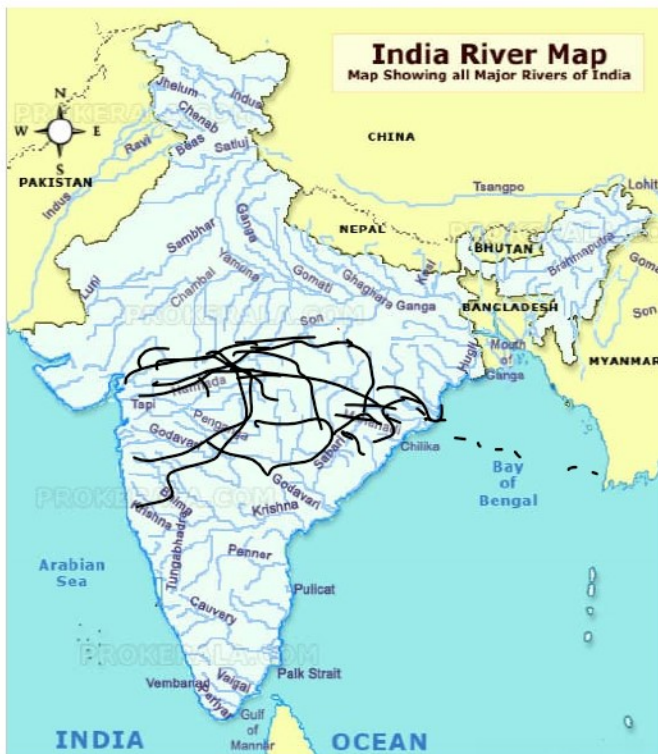




4th April 2023



Mahanadi
part of Central +
Eastern India.



3 major watersheds :-

- 1) The Himalaya and the Karakoram range
- 2) The Chota Nagpur plateau and Vindhya and Satpura ranges.
- 3) The Western Ghats

	Total length	Length in India
<u>Indus</u>	3180 kms.	1114 kms
<u>Brahmaputra</u>	3848 kms	916 kms
<u>Ganga</u>	2510 kms	2510 kms
<u>Yamuna</u>	1376 kms	1376 kms
<u>Narmada</u>	1312 kms	1312 kms
<u>Tapi</u>	724 kms	"
<u>Godavari</u>	1465 kms	"
<u>Krishna</u>	1400 kms	"
<u>Kaveri</u>	805 kms	"
<u>Mahanadi</u>	851 kms	"

The Indus River System

- arises from the northern slopes of the Kailash range in Tibet near Lake Mansarovar.
- Starts from Karachi and flows into the Arabian Sea.
- ^{From} Jammu to Kashmir it enters India.
- Other tributaries in the Kashmir region includes - the Zaskar, the Shyok, the Nubra and the Hunza.
- Flows between the Ladakh range and the Zaskar Range at Leh.
- It crosses the Himalayas through a 5181 m deep gorge near Attock, north of Nanga Parbat.

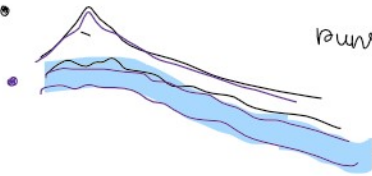


Tributaries

Ravi, Beas, Satlej, Jhelum, Chenab.

The Brahmaputra River System

- originates from the Mansarovar Lake,
- 3848 kms long.
- runs parallel to the Himalayas.



→ takes a U turn when it reaches Namcha Barwa

enters India through Arunachal Pradesh.

↓ known as Dihang River over here.

- Arunachal Pradesh

+
Assam

braid like style in Assam.



• Tsangpo in Tibet.



- It has less volume of water in Tibet
- less silt
- When it enters India, volume increases, hence carries more silt.
- Floods happen in Assam and Bangladesh because of this river.

Ganga River System

- Originates as the Bhagirathi from the Gangotri glacier.
- Before this river reaches Devprayag in the Garhwal Division, the Mandakini, Pindar, the Dhauliganga and the Bishenganga, they all merge into the Alakananda *drain into the Bhagirathi*
- Pindar river rises from East Trishul and Nanda Devi unite with the Alakananda at Karan Prayag. The Mandakini meets at Rudraprayag.
- Water at both Bhagirathi and Alakananda flow in the name of the Ganga at Devprayag.

The concept of Panch Prayag:-

1) Vishnuprayag — Alakananda meets Dhauliganga.

2) Nandprayag — " " " Nandakini

2)	Nandprayag	-	"	"	<u>Nandakini</u>
3)	Karnaprayag	-	"	"	Pindar
4)	Rudraprayag	-	"	"	Mandakini
5)	Devprayag	-	"	"	Bhagirathi

Popular tributaries of Ganga - Yamuna, Damodar,
 Sapta, Kosi, Ram Ganga, Gomti, Ghaghara, Son.....
 meets the Bay of Bengal.



Yamuna River System

- largest tributary of Ganga river.
- originates from the Yamunotri glaciers,
Bandarpunch peak in Uttarakhand.
- Main tributaries of Yamuna include
 - Son
 - Hindon
 - Betwa
 - Ken
 - Chambal
- extends through the states of Delhi, Himachal Pradesh,
 Uttar Pradesh, Haryana, Rajasthan and Madhya Pradesh.

The Narmada River System

- Central India
- Amarkantak Hill in Madhya Pradesh
- Narmada, Tapi, Mahi rivers run from east to west.
- They flow through Madhya Pradesh, Gujarat and Maharashtra.
- Drains into the Arabian Sea in the Bharuch district of Gujarat.

The Tapi River System

- originates in Central India ; Eastern Satpura Range is in Madhya Pradesh.
- west flowing river. Drains the Nimar region, East Vidarbha region and it also flows through Maharashtra's Khandesh

↓
north west part
of the Deccan
plateau.
South
Gujarat

- Drains into the Gulf of Cambay of the


- Drains into the Gulf of Cambay of the Arabian Sea.

The tributaries of Tapi include -

- | | |
|-----------------|------------------|
| 1) Waghur river | 5) Parzara river |
| 2) Aner " | 6) Bori " |
| 3) Girna " | |
| 4) Purna " | |

The Godavari River System

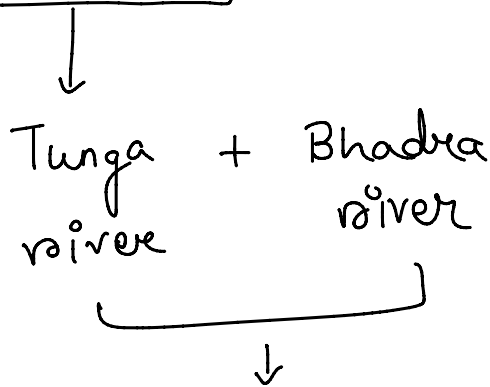
- brownish water. / second longest course among the peninsular rivers.
- Dakshin (south) Ganga
Vaidh (Old) Ganga.
- seasonal river
mostly dry during summers, widens during monsoons.
- originates - from Trimbakeshwar, near Nasik in Maharashtra.
- flows through Madhya Pradesh, Telangana, Andhra Pradesh, Orissa and drains into the Bay of Bengal.

- 
- fertile
delta region at Rajamundry.
 - Pilgrimage sites can be found near this like like Nasik, Bhadrachalam, Trimbak.
 - Tributaries include Pranahita [Combination of Penganga and Warda Rivers), Indravati River, Bindusara, Sabari and Manjira.
 - Asia's largest rail-cum-road bridge is located on this river. Connects Kovvur region and Rajamundry.
-

The Krishna River System

- longest river of South India.
- originated in Mahabaleshwar in Maharashtra.
- flows through Sangli and drains in Bay of Bengal.

- flows through sargol and enters in Bay of Bengal.
- Flows through Maharashtra, Karnataka, Telangana and Andhra Pradesh.
- Tungabhadra is the main tributary



Other tributaries include -

- 1) Koyna
- 2) Bhima
- 3) Mallaprabha
- 4) Dindi
- 5) Ghataprabha
- 6) Warana
- 7) Yerla
- 8) Musi

The Cauvery River System

- originates from Talakaveri in the Western Ghats.
- ↳ pilgrim spot
- + tourist spot
- ↳ Kodagu district - in Karnataka.

flows through

- Western Ghats, Karnataka State and Tamil Nadu. Drains into Bay of Bengal.

- vital for agriculture

- Tributaries -
 - 1) Ankavathy
 - 2) Shimsha
 - 3) Hemavati
 - 4) Kapila
 - 5) Ameravati
 - 6) Lakshmana
 - 7) Kabini
 - 8) Lokapavani
 - 9) Bhavani

107 Noyyal

117 Tirrotha.

Maharadi River System

- originates from the Satpura Range ; Central India.
 - Flows through Maharashtra , Chhattisgarh, Jharkhand and Orissa.
 - Hirakud Dam is built on this river
↓
Largest Dam
-

→ why is Kaveri river drying?

→ • Climate change

→ • Deforestation

• Irrigation

• Agricultural projects.

→ Largest river system of India. | Brahmaputra
Ganga ← - 1000 glaciers | 660 glaciers.
Largest number of glaciers (3500) - Indus basin

Interlinking of Rivers

(1919)

Sir Arthur Cotton.

• 1960

K.L. Rao

↳ proposed to link Ganga
and Cauvery

• 1982 National Water Development Agency
was established by Prime Minister Indira Gandhi

• 2002 - Supreme Court finalized the plan
by 2003 and it came into effect. by 2006.

- 2003 - A task force was formed
 - In 2012 - Again the S. Govt asked the govt. to start the project.
-

- In 2014, Ken-Betwa River Linking Project was approved.
-

Interlinking of Rivers

- For sorting out the problem of drought, for solving the problem of floods.
- For equitable distribution of ^{river} water in India.

National River Linking Project (NRLP)



37 rivers were interlinked

↳ almost 3000 storage dams.

Himalayan Component



Peninsular Component ↳ (16 rivers getting interlinked)

↳ Mahanadi and Godavari



↳ excess water transferred to Krishna, Cauvery, Pennar and Vaigai rivers.

2) Ken to Betwa, Parbati, to Kalisindh rivers
to Chambal rivers

3) Linking of West flowing and east flowing rivers.

Challenges related to Interlinking of Rivers

- 1) Project cost .
 - 2) Engineering capacity .
 - 3) Huge manpower requirement
 - 4) Environmental impact - Altered ecosystem,
 - 5) Inter -state disputes -
 - 6) International disputes .
-