in many stretches of the river. Mahseers, once plentiful in the upstream stretches of rivers, are already under the threat of extinction.

Fishing gears used

- Dip net, cast net, gill net, purse net, drag net, trawl net, bag net, long lines etc., are the fishing gears commonly employed in the Brahmaputra system.