A satellite view of Earth from space, showing the curvature of the planet and the blue oceans. The text is overlaid on this image.

OFFICERS' **Pulse**

PRELIMS ATLAS

National Issues
2019-20

OFFICERS IAS ACADEMY™

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BIOSPHERE RESERVE

- The Indian government has established 18 biosphere reserves in India which protect larger areas of natural habitat than a typical national park or animal sanctuary, and often include one or more national parks or preserves, along with buffer zones that are open to some economic uses.
- Protection is granted not only to the flora and fauna of the protected region, but also to the human communities who inhabit these regions, and their ways of life.

1. Biosphere reserves in India



2. Indian site in World network of biosphere reserve

- In 1968, UNESCO organized the **Biosphere Conference**, which saw the **beginning of the concept of a “Biosphere Reserve”**. This was the first intergovernmental conference examining how to reconcile conservation and use of natural resources, thus foreshadowing the present-day notion of sustainable development.
- **This conference resulted in the launching of the UNESCO “Man and the Biosphere” (MAB) Programme in 1970.**
- One of the original MAB projects consisted in **establishing a coordinated World Network of sites** representing the main ecosystems of the planet in which genetic resources would be protected, and where research on ecosystems as well as monitoring and training work could be carried out. **These sites were named as “Biosphere Reserves”**.
- **Biosphere reserves are areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use.**
- They are **internationally recognized**, nominated by national governments and remain under sovereign jurisdiction of the states where they are located.
- Biosphere reserves serve in some ways as **“living laboratories”** for testing out and demonstrating integrated management of land, water and biodiversity.
- **Collectively, biosphere reserves form a World Network.** Within this network, exchanges of information, experiences and personnel are facilitated.

S. No	Name	States/ UT
1	Nilgiri Biosphere Reserve	Tamil Nadu, Kerala and Karnataka
2	Gulf of Mannar Biosphere Reserve	Tamil Nadu
3	Sundarbans Biosphere Reserve	West Bengal
4	Nanda Devi Biosphere Reserve	Uttarakhand
5	Nokrek Biosphere Reserve	Meghalaya
6	Pachmarhi Biosphere Reserve	Madhya Pradesh
7	Simlipal Biosphere Reserve	Odisha
8	Great Nicobar Biosphere Reserve	Andaman & Nicobar Islands
9	Achanakmar-Amarkantak Biosphere Reserve	Chhattisgarh, Madhya Pradesh
10	Agasthyamalai Biosphere Reserve	Kerala and Tamil Nadu
11	Khangchendzonga National Park	Sikkim

UNESCO HERITAGE SITES

1. Natural Heritage site

Sl. No.	Name of Natural World Heritage Site	State
1	Kaziranga National Park	Assam
2	Keoladeo Ghana National Park	Rajasthan
3	Manas Wildlife Sanctuary	Assam
4	Nanda Devi National Park and Valley of Flowers	Uttarakhand
5	Sunderbans National Park	West Bengal
6	Western Ghats	Maharashtra,
		Goa,
		Karnataka,
		Tamil Nadu and Kerala
7	Great Himalayan National Park	Himachal Pradesh

2. Cultural Heritage site

Sl. No.	Name of Cultural World Heritage Site	State
1	Agra Fort	Uttar Pradesh
2	Ajanta Caves	Maharashtra
3	Buddhist Monuments at Sanchi	Madhya Pradesh
4	Champaner-Pavagadh Archaeological Park	Gujarat
5	Chhatrapati Shivaji Terminus (Formerly Victoria Terminus)	Maharashtra
6	Churches and Convents of Goa	Goa
7	Elephanta Caves	Maharashtra
8	Ellora Caves	Maharashtra
9	Fatehpur Sikri	Uttar Pradesh
10	Great Living Chola Temples	Tamil Nadu
11	Group of Monuments at Hampi	Karnataka
12	Group of Monuments at	Tamil Nadu

	Mahabalipuram	
13	Group of Monuments at Pattadakal	Karnataka
14	Hill Forts of Rajasthan	Rajasthan (Chittorgarh, Kumbhalgarh, Ranthambhore, Amber Sub-Cluster, Jaisalmer, Gagron)
15	Humayun's Tomb, Delhi	Delhi
16	Khajuraho Group of Monuments	Madhya Pradesh
17	Mahabodhi Temple Complex at Bodh Gaya	Bihar
18	Mountain Railways of India	Tamil Nadu
19	QutbMinar and its Monuments, Delhi	Delhi
20	Rani-Ki-Van (the Queen's Stepwell) at Patan, Gujarat	Gujarat
21	Red Fort Complex	Delhi
22	Rock Shelters of Bhimbetka	Madhya Pradesh
23	Sun Temple, Konarak	Orissa
24	Taj Mahal	Uttar Pradesh
25	The JantarMantar, Jaipur	Rajasthan
26	Archaeological Site of NalandaMahavihara (Nalanda University) at Nalanda	Bihar
27	The Architectural Work of Le Corbusier, an Outstanding Contribution to the Modern Movement	Chandigarh
28	Ahmedabad World Heritage city	Gujarat
29	The Victorian and Art Deco Ensemble of Mumbai	Maharashtra
30	Jaipur	Rajasthan

3. Mixed Heritage Site

Sl. No.	Name of Mixed World Heritage Site	State
1	Khangchendzonga National Park	Sikkim



RAMSAR WETLANDS

1. List of Ramsar sites in India

S. NO	Ramsar Sites in India	State
1	Ashtamudi Wetland	Kerala
2	Bhitarkanika Mangroves	Odisha
3	Bhoj Wetlands	Madhya Pradesh
4	Chandra Taal	Himachal Pradesh
5	Chilika Lake	Odisha
6	Deepor Beel	Assam
7	East Kolkata Wetlands	West Bengal
8	Harike Wetlands	Punjab
9	Hokera Wetland	Jammu & Kashmir
10	Kanjli Wetland	Punjab
11	Keoladeo National Park	Rajasthan
12	Kolleru lake	Andhra Pradesh
13	Loktak lake	Manipur
14	Nalsarovar Bird sanctuary	Gujarat
15	Point Calimere Wildlife and Bird Sanctuary	Tamil Nadu
16	Pong Dam lake	Himachal Pradesh
17	Renuka lake	Himachal Pradesh
18	Ropar Wetland	Punjab
19	Rudrasagar Lake	Tripura
20	Sambhar lake	Rajasthan
21	Sasthamkotta lake	Kerala
22	Surinsar- Mansar lakes	Jammu & Kashmir
23	Tsomoriri	Jammu & Kashmir
24	Upper Ganga river	Uttar Pradesh
25	Vembanad Kol Wetland	Kerala

26	Wular lake	Jammu & Kashmir
27	Sunderban Wetland	West Bengal



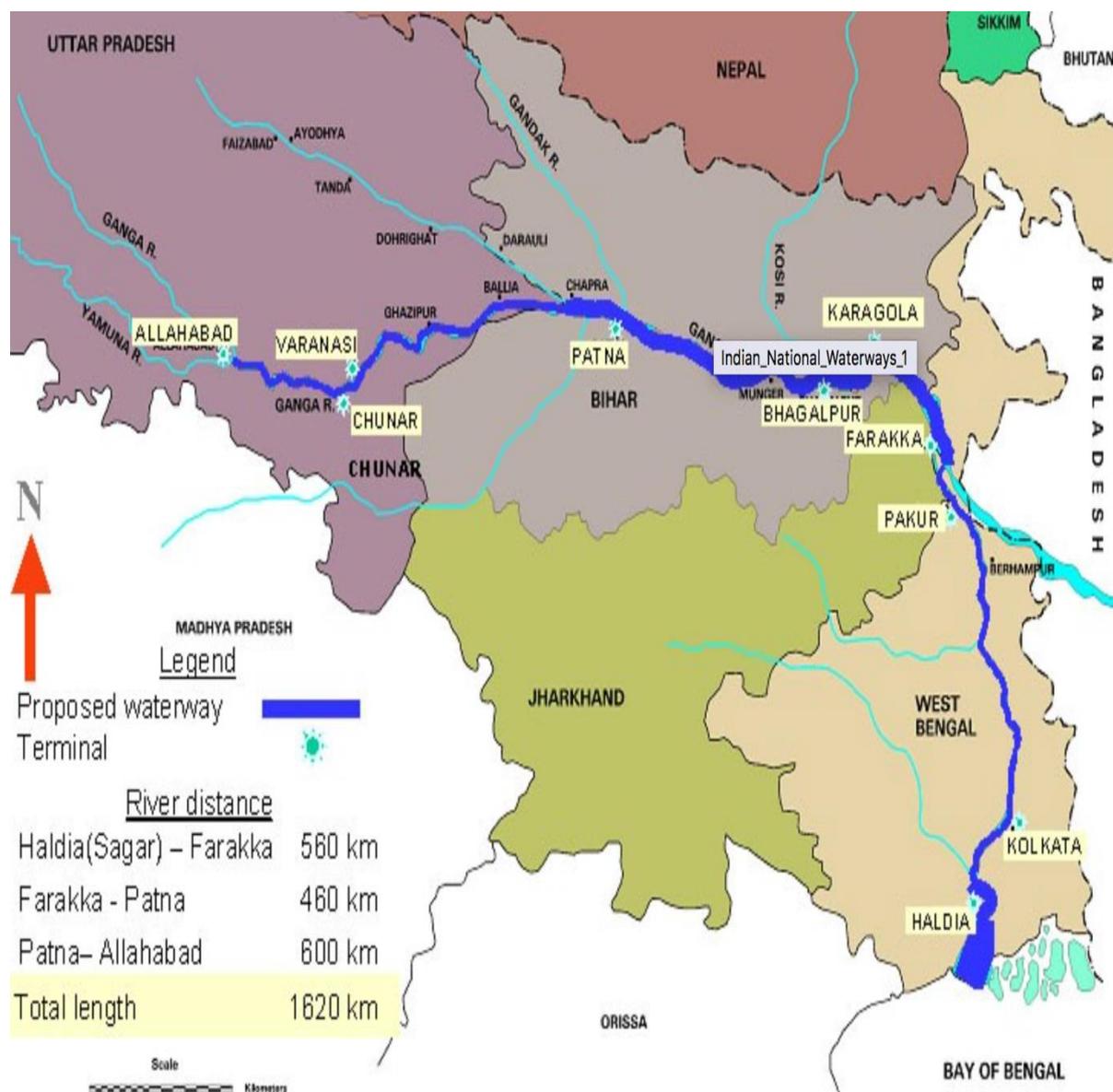
2. New Ramsar sites from India

S. NO	Ramsar Sites in India	State
1	Nawabganj Bird Sanctuary	Uttar Pradesh
2	Parvati Agra Bird Sanctuary	Uttar Pradesh
3	Saman Bird Sanctuary	Uttar Pradesh
4	Samaspur Bird Sanctuary	Uttar Pradesh
5	Sandi Bird Sanctuary	Uttar Pradesh
6	Sarsai Nawar Jheel	Uttar Pradesh
7	Nandur Madhameshwar	Maharashtra
8	Nangal Wildlife Sanctuary	Punjab
9	Keshopur-Miani Community Reserve	Punjab
10	Beas Conservation Reserve	Punjab

NATIONAL WATERWAYS

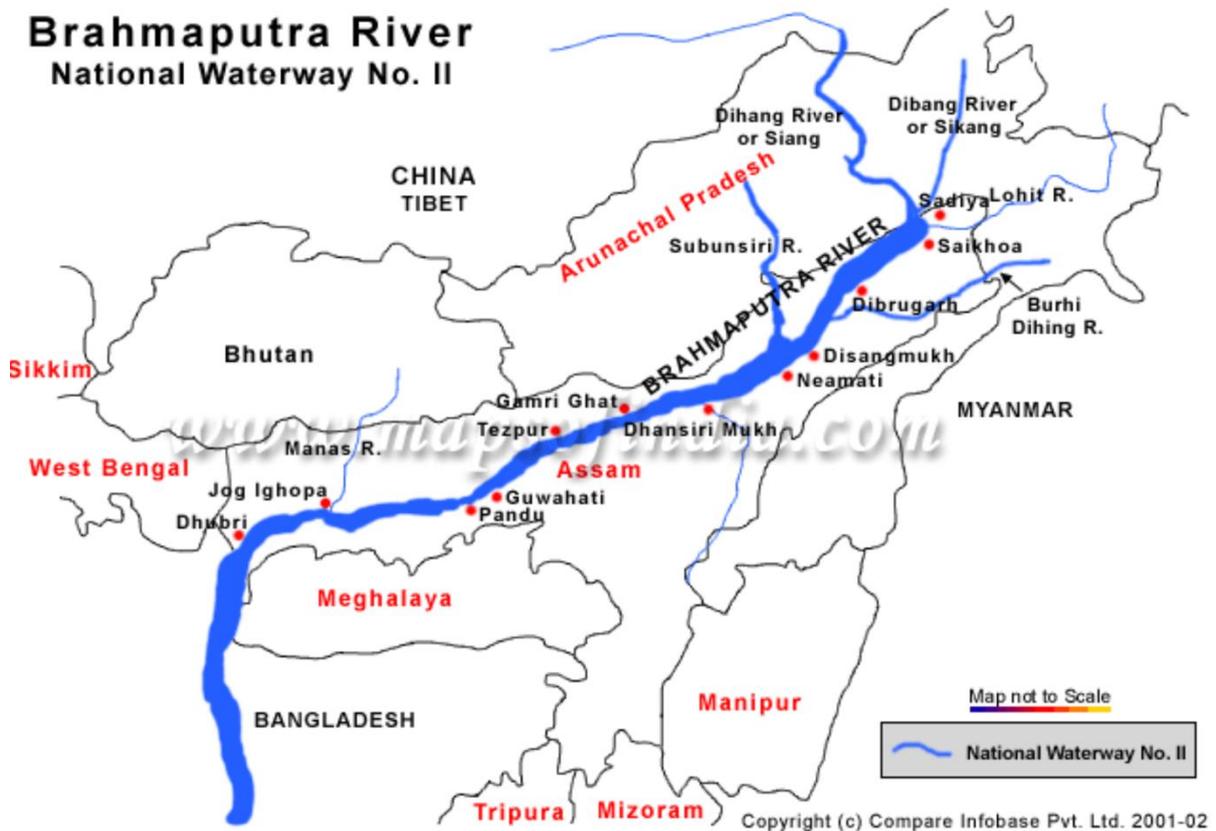
1. National waterway 1

Name	River	States	Length (km)
NW1	Prayagraj-Haldia stretch of the Ganga-Bhagirathi-Hooghly Rivers	UP, Bihar, Jharkhand, West Bengal	1620



2. National waterway 2

Name	River	States	Length (km)
NW2	Sadiya-Dhubri stretch of Brahmaputra River	Assam	891



3. National waterway 3

Name	River	States	Length (km)
NW3	Kollam-Kozhikode stretch of West Coast Canal and Champakara canal and Udyogmandal canal	Kerala	205



National Waterway-3

West Coast Canal
(Kottapuram – Kollam)
Champakkara & Udyogamandal canals

River distance

Kottapuram - Kollam	168 km
Udyogamandal canal	23 km
Champakkara canal	14 km
Total length	205 km

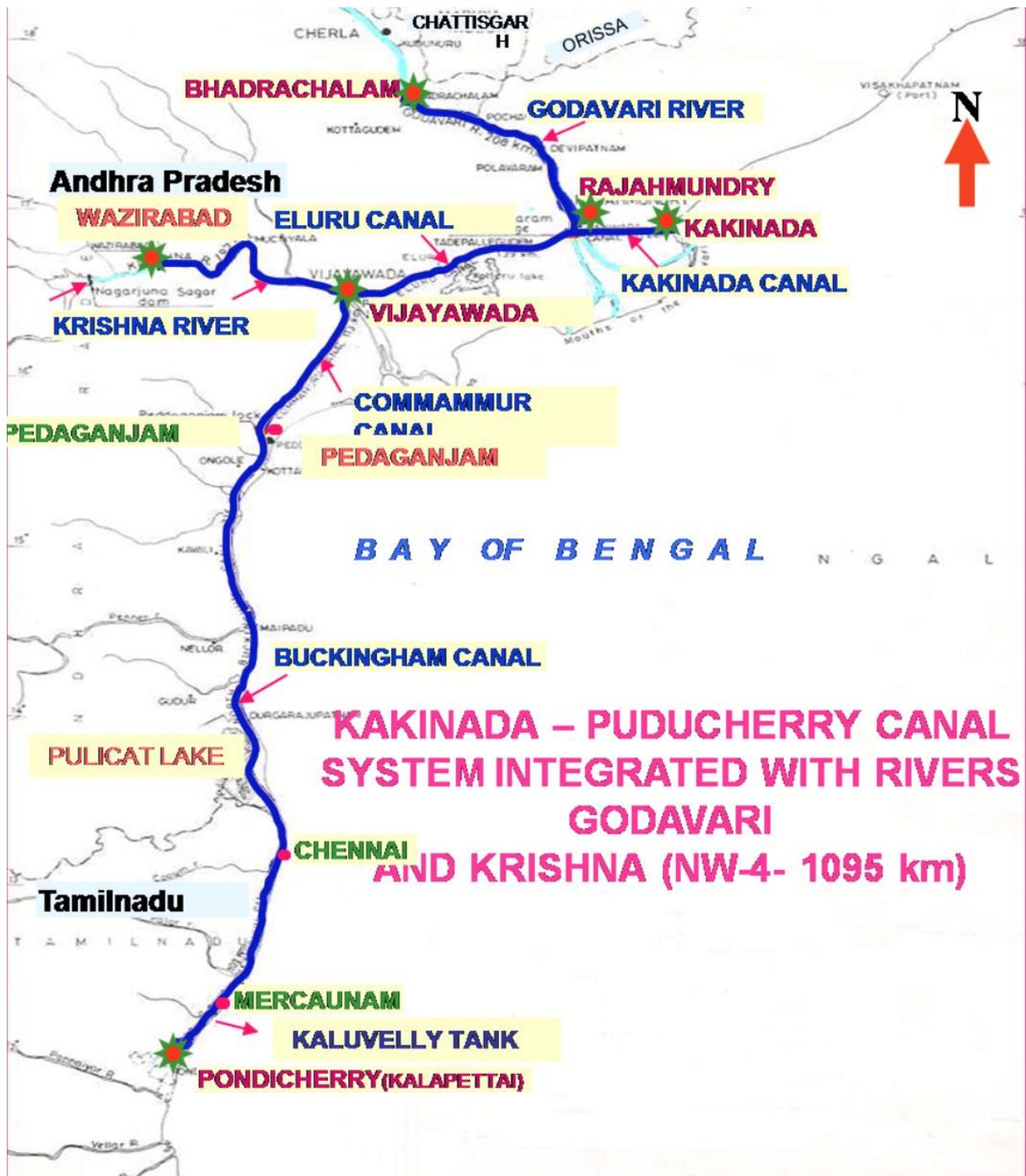
Legend

Waterway alignment	
Road	
Rail	
Important places	

[Back](#)

4. National waterway 4

Name	River	States	Length (km)
NW4	<p>(a)Kakinada-Puducherry stretch of canals and the Kaluvally Tank.</p> <p>(b)Bhadrachalam-Rajahmundry stretch of Godavari River</p> <p>©The bridge near village Galagali-Wazirabad-Vijayawada stretch of Krishna River.</p>	Puducherry, Andhra Pradesh, Telangana	1095



5. National waterway 5

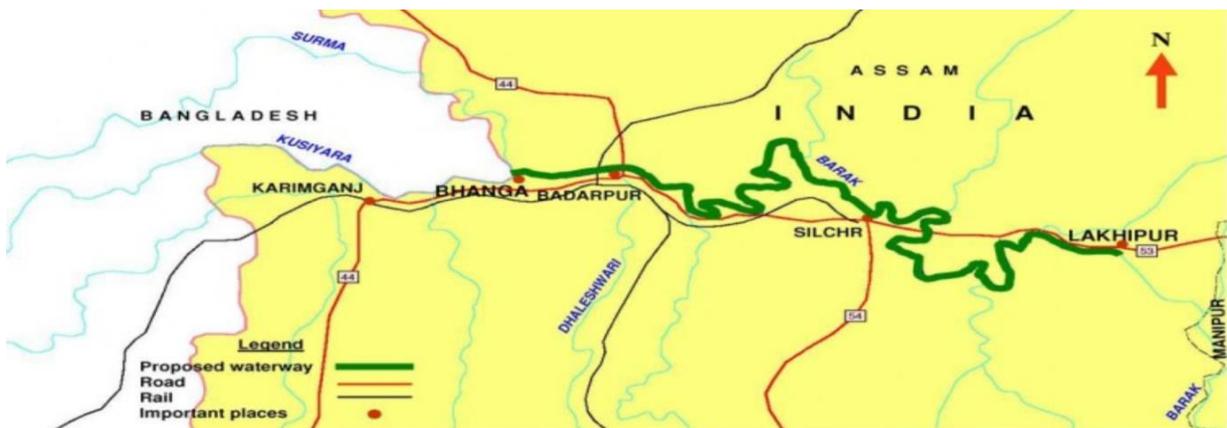
Name	River	States	Length (km)
NW5	(a) Talcher-Dhamra stretch of Brahmani River-Kharsua River-Tantighai River-Pandua Nala-Dudhei Nala-	Odisha, West Bengal	623

	Kani Dhamra River.		
	(b) Geonkhali-Charbatia stretch of coovum Canal.		
	© Harbatia-Dhamra stretch of Matai River and Mahanadi Delta Rivers		



6. National waterway 6

Name	River	States	Length (km)
NW6	Lakhipur to Bhanga in Barak River	Assam	121



National Waterways

TOTAL LENGTH:
4,503 KM

TOTAL STATES SERVED
15



NW-1
GANGA
HALDIA TO ALLAHABAD
1,620 Km
STATES SERVED:
UP, Bihar, Jharkhand
and West Bengal

NW-2
BRAHMAPUTRA
DHUBRI TO SADIYA
891 Km
STATES SERVED:
Assam, West Bengal, Arunachal
Pradesh, Meghalaya

NW-6
BARAK
LAKHIPUR TO BHANGA
(IN PROCESS)
121 Km
STATES SERVED:
Assam, Mizoram,
Manipur, Tripura

NW-4
**GODAVARI, KRISHNA
& CANALS**
KAKINADA TO
PUDUCHERY
1,078 Km
STATES SERVED: AP, Tamil
Nadu, UT of Puducherry

NW-5
**BRAHMANI, DELTA
CANALS, ECC**
COENKHALI TO TALCHER
588 Km
STATES SERVED: Odisha,
West Bengal

NW-3
WEST COAST CANAL
KOLLAM TO KOTTAPURAM
205 Km
STATE SERVED: Kerala

PLACES IN NEWS

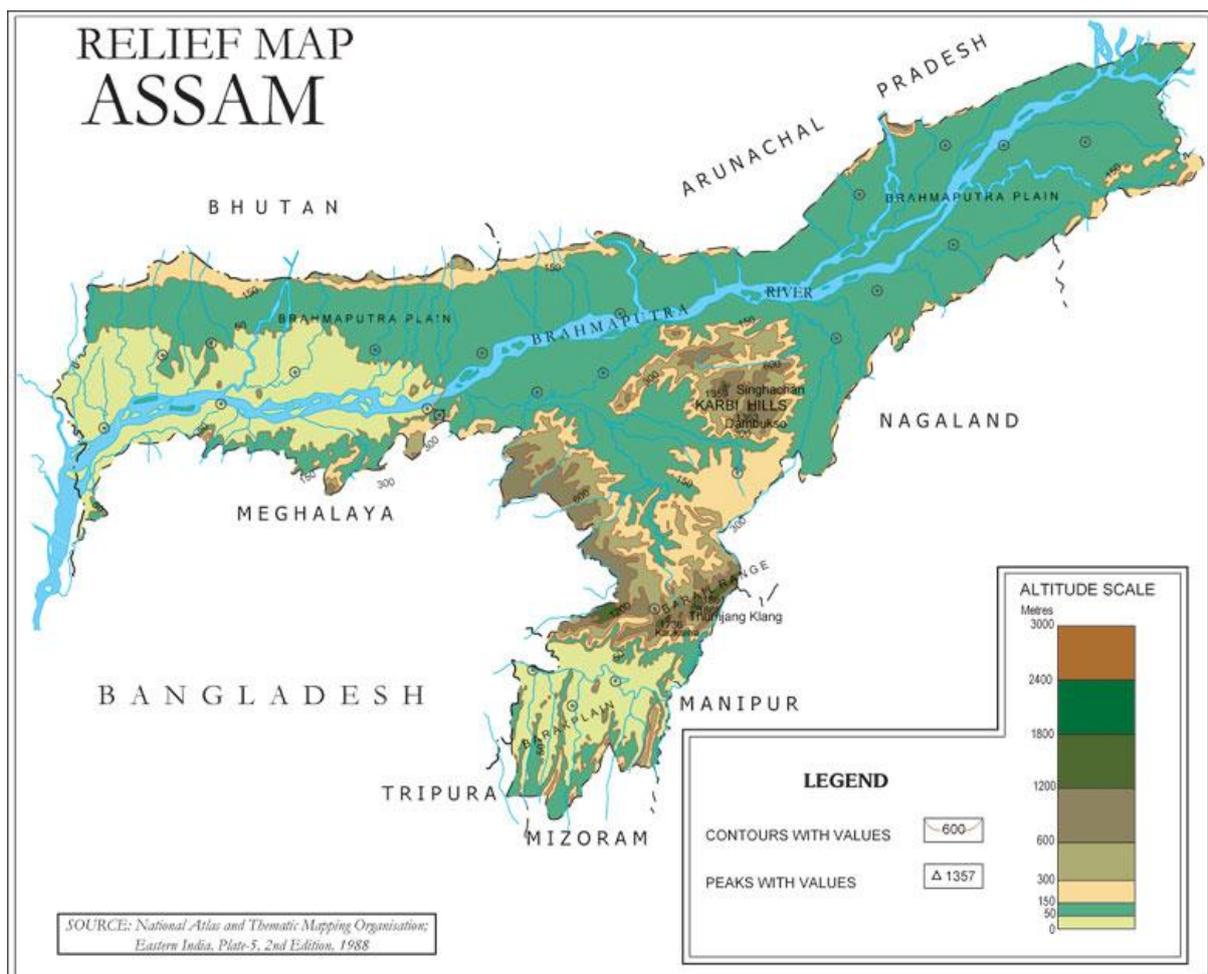
1. Assam

Geography of Assam:

a). Boundary

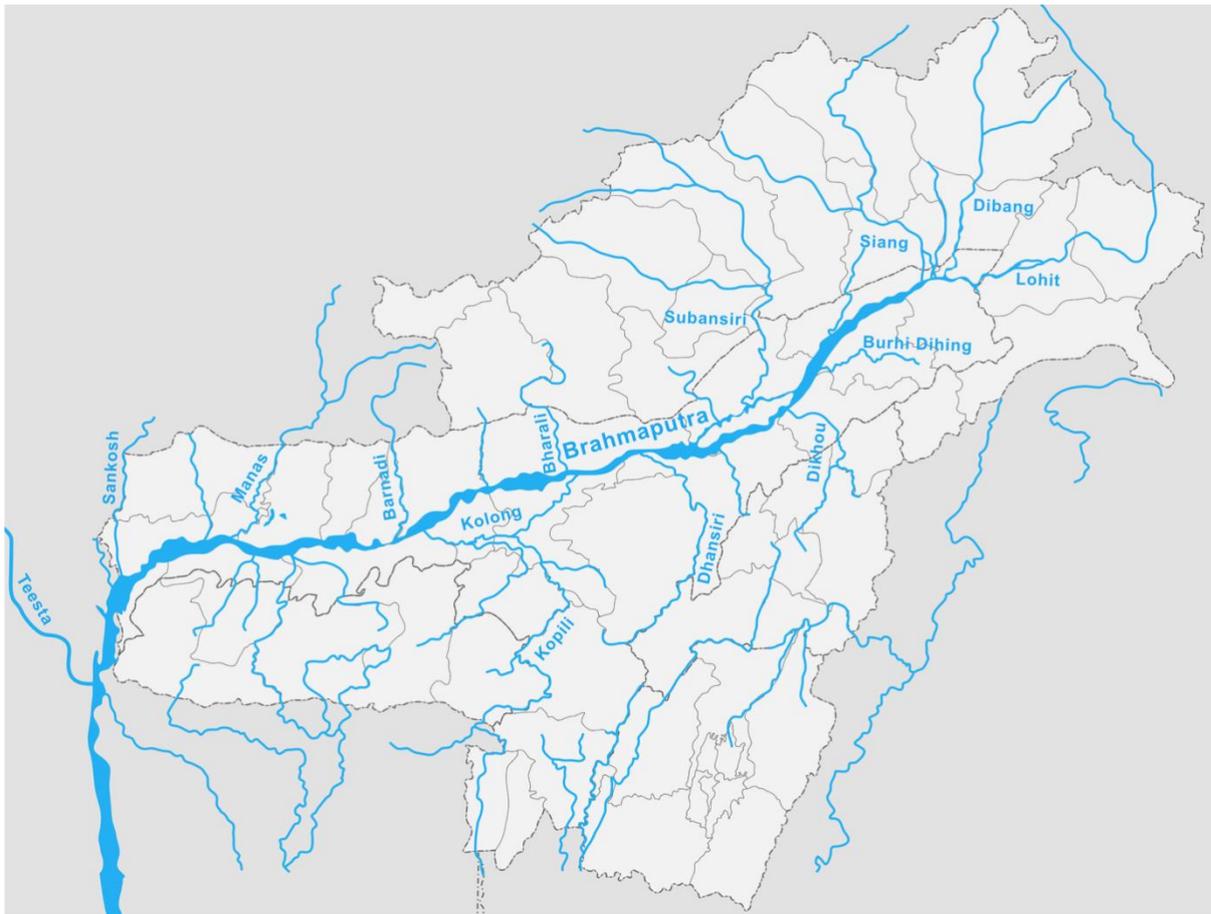
- It is located in the north-eastern part of the country.
- It is bounded the state of Arunachal Pradesh, Nagaland, Manipur, Mizoram and Tripura, Meghalaya and West Bengal. (It shares boundary with all other North eastern states)
- It shares international boundary with Bhutan and Bangladesh.

b). Physical features



- **Assam Himalayas:** It is a traditional designation for the portion of the Himalaya range between the eastern border of Bhutan (Teesta river), on the west, and the Great Bend of the Tsangpo River (Brahmaputra), on the east. The highest peak of this range is **Namcha Barwa**. The Subansiri, Manas, Sankosh rivers originate from Assam Himalayas.

- **Baraile Range:** The hill range that separates the state of Manipur from the state of Nagaland is known as Barail hills. The Barail is the highest hill range in Assam.
- **Karbi Hills:** Karbi hills are generally low hills and have gentle slopes. The region is home to Karbi and Dimasa tribe. The Hills in Karbi Anglong are part of Shillong plateau (Meghalayan plateau). The highest peak in this region is the ‘**Singhason**’ peak
- **Mikir hills:** They are group of hills located to the south of Kaziranga National park. They are considered as a part of Karbi Anglong plateau.
- **Majuli Island:** It is the largest river island in the world in the Brahmaputra River, Assam, India.



c). Principal rivers

Brahmaputra: The Brahmaputra basin originates in Tibet (Chemayungdung glacier) and flows across southern Tibet entering India via Arunachal Pradesh and flows through Assam finally ending at Bangladesh.

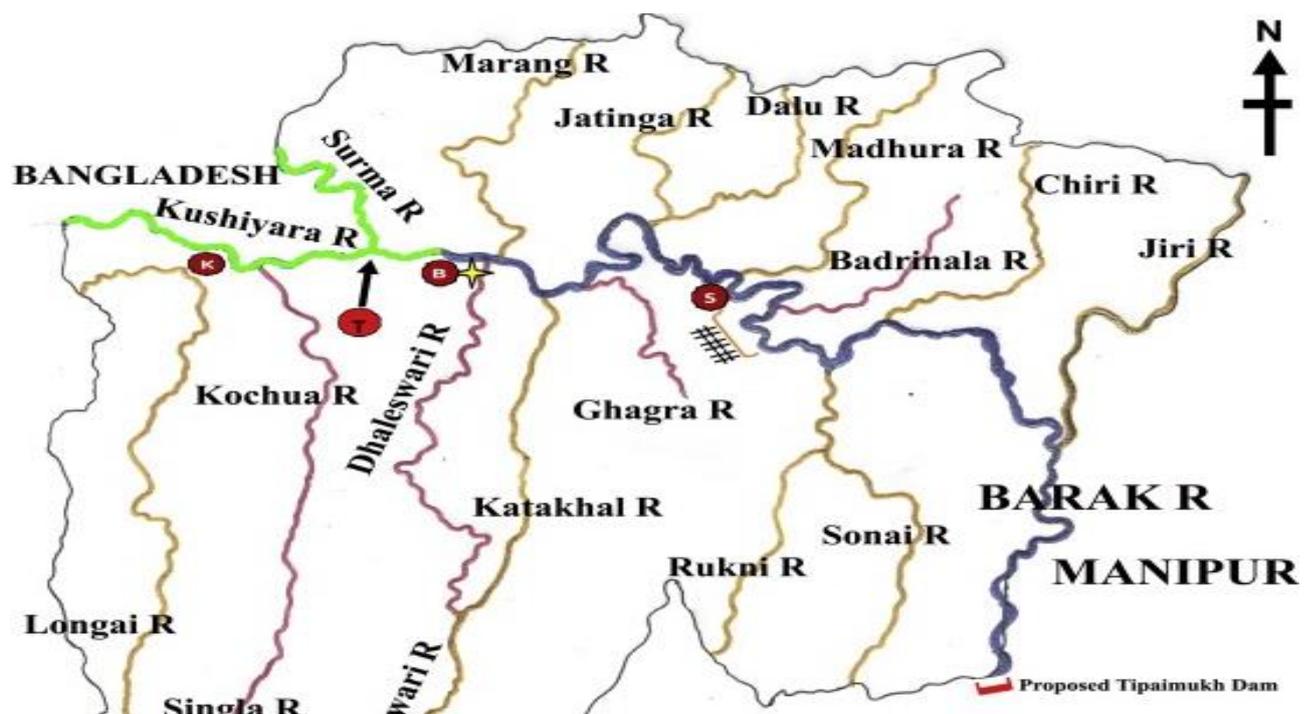
Right bank tributaries:

- Subansiri: Source: Tibetan himalayas
- Manas: It is a transboundary river in the Himalayan foothills between south Bhutan and India. The major part of the river traverses through Bhutan and then it enters western Assam and then joins the Brahmaputra. The Manas river passes through the Manas wildlife sanctuary which is a UNESCO site.

- Kameng: The west bank of the river consists Akka hills which is resided by the Akka tribes and the east consisting of the Daphla hills is resided by the Daphla tribe. The Kaziranga National Park and the Pakkhui Wildlife Sanctuary are located near the Kameng river.
- Sankosh: It rises in the northern Bhutan region
- Teesta: It rises from Zemu glacier in Kanchenjunga in Sikkim. The Teesta river drains the entire state of Sikkim and a part of Darjeeling Hills. It is known as the lifeline of Sikkim.

Left bank tributaries:

- Dibang/sikang: It originates and flows through the Mishmi Hills.
- Danshiri: Source- Liasang peak of Nagaland
- Lohit: Source- Tibet Region. It flows through the Mishmi Hills, to meet the Brahmaputra at the head of the Brahmaputra valley. Dhola-Sadia bridge/Bhupen Hazarika bridge spans over this river.
- Burhi Dihing: The river originates in the Patkai Hills in Arunachal Pradesh.



- **Barak:** Source-Liyai kullen village in Manipur. The Barak River is a 900-kilometre-long river flowing through the states of Manipur, Nagaland, Mizoram and Assam in India and into the Bay of Bengal via Bangladesh. Of the 900 km, 524 km is in India, 31 km on Indo – Bangladesh border and the rest is in Bangladesh. The navigable portion of Barak River in India, the 121 km stretch between Lakhipur and Bhanga has been declared as National Waterway 6, (NW-6). **Tipaimukh Dam** is a proposed embankment dam on the Barak River. tributaries: River Sonai (Tuirial River), Jatinga and the Madhura river.

d) Important protected areas:

Kaziranga National Park:

- It is a national park in the state of **Assam**, India.
- The national park hosts two-thirds of the world's great one-horned rhinoceros.

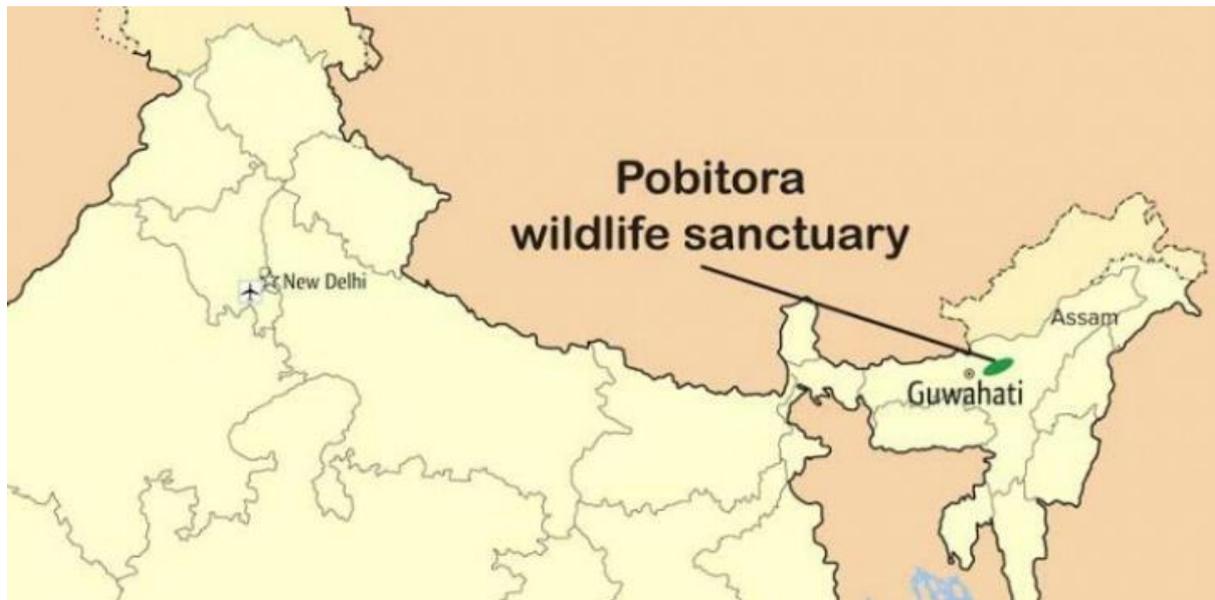
- It is a **World Heritage Site**.



- It was declared a **Tiger Reserve** in 2006.
- The park is home to large breeding populations of elephants, wild water buffalo and swamp deer.



Pobitora Wildlife Sanctuary:



- It is located on the southern bank of the Brahmaputra in the Indian state of Assam.
- It provides grassland and wetland habitat for the Indian rhinoceros.
- It has the highest concentration of one-horned rhinos in the world and is often called 'Mini Kaziranga' due to similar landscape and vegetation.
- Till now six rhinos have been translocated to Manas National park from this sanctuary.

Why in news?

- **Rhino protection force deployed in Kaziranga.**
- **Pobitora Wildlife Sanctuary:** Veterinarians have confirmed anthrax as the cause of death of two Asiatic water buffaloes in central Assam's Pobitora Wildlife Sanctuary.

2. Jammu & Kashmir

Geography of Jammu and Kashmir:



a) Boundary

- It shares international boundary with China and Pakistan and Afghanistan.
- Currently, the region of Jammu and Kashmir is separated by the Line of Control from the Pakistani administered territories of Azad Kashmir and Gilgit-Baltistan.
- It also shares boundary with Himachal Pradesh and Union territory of Ladakh.

b). Physical features



The Valley of Kashmir:

- It is an inter-montane valley. It is an ancient lake basin about 135 km long, 32 km wide.
- It is flanked by the main range of the Himalayas on the northeast and the Pir Panjal Range on the southwest.
- It is drained by the Jhelum River.

Pirpanjal range:

- It separates the Jammu Hills to the south from the Valley of Kashmir, beyond which lie the Great Himalayas.
- The major passes through the range include the Pir Panjal and Banihal.

Great Himalayas:

- It is the northernmost section of the Himalayan mountain ranges.
- It extends across northern Pakistan, northern India, and Nepal before trending eastward across Sikkim state (India) and Bhutan and northern Arunachal Pradesh.
- The range's total length is some 2,300 km and it has an average elevation of more than 6,100 metres.
- The Great Himalayas contain many of the world's tallest peaks, including Nanga Parbat, Annapurna, Mount Everest, and Kanchenjunga.

Karakoram range:

- K2 (Mount Godwin Austen), the second highest peak in the world is located in this range.

c) Rivers:

Indus:



- Source- Tibetan Plateau in the vicinity of Lake Manasarovar.
- Left bank tributary: It has five major tributaries, namely, the Chenab, Jhelum, the Ravi, the Beas, and the Sutlej.
- Right bank tributaries: Shyok, Gilgit, Kabul, Gomal, and Kurram.



- **Jhelum:** It is a tributary of Indus river. It rises from Verinag Spring situated at the foot of the Pir Panjal. It flows through Srinagar and **Wular Lake** before entering Pakistan through a deep narrow gorge. The Neelum River, the largest tributary of the Jhelum. It joins the Chenab river in Pakistan
- **Chenab:** It is a tributary of Indus river. The river is formed by the confluence of two rivers, Chandra and Bhaga, at Lahaul and Spiti district in the Indian state of Himachal Pradesh. The Bhaga river originates from Surya taal lake, which is situated a few kilometers east of the Bara-lacha la pass in Himachal Pradesh. The Chandra river originates from glaciers east of the same pass. The river flows through the Jammu region of Jammu and Kashmir into the plains of Punjab, Pakistan, and flows into the Indus River.

d) Important protected areas:

Dachigam National Park:

- It is located in the high altitude temperate zone in Jammu Kashmir
- Dachigam National park is located in the Zabarwan Range (a minor range located between Pirpanjal and Great Himalayas) of the western Himalayas
- Dachigam is popular for the **endangered Hangul or the Kashmir stag**- the only species of red deer to be found in India.

Why in news?

Shaksgam valley:

India recently slammed China for holding illegally acquired Indian territory (Shaksgam Valley).

- The Shaksgam Valley or the **Trans Karakoram Tract** is part of Hunza-Gilgit region of Pakistan Occupied Kashmir (POK), and is disputed territory claimed by India but controlled by Pakistan.
- It borders Xinjiang Province of the People's Republic of China (PRC) to the north, the Northern Areas of POK to the south and west, and the Siachen Glacier region to the east.
- The Shaksgam Valley was **ceded to China** by Pakistan in 1963 when both countries signed a boundary agreement (**China-Pakistan Boundary Agreement of 1963**) to settle their border differences.



Wular Lake:

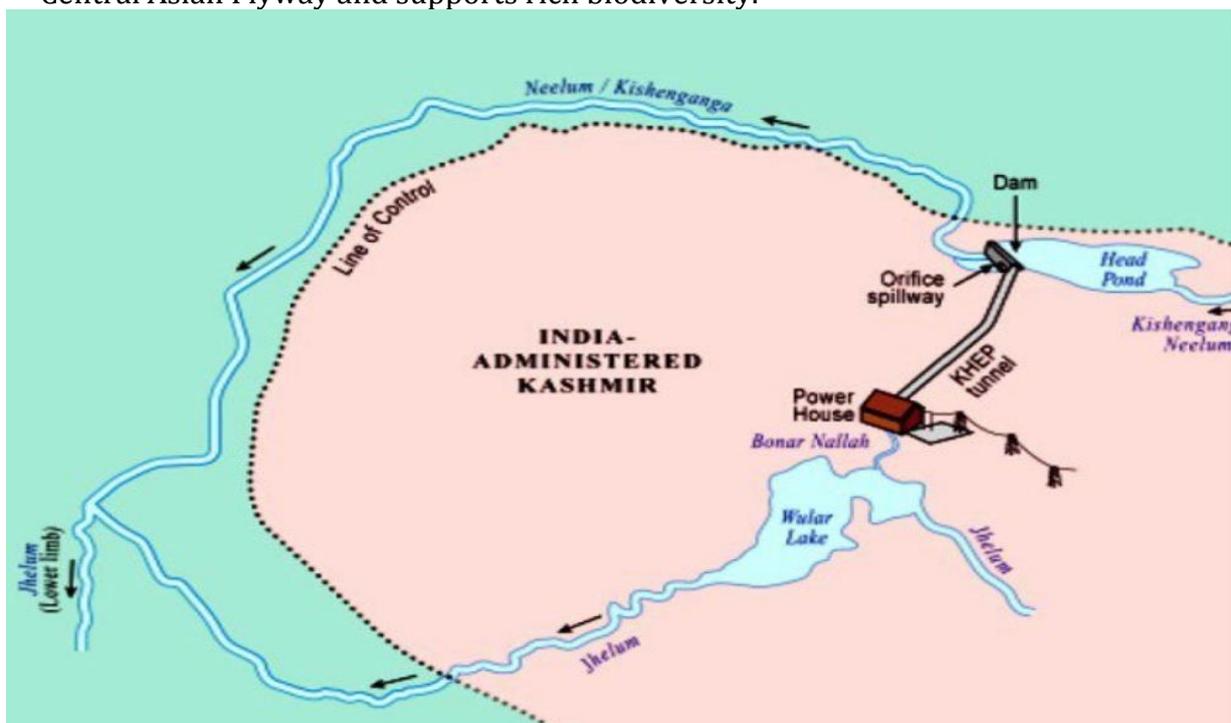
- A short film titled 'Saving the Saviour' was released by an independent filmmaker to raise awareness about the growing pollution of Wular Lake.
- Industrial and residential effluents from the neighbouring cities that discharge into the lake have deteriorated it to a great extent.
- In addition to this, the spread of the **invasive alligator weed** slowly destroys the beneficial vegetation in the lake

About Wular Lake:

- It is the **largest freshwater lake in India** and lies in the **Kashmir Valley**.
- The lake basin was formed as a result of tectonic activity and the main source of water is **River Jhelum**.



- The lake plays a significant role in water security in the Kashmir valley by regulating the release of floodwaters from glaciers in the surrounding Himalayas. The lake with its associated wetlands is an important habitat for migratory waterbirds within the Central Asian Flyway and supports rich biodiversity.



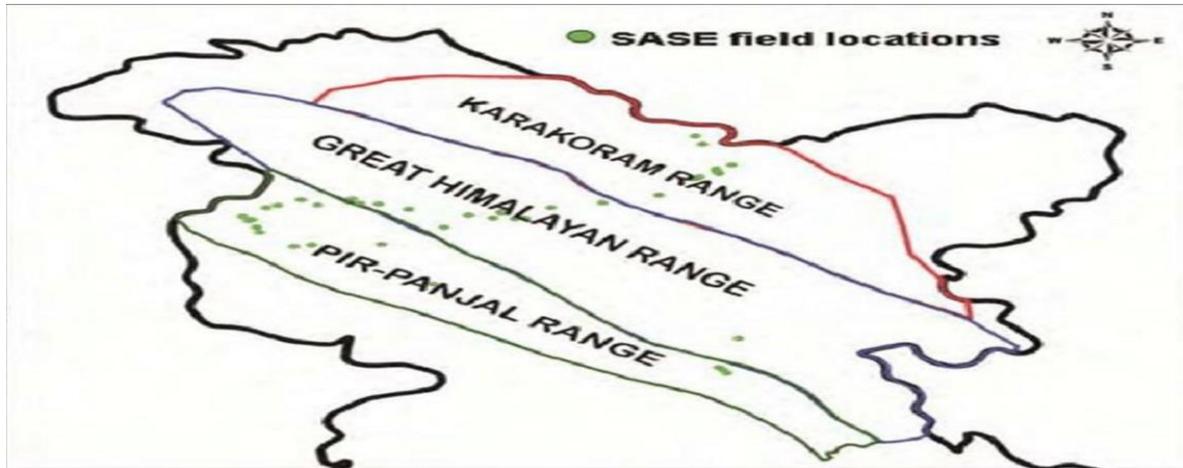
- It was designated as a **Wetland of International Importance** under the Ramsar Convention in 1990.

Atal tunnel:

- The Union Cabinet has decided to name the Rohtang Tunnel after former Prime Minister Atal Bihari Vajpayee.

About Atal / Rohtang Tunnel:

- Rohtang Tunnel also called as Atal tunnel is being built under the **Rohtang Pass** in the **Pir Panjal** range of the Himalayas.



- The tunnel will connect Manali in Himachal Pradesh with Leh, Ladakh.
- Upon completion, the 8.8 km-long tunnel will be the **world's longest highway tunnel** at an altitude of above 10,000 feet.
- It will reduce the distance between Manali and Leh by 46 kilometres.



- The tunnel will provide all-weather connectivity to remote border areas of Himachal Pradesh and Ladakh, which otherwise remained cut off from the rest of India for about six months.
- The construction is being carried out by the **Border Roads Organisation (BRO)**.

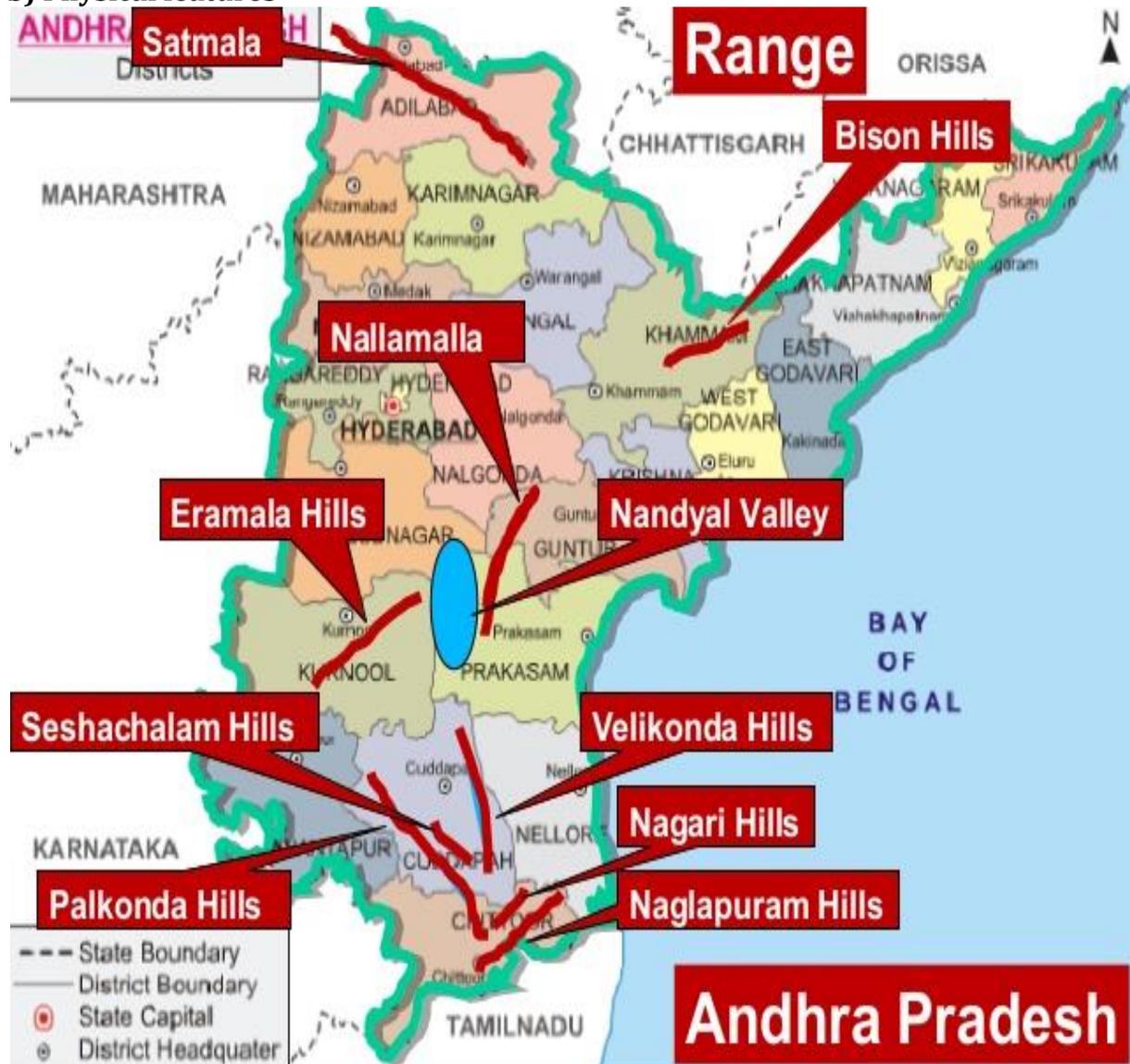
3. Andhra Pradesh

Geography of Andhra Pradesh:

a) Boundary

- It is bounded by the Indian states of Tamil Nadu, Karnataka, Telangana and Odisha.
- The Coastline of Andhra Pradesh forms a part of Coromandel Coast, with waters of Bay of Bengal.
- It has the second longest coastline with a length of 975 km, next to Gujarat.

b) Physical features



- Eastern Ghats forms series of mountain ranges in Andhra Pradesh. Few important ranges are,

- **Madugula Konda range:** It has an average elevation in the range of 900-1100m It has some of the highest peaks of the Eastern Ghats like the Jindhagada peak (1690m), Arma Konda (1680m), Gali Konda (1643m) etc
- **Nallamala range:** They run in a nearly north-south alignment, parallel to the Coromandel Coast between the rivers, Krishna and Pennar. Its northern boundaries are marked by the flat Palnadu basin while in the south it joins with the Tirupati hills.
- **Velikonda range:** They trend north-south and form the eastern flank of the Eastern Ghats
- **Palkondarange:** It forms the central part of the Eastern Ghats.
- **Seshachalam range:** It is the westward extension of Palkonda range. Tirupati, a major Hindu pilgrimage town is located in the hills. The hills contain seven peaks The Srivenkateshwara National Park is also located in these ranges.

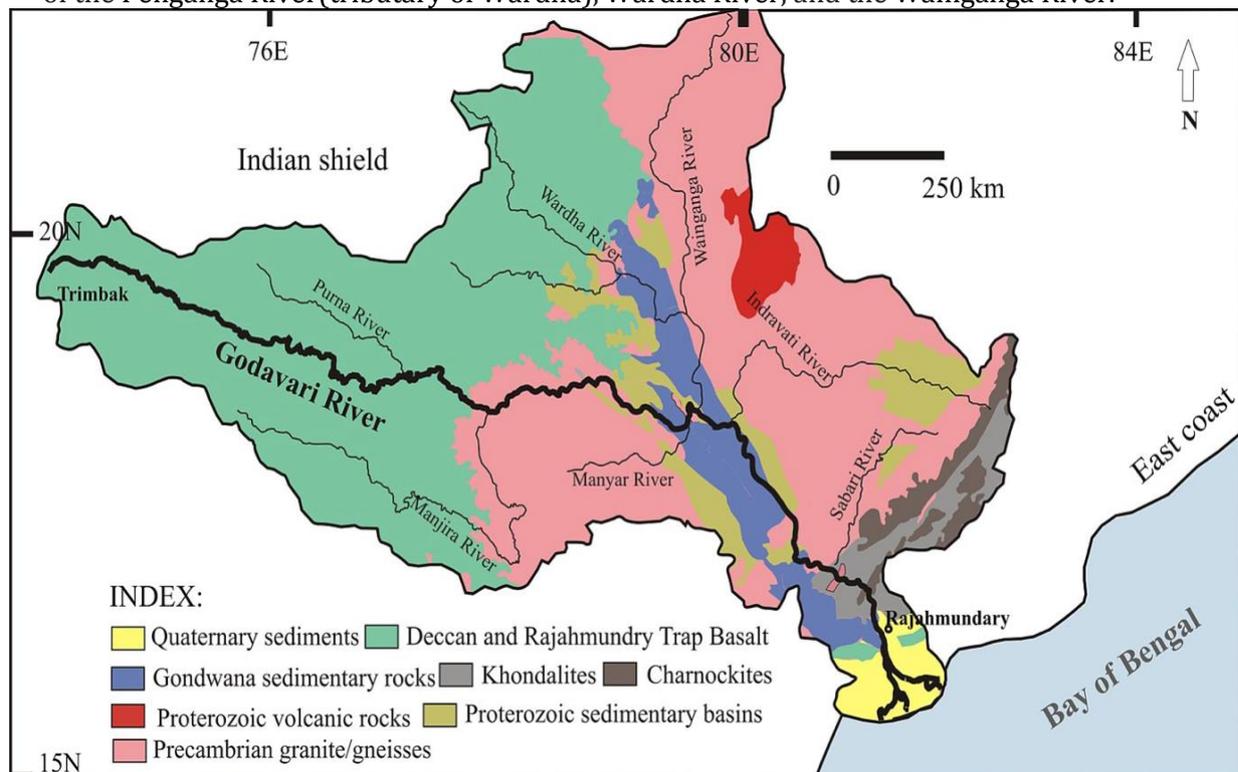
c) Principal Rivers

Godavari:

- Third largest river in India
- Largest of the peninsular rivers
- Rises at an elevation of 1,067 m in the Western Ghats near **Thriambak Hills** in the Nashik district of Maharashtra
- **Drainage:** Maharashtra (48.6%), Andhra Pradesh and Telangana (23.4%), Madhya Pradesh (10.0%), Chattisgarh (10.9%), Orissa (5.7%) and Karnataka (1.4%)
- Flows for about 1,465 km in a generally south east direction and falls into the **Bay of Bengal**.

Its chief tributaries are Indhravathi, Pranhita, Manjira and Wardha.

- **Indravati River:**The Indravati River is a stream of the river Godavari. Its starting point, found to be the Ghats of **Dandakaranya range** from the state of Odisha.
- **Pranhita River:**It is the largest tributary of Godavari River. It conveys the combined waters of the Penganga River(tributary of Wardha), Wardha River, and the Wainganga River.



- **Krishna:**The Krishna river originates in the Western Ghats near **Mahabaleshwar hill** in the state of Maharashtra. It is one of the longest rivers in India. Its tributaries are **Ghatprabha, Malprabha, Tungabhadra, Bhima, Koyna.**



- **Tungabhadra:** It is a tributary of Krishna river. It flows through the state of Karnataka during most of its course, before flowing along the border between Telangana, Andhra Pradesh and ultimately joining the Krishna River in Kurnool district of Andhra Pradesh. The Tungabhadra River is formed by the confluence of the Tunga River and the Bhadra River at Koodli which flow down the eastern slope of the Western Ghats in the state of Karnataka.
- **Penneru:** It rises in the Nandi Hills in Karnataka state, and runs north and east through the states of Karnataka and Andhra Pradesh to empty into the Bay of Bengal.

d) Important protected areas:

Sri Venkateswara National park:

- The National Park is located in Eastern Ghats spread over the Seshachalam hills.
- As the government of India declared the Seshachalam Hills as one of the biosphere reserves of India in 2010, this national park becomes the part of it.
- The star attractions here are slender lorises and stump-tailed macaques

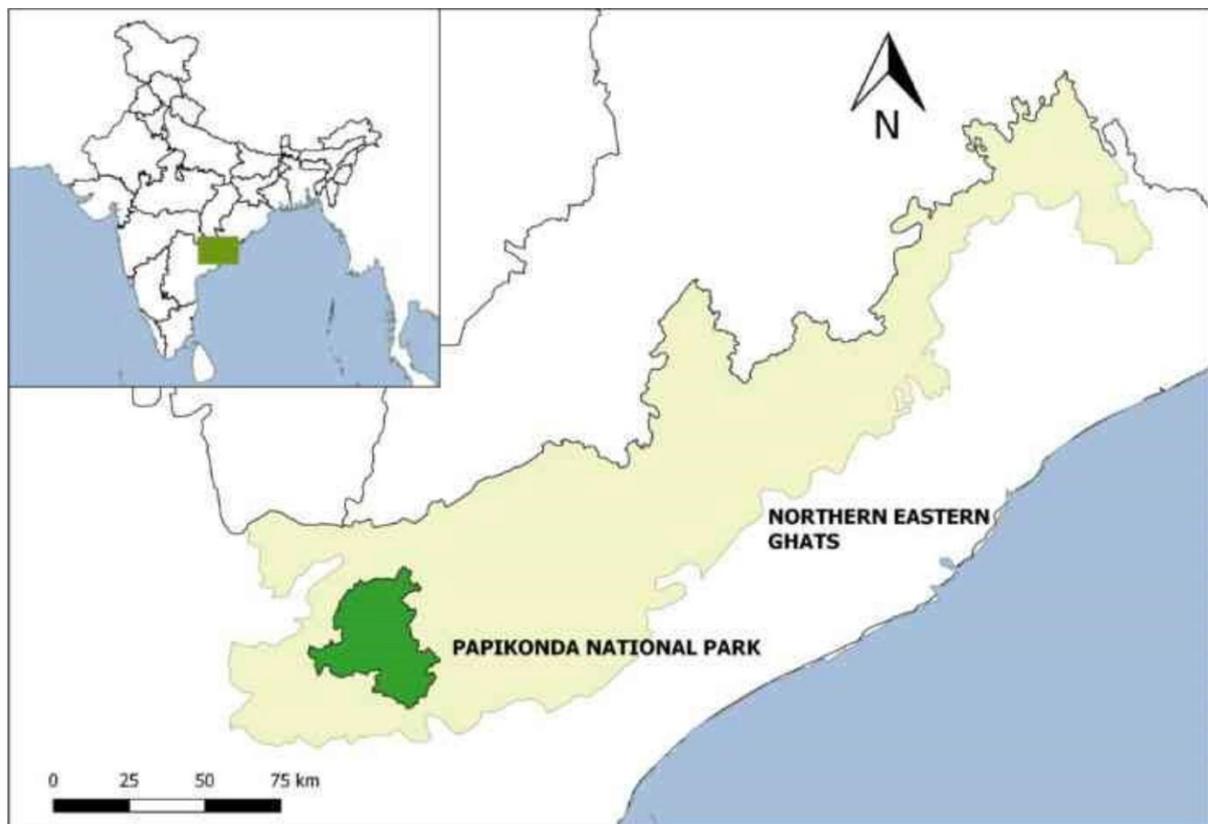
Why in news?

Butterfly survey in Papikonda National Park:

- As many as 129 butterfly species have been recorded by direct sighting during the maiden scientific survey carried out by the Andhra Pradesh Forest Department in Papikonda National Park.
- At least 11 species sighted in the park during the survey are believed to be recorded for the first time in Andhra Pradesh.
- The findings and report of the survey will be presented at the '**Conference of Parties to Convention on Migratory Species**' at **Gandhinagar** in February 2020.

About the National park:

- It is declared as a national park in 2018.
- It spreads over East and West Godavari districts of **Andhra Pradesh**.
- The floral variety of the Park is mainly Eastern Ghats vegetation. The area consists of **dry deciduous tropical forests**.
- **Godavari River** flows through the park.

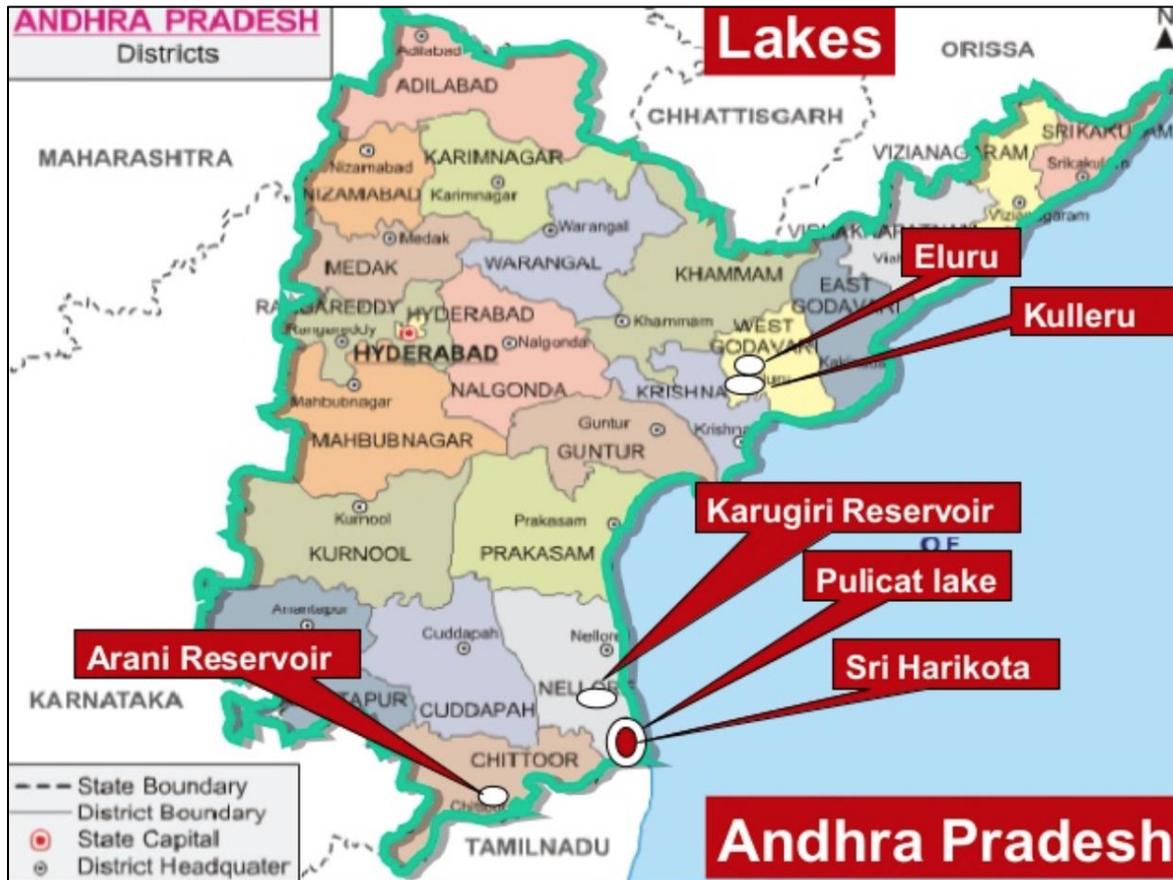


Annual Flamingo festival:

- The annual flamingo festival is to be celebrated in the first week of January in Pulicat Lake sanctuary.
- About 75 bird species visit the sanctuary every year, of which 30 bird species are migratory.

About the lake:

- It is a **brackish water lake** on the border of **Andhra Pradesh** and **Tamil Nadu**.
- It is the **second largest lagoon** in India.



- Pulicat Lake is fed by **River Kalangi** and **River Arani**.
- The lagoon is separated from the Bay of Bengal by a **barrier island** which is the Sriharikota.



- The lake supports a rich biodiversity and high biomass of fishes, prawns, crustaceans, coelenterates and planktons.

Kaleshwaram lift irrigation project:

- Telangana Chief Minister K Chandrasekhar Rao inaugurated the Kaleshwaram Lift Irrigation Project across the **Godavari river**.
- It is the world's largest multi-stage lift irrigation project.
- It will provide irrigation facility to 45 lakh acres and support **Mission Bhagiratha** and **Mission Kakatiya** schemes of the Telangana government which aim to provide drinking water to many villages and improve the capacities of tanks respectively.

4. Karnataka

Geography of Karnataka:

a) Boundary

It is bounded by the states of Goa, Maharashtra, Telangana, Tamil Nadu and Kerala. It has long coastline along the eastern shore of Arabian sea.

b) Physical features

- **Baba Budan Range:** Baba Budangiri Range is a range of mountains in the Western Ghats of Karnataka, India. Mullayanagiri is the highest peak in this range.
- **Biligiriranga Hills:** The **Biligirirangana Hills**, commonly called **BR Hills**, is a hill range situated in south-eastern Karnataka, at its border with Tamil Nadu. The BR hills is starting point Eastern Ghats and contacts with border of the Western Ghats allowing animals to move between them and facilitating gene flow between populations of species in these areas. Thus, this sanctuary serves as an important biological bridge for the biota of the entire Deccan plateau. Being at the starting point of the Eastern Ghats and very close to Western Ghats, the sanctuary is home to eco-systems that are unique to both the mountain ranges. The site was declared a tiger reserve in January 2011 by the Karnataka government, a few months after approval from India's National Tiger Conservation Authority.

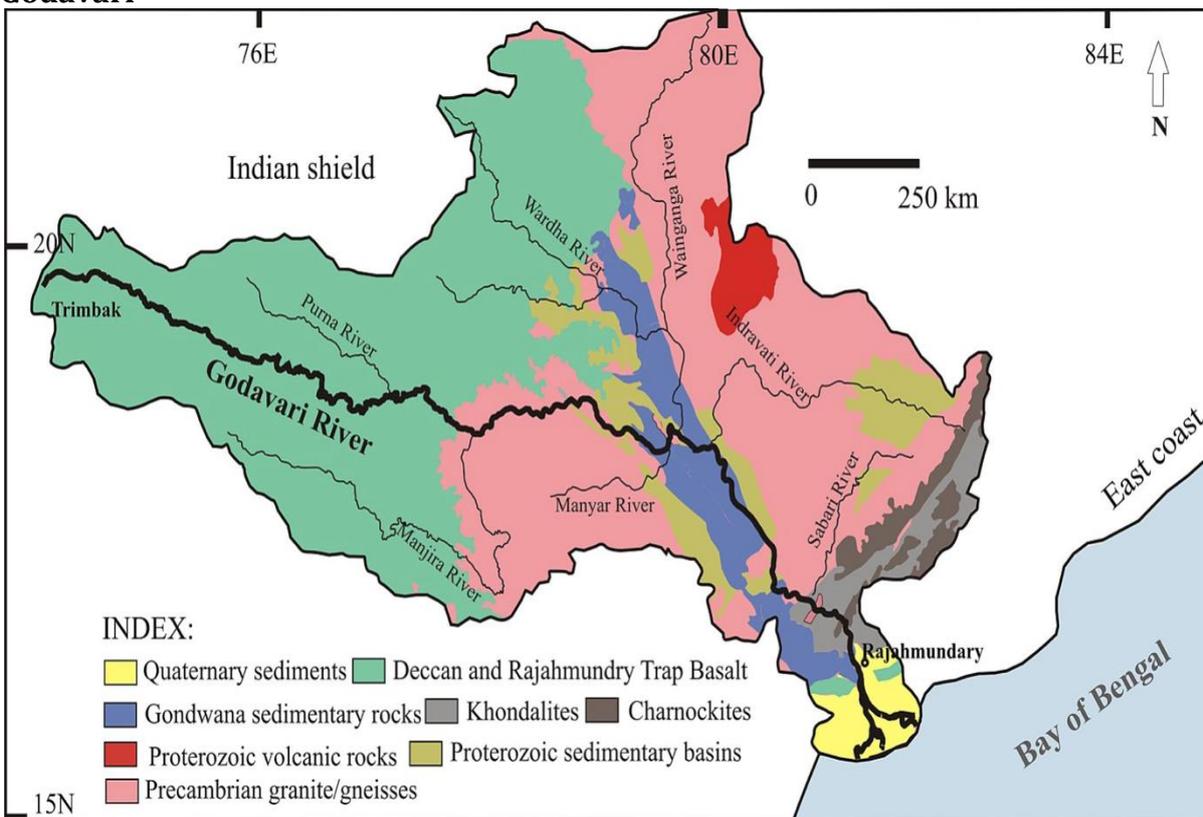
c) Principal rivers

- **Krishna:** The Krishna river originates in the Western Ghats near **Mahabaleshwar hill** in the state of Maharashtra. It is one of the longest rivers in India. Its tributaries are **Ghatprabha, Malprabha, Tungabhadra, Bhima, Koyna**.
- **Tungabhadra:** It is a tributary of Krishna river. It flows through the state of Karnataka during most of its course, before flowing along the border between Telangana, Andhra Pradesh and ultimately joining the Krishna River in Kurnool district of Andhra Pradesh. The Tungabhadra River is formed by the confluence of the Tunga River and the Bhadra River at Koodli which flow down the eastern slope of the Western Ghats in the state of Karnataka.
- **Bhima:** It is the tributary of Krishna river. It originates near Bhimashankar Temple in the Bhimashankar hills in on the western side of the Western Ghats, known as Sahyadri, in Pune District, Maharashtra state. It flows through Bhimashankar Wildlife Sanctuary. It flows through Maharashtra, Karnataka, and Telangana states, before entering the Krishna River.
- **Koyna:** The **Koyna River** is a tributary of the Krishna River. Both Krishna river and koyna river originates in Mahabaleshwar, Maharashtra. The Koyna River is famous for the Koyna

Dam and the Koyna Hydroelectric Project. The koyna dam has created huge reservoir – Shivasagar Lake.



Godavari



- Third largest river in India
- Largest of the peninsular rivers
- Rises at an elevation of 1,067 m in the Western Ghats near **Thriambak Hills** in the Nashik district of Maharashtra
- **Drainage:** Maharashtra (48.6%), Andhra Pradesh and Telangana (23.4%), Madhya Pradesh (10.0%), Chattisgarh (10.9%), Orissa (5.7%) and Karnataka (1.4%)
- Flows for about 1,465 km in a generally south east direction and falls into the **Bay of Bengal**.
- Its chief tributaries are Indhravathi, Pranhita, Manjira and Wardha.

Manjira:

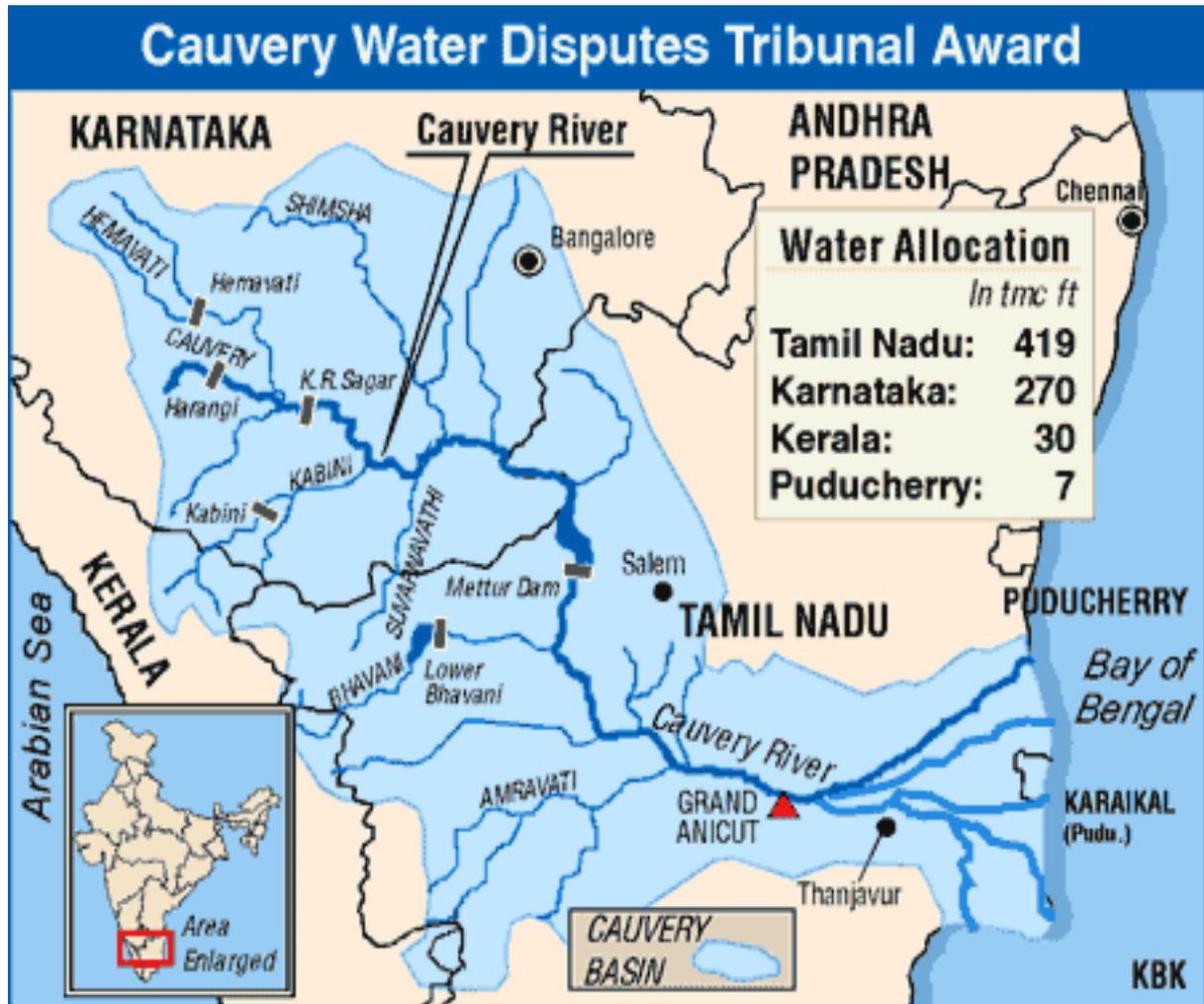
- The **Manjira** is a tributary of the river Godavari. It passes through the states of Maharashtra, Karnataka and Telangana. It originates in the **Balaghat range** of hills near Ahmednagar district and empties into the Godavari River

Kaveri:

- It 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. Principal tributaries are, Hemavati, Kabini, Bhavani, Lakshmana Tirtha, Noyyal, Amaravathi and Arkavati.



Hemavathi: It is a tributary of Kaveri. It raises in the Western Ghats in Chikmagalur District of the state of Karnataka. It joins the Kaveri near Krishnarajasagara.



Kabini: It is one of the major tributaries of the river Cauvery. It originates in the Wayanad District of Kerala state by the confluence of the Panamaram River and the Mananthavady River. It flows eastward to join the Kaveri River in Karnataka.

d) Important protected area:

Nagarhole National park:

- It is also called as Raji Gandhi National Park
- It is a national park located in Kodagu district and Mysore district of Karnataka, India. It is one of India's premier Tiger Reserves along with the adjoining Bandipur Tiger Reserve.
- It is part of the Nilgiri Biosphere Reserve.
- Together with the adjoining Bandipur National Park, Mudumalai National Park and Wayanad Wildlife Sanctuary it forms the largest protected area in Southern India.

What is in the news?

Ranganathittu Bird sanctuary:

- The devastating flood in river Cauvery in 2018 **destroyed** the bird sanctuary by uprooting trees and erosion of soil on the islets.
- The forest department has taken an initiative to restore the sanctuary by expanding the islets through soil stabilization using mud bags, boulders etc.

About the sanctuary:

- Ranganathittu Bird sanctuary is located in Mandya district of **Karnataka**. The sanctuary comprises of six islets in the Cauvery river.



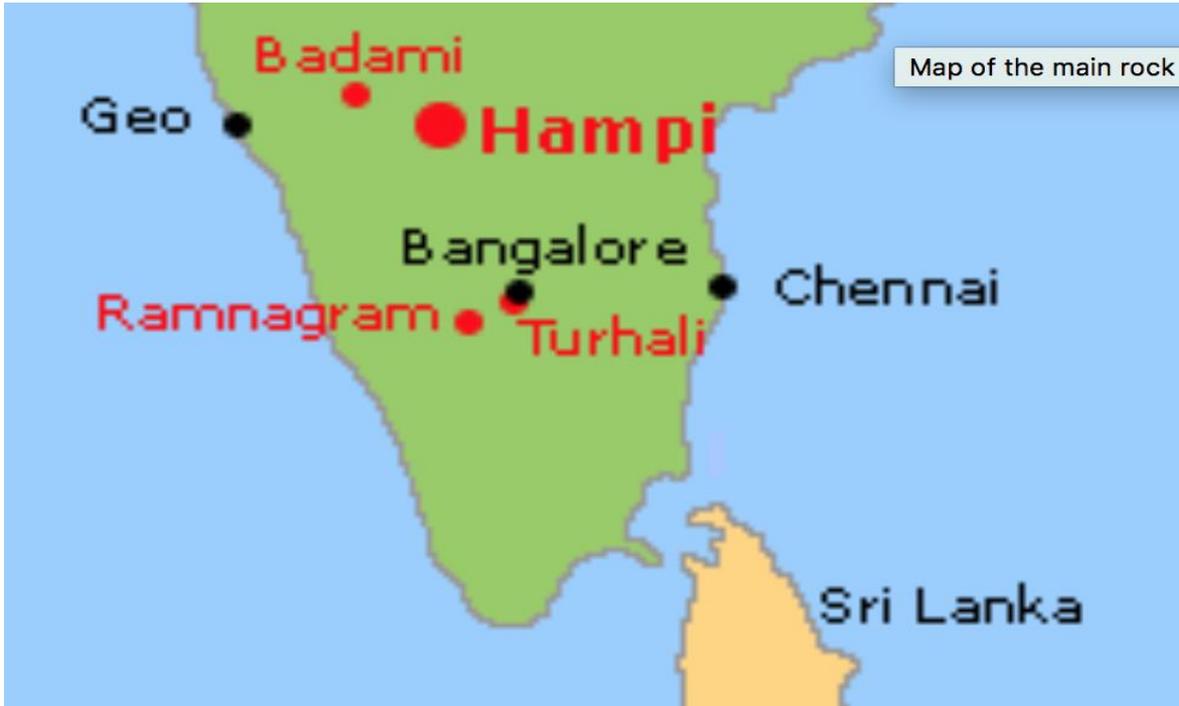
- The large cormorant, darter, spoonbill, open-billed stork, painted stork, egret, heron, and the lesser whistling teal are some of the famous birds of this area.
- Over 200 different migratory birds visit this place every year.
- It is also declared as “**Important bird site**” by **Birdlife International** (a non-profit organisation working for the avian conversation).

Hampi:

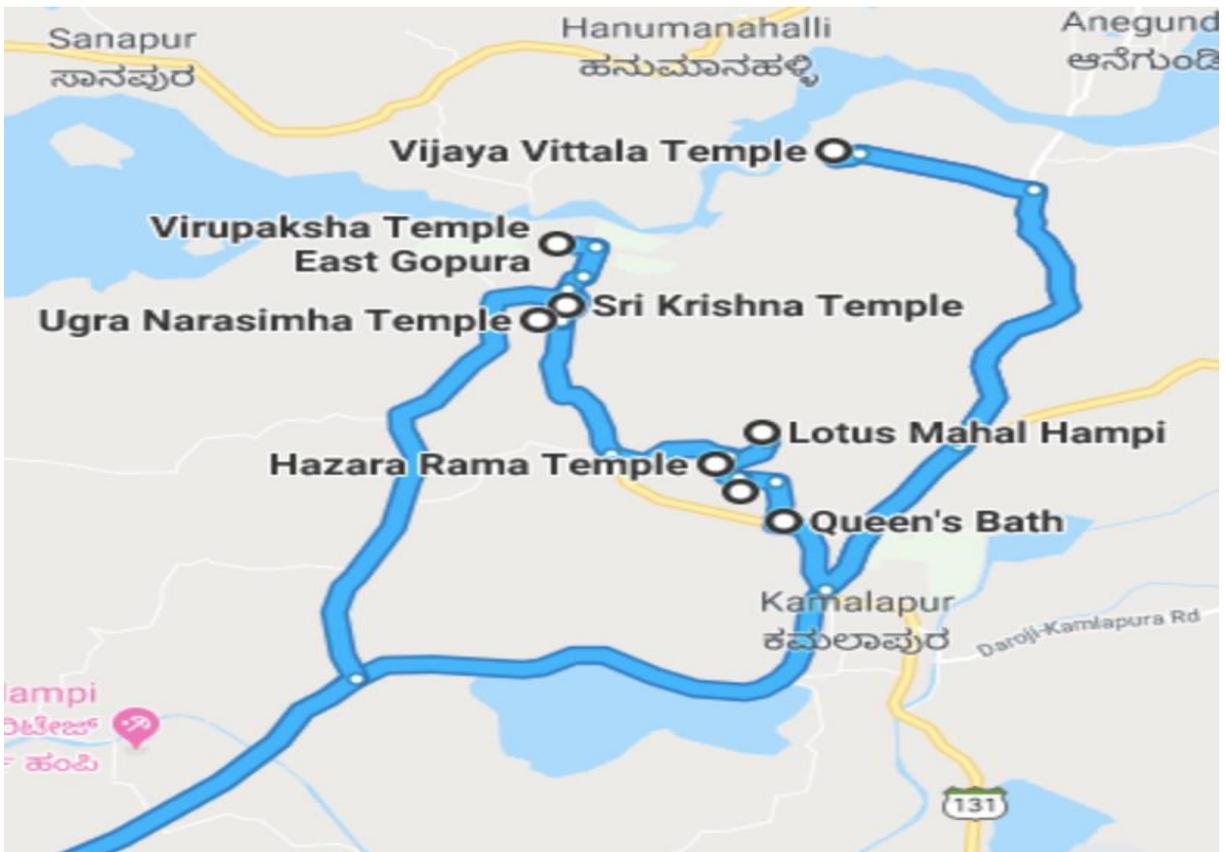
- The UNESCO World Heritage Committee (WHC) has raised concerns about developmental projects in the world heritage site of **Hampi**.

About Hampi

- Hampi is a UNESCO World Heritage Site located in east-central Karnataka, India.
- It became the pilgrimage centre of the Hindu religion.
- It was the capital of Vijayanagara Empire in the 14th century.
- It is located near the **Tungabhadra** River.



Important temples located at Hampi:



Virupaksha Temple:

- Dedicated to Lord Shiva, it was built by the **Chalukyas** in the 7th century.

- It was subsequently greatly improved by the Vijayanagara kings of the 14th-16th century.
- Krishna Deva Raya added its Tamil style gopura. It is also popular for its yearly chariot festival.

Vittala Temple:

- The temple is dedicated to Vaishnava deity Lord Vitthala. Vittala Temple in Hampi is known for its exquisite craftsmanship and extraordinary architecture in the Dravidian Style.
- Its peculiarity is the huge and decorative stone chariot, though not a monolithic structure.

Hazara Rama Temple:

- Hazara Rama comes from the word Hazarumu which in Telugu means Entrance Hall.
- This place has intricate carvings describing stories of Ramayana and some of them depicting various Vishnu avatars.

Jain Temples:

- Jainism remained an important religion even during the Vijayanagara Empire due to their highly tolerant attitude towards all religions.

5. Bihar

Geography of Bihar:

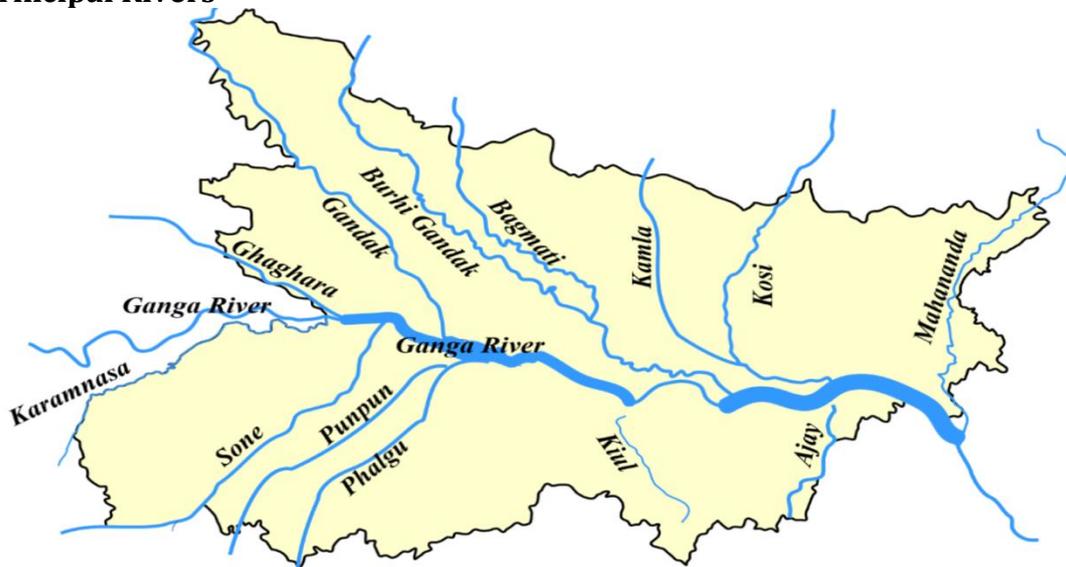
a) Boundary

- Bihar shares long international boundary with Nepal to the north.
- It is bounded by the Indian states of West Bengal, Uttar Pradesh and Jharkhand.

b) Physical features

- **Kaimur Range:** Kaimur range is a notable relief feature of Bihar. It lies in the South western part of the state. It is the eastern portion of the Vindhya Range, about 483 kilometres long, extending from around Jabalpur district of Madhya Pradesh to around Rohtas district of Bihar. Apart from this Bihar is largely a low feature less plain made up of gangetic deposits.

c) Principal Rivers



Ghaghara:

- It is a perennial trans-boundary river originating on the Tibetan Plateau near Lake Manasarovar. It cuts through the Himalayas in Nepal and joins the Sharda River at Brahmaghat in India. Together they form the Ghaghara River, a major left bank tributary of the Ganges. It is the largest tributary of the Ganges by volume and the second longest tributary of the Ganges by length after Yamuna.

Gandak:

- It is one of the major rivers of Nepal and a left bank tributary of the Ganges in India. It lies between the similar Kosi River system to the east and the Ghaghara River system to the west.



Kosi:

- The river drains the eastern part of Nepal and part of Tibet, including the country around Mount Everest. The Kosi is joined by several major tributaries and breaks southward through the Siwālik Hills at the narrow Chatra Gorge. The river then emerges on the great plain of northern India in Bihār state on its way to the Ganges. Because of its great outflushing of debris, the Kosi has no permanent channel in its course through the great plain of northern India. It has long been notorious for its devastating floods, which may rise as much as 30 feet in 24 hours and which long made vast tracts of northern Bihār unsafe for habitation or cultivation. Now a dam across the Chatra Gorge at Barakakshetra controls floods, permits irrigation of the floodplain. Arun kosi, sun kosi and Tamar kosi are its principal tributaries.

Mahananda:

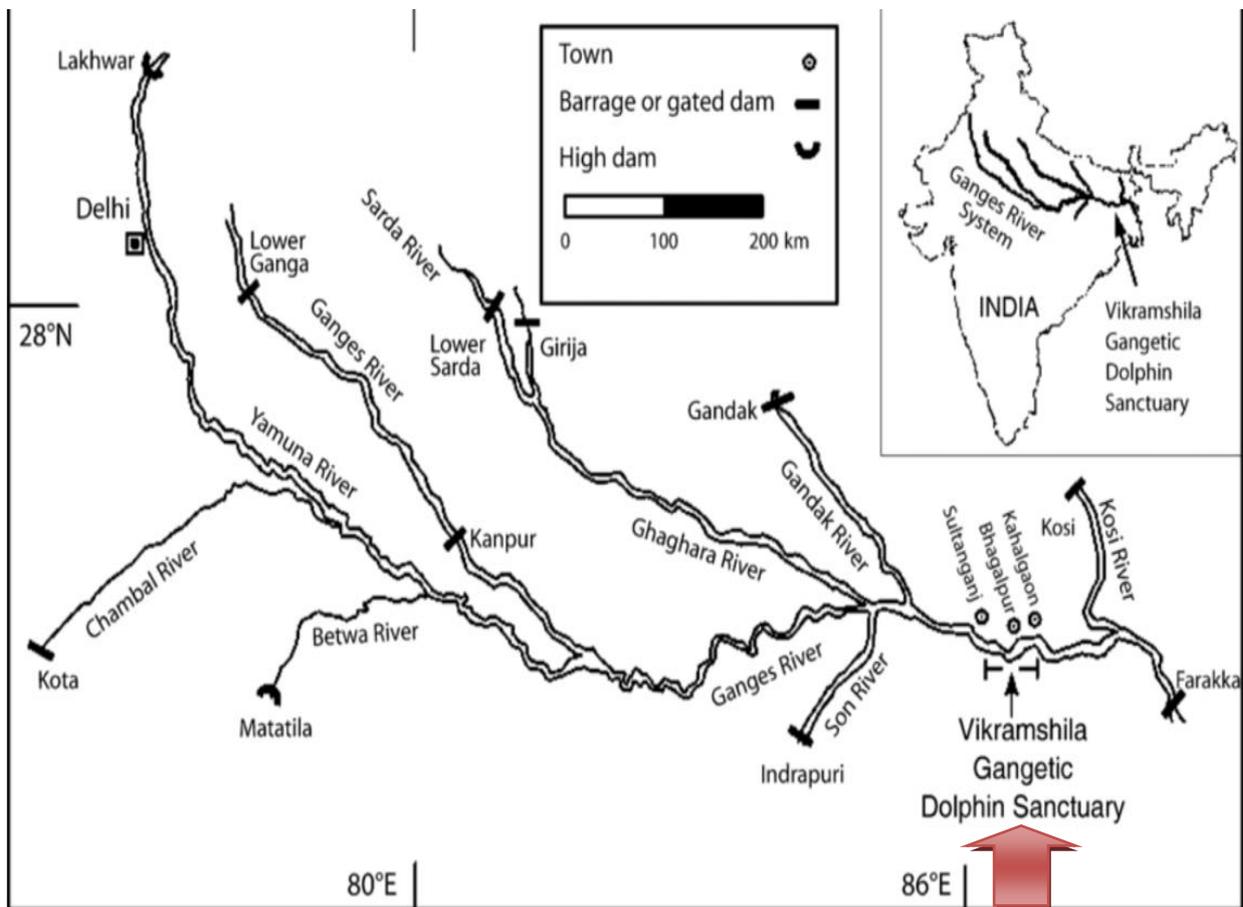
- It is a trans-boundary river that flows through the Indian states of West Bengal and Bihar, and Bangladesh. The Mahananda originates in the Himalayas

in Darjeeling district at an elevation of 2,100 meters. It flows through Mahananda Wildlife Sanctuary and descends to the plains near Siliguri. It enters Bangladesh, flows for 3 kilometres and returns to India. After flowing through West Bengal and Bihar, it enters West Bengal.

d) Important protected area:

Vikramshila Gangetic Dolphin Sanctuary

- It is located in Bihar.
- It is the only dolphin sanctuary in the country.
- National Waterway-1 connecting Haldia to Varanasi passes through this sanctuary.
- Gangetic river dolphins found in the river is classified as '**Endangered**' by the IUCN Red List and have been included in the **Schedule I** of the Wildlife (Protection) Act, 1972.
- Gangetic river dolphin is the **National Aquatic Animal of India**.



What's in the news?

- The Ministry of Shipping has informed parliament that it is planning to safeguard the population of the Ganges River Dolphin in the **Vikramshila Gangetic Dolphin Sanctuary (VGDS)** by restricting the speeds of vessels and blowing sirens and horns.

6. Kerala

Geography of Kerala:

a) Boundary

- It is bordered by the states of Karnataka and Tamil Nadu to the east and by the Arabian Sea.
- It also surrounds Mahe, a segment of the state of Puducherry, on the northwestern coast.

b) Physical features

Western Highlands:

- The Western Ghats is a continuous mountain range of 450 km along the eastern side of Kerala.
- It forms almost an unbroken wall guarding the eastern frontier and helps the people of Kerala to lead a sheltered life of their own through the centuries.
- The Western Ghats is also responsible for the high and steady rainfall in Kerala.
- With a height of 2,695 metres, **Anamudi** is the highest peak in India outside Himalayas. Anamudi is located in Idukki district in Kerala.

Eastern lowlands:

- The Kerala Backwaters region is a particularly well-recognized feature of Kerala; it is an interconnected system of brackish water lakes and river estuaries that lies inland from the coast and runs virtually the length of the state.
- These facilitate inland travel throughout a region roughly bounded by Thiruvananthapuram in the south and Vatakara (which lies some 450 km to the north). Lake Vembanad is Kerala's largest body of water. It lies between Alappuzha and Kochi.

c). Rivers

Ponnani(Bharatapuzha):

- The Ponnani rises in the Western Ghats range northeast of Palakkad. The river empties into the Arabian Sea at Ponnani. It is the second longest river in Kerala, after Periyar.

Periyar:

- It is the longest river and the river with the largest discharge potential in Kerala. It generates a significant proportion of Kerala's electrical power via the Idukki Dam. The source of the Periyar lies high in the Western Ghats. The Mullaperiyar dam is constructed at the confluence of the Periyar and Mullayar to create the Periyar Thekkady lake and reservoir, as well as the Periyar National Park. site.

Pamba:

- It is the third longest river in the South Indian state of Kerala after Periyar and Bharathappuzha. The Pamba originates at Pulachimalai hill in the Peerumedu plateau in the Western Ghats. Kuttanad, an important rice cultivation area in Kerala receives its irrigation water from the Pamba river. The river finally empties into Vembanad lake.



d) Important Protected area:

Silent valley National park:

- It is a national park in Kerala, India. It is located in the Nilgiri hills. This national park has some rare species of flora and fauna. It is characterized by tropical moist evergreen forest. It is the core of the Nilgiri Biosphere Reserve and is part of the Nilgiri Sub-Cluster Western Ghats World Heritage Site, recognised by UNESCO.

Why in news?

Exclusive zones to conserve Karimeen:

- The authorities have made reserves in **Vembanad** and **Ashtamudi** Lakes to save karimeen (Pearl spot).
- The population of karimeen is declining fast. This act will help in retrieval of other species too.

About Ashtamudi Lake:

- It is a backwater in Kollam district, Kerala.
- Kallada River is a major river discharging into the Ashtamudi Lake.



- **Munroe** Island is present in this lake.
- It is one of the **Ramsar sites** of India.(Wetland of International importance)

About Vembanad Lake:



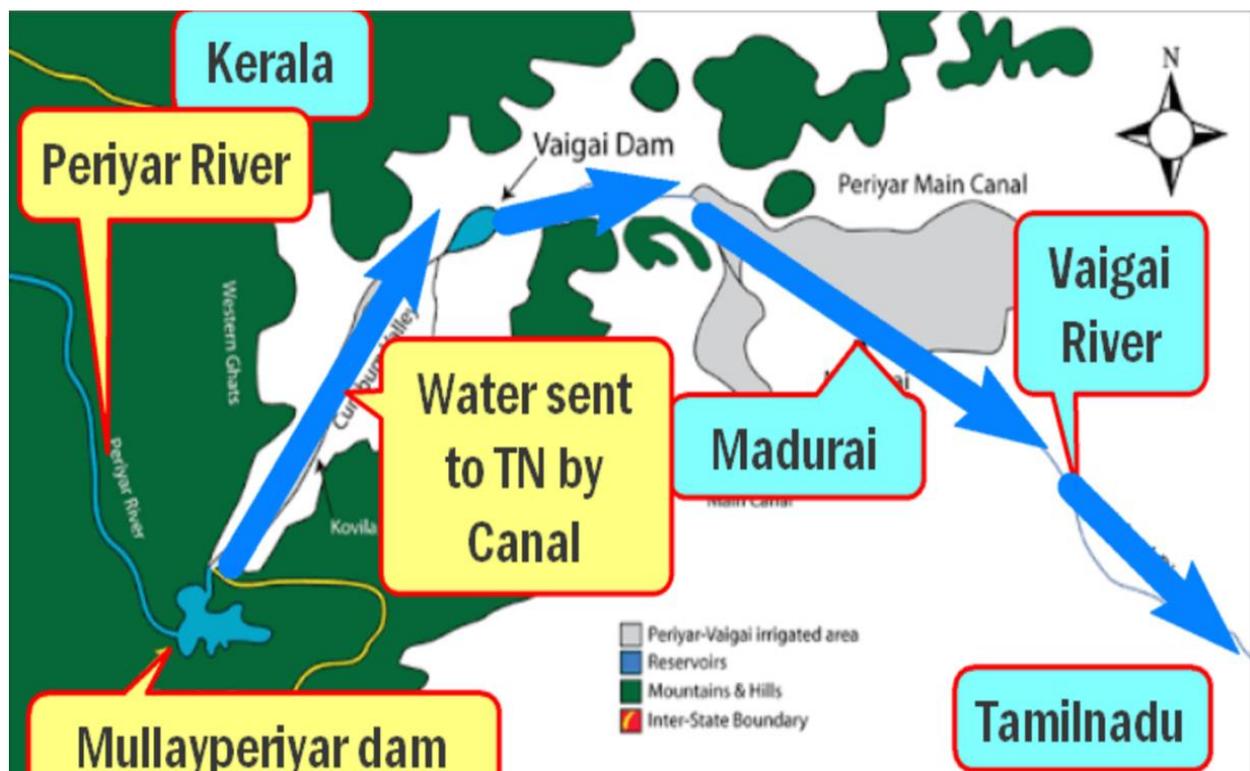
- The longest lake in India. Located in Kerala.
- It is one of the **Ramsar sites** of India.(Wetland of International importance)
- The Nehru Trophy Boat Race is conducted in a portion of the lake.
- **Pamba** and **Periyar** river discharges into this lake

Mullaperiyar Dam

- In 2014, the **Supreme Court ordered to appoint a three-member committee** with chairman of the Central Water Commission as the chairperson and representatives from the States of Kerala and Tamil Nadu to supervise and ensure that the water level in the Mullaperiyar dam was **raised from 136 feet to 142 feet**.
- As per directions of the Supreme Court in a 2014 judgement, the Ministry of Jal Shakti has constituted a three-member Supervisory Committee to supervise the restoration of Full Reservoir Level (FRL) in the Mullaperiyar Dam to the elevation of 142 ft.

About Mullaperiyar dam:

- It was built in 1895 on the **Periyar River** in Idukki District of Kerala.
- The Periyar River originates from **Sivagiri hills** of Western Ghats and flows through the Periyar National Park and finally to the Arabian Sea.It is the **longest river in Kerala**.
- The **Mullaperiyar dam** is constructed at the confluence of the **Periyar** and **Mullayar** to create the **Periyar Thekkady lake and reservoir**.
- The area belonging to Tamil Nadu in the Periyar basin is located far down the river from the Mullaperiyar Dam site.This area is drained by the tributary **Nirar**, which is diverted to Tamil Nadu as a part of inter-state **Parambikulam-Aliyar Project (PAP) agreement**.
- From Periyar Thekkady lake and reservoir, some water is diverted eastwards to Tamil Nadu via a tunnel. The diverted water, after power generation, is let into the **Suruliar river** (a tributary of the**VaigaiRiver**) thereby resulting in an inter-basin transfer of water.



- Downstream of the Mullaperiyar dam, the Periyar continues to flow northwestward for 35 kilometres to the **Idukki reservoir** formed by the Idukki, Cheruthoni and Kulamavu dams.

- The Idukki dam is constructed across the Periyar river on the famous Idukki gorge formed by the **Kuravan and Kurathi hills**



- Although the dam is located in Kerala, it is operated by **Tamil Nadu** following an 1886 lease indenture for 999 years that was signed between the Maharaja of Travancore and the Secretary of State for India for the Periyar Irrigation works.
- After India's independence, this contract was renegotiated in 1970 formally, wherein Kerala allowed Tamil Nadu to use the water for the reservoir in exchange of a revised rent, while also allowing it to generate power.

7. Uttar Pradesh

Geography of Uttar Pradesh:

a) Boundary

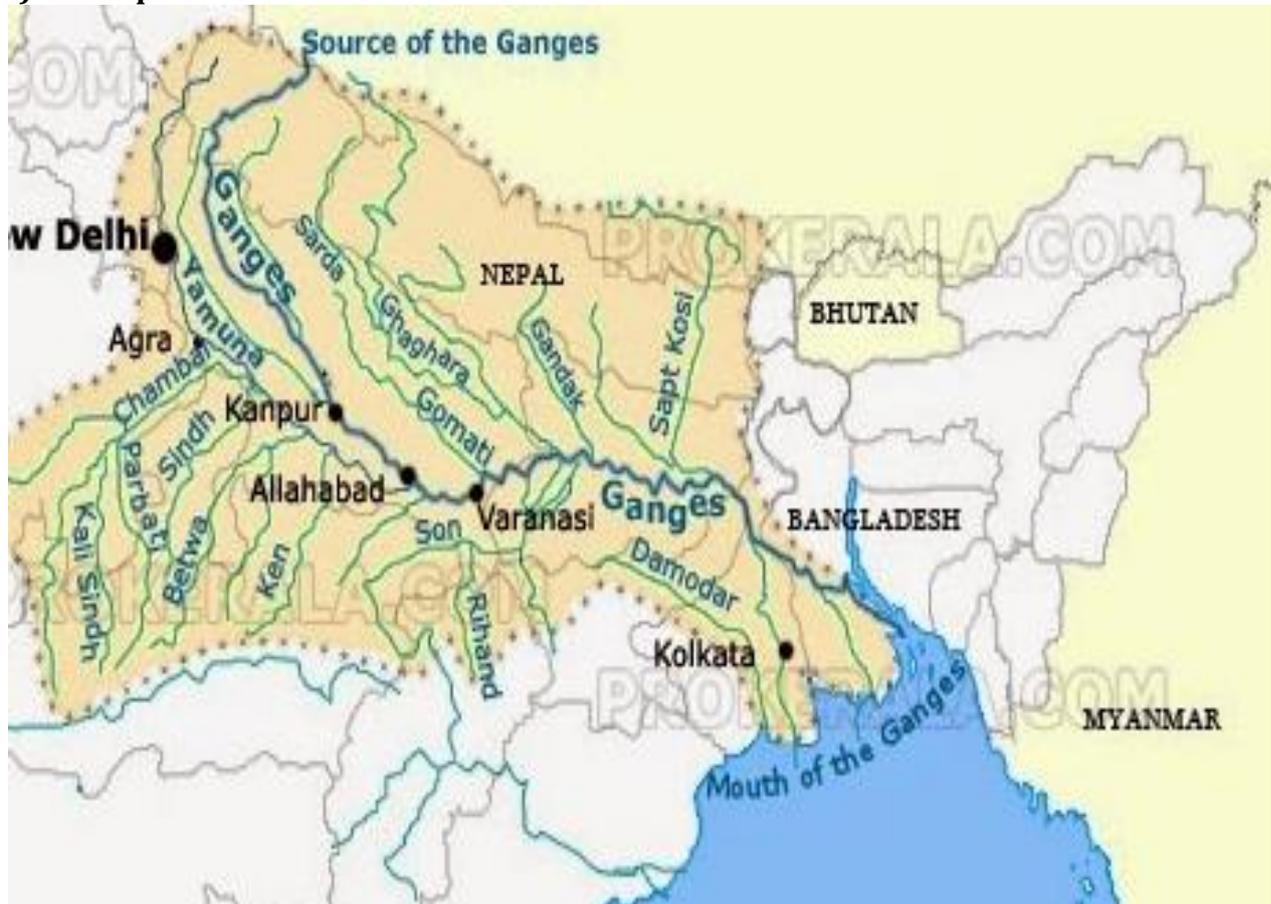
Uttar Pradesh is bordered by

- Uttarakhand and the country of Nepal to the North
- Bihar to the east,
- Jharkhand and Chhattisgarh to the Southeast,
- Madhya Pradesh to the South,
- Rajasthan, Haryana and the national capital territory of Delhi to the West.

b) Physical features

- **Bhabar:** The Shivalik Range which forms the southern foothills of the Himalayas, slopes down into a boulder bed called Bhabar.
- **Terai:** The Bhabar tract gives place to the terai area which is covered with tall elephant grass and thick forests interspersed with marshes and swamps. The sluggish rivers of the Bhabar deepen in this area, their course running through a tangled mass of thick undergrowth. The terai runs parallel to the Bhabar in a thin strip.

c). Principal rivers



- **Ganges:** The Ganges is a trans-boundary river of Asia which flows through India and Bangladesh. The 2,601 km 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. In Uttar Pradesh the Ganga river flows for around 1140km.
- **Yamuna:** It is the second largest tributary river of the Ganga and the longest tributary in India. Originating from the **Yamunotri Glacier** of **Banderpooch peaks** of the Lower Himalaya in Uttarakhand. It merges with the Ganges at Triveni Sangam, Prayagraj which is a site of the Kumbh Mela, a Hindu festival held every 12 years. Prominent tributaries are Tons, Hindon, Rind, Sengar, Varuna, Chambal, Betwa, Ken.
- **Gomti:** It is a tributary of Ganga river. It originates from Gomat Taal near Madho Tanda, Pilibhit, India. It extends 960 kilometres through Uttar Pradesh and meets the Ganges near Varanasi district.

- **Ghaghara:**It is a perennial trans-boundary river originating on the Tibetan Plateau near Lake Manasarovar. It cuts through the Himalayas in Nepal and joins the Sharda River at Brahmaghat in India. Together they form the Ghaghara River, a major left bank tributary of the Ganges. It is the largest tributary of the Ganges by volume and the second longest tributary of the Ganges by length after Yamuna.
- **Sharda:**It is a tributary of Ghaghra river, which in turn is a tributary of Ganga. It is also called as **Kali River**. It originates at Kalapaani in the Himalayas in the Pithoragarh district in Uttarakhand, India. It flows along Nepal's western border with India.
- **Ramganga:**The Ramganga River originates in the southern slopes of **Dudhatoli Hill** in Pauri Garhwal District of the Indian state of Uttarakhand. It is a tributary of the river Ganges, Ramganga flows through the Jim Corbett National Park.

d) Important protected area:



- **Dudhwa National park:** It is the only national park of Uttar Pradesh. It is located in the Terai belt of marshy grasslands of northern Uttar Pradesh, India. It is part of the Dudhwa Tiger Reserve. It is located on the Indo-Nepal border. It is characterized by tropical semi-evergreen to tropical deciduous type of vegetation. **Suheli** and Mohana streams flow in the Dudhwa National Park. They are tributaries of the mighty **Ghagra River**.

Why in news?

a) 'National importance' tag:

- Sadikpur Sinauli, Baghpat district in Uttar Pradesh expected to get National importance tag from Archeological survey of India following the excavation of underground "sacred chambers", chariots, decorated "legged coffins" as well as fascinating artefact.
- Sinauli is located on the left bank of the River Yamuna, 68 km north-east of Delhi which brought to light the largest necropolis of the late Harappan period datable to around early part of second millennium BCE.
- India's premier conservation body, Archeological Survey of India (ASI) under the Union Culture Ministry has issued a preliminary notification in this regard showing its intention to tag the site as 'national importance'.
- The aim is to protect the site from encroachment, tempering and destruction. Around 28.67 hectares of land mostly belonging to the locals in the region has been earmarked for notification.

b) Chaukhandi Stupa:

- Archaeological Survey of India (ASI) has declared Chaukhandi stupa located in **Sarnath, UP** as **protected area of national importance**.
- This notification will allow ASI to undertake restoration and preservation works at the site.

About the stupa:

- Chaukhandi Stupa is a Buddhist site and has served as a place of **relics of Buddha**.
- It is called Chaukhandi because of four armed plan.
- This site finds mention in **Hiuen Tsang**, traveler during Harsha's period.
- This site was renovated during Mughal period by Raja Todarmal to commemorate Humayun visit.



8. Tripura

Geography of Tripura:

a) Boundary

- Tripura is a land locked state. It is located in the north-eastern part of the subcontinent. It is bordered to the north, west, and south by Bangladesh. It also borders the state of Mizoram and Assam.

b) Physical features

- The range of hills rises from the plains of Sylhet in Bangladesh at the north and proceeds southwards until they join the hills of the Chittagong hill tracts in Bangladesh. The elevation of hills gradually increases in the east. The eastern range of the Jampui is situated at an elevation of 914 meters above MSL and the western range of the Baramura, Deotamura with its elevation of 244 meters above MSL is the lowest.
- **Jampui Range:** It is a hill range located in the North Tripura district in the north eastern part of the Indian state of Tripura. The average altitude of the hill range is approximately 1000 metres above sea level. The hill range has 11 villages inhabited by Mizo (Lushai tribes) and also by Reang tribes. It is famous for orange festival.
- **Deotamura Range:** It is a hill range in South Tripura district of Tripura, India. It is known for an archaeological site of rock sculptures, a panel of carved images, on the bank of Gomati River

c). Principal rivers

Gumti:

- Gumti River originates from **Dumur** in Tripura state of India. From its source it flows about 150 km along a meandering course through the hills, turns west and enters Bangladesh.



Feni River:

- It is a river in south-eastern Bangladesh and Tripura state of India. It is a trans-boundary river with an ongoing dispute about water rights. The Feni River originates in South Tripura

district and flows through Sabroom town and then enters Bangladesh. Muhuri River, also called Little Feni joins it near its mouth.

Why in news?

Feni Bridge:

- The Feni Bridge also known as Maitree Setu, is a bridge being constructed over Feni River started in 2017, and it is expected to be completed by April 2020.

9. Odisha

Geography of Odisha:

a) Boundary

- It shares national boundary by the states of Jharkhand, West Bengal, Andhra Pradesh, Telangana, Chhattisgarh. It has long coastline in the east through the Bay of Bengal.

b) Physical features

- **Garhjat Range:** It is a north-eastern prolongation of the eastern Ghats which rises abruptly and steeply in the east and slopes gently to a dissected plateau in the west running from north-west (Mayurbhanj) to south-west (Malkangiri).
- **Maliya Range:** It is also called as Odisha hills. **Mahendra Giri (1,501 m)** is the tallest peak here.

c). Principal rivers

Mahanadi:

- It rises in the Sihawa town in Dhamtari district of Chhattisgarh. The river flows through the states of Chhattisgarh and Odisha. It flows through the Raipur city. Near the city of Sambalpur, it is dammed by the largest earthen dam in the world, the **Hirakud Dam**. It empties into the Bay of Bengal. Its principal tributaries are Hasdeo, Sheonath, Ong, Tel, Ib, Mand.



Subarnarekha:

- The **Subarnarekha River** flows through the Indian states of Jharkhand, West Bengal and Odisha. The rain-fed Subarnarekha originates south of Ranchi on the **Chhotanagpur plateau**. River Kharkai is its principal tributary. It flows the industrial town of Jamshedpur where TISCO is located.



Baitarani:

- The Baitarani originates from the Guptagang hills in Keonjhar district in Odisha state. Afterwards for about half a kilometre the river flows underground and is not visible from outside. The Baitarani is known here by the name Guptaganga. The beginning portion of Baitarani acts as the small part of boundary between the states of Odisha and Jharkhand.

Brahmani:

- The **Brahmani** is a major seasonal river in the Odisha state of Eastern India. The Brahmani is formed by the confluence of the Sankh and South Koel rivers. It forms a large delta before emptying into the Bay of Bengal

Vamsadhara:

- It is an important east flowing river between Rushikulya river and Godavari river, in Odisha and Andhra Pradesh states in India. The river originates in the border of Thuamul Rampur in the Kalahandi district of Odisha and runs for a distance of about 254 kilometers, where it joins the Bay of Bengal at Kalingapatnam, Andhra Pradesh.

Rushikulya river:

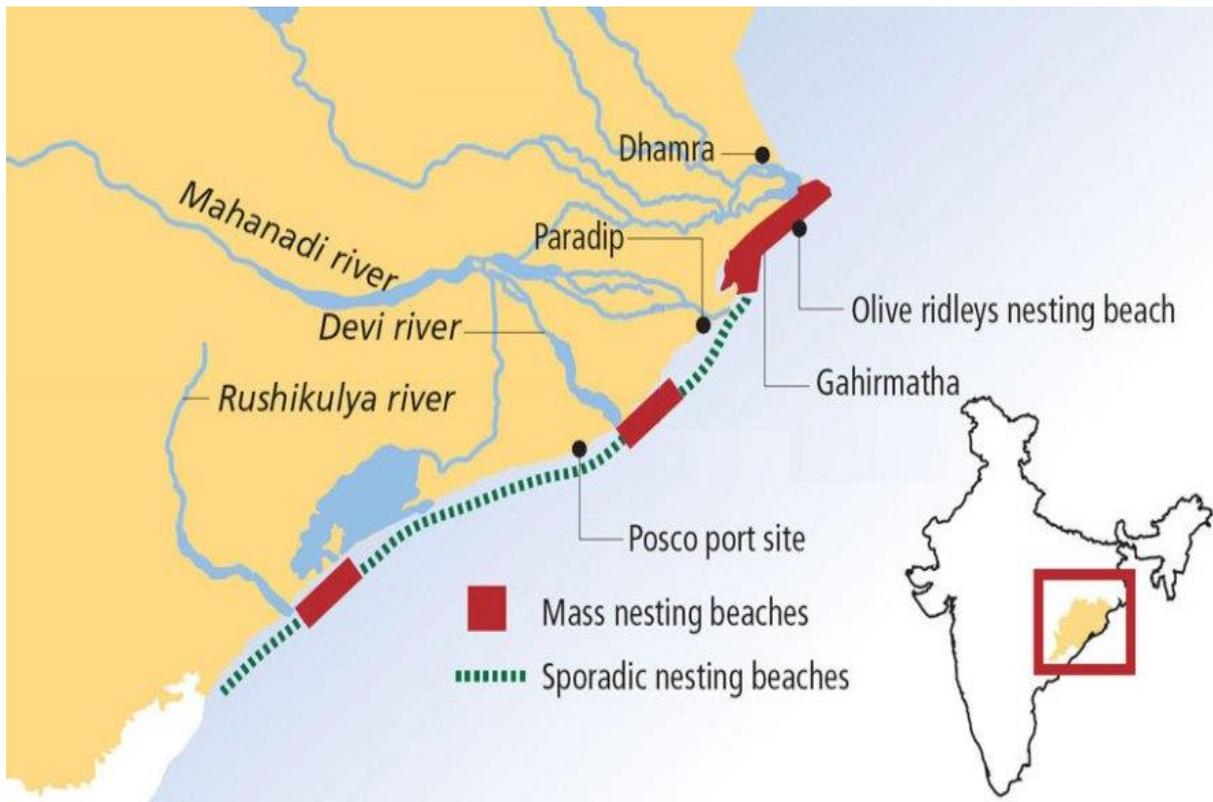
- It is one of the major rivers in the state of Odisha and covers entire catchment area in the districts of Kandhamal and Ganjam of Odisha. The Rushikulya originates from **Daringbadi hills** of the Eastern Ghats range.

d) Important protected areas:

Simlipal National park:

- Simlipal National Park is national park and a tiger reserve in Mayurbhanj district of Odisha. Simlipal National Park derives its name from the abundance of semul (red silk cotton)

trees) that bloom here. It is the second largest national park in India. Its reserve is part of UNESCO World Network of Biosphere Reserves since 2009.



Grahirmatha Marine sanctuary:

- It is a marine wildlife sanctuary located in Odisha and is a very popular tourist attraction of Odisha in India. It is the world's largest nesting beach for Olive Ridley Turtles. It extends from Dhamra River mouth in the north to Brahmani river mouth in the south.

Why in news?

a) Olive Ridley turtles:

- Mass nesting has been seen in Rushkuliya coast

b) Chilika lake

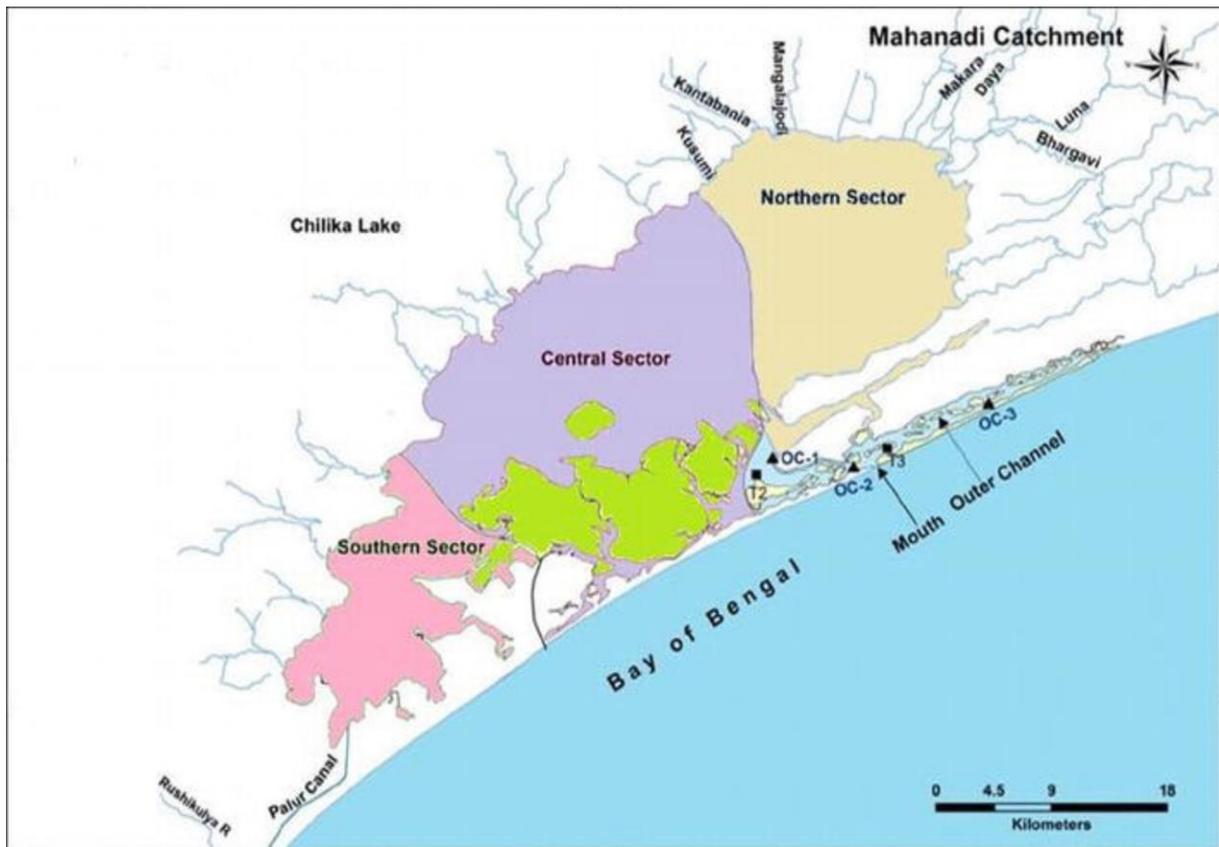
- Due to waves of intense energy lashed by the extreme severe cyclone, Fani, on May 3, four new mouths have opened up in the Chilika lake, Odisha.
- Now there are totally six mouths. This might change the ecological character of Chilika.

About the lake:

- Chilika is the **largest brackish water lake in Asia**.
- The salt content or salinity comes from seawater that enters the lagoon from a small inlet that runs parallel to the sea and opens up at a place known as the mouth.
- Freshwater comes from 52 small and large rivers that drain into the lake, largely from **Daya** and **Bhargavi** rivers.



- The lake's salinity varies—from 0 in the northern sector, where there is complete freshwater, to 33 in the mouth, which is complete saltwater.



- This **delicate salinity gradient** between different parts of the lake supports a wide variety of ecosystems.
- Any disturbance to this salinity gradient either by incursion of more freshwater, polluted water or seawater can be **detrimental** to the health and survival of myriad species of plants and animals that Chilika supports.

10. Arunachal Pradesh

Geography of Arunachal Pradesh:

a) Boundary

- It has international boundary with the kingdom of Bhutan, Tibet Autonomous Region of China and Myanmar.
- It also shares national boundary with the state of Nagaland and Assam.

b) Physical features

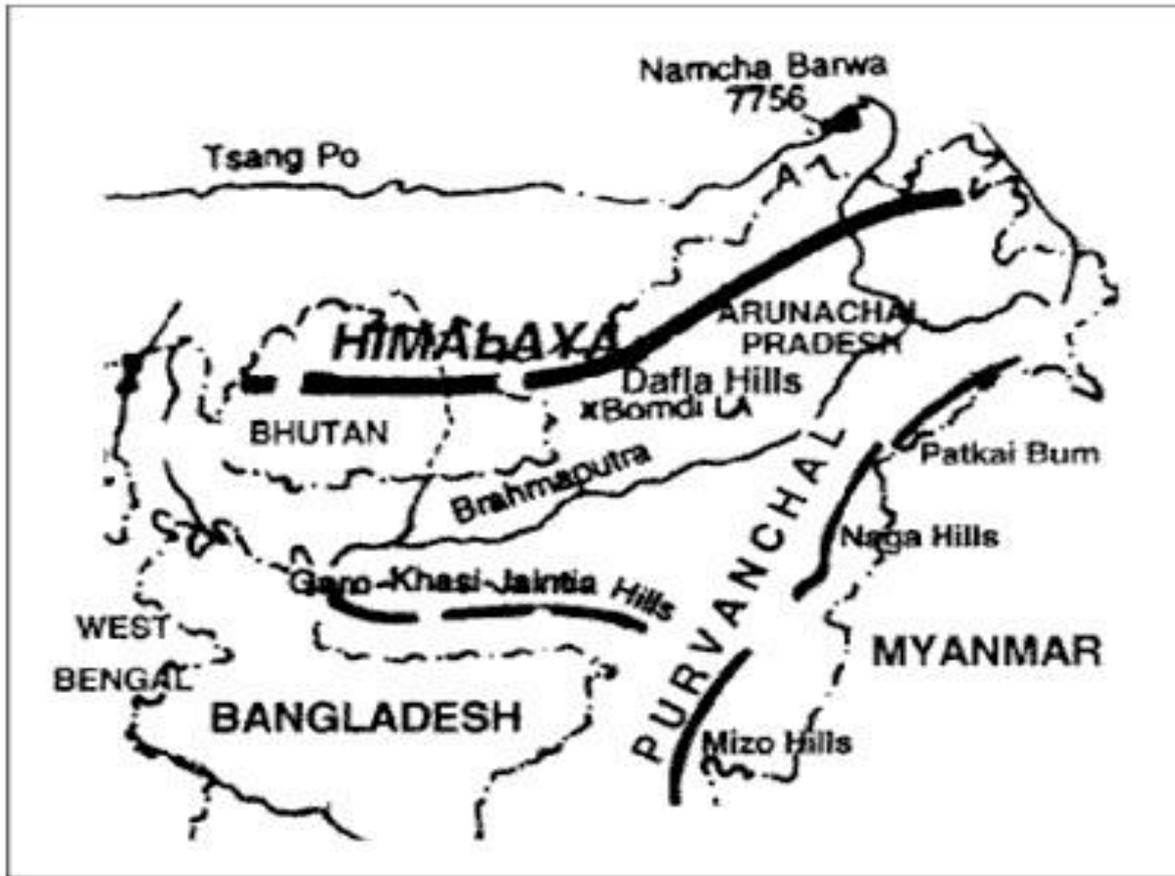
Assam Himalayas:

- It is a traditional designation for the portion of the Himalaya range between the eastern border of Bhutan (Teesta river), on the west, and the Great Bend of the Tsangpo River (Brahmaputra), on the east. The highest peak of this range is **Namcha Barwa**. The Subansiri, Manas, Sankosh rivers originate from Assam Himalayas.

Purvanchal Range:

- It is a sub-mountain range of the Himalayas in northeast India. It lies south of the Brahmaputra valley. The range is an eastern extension of the Himalayan Range System, in north eastern India. It bends sharply to the south beyond the Dihang River gorge, and spreads along the eastern boundary of India with Myanmar. The Purvanchal range includes

the hill ranges of the Mishmi hills, Patkai, Barail Range, Naga Hills, Lushai Hills and Jampui Hills



Mishmi Hills:

- It is the highest range of Purvanchal hills. It is situated in the north eastern part of Arunachal Pradesh. Brahmaputra makes gorge in this hills.



Patkai Bum:

- It is a north south ranging hills located in the Arunachal Pradesh and Nagaland border.



Dafla Hills:

- Located in the central part of Arunachal Pradesh. It is bounded on the west by the Aka Hills and on the east by the Abor Range.

Abhor Hills:

- It is located near the Indo china border. It is located between Miri and Mishmi hills.

c) Principal rivers



Brahmaputra:

- The Brahmaputra basin originates in Tibet (Chemayungdung glacier) and flows across southern Tibet entering India via Arunachal Pradesh and flows through Assam finally ending at Bangladesh.

Dibang [Sikang]:

- It is a left bank tributary of Brahmaputra. It originates and flows through the Mishmi Hills.

Lohit:

- Source- Tibet Region. It flows through the Mishmi Hills, to meet the Brahmaputra at the head of the Brahmaputra valley. Dhola-Sadia bridge/Bhupen Hazarika bridge spans over this river.

Subansiri:

- Source- Tibetan Himalayas. It is an antecedent river and important right bank tributary of Brahmaputra.

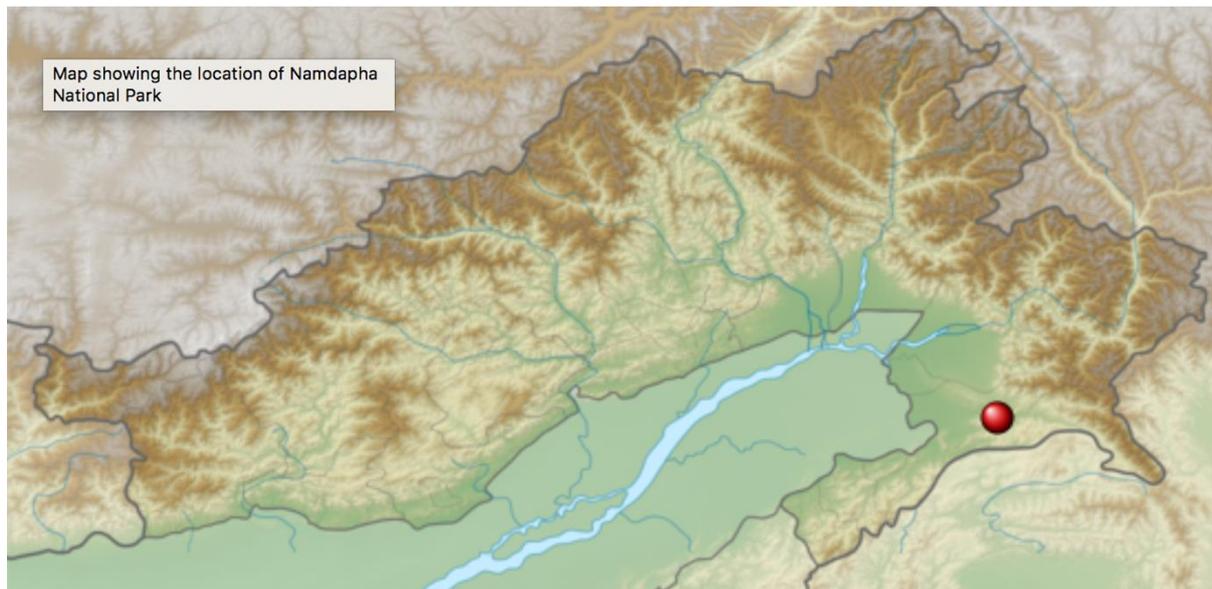
Kameng:

- The west bank of the river consists Akka hills which are resided by the Akka tribes and the east consisting of the Dafla hills is resided by the Daphla tribe. The Kaziranga National Park and the Pakkhui Wildlife Sanctuary are located near the Kameng River.

d) Important protected area:

Namadapa National park:

- The national park is located in northeastern state of Arunachal Pradesh, near the international border with Myanmar. It is located between the Mishmi Hills and the Patkai range. It is crossed from east to west by the Noa Dihing River that originates at the Chaukan Pass located on the Indo-Myanmar border. The land cover changes with increasing elevation from tropical evergreen forest to temperate broadleaf and mixed forest.



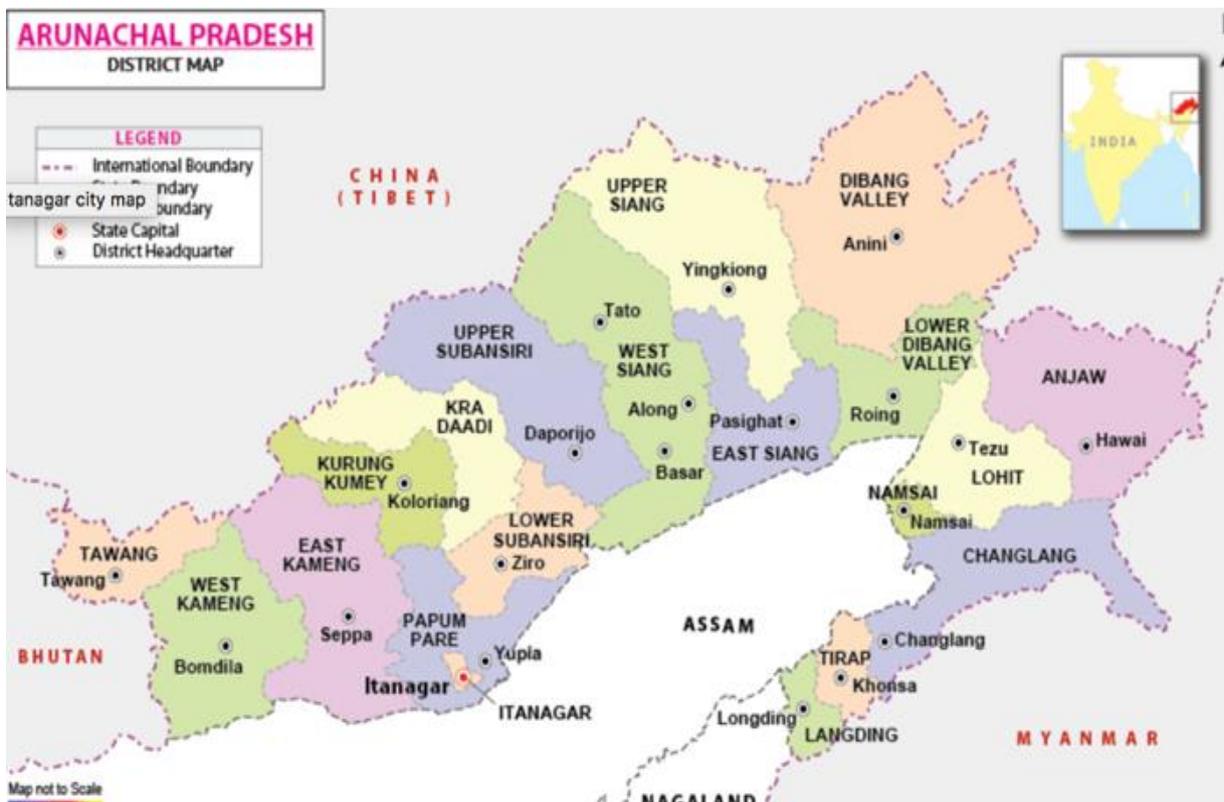
What is in the news?

Sisseri River Bridge:

- Defence Minister Rajnath Singh inaugurated the **Sisseri River bridge** located at Lower Dibang Valley district in Arunachal Pradesh.
- The bridge connects **Dibang Valley district with Siang valley district in Arunachal Pradesh.**

About the River:

- **Sisar River** is a tributary of **Dibang River**.
- **Dibang River**, also known as **Sikang** in turn is a tributary river of the Brahmaputra that originates and flows through the **Mishmi Hills** and northeast India from the state of Arunachal Pradesh.



- This bridge is also strategically important from a military viewpoint and will be a part of Trans Arunachal Highway.
- It is constructed over **Sisar River**.
- It was constructed under **Project Brahmaputra** of Border Roads Organisation (BRO).

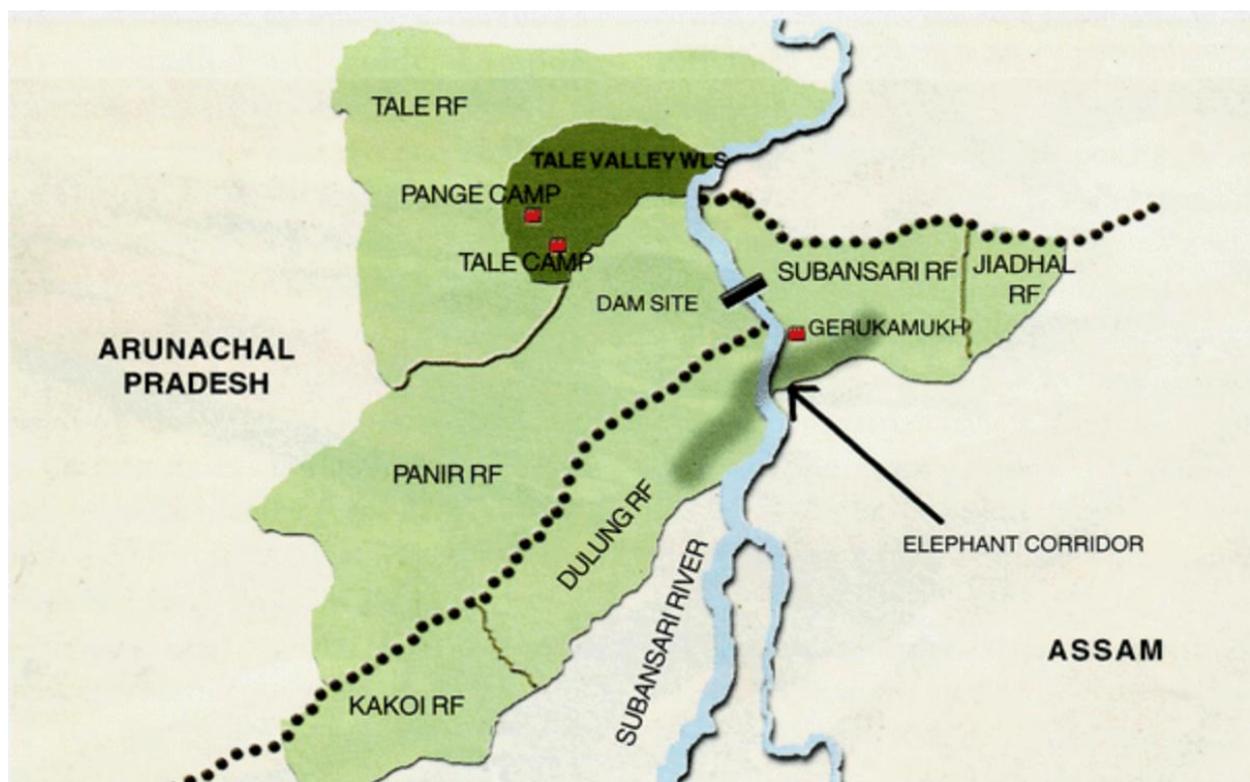
- Project Brahmaputra aims to maintain and develop the difficult geographical terrain and strategically important area.

b). Talley Valley wildlife sanctuary:

- Scientists have found a new species of burrowing snake in Talley Valley Wildlife Sanctuary, named **Trachischium aptei**.

About Talley valley Wildlife sanctuary:

- Talley Valley is a wildlife sanctuary as well as a biodiversity hotspot located in **Arunachal Pradesh**.
- Comprising **sub-tropical and alpine forests**, the valley has a variety of flora and fauna, many of which are endangered.
- River **Subansiri** flows through the Talley valley.
- It is home to highly endangered species like **clouded leopards**.
- **Pleioblastus simone** is a bamboo variety only found in Talley Valley.



11. Nagaland

Geography of Nagaland:

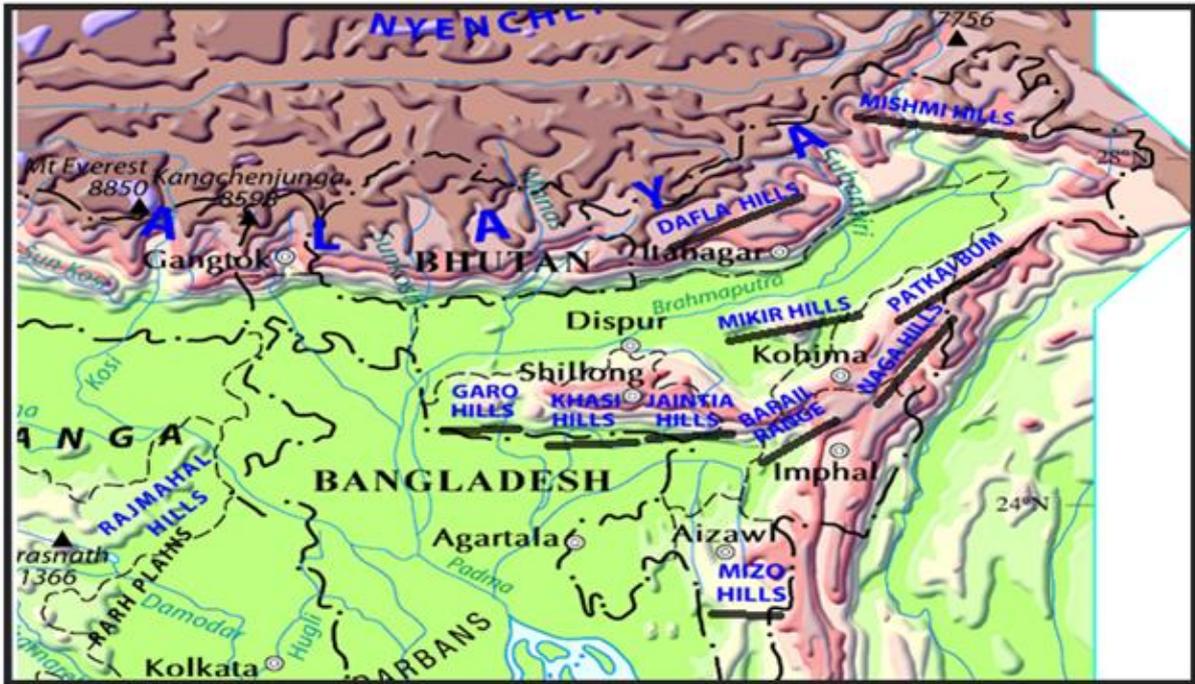
a) Boundary: Nagaland, state of India, lying in the hills and mountains of the north-eastern part of the country. It is one of the smaller states of India. Nagaland is bounded by the Indian states of Arunachal Pradesh to the northeast, Manipur to the south, and Assam to the west and northwest and the country of Myanmar (Burma) to the east.

b) Physical features

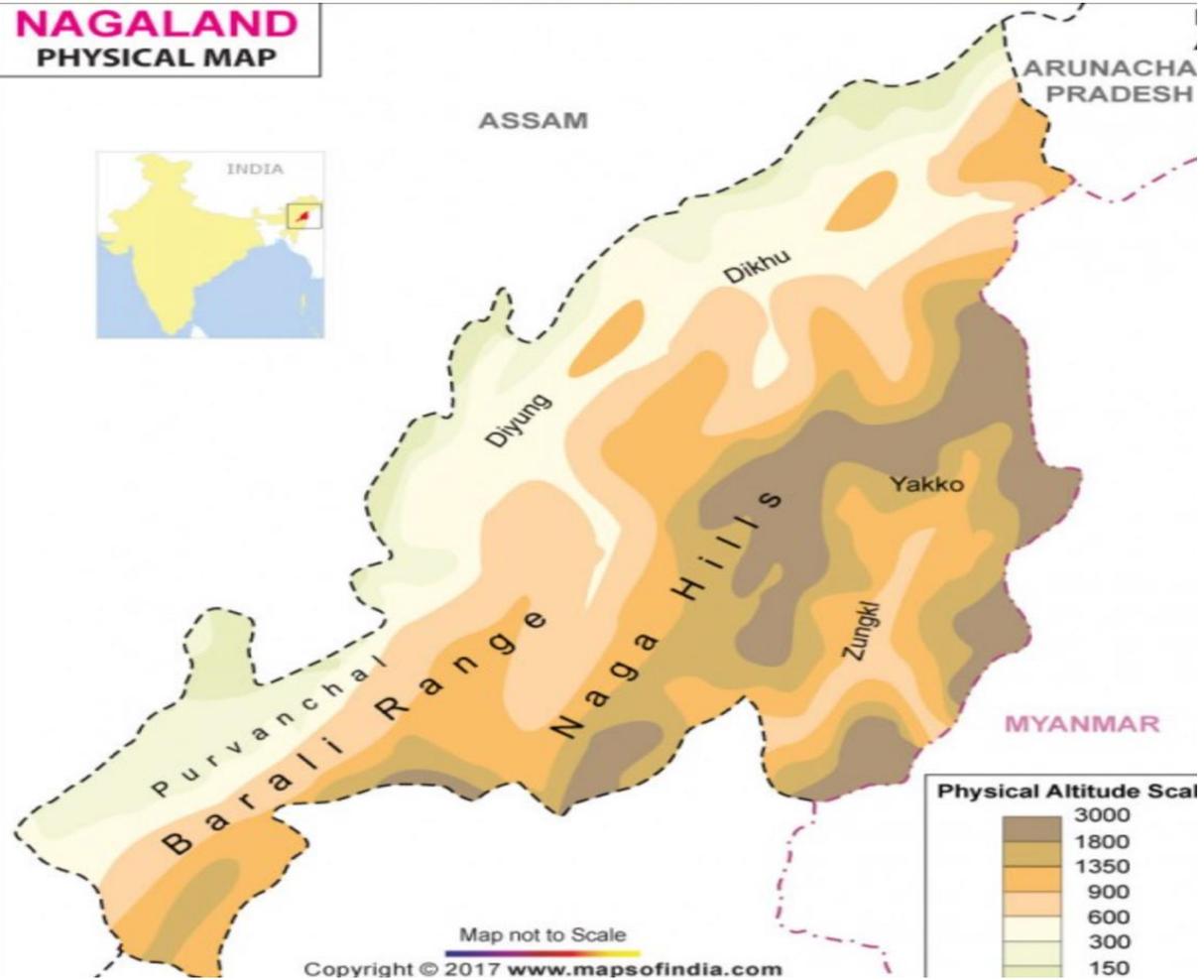
Naga Hills:

- They are part of the **Purvanchal range**. It part of the complex mountain barrier on the border of India and Myanmar (Burma). Naga hills are a northern extension of the Arakan

Yoma. **Mount Saramati** is the highest peak here. Baraile range separates Naga hills from Manipur hills.



NAGALAND PHYSICAL MAP



c). Rivers

Doyang:

- It is the longest and the biggest river of Nagaland. Doyang Hydroelectric Power Plant of capacity 75MW is built on the Doyang river. It **originates** in Manipur. Doyang river is the tributary **Dhansiri** river which in turn is a tributary of **Brahmaputra**.

Dikhu:

- It is another important river of Nagaland. It is also a tributary of **Brahmaputra**.

Barak:

- Source-Liyai kullen village in Manipur. The Barak River is a 900-kilometre-long river flowing through the states of Manipur, **Nagaland**, Mizoram and Assam in India and into the Bay of Bengal via Bangladesh. Of the 900 km, 524 km is in India, 31 km on Indo – Bangladesh border and the rest is in Bangladesh. The navigable portion of Barak River in India, the 121 km stretch between Lakhipur and Bhanga has been declared as National Waterway 6, (NW-6). **Tipaimukh Dam** is a proposed embankment dam on the Barak River.
- tributaries: River Sonai (Tuiri River), Jatinga and the Madhura river.

Tizu river:

- It originates in Nagaland and becomes a tributary of Chindwin River in Myanmar.

d) Important Protected areas

Ntangki National Park:

- Ntangki National Park is the only National park of the state. It is located in the Dimapur district of the state of Nagaland. It consists of vast stretches of equatorial forest and grasslands.
- Some parts of the national park also have semi tropical and deciduous vegetation.
- The park is made up of thick rain forests making a perfect habitat for all types of mammals, birds, reptiles and insects. The park is home to wildlife like Hoolock gibbon, Golden langur, Palm civets, Tiger, Black stork, Sloth bear, Wild dogs, Flying squirrel, Monitor lizard, Python etc.

Why in news?

- Nagaland to initiate its own version of NRC from July 10

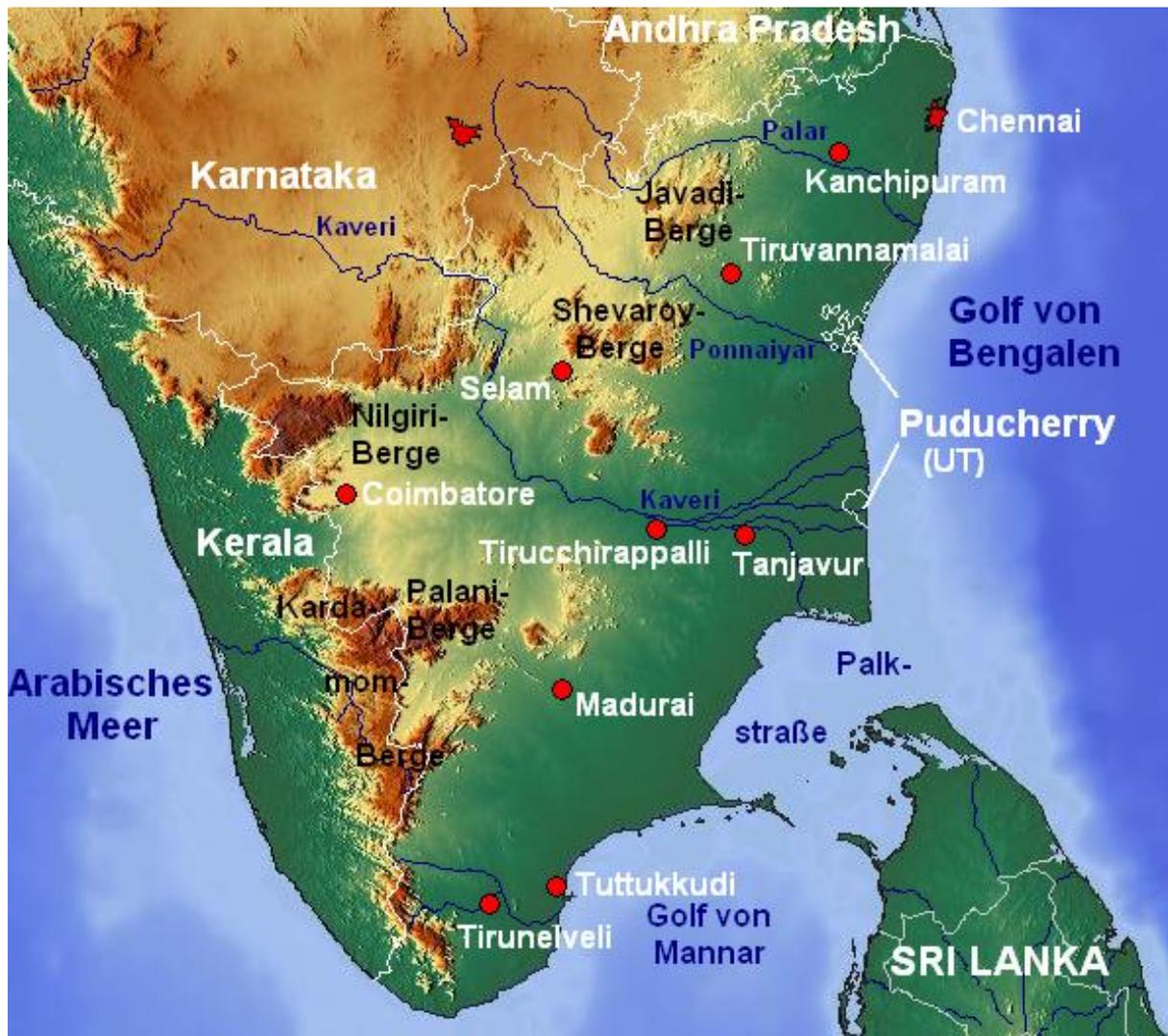
12. Tamil Nadu

Geography of Tamil Nadu:

a) Boundary

- It is bounded by the Indian Ocean to the east and south and by the states of Kerala, Karnataka and Andhra Pradesh in other directions.
- Enclosed by Tamil Nadu along the north-central coast are the enclaves of Puducherry and Karaikal, both of which are part of Puducherry union territory.

b). Physical features



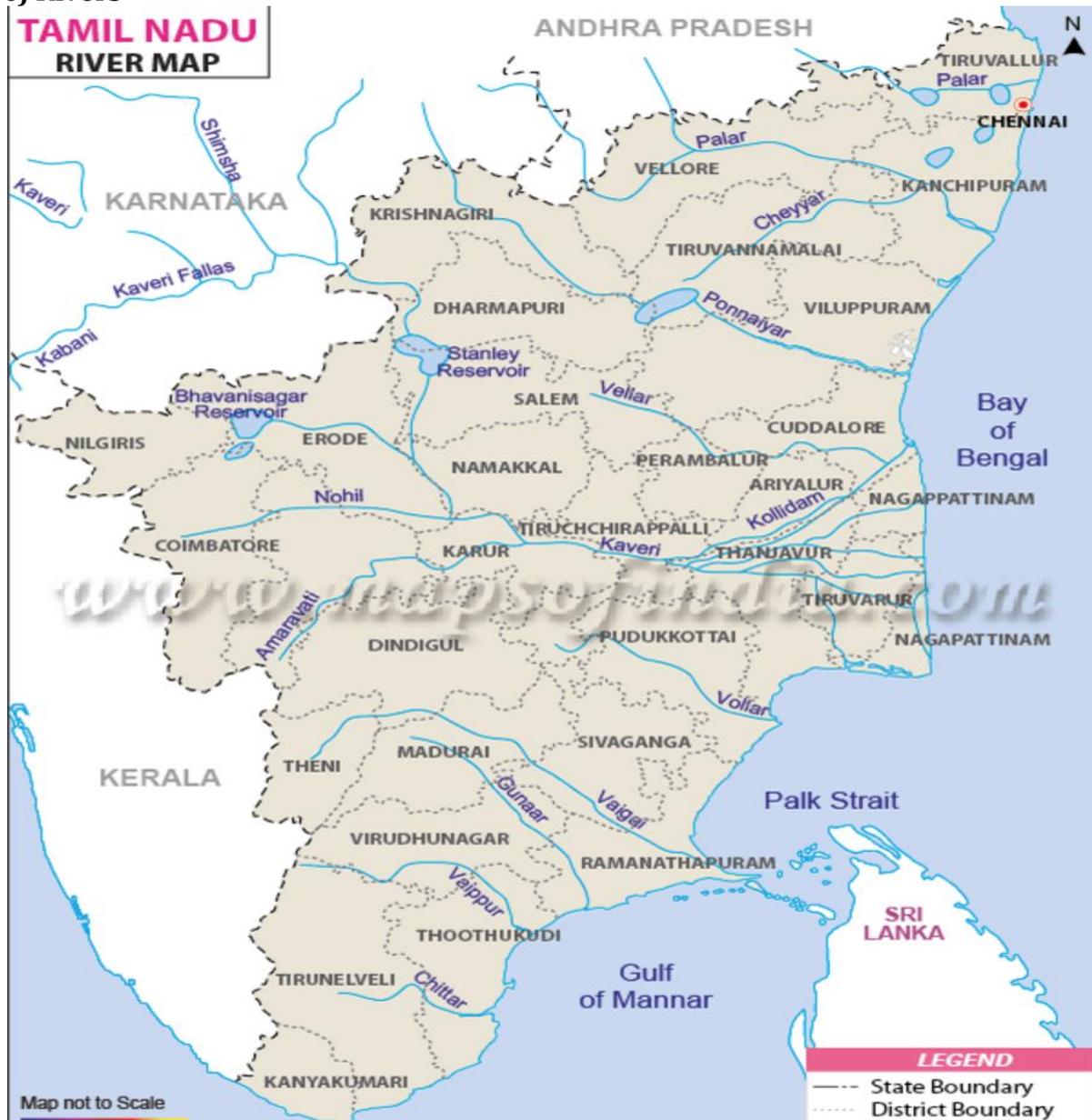
Western Ghats:

- **Nilgiri hills:** The Nilgiri Mountains form part of the Western Ghats in western Tamil Nadu, India. At least 24 of the Nilgiri Mountains' peaks are above 2,000 metres the highest peak being Doddabetta, at 2,637 metres. The Nilgiri Hills are separated from the Karnataka Plateau to the north by the Noyar River. The Nilgiri Hills are part of the Nilgiri Biosphere Reserve (itself part of the UNESCO World Network of Biosphere Reserves and form a part of the protected bio-reserves in India)
- **Cardamom hills:** It is a mountain range of southern India and part of the southern Western Ghats located in southeast Kerala and southwest Tamil Nadu in India. Their name comes from the cardamom spice grown in much of the hills' cool elevation, which also supports pepper and coffee. The Western Ghats and Periyar Sub-Cluster including the Cardamom Hills, are UNESCO World Heritage Sites. Cardamom hills conjoin the Anaimalai Hills to the northwest, the Palani Hills to the northeast.
- **Palani Range:** It lies in the northeast of Anaimalai hills. It is an eastward extension of western ghats. Samukhta river, a tributary of Kaveri has its source in this range.

Eastern Ghats:

- **Javadi hills:** It lies in the state of Tamil Nadu and are part of eastern Ghats. Bheemanmadavu waterfalls is a major tourist attraction in this hills. Cheyyar and Agaram river which are tributaries of Palar raises in this hills.
- **Kalrayan:**The **Kalvarayan Hills** are a major range of hills situated in the Eastern Ghats of the southern Indian state of Tamil Nadu. It gets its name from Kallar community who live in this hills. Gomukhi dam and Periyar falls are major tourist attraction in this range.
- **Shevaroy hills:**The Servarayans form part of the southern ranges of the Eastern Ghats System. The main town here is Yercaud. It is nestled parallel to the lower Chitteri - Kalrayan hills, just north of the Kolli Hills and Pachaimalai Hills hills. Westwards, lie the Mettur hills. This range forms an important link in the southern part of Eastern Ghats hill chain.

c) Rivers



Kaveri:

- It 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. Its principal tributaries are, Hemavati, Kabini, Bhavani, Lakshmana Tirtha, Noyyal, Amaravathi and Arkavati.

Bhavani river:

- It is an Indian river which flows through Indian states of Kerala and Tamil Nadu, India. It's a major tributary of the Kaveri River. Bhavani river originates from Nilgiri hills of the Western Ghats, enters the Silent Valley National Park in Kerala and flows back towards Tamil Nadu. Siruvani river, Coonoor river and Moyar River are its principal tributaries. Lower Bhavani dam is constructed on Moyar river.

Palar:

- It is a river of southern India. It rises in the Nandi Hills of Karnataka state, and flows in Karnataka, Andhra Pradesh and Tamil Nadu before reaching its confluence into the Bay of Bengal. The chief tributary is the Cheyyar River which originates in Javadi hills.

Vaigai:

- It is a river in the Tamil Nadu state of southern India. It originates in Varusanadu Hills, the Periyar Plateau of the Western Ghats range. The Vattaparai Falls are located on this river. The river empties into the Palk Strait close to Pamban Bridge in Ramanathapuram District.

Tambraparni:

- It is a perennial river that originates from the Agastyarkoodam peak of Pothigai hills of the Western Ghats, above Papanasam. It flows the Tamil Nadu state of southern India into the Gulf of Mannar.

d) Important Protected areas:



Mudhumalai National park:

- The **Mudumalai National Park and Wildlife Sanctuary** also a declared tiger reserve, lies on the northwestern side of the Nilgiri Hills (Blue Mountains), in Nilgiri District in Tamil Nadu, India. It shares its boundaries with the states of Karnataka and Kerala. The protected area is home to several endangered and vulnerable species including Indian elephant, Bengal tiger, gaur and Indian leopard.

What is in news?

a) Keeladi:

- In a major turning point in the cultural historiography of the ancient Sangam Age, the
- Tamil Nadu Archaeology Department (TNAD) has published a report titled '**Keeladi-An Urban Settlement of Sangam Age on the Banks of River Vaigai**', based on the recent excavations at Keeladi in Sivaganga district, Tamil Nadu.
- The cultural deposits unearthed has been dated to a period between **6th century BCE and 1st century CE**.
- The Archaeological Survey of India has approved Tamil Nadu archaeological department's request to continue excavations at four locations- **Keeladi** in Sivaganga, **Kodumanal** in Erode, **Sivagalai** in Tirunelveli and **Adichanallur** in Thoothukudi district.

About Keeladi:

- Keeladi is a village near the village in Sivaganga district, in Tamil Nadu, India.
- It is located on the banks of River Vaigai.



- They provided significant archaeological evidence to the descriptions of Tamil poets belonging to the **Sangam period** (Tamil Sangam, an assembly of poets, had its seat in Madurai between 4th century BCE and 2nd century BCE).

b) Mamallapuram

- Chennai Connect – Indo-China Second Informal Summit was held in Mamallapuram.

About Mamallapuram:

- **Mamallapuram**, also known as **Mahabalipuram**, is a town in Tamil Nadu, best known for the UNESCO World Heritage Site of 7th- and 8th-century Hindu Group of Monument. Mamallapuram was one of two major port cities by the 7th century within the Pallava kingdom. The town was named after Pallava king Narasimhavarman I, who was also known as Mahamalla.



13. Rajasthan

Geography of Rajasthan:

a) Boundary

- It is bounded to the north by the states of Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, and Gujarat.
- It also has an international boundary with Sindh and Punjab in Pakistan.

b). Physical features

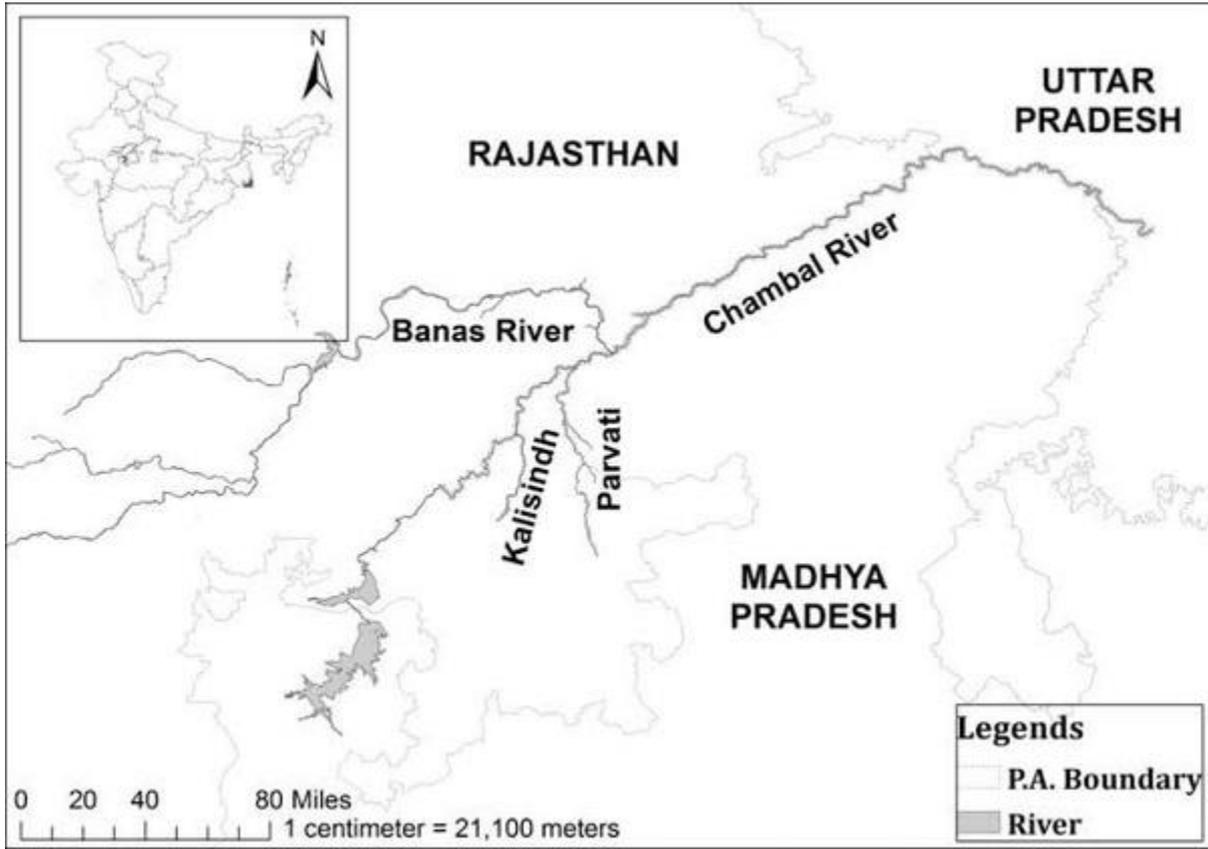
- **Aravalli range:** The Aravalli Range runs for approximately 800 km in the states of Haryana, Rajasthan and Gujarat. Guru Shikhar on Mount Abu is the highest peak in the Aravalli range. There is a break in the range at Sambhar Lake. Rivers like Luni, Sabarmati, and Banas arise from this range.

c) Rivers:

Chambal River:

- The Chambal is the chief tributary of the Yamuna River and rises in the Vindhya Range just south of Mhow, western Madhya Pradesh state. From its source it flows north into Rajasthan and Uttar Pradesh to empty into the Yamuna. Banas, Kalisindh and Parvathi are its

chief tributaries. Gandhi sagar, Jawahar sagar, Rana Prathap sagar dams are constructed across this river.



CHAMBAL VALLEY PROJECT



Banas:

- It rises near Kumbhalgarh and cuts its way tortuously through the Aravalli Range. It then flows in a northeasterly course onto the plains and joins the Chambal River, just north of Sheopur, after a course of 500 km.

Luni:

- The Luni is the only significant river west of the Aravallis. It rises near the city of Ajmer in central Rajasthan and flows west-southwest into the Rann of Kachchh in Gujarat state.

d) Important protected areas:

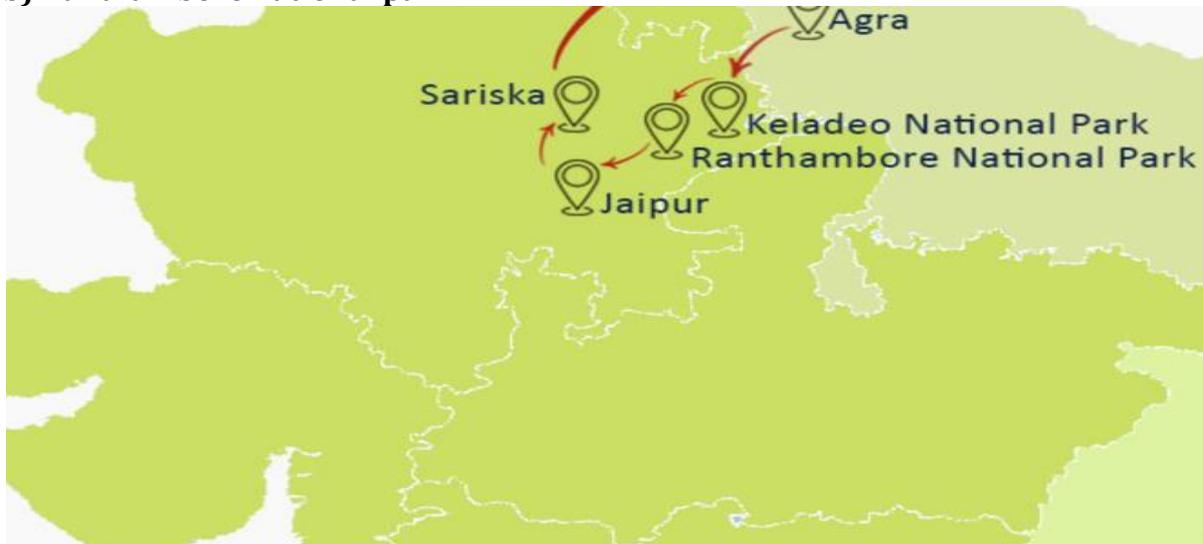
Desert national Park

- Desert National Park in Rajasthan, India, is situated in the West Indian state of Rajasthan near the towns of Jaisalmer and Barmer. This is one of the largest national parks, covering an area of 3162 km². It is an important protected area due to the conservation of **Great India Bustard**.

What is in the news?

a) Jaipur makes it to UNESCO WorldHeritage Site list

b) Ranthambore national park:



- A recent study published in **Threatened Taxa** notes that 86% of the tested dogs around **Ranthambore National Park** in Rajasthan carried Canine distemper Virus (CDV) antibodies in their bloodstream.
- This means that the dogs are either currently infected or have been infected sometime in their life and have overcome the disease. This finding points out that there is an increased risk of disease transfer from the dogs to tigers and leopards that live in the park.
- Canine distemper is a contagious and serious disease caused by a virus that attacks the respiratory, gastrointestinal and nervous systems of puppies and dogs. Contact between wild animals and dogs can facilitate the spread of the virus.
- In 2018, over 20 lions in the Gir forest in Gujarat succumbed to the CDV infection, and now a guideline has been prepared by the National Tiger Conservation Authority to prevent the spillover of the disease to wild animals
- There is heightened risk of CDV disease transfer from local dogs to the tigers and leopards in the Ranthambore National Park, Rajasthan.

About Ranthambore National Park:

- Ranthambore National Park is located in Sawai Madhopur district of Rajasthan.
- The park's deciduous forests are characteristic examples of the type of jungle found in Central India
- Ranthambore National Park lies at the edge of a plateau and is bounded to the north by the **Banas River** and to the south by the **Chambal River**.
- It is known for its Bengal tigers and is a popular place in India to see these animals in their natural jungle habitat.

c). Green wall of India:

- The centre is mulling an ambitious plan of creating Green Wall of India.

About Green wall of India:

- Green Wall of India is a 1,400km-long and 5km-wide green corridor all the way from **Panipat in Haryana to Porbandar in Gujarat** which is modelled on the **Great Green Wall of Africa** that was envisioned to run from Djibouti in the continent's east to Senegal in its west.
- The Delhi metropolitan region's expansion has resulted in widespread deforestation around the capital.
- The **Aravalli range**, which separates western India's Thar desert from the relatively green plains to its east, has lost so much green cover that it is **losing its ability to act as a natural barrier** against the heat and dust that blows in from the west.

SHIELD AGAINST DESERT



Rough contours of proposed 1,400km 'green wall'

- Forest belt likely to run roughly from **Porbandar to Panipat**, covering entire Aravalli range and beyond
- 'Green wall' will act as barrier for dust from west and check eastward march of Thar desert
- It will check desertification by **restoring degraded land through massive afforestation**
- Project yet to get formal nod, details to be worked out

- **Thar Desert's expansion** could even threaten the "granary of India"—the fertile belts of Punjab, Haryana, western Uttar Pradesh and the Malwa region.
- Desertification and land degradation atlas of India brought out by ISRO in 2016 revealed that Gujarat, Rajasthan and Delhi were among states/UT where more than 50% of the total area was degraded land and those under threat of desertification.

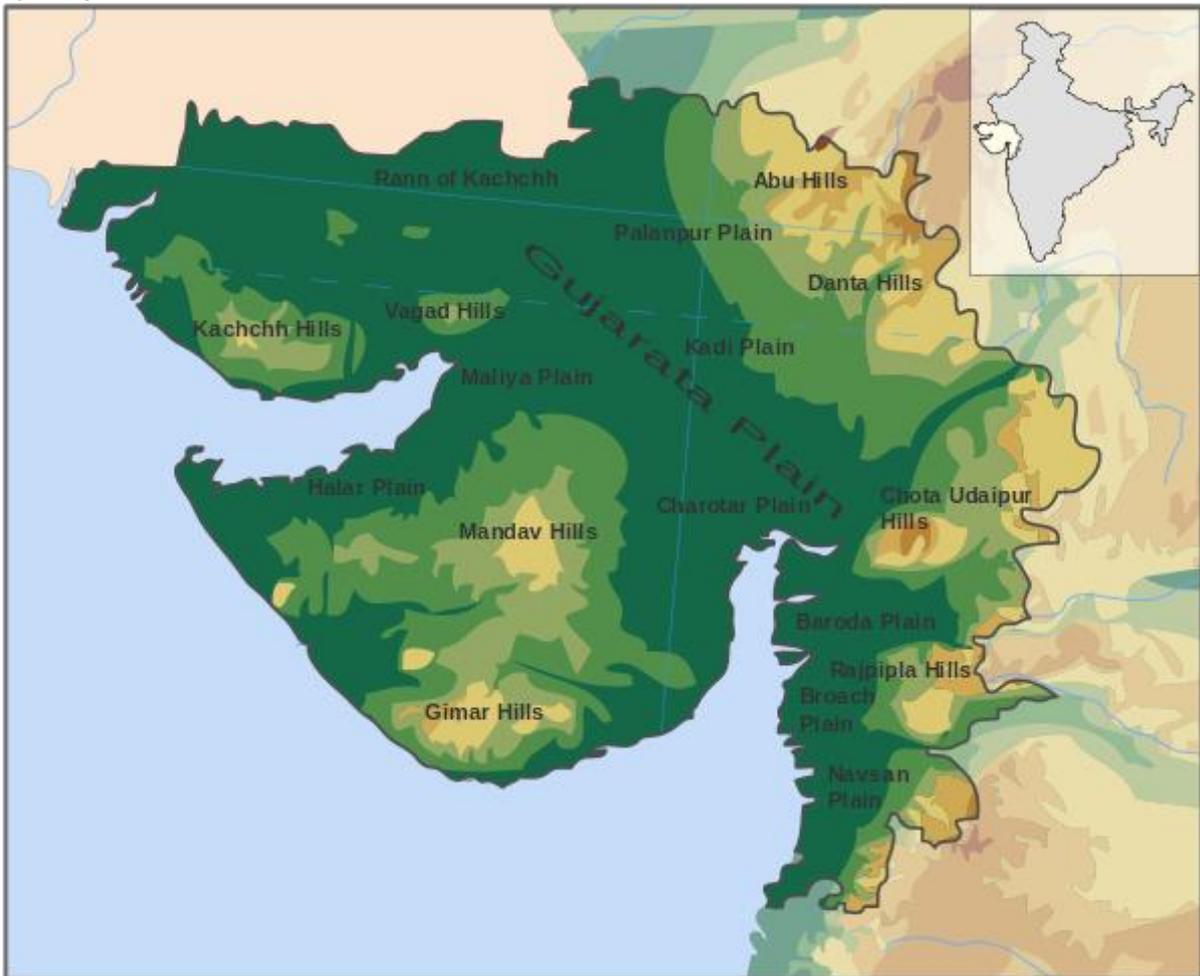
14. Gujarat

Geography of Gujarat:

a) Boundary

- The state is bounded primarily by Pakistan to the northwest and by the Indian states of Rajasthan to the north, Madhya Pradesh to the east, and Maharashtra to the southeast.
- Gujarat also shares a small segment of its southeastern border with the Indian union territory of Dadra and Nagar Haveli, and, together with the Arabian Sea, it surrounds the territory of Daman and Diu.

b). Physical features



- **Vindhyan range:** It is a mountain range in central India. From Gujarat state on the west, it extends about 1,086 km across Madhya Pradesh state to about the Ganges (Ganga) River valley near Varanasi, Uttar Pradesh. The Vindhya range gives rise to the main southern tributaries of the Ganges-Yamuna system, including the Chambal, Betwa, Ken, and Tons rivers. The southern slopes of Vindhya are drained by the Narmada river.
- **Western Ghats:** The **Western Ghats**, also known as **Sahyadri** are a mountain range in a stretch of 1,600 kilometres parallel to the western coast of the Indian peninsula, traversing through various states of India. It is a UNESCO World Heritage Site and is one of the eight "hottest hot-spots" of biological diversity in the world. The range starts near the Songadh town of **Gujarat**, south of the Tapi river, and runs approximately 1,600 km (990 mi) through the states of Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu.

at Marunthuvazh Malai, at Swamithope, near the southern tip of India. Saputara hills, Rajpipla hills and Willson hills in Gujarat are part of the western Ghats.

- **Satpura range:** The **Satpura Range** is a range of hills in central India. The range rises in eastern Gujarat state running east through the border of Maharashtra and Madhya Pradesh to the east till Chhattisgarh. The range parallels the Vindhya Range to the north, and these two east-west ranges divide Indian Subcontinent into the Indo-Gangetic plain of northern India and the Deccan Plateau of the south. The **Narmada** River and **Tapti** River originates in the Satpura range. At its eastern end, the Satpura range meets the hills of the Chotanagpur Plateau. The Satpura Range includes the Mahadeo Hills to the north, the Maikala Range to the east, and the Rajpipla Hills to the west. **Mount Dhupgarh in Mahadeo hills** is the highest point in Satpura. Pachmarhi Hill station is located close to the peak.
- **Aravali range:** The Aravalli Range runs for approximately 800kms in the states of Haryana, Rajasthan and Gujarat. Guru shikhar on Mount Abu is the highest peak in Aravalli range. There is a break in the range at Sambhar lake. Rivers like Luni, Sabarmathi, Banas arises from this range.
- **Gir range:** It is a low mountain range in western Gujarat state, on the southern Kathiawar Peninsula. Gorakhnath is a important peak in this range. The Gir Range is covered by forests, including sal and dhak trees. The Bhadar and Ghelo rivers flow west and east from the Girnar Hills. The hills are inhabited mainly by the Bhil and Dubla peoples. The Gir Range is considered to be sacred because of the ancient Jaina temple of Girnar situated on one of the hills; the temple is a major place of pilgrimage. The Gir National Park, noted for its Asiatic lions, is located in the region.

c). Rivers

Narmada:

- The source of the Narmada is a small reservoir, known as the Narmada Kund, located at Amarkantak on the Amarkantak Plateau. It forms the traditional boundary between North India and South India and flows westwards over a length of 1,312 km before draining through the Gulf of Khambhat into the Arabian Seaward of Bharuch city of Gujarat. It is one of only three major rivers in peninsular India that run from east to west along with the Tapti 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 Tapti. Sardar sarovar dam is constructed on this river.

Tapti:

- The river originates from **Multai** in Betul district of Madhya Pradesh in the Satpura range. It 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. Ukai Dam is constructed on this river

Mahi:

- The **Mah** is a river in western India. It rises in Vindhyas Madhya Pradesh and flows through Rajasthan, Gujarat and empties into the Gulf of Khambhat, Arabian Sea. It is one of the many west-flowing rivers in India, along with Tapti River, Sabarmati River, Luni River and the Narmada River. Most peninsular rivers in India flow eastward into the Bay of Bengal.

Sabarmati:

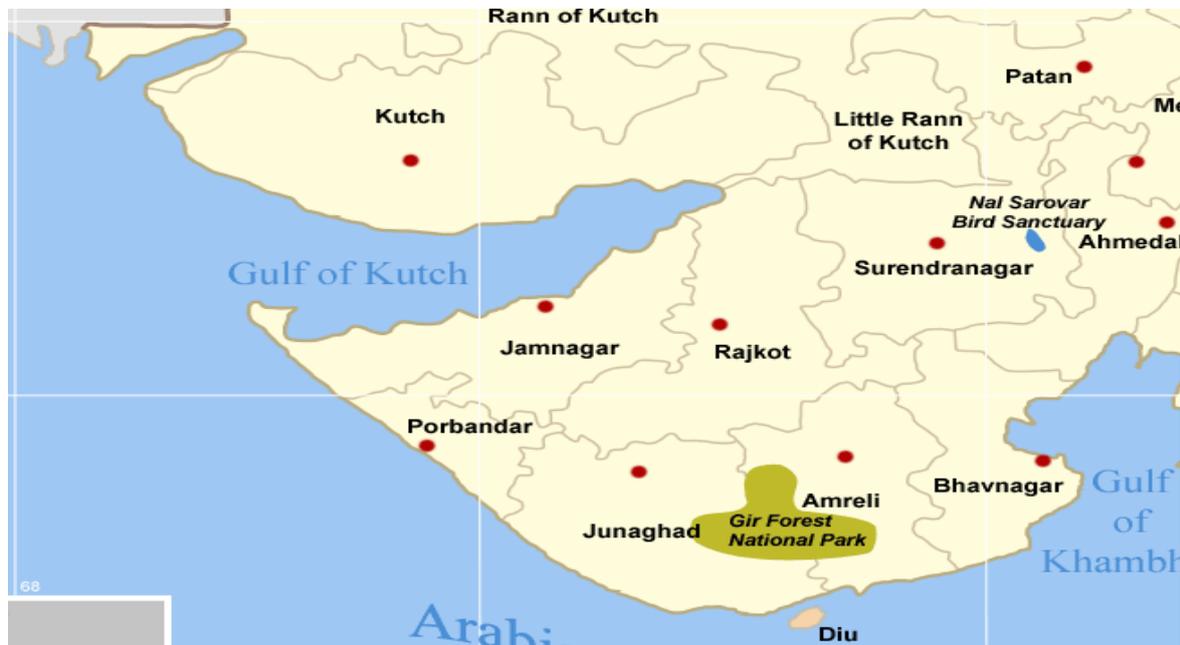
- The **Sabarmati river** is one of the major west-flowing rivers in India. It originates in the **Aravalli Range** of the Udaipur District of Rajasthan and meets the Gulf of Khambhat of Arabian Sea after travelling in a south-westerly direction across Rajasthan and Gujarat.

Shetrunji:

- It rises northeast of the Gir Hills. It empties through Gulf of Cambay, Arabian sea.

d) Important protected areas:

- **Gir National park: Gir National Park and Wildlife Sanctuary**, also known as **Sasan Gir**, is a forest and wildlife sanctuary near Talala Gir in Gujarat, India. Shetrunji and Hiran are major perennial rivers in this region. Kamleshwar Dam built on Hiran river is dubbed 'the lifeline of Gir'. It is the largest dry deciduous forest in western India. Today, it is the only area in Asia where Asiatic lions occur.



Why in news?

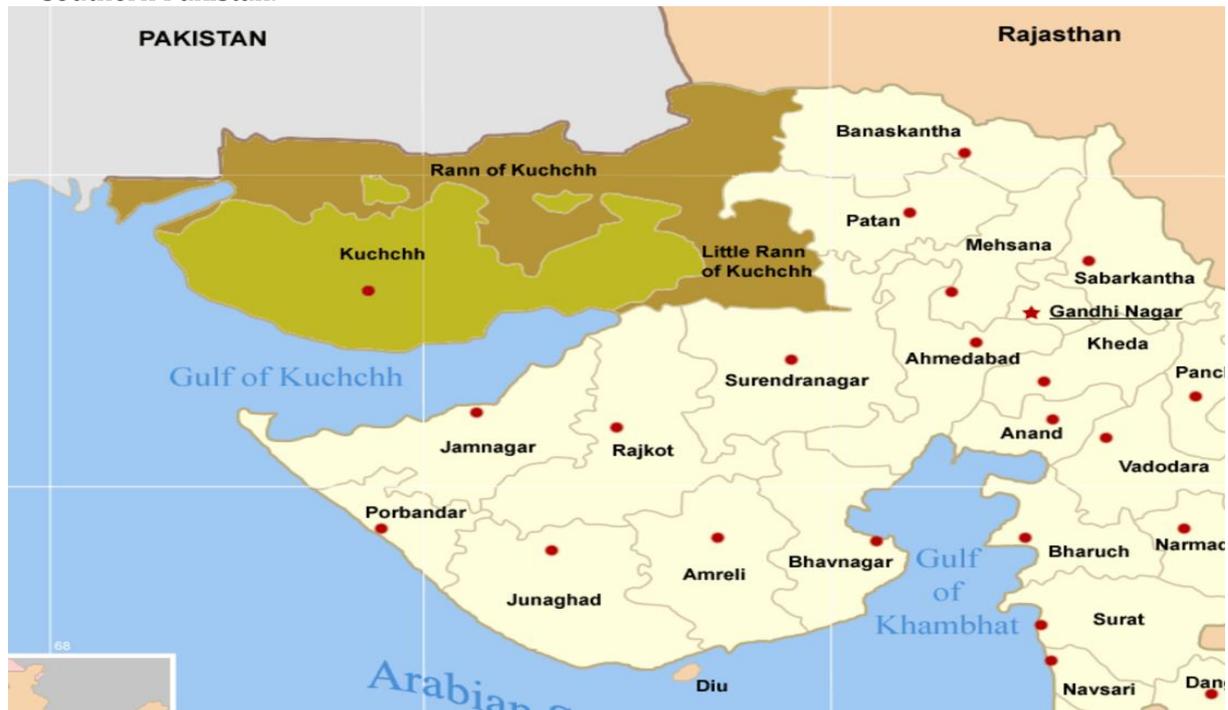
a) Kutch desert:

- A team of Indian and French researchers has concluded that the **hot arid desert of Kutch was once a humid subtropical forests** with a variety of birds, freshwater fish and possibly giraffes and rhinos.
- Their conclusions are based on the discovery of a tranche of vertebrate fossils from nearly 14 million years ago in a geological time period known as the **Miocene**.
- The bulk of fossils unearthed in Kutch have so far been mainly marine organisms, due to their proximity to the Arabian Sea. Geological changes eventually closed off the salt-flats' connection to the sea and the region turned into a large lake, eventually becoming salty wetlands.

About Kutch desert:

- The Kutch desert (Rann of Kutch) is a salt marsh in the Thar Desert in the **Kutch district** of Gujarat, India.
- This area has been inhabited by the Kutchi people.
- The region is divided into two distinct areas, the **Great Rann** and the **Little Rann** (Rann means "desert" in Hindi.)
- The region is called **Kutch** literally meaning "intermittently wet and dry".
- The Ranns, which cover some 10,800 square miles, are dry all winter, then totally flooded in the summer because of heavy rainfall.

- The **Great Rann** of Kutch, along with the **Little Rann of Kutch** and the **Banni grasslands** on its southern edge, is situated in the district of Kutch and comprises some 30,000 square kilometres (10,000 sq mi) between the Gulf of Kutch and the mouth of the Indus River in southern Pakistan.



b) Lothal:

- The government has decided to establish a National Maritime Heritage Museum at **Lothal**.
- The museum, which will be India's first maritime museum, will also be an independent research centre of underwater archaeology for reconstruction of maritime history, archaeology of boat building and materials traded.
- The museum will be set up with technical help from the **Portuguese Maritime Heritage Museum**.

About Lothal:

- Lothal is an ancient city of Indus Valley Civilization.
- The city stood beside a tributary of the **Sabarmati** in Gujarat, close to the **Gulf of Khambhat**.
- It was situated near areas where raw materials such as semi-precious stones were easily available. This was an important centre for making objects out of stone, shell and metal.
- There was also a **storehouse** in the city. Many seals and sealings (the impression of seals on clay) were found in this storehouse.
- A **dockyard** is also found at Lothal.



15. Mizoram

Geography of Mizoram:

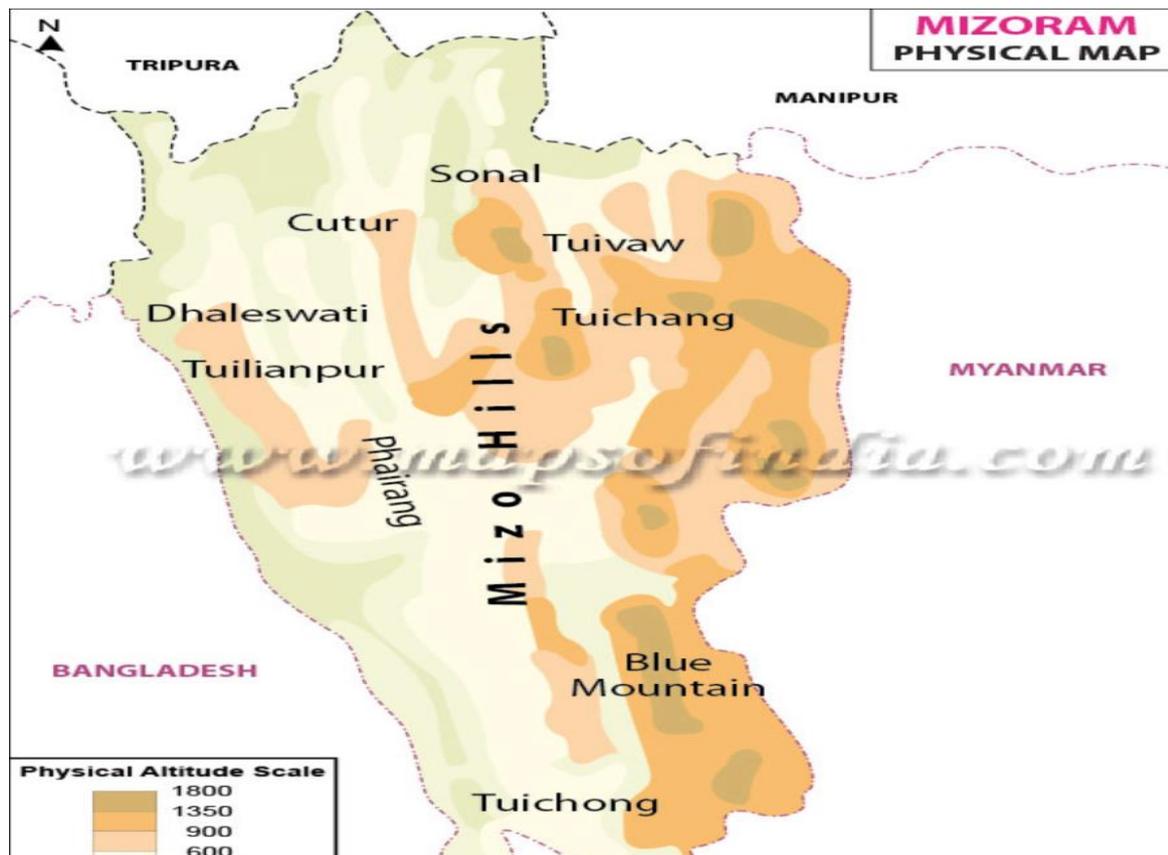
a) Boundary

- It is located in the north-eastern part of the country and is bounded by Myanmar (Burma) to the east and south and Bangladesh to the west and by the states of Tripura to the northwest, Assam to the north, and Manipur to the northeast. It is a landlocked state.

b) Physical features

Mizo Hills:

- It is a part of Purvanchal Himalayas. They are known as Lushai hills. Mizo Hills form a part of the Rakhine (Arakan yoma) Mountains. Arakan yoma is an extension of Himalaya in Myanmar. **Blue mountain** is the highest peak in Mizo hills. In the south, the Kaladan River and its tributaries flow southward into Myanmar, while the Dhaleswari (Tlawng) and Sonai (Tuirail) rivers flow north into Assam.



c) Rivers

Kaladan:

- It is a river in eastern Mizoram State of India, and in Chin State and Rakhine State of western Myanmar. The Kaladan River is called the Chhimtuipui River in India. It forms the international border between India and Burma.

Tlawng;

- It is, also known as river Dhaleswari in Assam. It is a tributary of Barak river. The Tlawng River is one of the longest rivers in Mizoram. The city of Aizawl lies in the Tlawng valley.

Tuirial:

- It is a river of Mizoram, northeastern India. It is also a tributary of Barak river. It is impounded by the Tuirial Dam.

d) Important protected areas:

Phawngpui National Park:

- It is one of the two national parks of India in Mizoram, the other and the larger being Murlen National Park. It bears the name of the mountain Phawngpui, often called the Blue Mountain of Mizoram, which is the highest mountain peak in the state, reaching 2,157 m.
- The national park covers the entire mountain along with the surrounding reserve forest. The mountain area of Phawngpui is at most times covered by a thin stretch of clouds, which makes it blue in appearance from a distance, hence the name Blue Mountain. The temperature therefore is mild throughout the year ranging. It overlooks the major river Chhimtuipui (Kaladan) flowing towards Burma.



Why in news?

a) Bru-Reang Refugee Crisis

16. West Bengal

Geography of West Bengal:

a) Boundary

- **West Bengal**, state of India, located in the eastern part of the country. It is bounded to the north by the state of Sikkim and the country of Bhutan, to the northeast by the state of Assam, to the east by the country of Bangladesh, to the south by the Bay of Bengal, to the southwest by the state of Odisha, to the west by the states of Jharkhand and Bihar, and to the northwest by the country of Nepal.

b) Physical features

- **West Bengal Duars:** The Duars are the alluvial floodplains in northeastern India that lie south of the outer foothills of the Himalayas and north of the Brahmaputra River basin. This region is about 30 km wide and stretches over about 350 km from the Teesta River in West Bengal to the Dhansiri River in Assam. The region forms the gateway to Bhutan. North of the Duars, the Himalayan mountain ranges rise abruptly along the northern boundary of the state.

c) Rivers

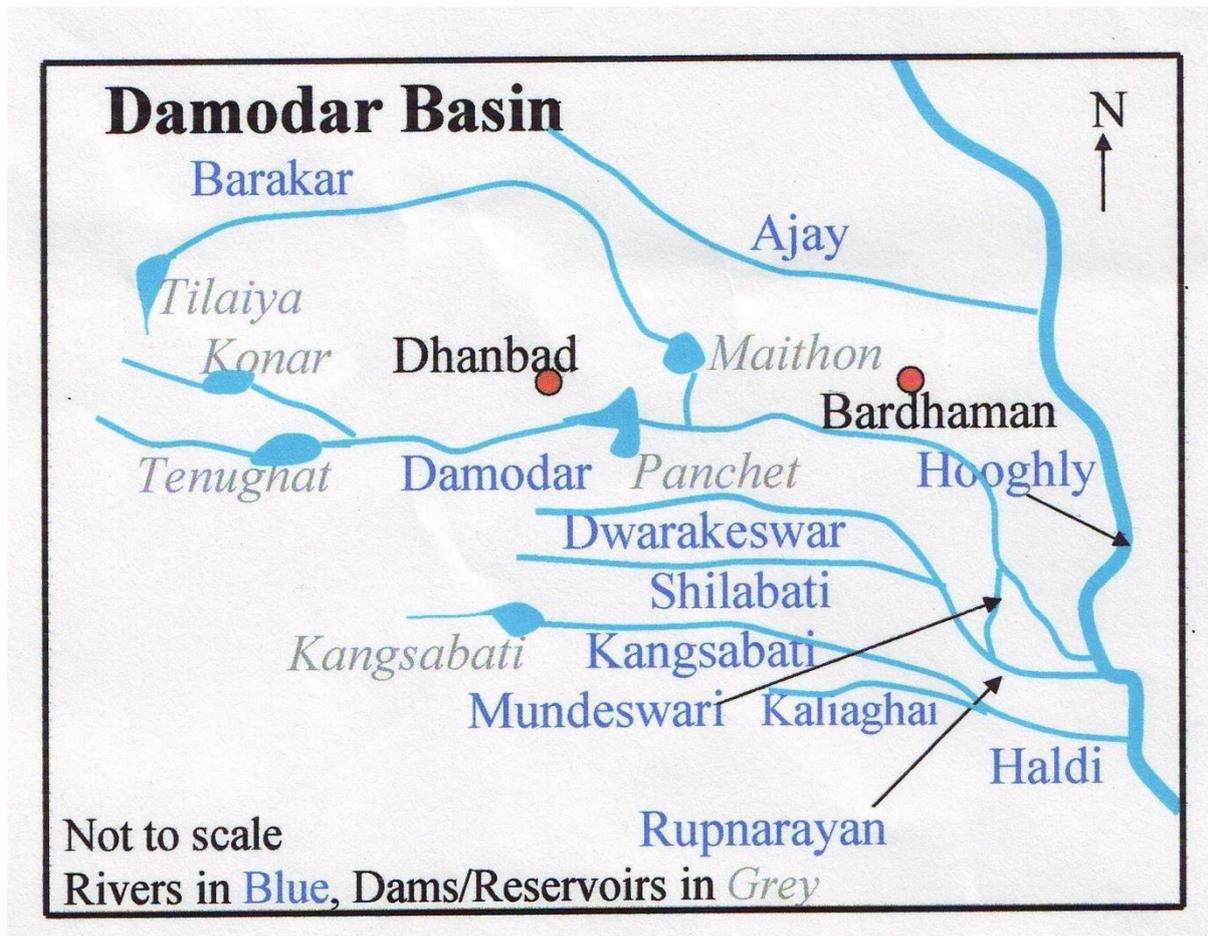
Damodar:

- Damodar River is a river flowing across the Indian states of Jharkhand and West Bengal. The Damodar River rises in the **Palamau hills** of Chota Nagpur. Its tributaries are

Barakar, Konar and Bokaro. Earlier known as the **Sorrow of Bengal** because of its ravaging floods in the plains of West Bengal.

- Now the Damodar and its tributaries have been somewhat tamed with the construction of several dams by the Damodar Valley Corporation. It constructed four multipurpose dams to form a series of reservoirs—Tilaiya, Maithon, Konar, and Panchet . It follows a generally eastward course for 592 km through West Bengal to join the Hugli River in the southwest of Kolkata.





Hoogly:

- It is a distributary of the Ganges River in West Bengal, India. The Ganges splits into the Padma and the Hooghly in Murshidabad.
- The Padma flows eastward into Bangladesh, whereas the Hooghly flows south through West Bengal. The river flows through 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, Ajay and Damodar rivers.

Teesta:

- Tista River, a tributary of the Jamuna River (Brahmaputra River), flowing through India and Bangladesh.
- It rises from Zemu glacier in Kanchenjunga in Sikkim. It flows to the south, cutting a deep gorge through the Shiwalik Hills east of Darjiling in West Bengal, and turns onto the plains of West Bengal.
- The Teesta river drains the entire state of Sikkim and a part of Darjeeling Hills. It is known as the lifeline of Sikkim.

d) Important Protected areas:

Sundarbans National park:

- It is a national park, tiger reserve, and biosphere reserve in West Bengal, India. It is part of the Sundarbans on the Ganges Delta, and adjacent to the Sundarban Reserve Forest in Bangladesh. The delta is densely covered by mangrove forests, and is one of the largest reserves for the Bengal tiger.
- It is also home to a variety of bird, reptile and invertebrate species, including the salt-water crocodile. The present Sundarban National Park was declared as the core area of Sundarban Tiger Reserve in 1973 and a wildlife sanctuary in 1977.
- On 4 May 1984 it was declared a national park. It is a UNESCO World Heritage Site inscribed in 1987, and it has been designated as a Ramsar sitesince 2019. It is considered as a World Network of Biosphere Reserve (Man and Biosphere Reserve) from 1989.



Why in news?

Sundarbans mangroves save Bengal from Cyclone Bulbul:

- The cyclone that had formed in the Bay of Bengal hit the Sundarbans coast late in the evening of November 9 with winds gusting up to a speed of 130 kilometres per hour.
- But as it moved parallel to the coast – eastwards towards Bangladesh – the world’s largest mangrove forest impeded the wind, proving yet again the importance of mangroves in safeguarding coasts from storms that are becoming increasingly more frequent and more severe due to climate change.

17. Uttarakhand

Geography of Uttarakhand:

a) Boundary

- **Uttarakhand** is bordered by the Indian state of Himachal Pradesh and Uttar Pradesh.
- It also shares international boundary with the Tibet Autonomous Region of China and Nepal.

b) Physical features

- **Himadri or Great Himalaya ranges:** Most of the major peaks are located in this zone.
- **Himachal or Lesser Himalayas:** Adjacent to and south of the Great Himalayas is a zone containing the Lesser Himalayas, known popularly as the Himachal. It has two linear ranges: Mussoorie and Nag Tibba:

- **Siwalik:** To the south of the Himachal is a stretch of the Siwalik Range. The entire area containing the Himadri, the Himachal, and the Siwaliks is broadly known as the **Kumaun Himalayas**.
- **Bhabar:**The southern edge of the Siwalik Range merges with a narrow bed of gravel and alluvium known as the Bhabar.
- **Terai:** Bhabar interfaces to the southeast with the marshy terrain known as the Tarai. The combined Siwalik-Bhabar-Tarai area ranges in elevation from 300 to 3,000 metres.
- **Duns:**South of the Siwaliks are found flat-floored depressions, known locally as *duns*, such as the Dehra Dun.

c) Rivers



Yamuna:

- It is the second largest tributary river of the Ganga and the longest tributary in India. Originating from the **Yamunotri Glacier** of **Banderpooch peaks** of the Lower Himalaya in Uttarakhand. It merges with the Ganges at Triveni Sangam, Prayagraj which is a site of the Kumbh Mela, a Hindu festival held every 12 years. Prominent tributaries are Tons, Hindon, Rind, Sengar, Varuna, Chambal, Betwa, Ken.

Tons:

- It is the largest tributary of the Yamuna. It also raises from **Banderpooch peaks** of the Lower Himalaya in Uttarakhand

Alaknandha:

- It is a Himalayan river in the Indian state of Uttarakhand and one of the two headstreams of the Ganges. In hydrology, the Alaknanda is considered the source stream of the Ganges on account of its greater length and discharge. Alaknanda's origin at its snout, the triangular Lake Satopanth. 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

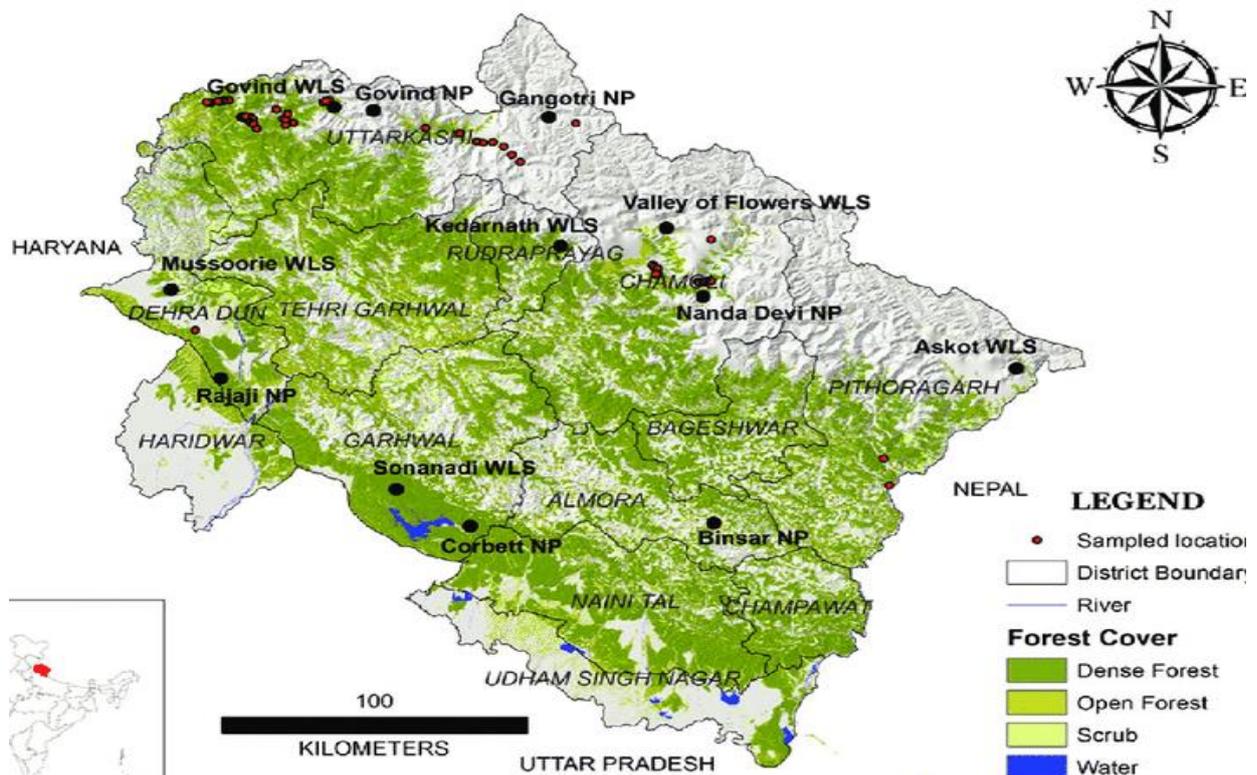
Ramganga:

- The Ramganga River originates in the southern slopes of **Dudhatoli Hill** in Pauri Garhwal District of the Indian state of Uttarakhand. It is a tributary of the river Ganges. Ramganga flows through the Jim Corbett National Park.

d) Important Protected area:

Jim Corbett National park:

- It is the oldest national park in India and was established in 1936. The park encompasses the Patli Dun valley formed by the Ramganga river.
- The reserve, located partly along a valley between the Lesser Himalaya in the north and the Shivaliks in the south, has a sub-Himalayan belt structure. Dense moist deciduous forest mainly consists of sal, haldu, peepal, rohini and mango trees. Forest covers almost 73% of the park, 10% of the area consists of grasslands.



Nanda Devi National Park:

- It was established in 1982. It is a national park situated around the peak of Nanda Devi (7816 m) in the state of Uttarakhand in northern India. The entire park lies at an elevation of more than 3,500 m above mean sea level.
- The National Park was inscribed a World Heritage Site by UNESCO in 1988. It was later expanded and renamed as Nanda Devi and Valley of Flowers National Parks in 2005. Nanda Devi and Valley of Flowers is added to the World network of Biosphere Reserve by UNESCO. The Valley of Flowers National Park is renowned for its meadows of endemic alpine flowers and outstanding natural beauty. Together they encompass a unique transition zone between the mountain ranges of the **Zaskar and Great Himalaya**.

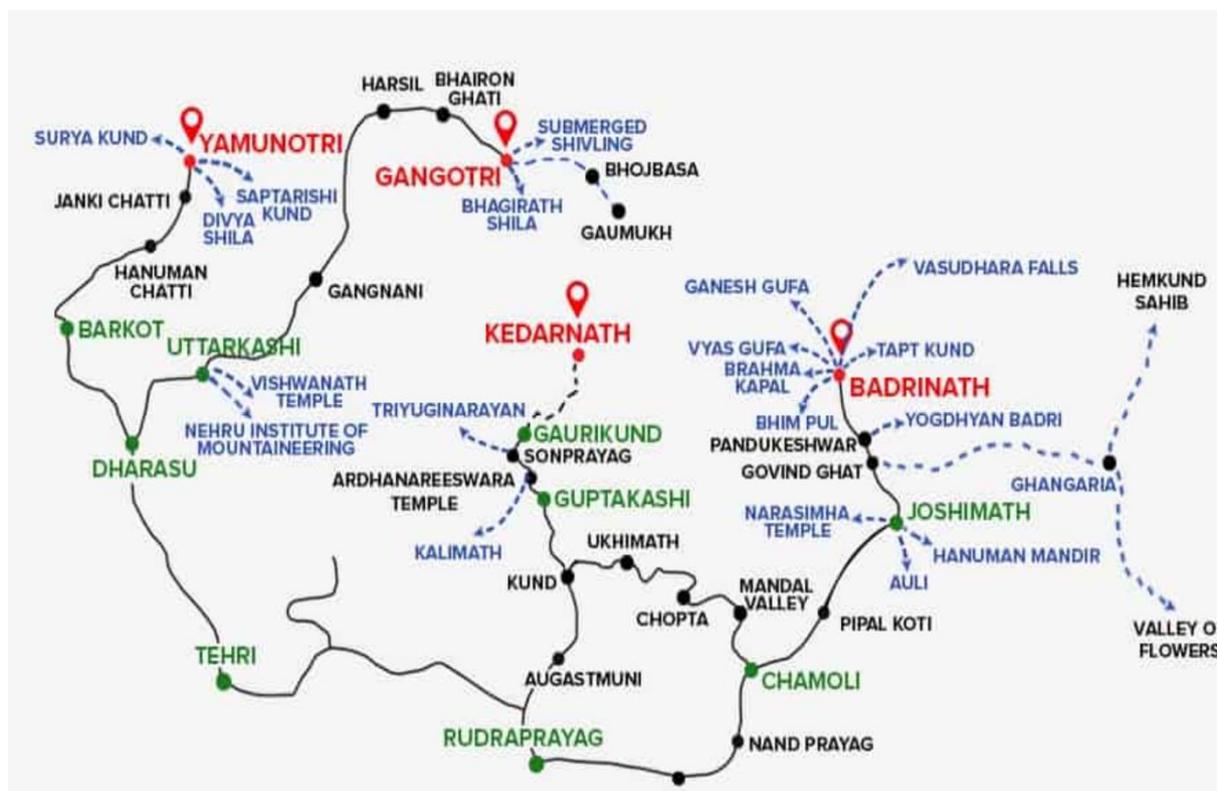
What is in news?

a). Chardham highway project

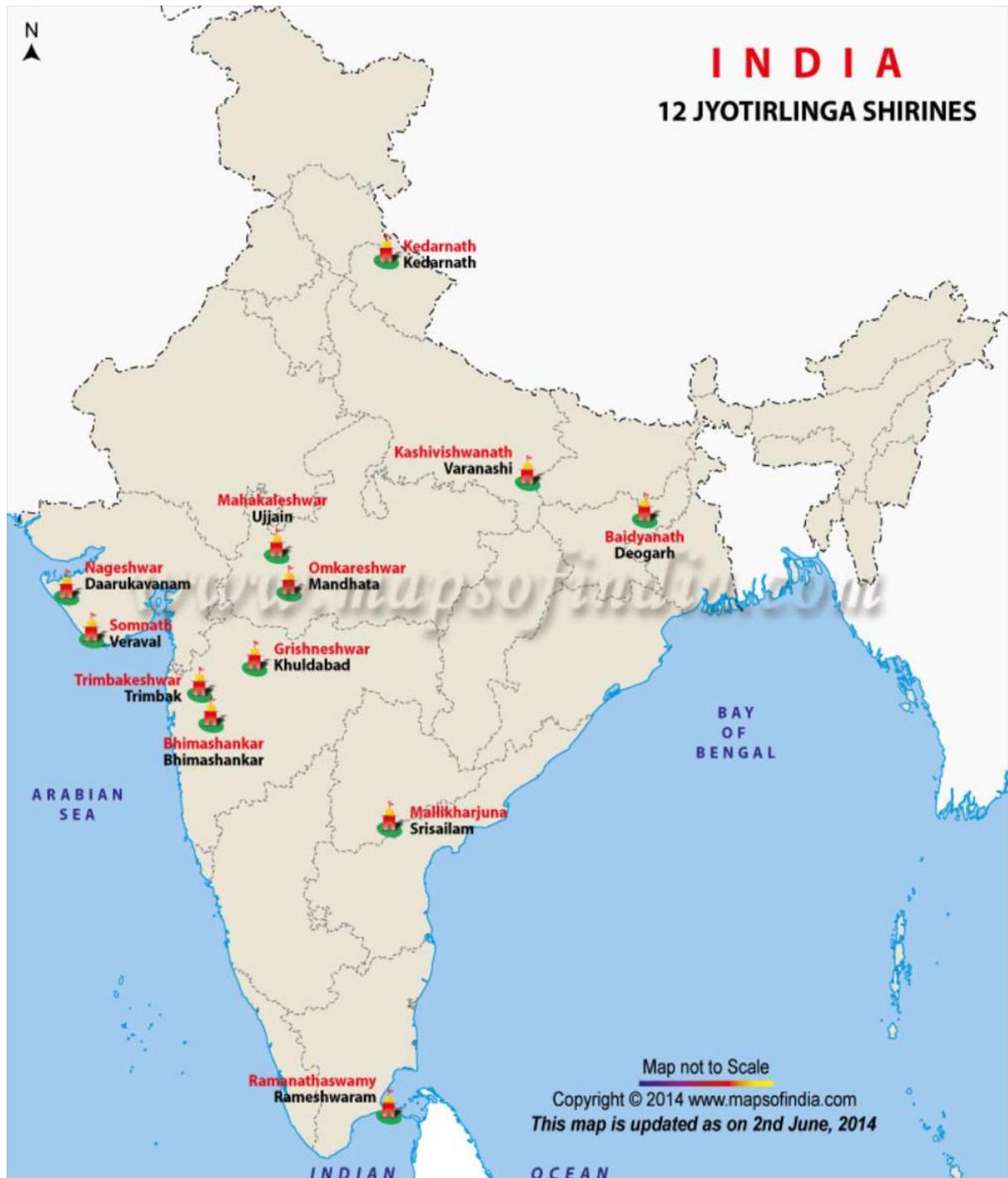
- The Supreme Court has cleared the Chardham highway project, which will connect four holy places of Uttarakhand through 900-km all-weather roads.

About Chardham project:

- Chardham Yatra in Uttarakhand is pilgrimage to four destinations – **Yamunotri, Gangotri, Kedarnath and Badrinath**.
- All of these four sites are devoted to a specific deity.



- Gangotri is dedicated to the Goddess Ganga, Yamunotri is dedicated to the Goddess Yamuna, Kedarnath is dedicated to Lord Shiva and is one of the 12 jyotirlingas, and Badrinath is dedicated to Lord Vishnu.



- **Char Dham National Highway (NH) connectivity programme** comprises projects of improvement/development of 889 km length of NHs leading to four destinations of Chardham Yatra and part of route leading to Kailash Mansarovar yatra.

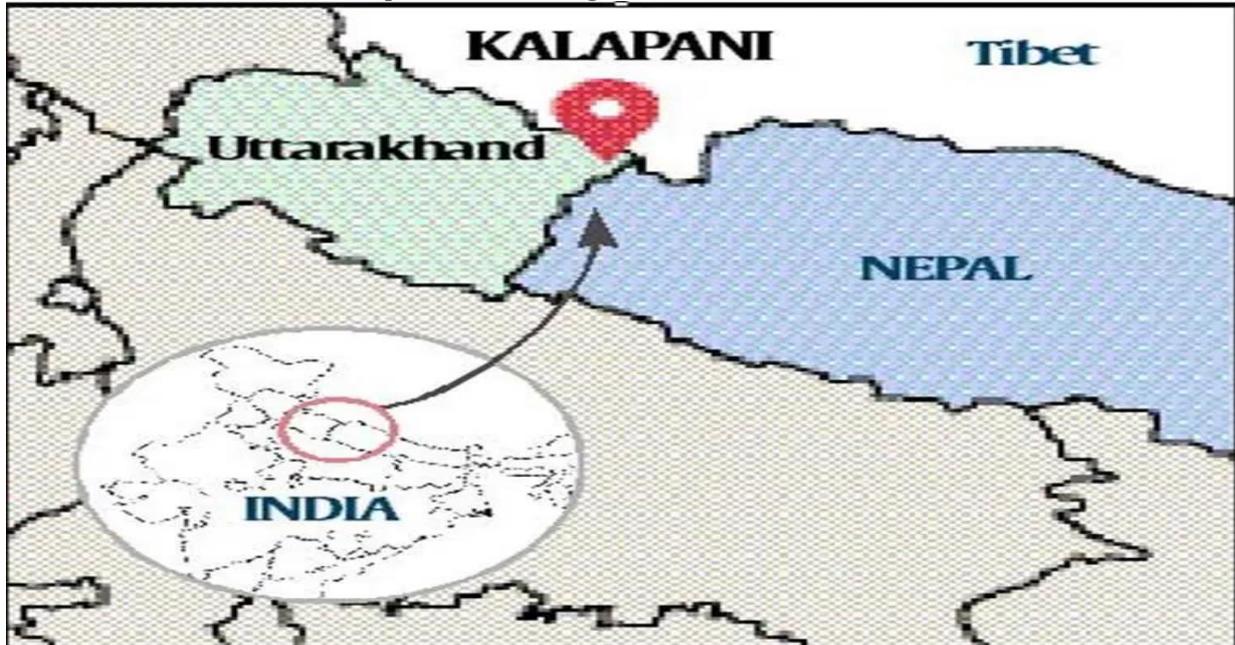
b) Kalapani

- Nepali Prime Minister K.P. Sharma Oli demanded withdrawal of Indian military personnel from the Kalapani region.
- There have been protests in Nepal against India's move to place the Kalapani area inside its territory in its new political map released post bifurcation of Jammu and Kashmir.

- While the Nepal government and political parties have protested, India has said the new map does not revise the existing boundary with Nepal.

About Kalapani:

- The Kalapani territory is an area **disputed between India and Nepal**, but under Indian administration as part of Pithoragarh district in the Uttarakhand state.



- The valley of Kalapani, with the **Lipulekh Pass** at the top, forms the Indian route to Kailash–Mansarovar, an ancient pilgrimage site.
- It is also the traditional trading route to Tibet for the **Bhotiyas** of Uttarakhand.

18. Himachal Pradesh

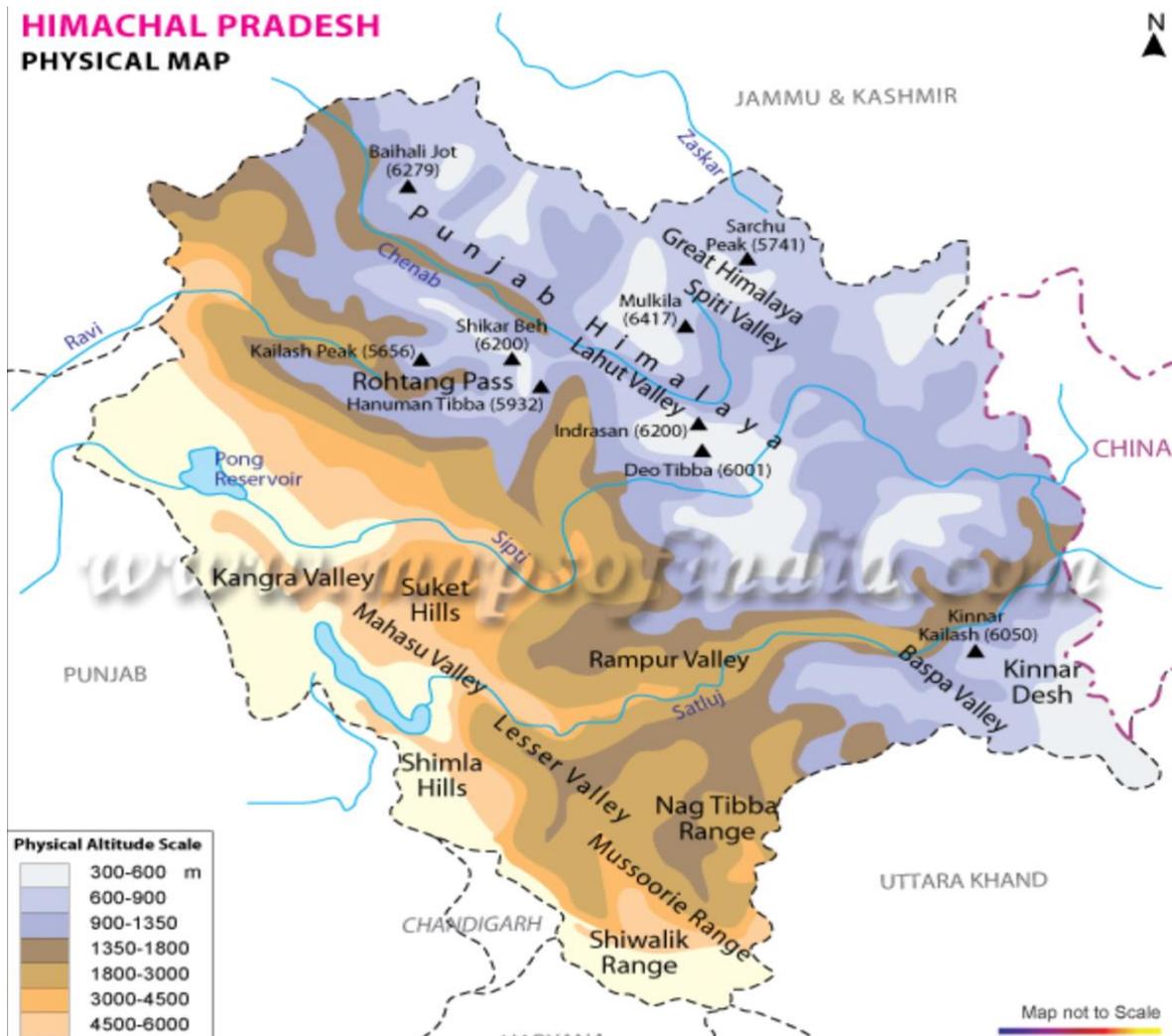
Geography of Himachal Pradesh:

a) Boundary

- It is bounded by the state of Jammu and Kashmir to the north, by the Tibet Autonomous Region of China to the east, and by the states of Uttarakhand to the southeast, Haryana to the south, and Punjab to the west.

b). Physical features

- **Shiwalik or outer Himalayas:** The region adjacent to the plains of Punjab and Haryana consists of two stretches of the Shiwalik Range separated by long, narrow valleys.
- **Lesser Himalayas:** To the north of the Siwaliks are the Lesser (or Lower) Himalayas, which rise to about 4500 meters. Within this region are the spectacular snow-capped **Dhaola Dhar** and **Pir Panjal** ranges.
- **Zaskar Range:** It is one of the main ranges of Trans Himalayan system. It is located between Great Himalayas and Ladakh range. It extends from Uttarakhand to Jammu and Kashmir. Shipki La, Lipu Lekh, Mana Pass are important passes in this range. Many active mountain glaciers originate in this area.



c). Principal rivers:

Sutlej River:

- It rises from the **Manasarovar-Rakas Lakes** in Tibet. It enters India through Shipki La pass on the Tibet-Himachal Pradesh boundary. It cuts deep gorges where it pierces the Great Himalaya and the other Himalayan ranges. Before entering the Punjab plain, it cuts a gorge in Naina Devi Dhar, where the famous **Bhakra dam** has been constructed. After entering the plain at Rupnagar (Ropar), it turns westwards and is joined by the **Beas at Harike**. During its onward journey it receives the collective drainage of the Ravi, Chenab and Jhelum rivers. It joins the Indus a few kilometres above **Mithankot**. Out of its total length of 1,450 km, it flows for 1,050 km in Indian territory.

Chenab (Chandra-Bhaga):

- It is a tributary of Indus river. The river is formed by the confluence of two rivers, Chandra and Bhaga, at Lahaul and Spiti district in the Indian state of Himachal Pradesh. The Bhaga river originates from Surya taal lake, which is situated a few kilometers east of the Bara-lacha la pass in Himachal Pradesh. The Chandra river originates from glaciers east of the same pass. The river flows through the Jammu region of Jammu and Kashmir into the plains of Punjab, Pakistan, and flows into the Indus River.



Ravi:

- The Ravi has its source in **Kullu hills** near the **Rohtang Pass** in Himachal Pradesh. It drains the area between the Pir Panjal and the Dhaola Dhar ranges. It joins into the Chenab in Pakistani Punjab.

Beas:

- The Beas originates near the **Rohtang Pass**, at a height of 4,062 m above sea level, on the southern end of the Pir Panjal Range, close to the source of the Ravi. It crosses the Dhaola Dhar range and it takes a south-westerly direction and meets the Satluj river at Harike in Punjab.

d) Important protected areas:

Pin valley National park:

- It is located in Lahaul & Spiti district of Himachal Pradesh. The region is a cold desert, which is adjoined to the Great Himalayan National Park in the southwest and Rupini Bhabha sanctuary in the south.
- Dry alpine and dwarf junifer scrub are the major forest types found in this region. Being a high altitude national park, Pin Valley is home to a variety of rare animals like woolly hare, Tibetan gazelle, and snow leopard.



What is in the news?

Mount Leo Pargyil:

- Indian Army team from 18th battalion, the Mahar Regiment successfully summited Mount Leo Pargyil (6773M). After an extremely challenging climb in harsh weather, hoisting the National Flag atop Mt Leo Pargyil.

About Mount Leo Pargyil:

- Leo Pargyil is the third highest peak of Himachal Pradesh and is considered to be among the most challenging and technically difficult peak to scale. It lies in the Zaskar range.

19. Ladakh

Geography of Ladakh:

a) Boundary

- The Union Territory of Ladakh consists of Kargil and Leh - two districts. It is bounded by China, Pakistan, Union territory of Jammu and Kashmir and Himachal Pradesh

b). Physical features



- **Ladakh range:** It is the southern extension of Karakoram range. It extends from the mouth of Shyok river in Ladakh to the Tibetan border. Gasherbum is an important peak in this region.
- **Karakoram range:** It is a large range extending across Pakistan, India and China. World's second highest peak K2 lies in this range. The Siachin glacier and Biafo glacier is situated in this range.
- **Zanskar:** It is one of the main ranges of Trans Himalayan system. It is located between Great Himalayas and Ladakh range. It extends from Uttarakhand to Jammu and Kashmir. Shipki La, Lipu Lekh, Mana Pass are important passes in this range. Many active mountain glaciers originate in this area.

c) Rivers



Indus:

- Source- Tibetan Plateau in the vicinity of Lake Manasarovar. Its Left bank tributaries are Chenab, Jhelum, the Ravi, the Beas, and the Sutlej. Its right bank tributaries are Dras, Shingo, Shyok, Gilgit, Kabul, Gomal, and Kurram

Dras:

- It is a river in the Kargil district in the Indian union territory of Ladakh. Its source lies in the near Zojila Pass. The combined Dras and Shingo rivers join the Suru River. The Suru River is a left tributary of the Indus River.

Shyok:

- It is a tributary of the Indus River that flows through northern Ladakh and Gilgit–Baltistan in India. The Shyok River originates at the Rimo Glacier, one of the tongues of Siachen Glacier. Nubra river is its chief tributary.

Zashkar:

- Zaskar river is one of the major tributaries of the Indus river. Zaskar River is formed by the confluence of Doda River and Lungnak River. The zashkar river meets the Indus river in Ladakh, a place popularly known as Sangam.

d) Important protected area:

Hemis National park:

- It is a high altitude national park in the eastern Ladakh Union Territory. The park is bounded on the north by the banks of the Indus River.
- It is famous for its snow leopards. It is the only national park in India that is north of the Himalayas. It is the largest notified protected area in India (largest National park) The park is home to a number of species of endangered mammals. The park lies within the Karakoram-West Tibetan Plateau alpine steppe ecoregion, and contains pine forests, alpine shrublands and meadows, and alpine tundra.



What is in the news?

Pangong Tso lake:

- Soldiers of India and China were engaged in a face-off near Pangong Tso lake in eastern Ladakh, which ended after a local delegation-level meeting.

About Pangong Tso lake:

- Pangong Tso Lake is located in the eastern Ladakh. It is situated at a height of about 4,350 m. It is the world's highest saltwater lake. It is 134 km long and extends from India to the Tibetan Autonomous Region, China. Approximately 60% of the length of the lake lies within the Tibetan Autonomous Region. During winter the lake freezes completely, despite being saline water.

20. Manipur

Geography of Manipur:

a). Boundary

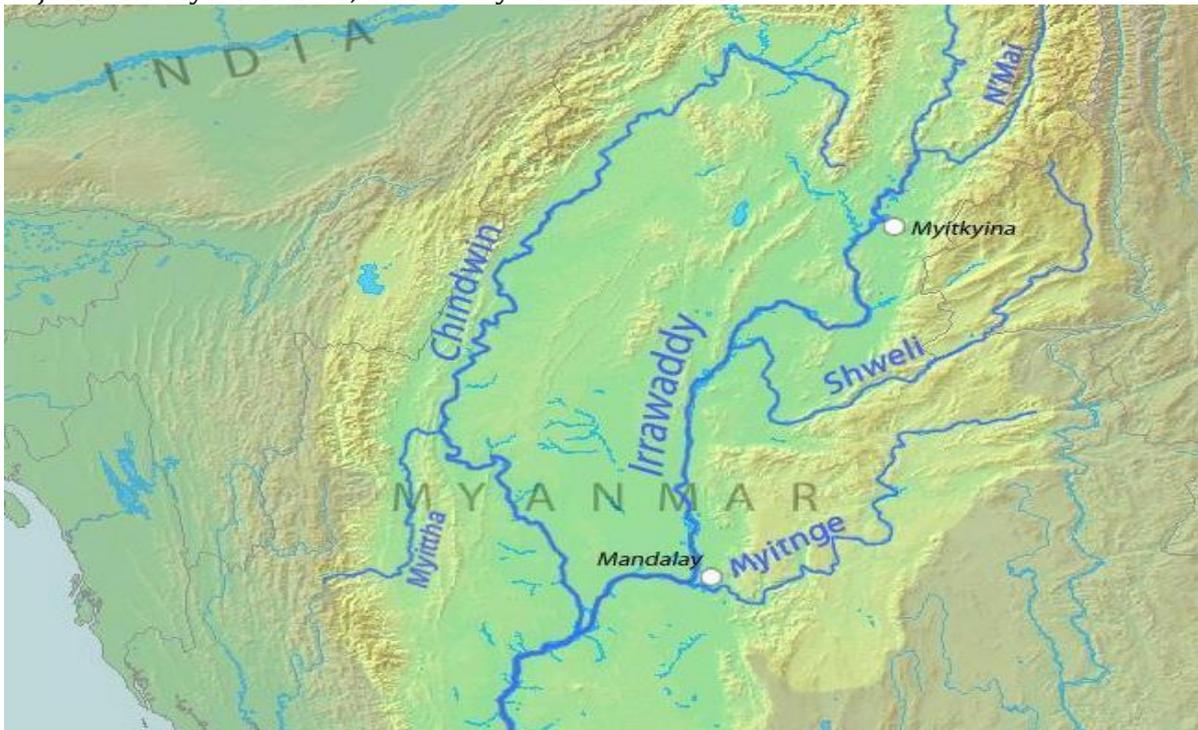
It is bordered by the Indian states of Nagaland to the north, Assam to the west, and Mizoram to the southwest and by Myanmar (Burma) to the south and east.

b) Physical features

- **Chin Hills:**The **Chin Hills** are a range of mountains in Chin State, north-western Burma (Myanmar), that extends northward into India's Manipur state.¹²
- **Manipur Hills:**It is a part of Purvanchal hills. Its eastern boundary runs along the frontier between India and Myanmar. Barak river originates from this hill.

c) Rivers

Manipur river: The river flows southward through the valley into Myanmar, where it joins the Myittha River, a tributary of the Chindwin.



Barak:

- Source-Liyai kullen village in Manipur. The Barak River is a 900-kilometre-long river flowing through the states of Manipur, Nagaland, Mizoram and Assam in India and into the Bay of Bengal via Bangladesh.

- Of the 900 km, 524 km is in India, 31 km on Indo – Bangladesh border and the rest is in Bangladesh. The navigable portion of Barak River in India, the 121 km stretch between Lakhipur and Bhanga has been declared as National Waterway 6, (NW-6). **Tipaimukh Dam** is a proposed embankment dam on the Barak River. tributaries: River Sonai (Tuirial River), Jatinga and the Madhura river.



d) Important protected area:

Keibul Lamjao National Park:



- The Keibul Lamjao National Park is located in the Bishnupur district of the state of Manipur in India. It is the only floating park in the world, located in North East India, and an integral part of **Loktak Lake** (which has been declared a Ramsar site). The national park is characterized by many floating decomposed plant materials locally called **phumdis**. To preserve the natural refuge of the endangered Manipur **Eld's deer** or **brow-antlered deer** or **sangai** also called the dancing deer, it listed as an endangered species by IUCN.

What is in the news?

Keibul Lamjao National Park:

- Recently, Manipur's Sangai Festival 2019 was celebrated. Every year **Manipur** celebrates the Sangai festival in the month of November
- The festival is named after the **State animal, Sangai** (also known as dancing deer) which is found only in Manipur's **Keibul Lamjao National Park**.
- The festival is labelled as the grandest festival of Manipur and helps promote Manipur as a world class tourism destination.
- Every edition of the festival showcases the tourism potential of the state in the field of Arts & Culture, Handloom, Handicrafts, Indigenous Sports, Cuisine, Music and Adventure sports of the state etc.

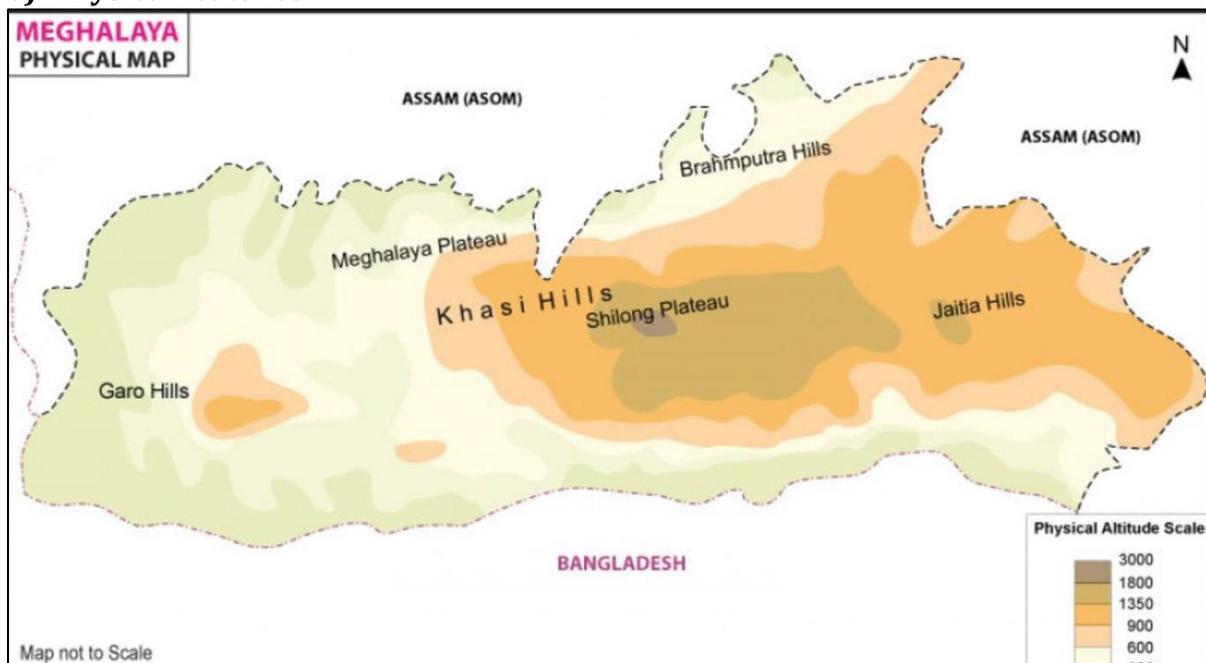
21. Meghalaya

Geography of Meghalaya:

a). Boundary

It is bounded by the Indian state of Assam to the north and northeast and by Bangladesh to the south and southwest.

b). Physical features



Garo hills:

- The highest point in the Garo Hills is Nokrek Peak with an altitude of 1515 m.

Kasi hills:

- The town of Sohra (Cherrapunji) in the Khasi Hills south of capital Shillong holds the world record for most rain in a calendar month, while the village of Mawsynram, near Sohra (Cherrapunji), holds the record for the most rain in a year. The highest point in Meghalaya is Shillong Peak, which is in the Khasi Hills overlooking the city of Shillong.

c) Rivers

Digaru

- It is a river originating in the Garo-Khasi hills of Meghalaya state in India, flowing towards the northeast and then meeting the **Kolong river** and then merging with the Brahmaputra river. The word 'Di' which means water and 'Garo' means the people living in the Garo hills. Hence Digaru literally means "water of the Garo".

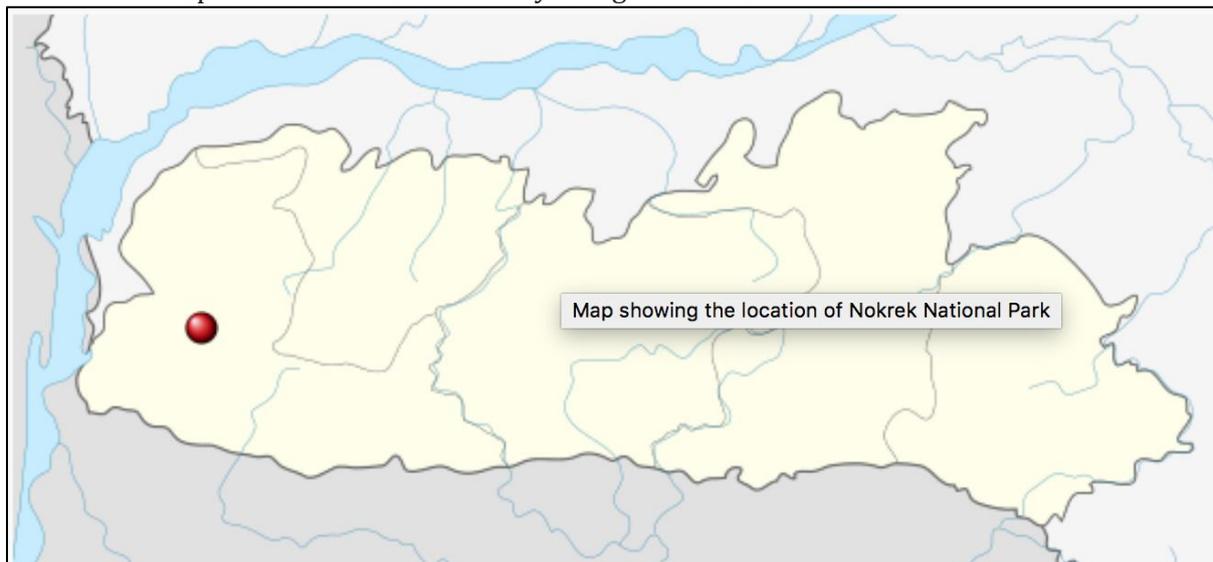
Kopili River

- It is an interstate river in Northeast India that flows through the states of Meghalaya and Assam and is the largest south bank tributary of the Brahmaputra in Assam.

d). Important protected areas:

Nokrek Biosphere reserve:

- The Nokrek Biosphere Reserve is located in the northeast of India on the Tura Range, Garo hills. The entire area is mountainous and Nokrek is the highest peak of the **Garo hills**, rising up 1,412 metres. The biosphere reserve contains major rivers and streams that form a perennial catchment system. Examples include the **Ganol, Dareng and Simsang** rivers, of which the latter is the longest and largest.
- The Simsang originates in the north of the Biosphere Reserve, the Dareng from the southern peaks, and the Ganol flows westward into the Brahmaputra River, which supplies water to numerous towns.
- Evergreen and semi-evergreen deciduous forests dominate the landscape: 90% of the Nokrek Biosphere Reserve is covered by evergreen forest.



Why in news?

Meghalaya minor tribes fear exclusion from 6th schedule

- Meghalaya is divided into autonomous councils in the names of the three major matrilineal communities — Garo, Khasi and Jaintia. The minority tribes include the Hajong, Koch, Rabha, Boro and Mann.
- Currently, the members of such unrepresented tribes are also nominated to the autonomous district councils. However, the sub-committee constituted by the Meghalaya government has decided to recommend to the Parliament the removal of

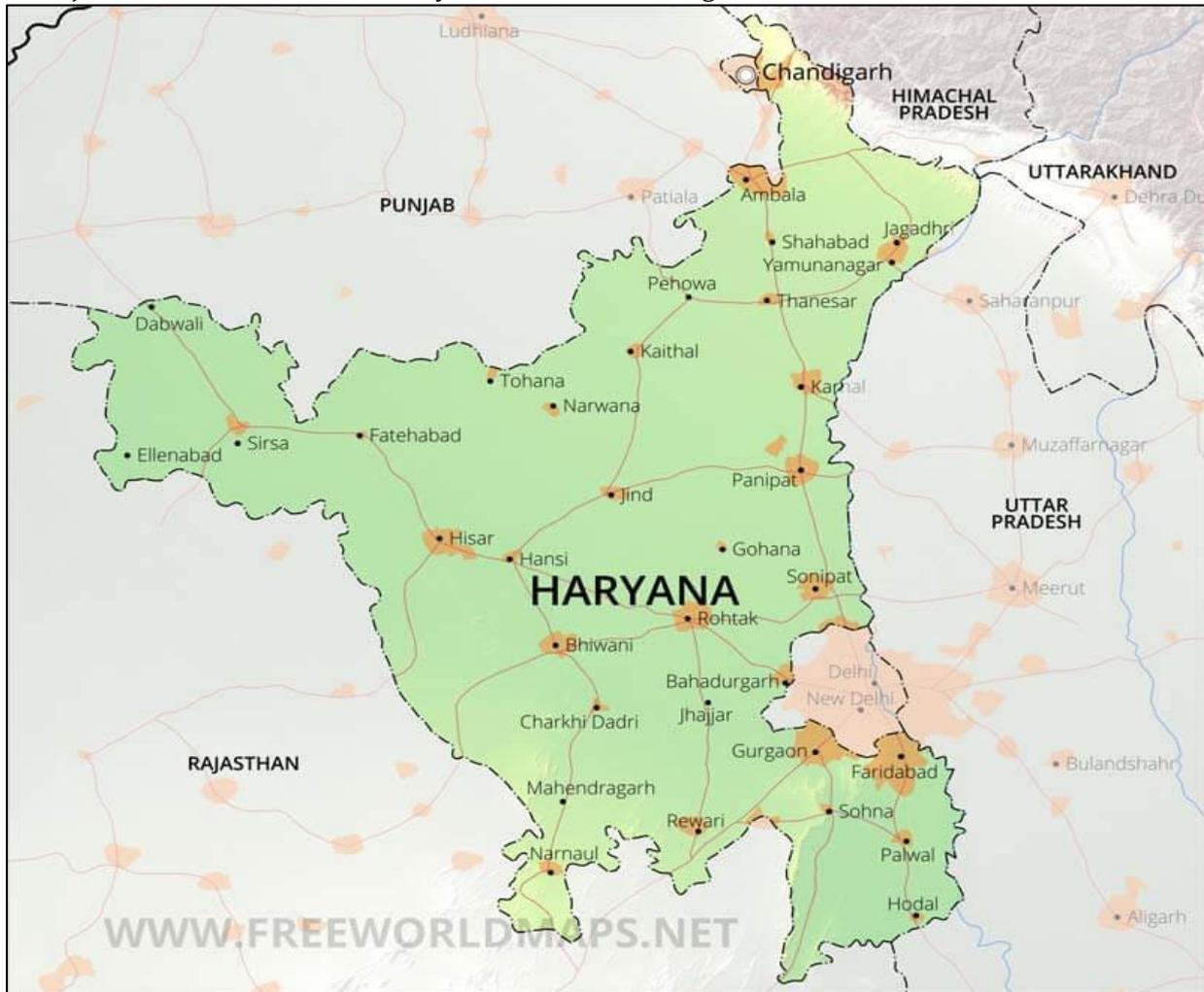
the word unrepresented tribes from the proposed amendment of the Sixth Schedule to the Constitution of India.

22. Haryana

Geography of Haryana:

a) Boundary

- It shares boundary with Punjab, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Rajasthan and the union territory of Delhi, and Chandigarh



b) Physical features

- **Shiwalik range:** strip of the highly dissected Siwalik (Shiwalik) Range (including the narrow foothill zone).
- **Aravalli range:** Remnants of the Aravalli Range, which stretches from southwestern Rajasthan to Delhi, are evident in parts of southern Haryana.

c) Rivers

Yamuna:

- The alluvial plain is drained by only one perennial river, the Yamuna, located on the state's eastern border. It is the second largest tributary river of the Ganga and the longest tributary in India. Originating from the **Yamunotri Glacier** of **Banderpooch peaks** of the Lower Himalaya in Uttarakhand. It merges with the Ganges at Triveni Sangam, Prayagraj which is a

site of the Kumbh Mela, a Hindu festival held every 12 years. Prominent tributaries are Tons, Hindon, Rind, Sengar, Varuna, Chambal, Betwa, Ken.

Ghaggar:

- Many seasonal streams flowing from the Siwalik Range pass through the area, however. The most notable of these is the Ghaggar (near the state's northern boundary).

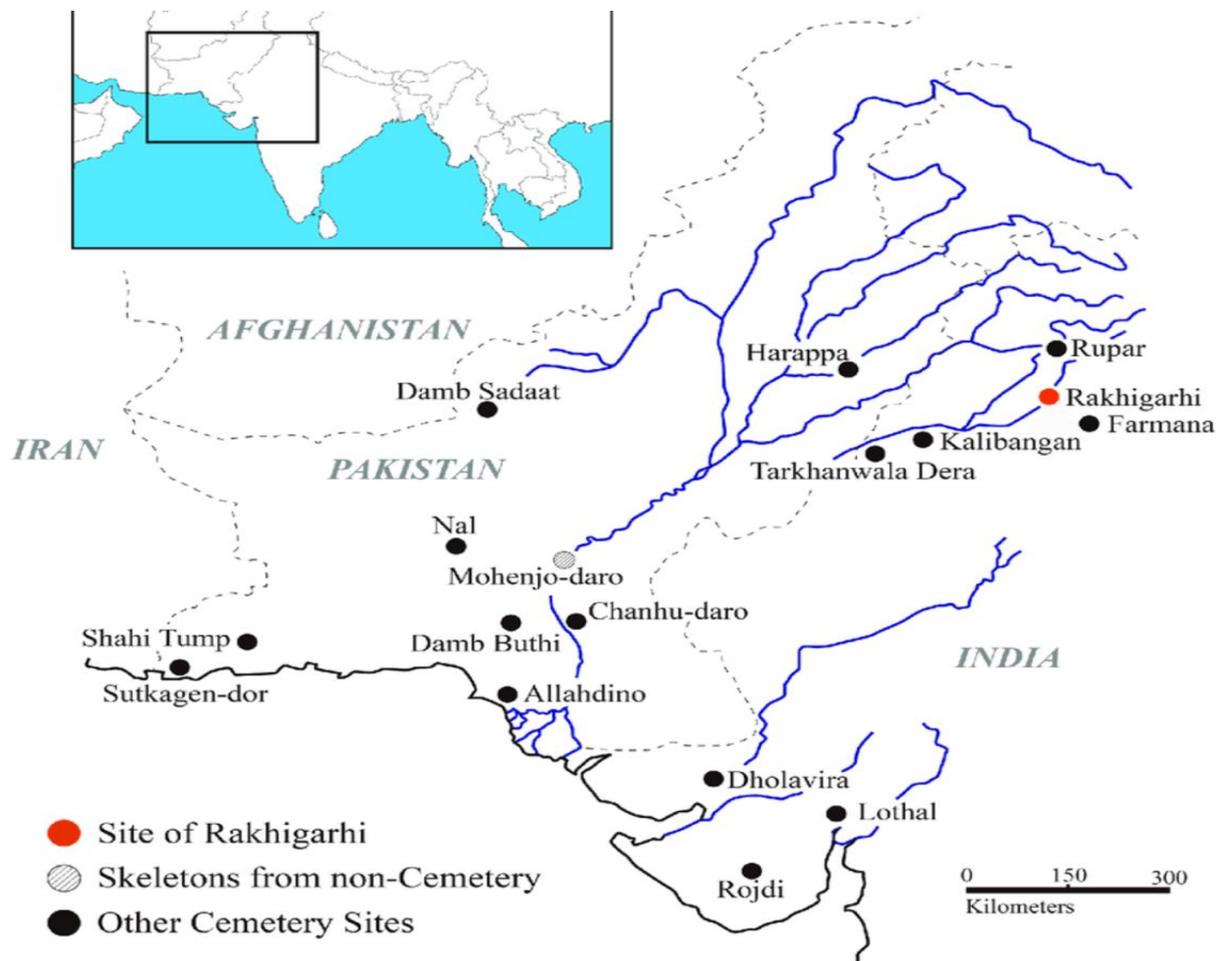
Why in news?

Rakhigarhi:

- Researchers have successfully sequenced the first genome of skeletal remains excavated from the Harappan cemetery at **Rakhigarhi**, throwing fresh light on the Indus Valley Civilisation.

About Rakhigarhi:

- Rakhigarhi, is a village in Hisar District in the state of Haryana in India, situated 150 kilometers to the northwest of Delhi.
- It is the site of a pre-Indus Valley Civilisation settlement going back to about 6500 BCE. Later, it was also part of the mature Indus Valley Civilisation, dating to 2600-1900 BCE.
- The site is located in the Sarasvati river plain, some 27 km from the seasonal **Ghaggar river**.
- Rakhigarhi encompasses a set of seven mounds, and there are many more settlement mounds in the immediate vicinity.



23. Goa

Geography of Goa:

a) Boundary

- It is bounded by the states of Maharashtra on the north and Karnataka on the east and south and by the Arabian Sea on the west.

b) Physical features

- **Western Ghats:** It rise to nearly 1,220 metres on the eastern edge of the state.

c) Rivers



Mandovi:

- It is also known as **Mahadayi** river, is described as the lifeline of the Indian state of Goa. It originates from a cluster of 30 springs at Bhimgad in the Western Ghats in the Belagavi district of Karnataka. Dudhsagar Falls and Varapoha Falls is formed by this river. Mandovi joins with the Zuari at a common creek at Cabo Aguada, forming the Mormugao harbour.

Zuvari:

- The **Zuari** is the largest river in the state of Goa, India. It is a tidal river which originates at Hemad-Barshem in the Western Ghats. Zuari is 92 km long, but is connected to other rivers and canals such as Mandovi river (62 km in length) and Cumbarjua Canal (15 km)

d) Important protected areas:

Salim Ali Bird Sanctuary:

- It is an estuarine mangrove habitat, which is declared as the bird sanctuary, and located on western tip of the Island of Chorão along the Mandovi River, Goa, in India. The sanctuary is named after Salim Ali, the eminent Indian ornithologist. The area is covered by low mangrove forest.



Why in news?

Goa Maritime Conclave- 2019

24. Andaman and Nicobar

Geography of Andaman and Nicobar:

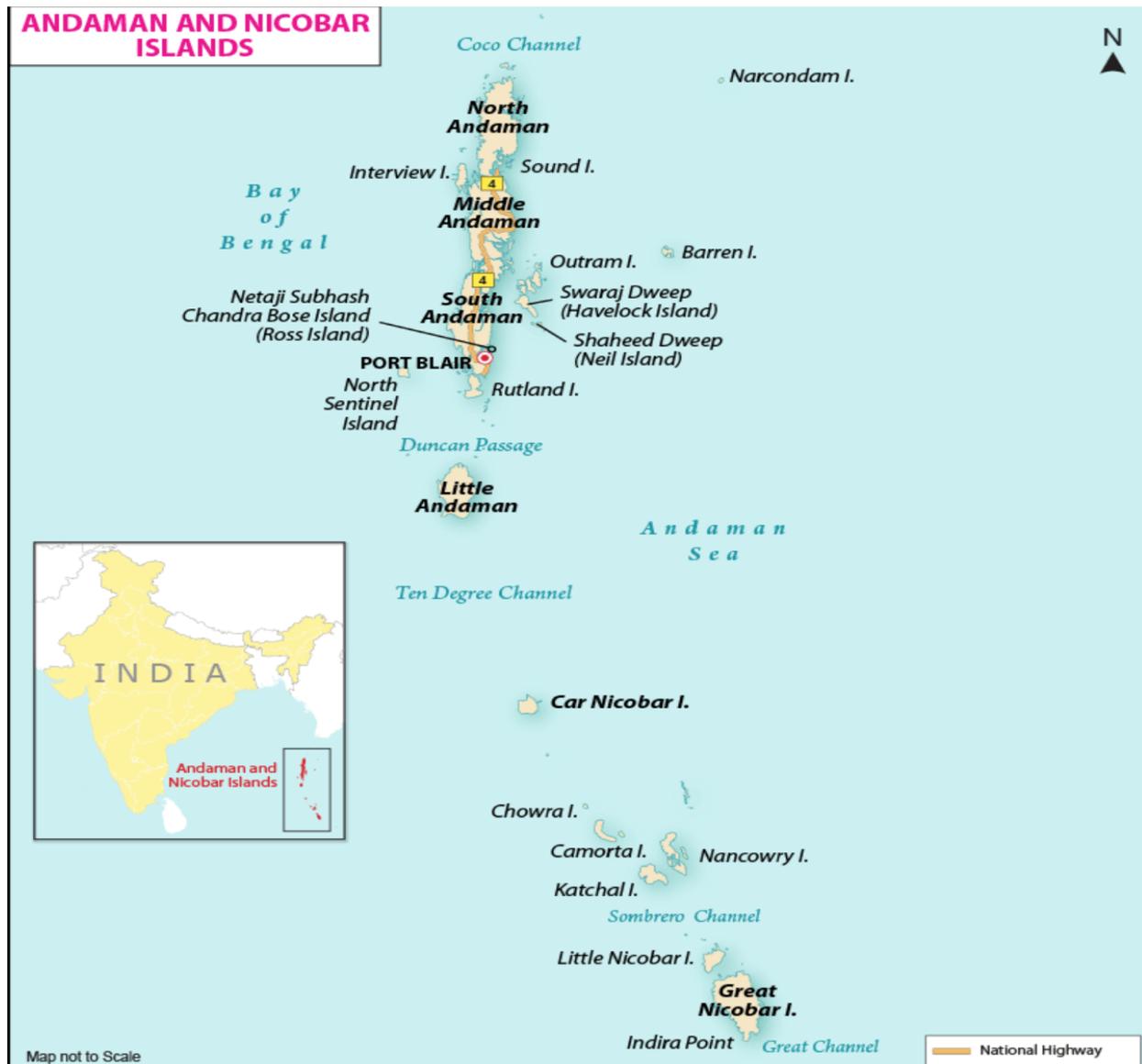
a) Boundary

- **Andaman and Nicobar Islands**, union territory, India, consisting of two groups of islands at the south-eastern edge of the Bay of Bengal.
- These are peaks of a submerged mountain range. It is considered as the southward extension of Arakan Yoma system.
- It forms an arc stretching southward for some 1,000 km between Myanmar and the island of Sumatra, Indonesia. The arc constitutes the boundary between the Bay of Bengal to the west and the Andaman Sea to the east.

b) Physical features

- **Andamans**: It comprise more than 300 islands. North, Middle, and South Andaman, known collectively as **Great Andaman**, are the main islands; others include Landfall Island, Interview Island, the Sentinel Islands, Ritchie's Archipelago, and Rutland Island. Little Andaman in the south is separated from the Nicobar Islands by the **Ten Degree Channel**, which is about 90 miles (145 km) wide.
- **Nicobars**: It consists of 19 islands. Among the most prominent are **Car Nicobar** in the north; Camorta, Katchall, and Nancowry in the centre of the chain; and **Great Nicobar** in the south. About 90 miles to the southwest of Great Nicobar lies the northwestern tip of Sumatra, Indonesia.

- The highest elevation is at **Saddle Peak** on North Andaman, followed by **Mount Thullier** on Great Nicobar and **Mount Harriet** at on South Andaman. In the late 20th and early 21st centuries, there were volcanic eruptions on **Barren Island** in the northern Andamans.



c). Rivers

Alexandria River:

- It is a perennial rivers of the Great Nicobar. This river is situated just at the mouth of Alexandria and is much known among the people for its leatherback nesting beaches.

Galathea:

- It is another perennial river of the Great Nicobar. The river passes through periphery of Galathea National park and then empties into the Galathea bay near Indira point.

Kalpong:

- It makes the most popular river of the Andaman District which has its origination from the Saddle Peak which takes it to the Bay of Bengal. Particularly this river is considered to the site of the very first hydroelectric project in the entire region of Andaman and Nicobar Islands.

d) Important protected region

Galathea National park:

- It is located in the Union Territory of Andaman and Nicobar Islands, on the island of Great Nicobar in the Nicobar Islands. The total area of this park is some 110 square kilometres, and it was gazetted as a National Park of India in 1992.
- Galathea forms part of what has been designated as the **Great Nicobar Biosphere Reserve**, which also includes the larger **Campbell Bay National Park**, separated from Galathea by a 12-km forest buffer zone. The vegetation consists largely of tropical and subtropical moist broadleaf forests.



Why in news?

Great Nicobar Island

- A survey of five beaches in the islands recorded the presence of plastic bottles. Sixty percent of these were analysed and found to be of 'non-Indian origin'. The overwhelming contribution from **Indonesia** and **Thailand** was likely due to its proximity to the island; the plastic is likely to have made its way to the island because of water currents via the Malacca Strait, which is a major shipping route.

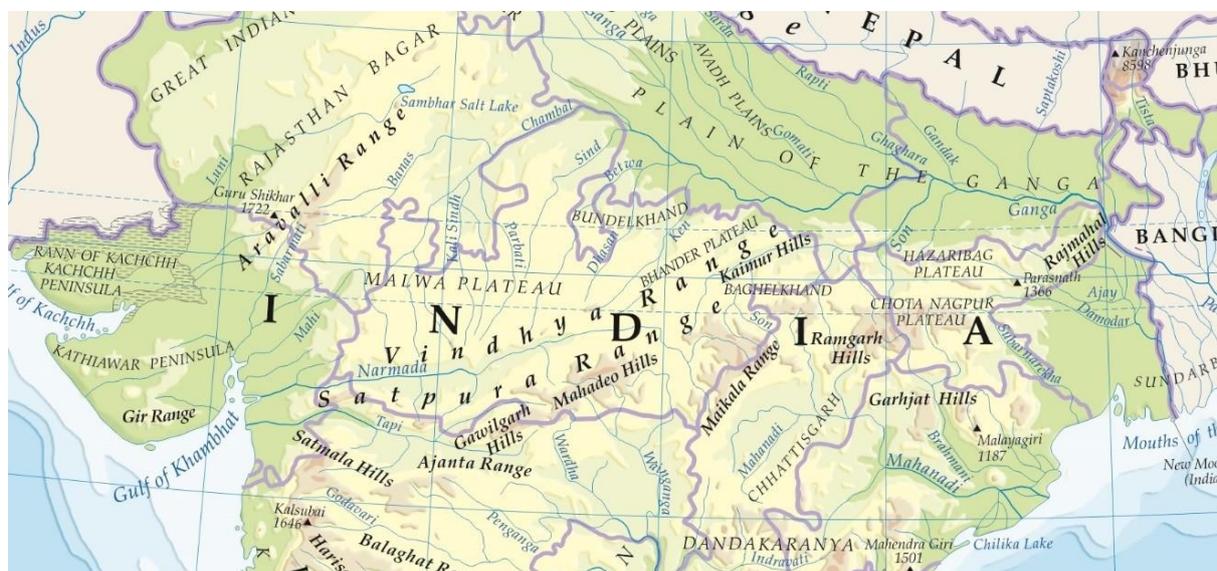
25. Madhya Pradesh

Geography of Madhya Pradesh:

a) Boundary

- The state has no coastline and no international frontier. It is bounded by the states of Uttar Pradesh, Chhattisgarh, Maharashtra, Gujarat, and Rajasthan.

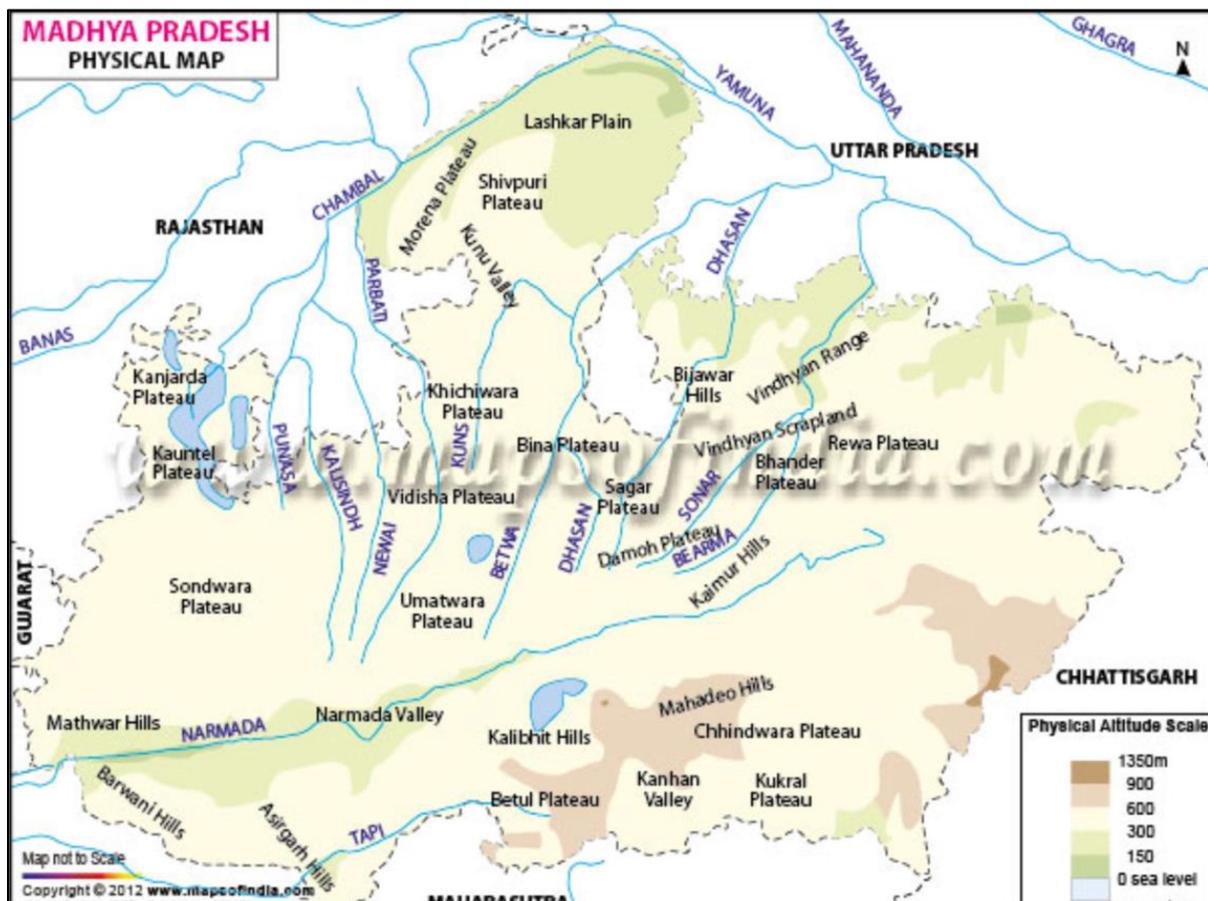
b). Physical features



- **Vindhya Range:** The Vindhya range is actually a group of discontinuous chain of mountain ridges, hill ranges, highlands and plateau escarpments. Trange extends up to Gujarat in the west, Uttar Pradesh and Bihar in the north and Chhattisgarh in the east. The eastern portion of the Vindhyas comprises multiple chains, as the range divides into branches east of Malwa. A southern chain of Vindhyas meets the Satpura Range in the Maikal Hills near Amarkantak Plateau. A northern chain of the Vindhyas continues eastwards as Bhandar Plateau and Kaimur Range. A branch of the Vindhya range spanning across Bundelkhand is known as the Panna range. The southern slopes of this range is drained by Narmadha river, which runs westward towards the Arabian sea in a East west valley formed between the Vindhya and its parallel range Satpura. The northern slopes are drained by the tributaries of ganga (Kali sind, Parbathi, Betwa, Ken).

- **Kaimur range:** The southern part of the Vindhyan Range up to Katangi (a place in Jabalpur district of Madhya Pradesh) is called Bhandar Range. Beyond this point the hill range in continuation is called the Kaimur Range. **Kaimur Range** is the eastern portion of the Vindhya Range, about 483 kilometres long, extending from around Katangi to around Sasaram in Rohtas district of Bihar. This forms the watershed or divide for two of the major rivers of peninsular India, the Son on the south and Tons on the north. A series of plateaus runs along the Kaimur Range, starting with the Panna Plateau in the west, followed by Bhandar Plateau and Rewa Plateau and ending with Rohtas Plateau in the east.
- **Satpura range:** It is a range of hills in central India. The range rises in eastern Gujarat state running east through the border of Maharashtra and Madhya Pradesh to the east till Chhattisgarh. The range parallels the Vindhya Range to the north, and these two east-west ranges divide Indian Subcontinent into the Indo-Gangetic plain of northern India and the Deccan Plateau of the south. The Narmada River originates from north-eastern end of Satpura in Amarkantak. The Tapi River originates in Multai in the central part of Satpura, and runs westward at the range's southern slopes before meeting the Arabian Sea at Surat.
- **Mahadeo:** The Mahadeo Hills are a range of hills in Madhya Pradesh state of central India. The hills are situated in the northern section of the Satpura Range. Wainganga river originates from this range. It separates the basin of the Narmada River to the north from that of the Wainganga and Wardha rivers, tributaries of the Godavari, to the south.

c). Rivers



Narmada:

- The source of the Narmada is a small reservoir, known as the Narmada Kund, located at Amarkantak on the Amarkantak Plateau. It forms the traditional boundary between North India and South India and flows westwards over a length of 1,312 km before draining through the Gulf of Khambhat into the Arabian Seaneer of Bharuch city of Gujarat. It is one of only three major rivers in peninsular India that run from east to west along with the Tapti 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 Tapti. **Sardar sarovar dam** is constructed on this river.

Tapti:

- The river originates from **Multai** in Betul district of Madhya Pradesh in the Satpura range. It 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. Ukai Dam is constructed on this river

Wainganga:

- The Wainganga is a river in India originating in the **Mahadeo Hills** in Seoni district of Madhya Pradesh. It is a key tributary of the **River Godavari**. The river flows south through the states of Madhya Pradesh and Maharashtra, roughly 579 km. After joining the **Wardha River**, the united stream, which is known as the **Pranahita** River, empties into the Godavari River at Kaleshwaram, Telangana.

Chambal:

- The Chambal is the chief tributary of the Yamuna River and rises in the Vindhya Range just south of Mhow, western Madhya Pradesh state. From its source it flows north into Rajasthan and Uttar Pradesh to empty into the Yamuna. Banas, Kalisindh and Parvathi are its chief tributaries. Gandhi sagar, Jawahar sagar, Rana Prathap sagar dams are constructed across this river.

Ken:

- It is one of the major rivers of the Bundelkhand region of central India, and flows through two states, Madhya Pradesh and Uttar Pradesh. It is a tributary of the Yamuna.

Betwa:

- It is a river in Northern India, and a tributary of the Yamuna. It rises in the Vindhya Range just north of Hoshangabad in Madhya Pradesh and flows north-east through Madhya Pradesh and Uttar Pradesh.

d) Important National park

Kanha National park:

- It is also one of the tiger reserves of India and the largest national park of Madhya Pradesh, state in the heart of India. It is situated in the Maikal range of Satpuras in Madhya Pradesh. The park has a significant population of the Royal Bengal tiger, Indian leopards, the sloth bear, barasingha and Indian wild dog. Low land vegetation is a mixture of sal and other mixed-forest trees, interspersed with meadows. The highland forests are tropical moist, dry deciduous type.

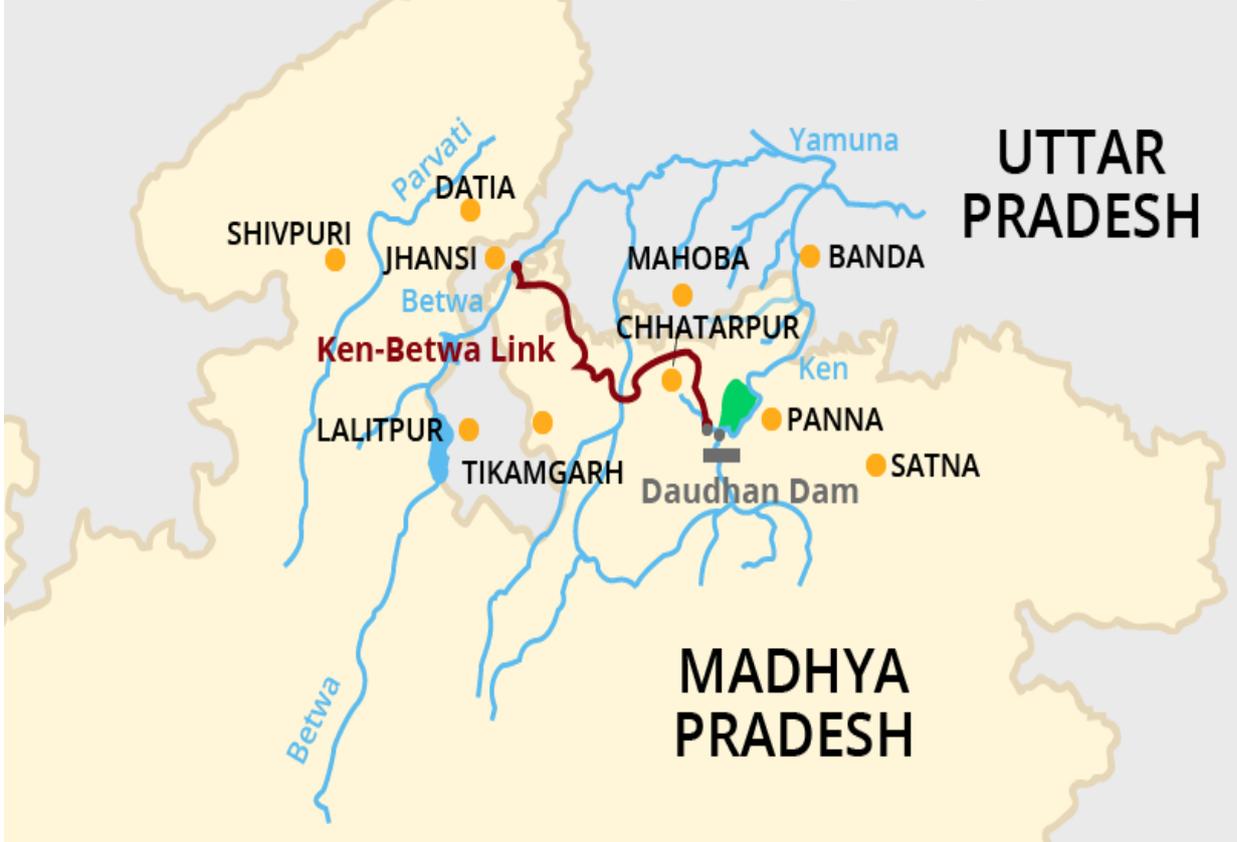


What is in the news?

Ken and Betwa River

- Centre nudging on Ken-Betwa river interlinking project

The Ken-Betwa River Linking Project



About the project:

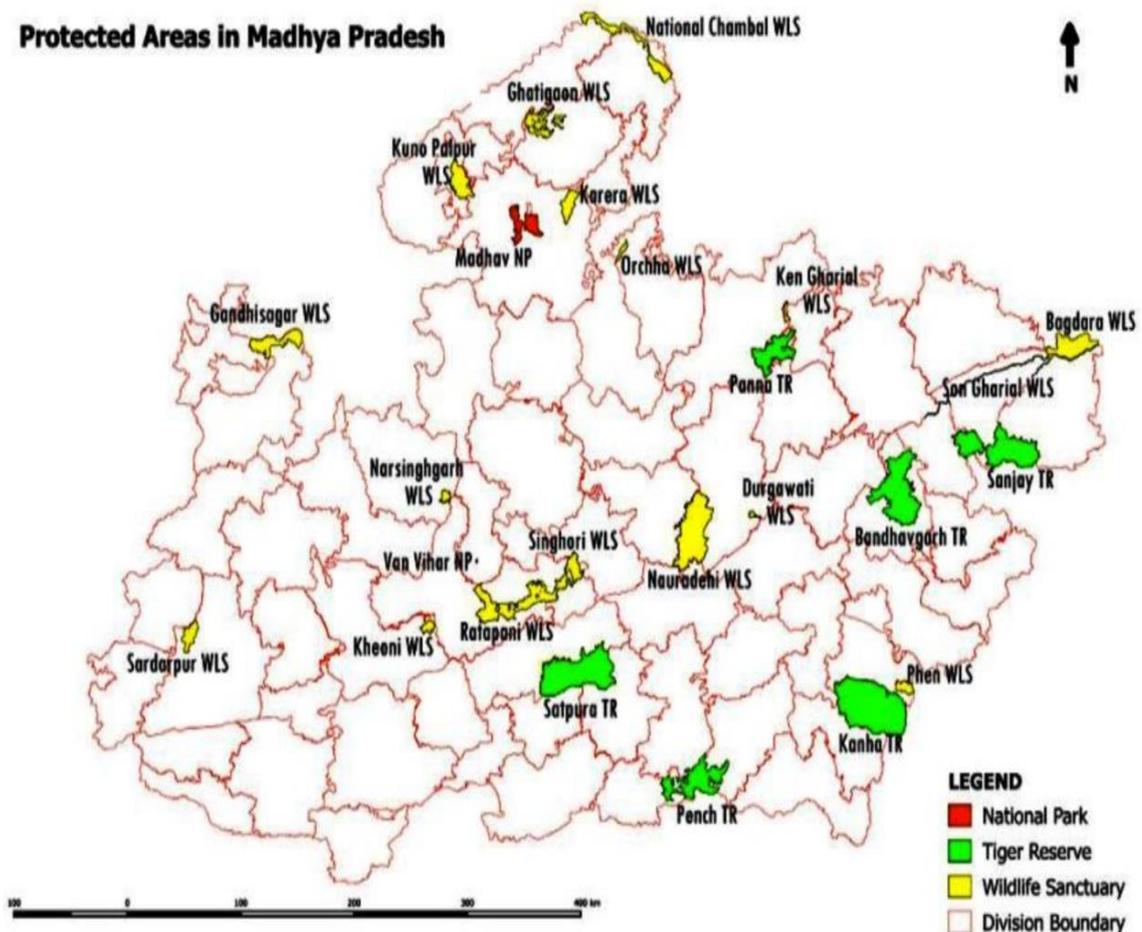
- The project involves building a 77-metre tall and a 2-km wide Dhaudhan dam and a 230-km canal.
- Originally, this phase envisaged irrigating 6,35,661 hectares annually (3,69,881 ha in M.P. and 2,65,780 ha in U.P.).
- In addition, the project was to provide 49 million cubic metres (MCM) for drinking water supply en route.
- The Ken-Betwa Project is a two-part, Rs. 18,000 crore is the first river inter-linking project.
- The project will transfer the surplus water from the Ken river to the Betwa basin to help to irrigate the drought-prone Bundelkhand region and the adjoining areas.

Kheoni sanctuary:

- For the first time 5 tigers were spotted in the sanctuary.
- Being breeding ground of herbivores animals, it provides a suitable environment for tigers.

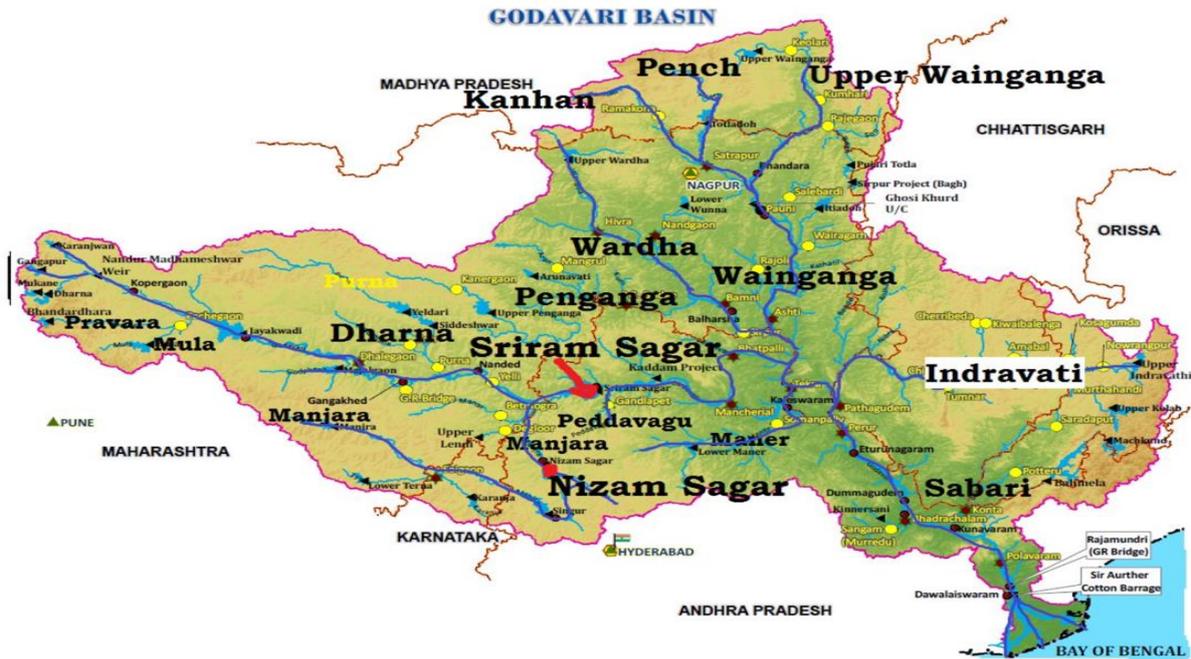
About the sanctuary:

- Kheoni Wildlife Sanctuary is located in Dewas district of **Madhya Pradesh**.
- It is connected to **Ratapani Tiger Reserve** through corridors.
- Its dry deciduous forest consists of teak, tendu and bamboo.
- It has fauna of Nilgai, Palm civet, Striped Hyena etc.



Wainganga:

- Archaeological Survey of India is carrying out restoration works of **Markandeshwar temple**, located on the banks of River Wain Ganga.
- The Markandeshwar temple is situated on the bank of **River Wainganga** in Gadchiroli district of **Maharashtra**.
- It is also known as the “**Khajuraho of Vidarbha.**”



26. Daman and Diu

Geography of Daman and Diu:



a) Boundary

- Daman is an enclave on the state of Gujarat's southern coast, situated 160 km north of Mumbai. Diu encompasses an island off the southern coast of Gujarat's Kathiawar Peninsula, 64 km southeast of Veraval, as well as a small area on the mainland.

b) Rivers

- Daman Ganga River flows through the territory, with Daman town situated where the river enters the Arabian Sea.

What is in the news?

- **Diu and Daman:** Govt plans to merge 2 UTs — Daman and Diu with Dadra and Nagar Haveli

27. Sikkim

Geography of Sikkim:

a) Boundary

- It is one of the smallest states in India. Sikkim is bordered by the Tibet Autonomous Region of China to the north and northeast, by Bhutan to the southeast, by the Indian state of West Bengal to the south, and by Nepal to the west

b). Physical features

- **Great Himalaya:** It occupies the northern part of the State. Kanchenjunga world's third highest mountain, is situated in this range on the border between Sikkim state, north-eastern India and eastern Nepal.
- **Lesser Himalaya:**
 1. **Singalila Range:** It separates Sikkim from Nepal in the west.
 2. **Dongkya Range:** It forms the border with the Tibet Autonomous Region of China to the east. Several passes across this range afford easy access to the Chumbi valley in Tibet.



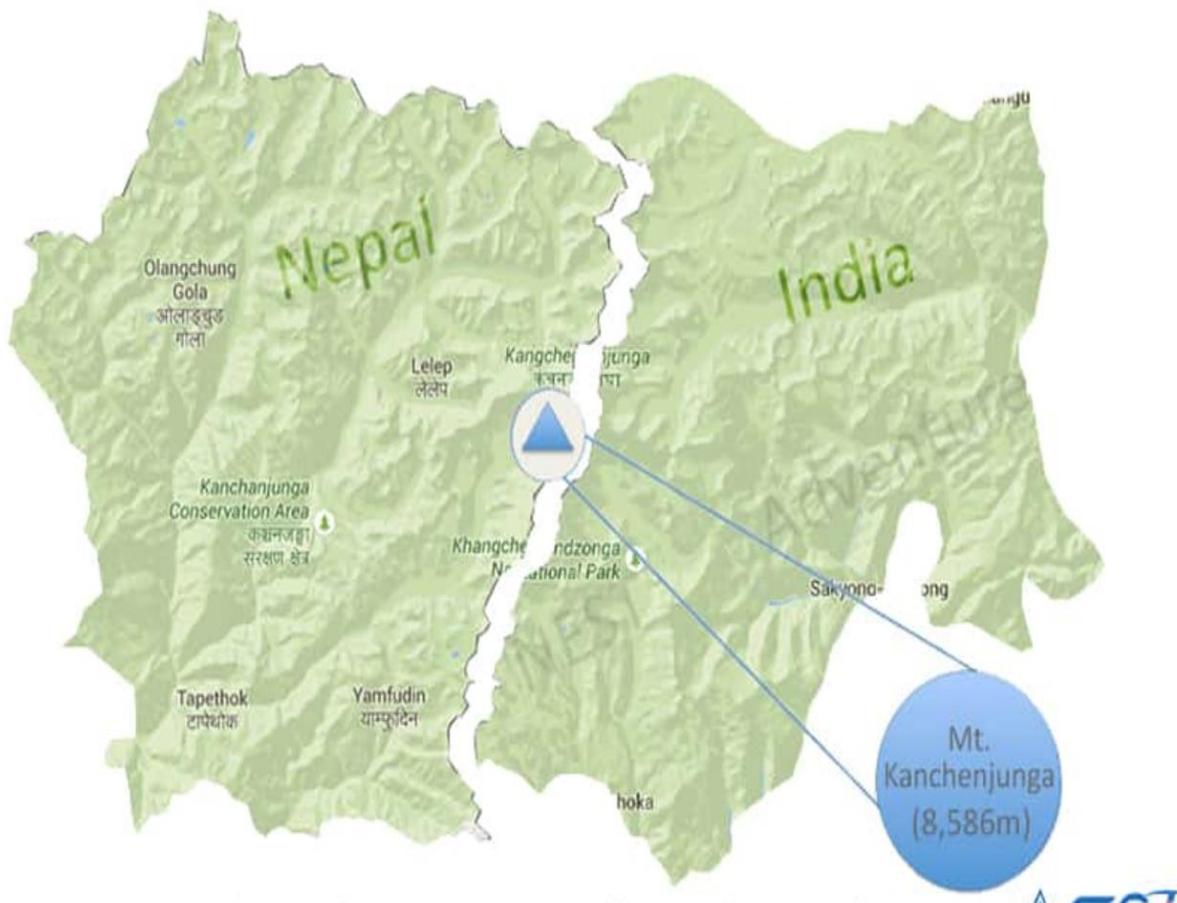
c). Rivers:

- **Teesta:** The Sikkim basin is drained by the Teesta River and its tributaries, such as the **Rangit**, Lhonak, Talung, and Lachung, which have cut deep valleys into the mountains. Originating in the northeast from a zemu glacier near the Tibetan border, the Teesta river descends steeply, dropping about 4,800 metres to Rangpo, on the border with West Bengal, where it has cut a gorge through the Darjiling Ridge before emerging onto the Indo-Gangetic Plain.

d) Important protected area:

Khangchendzonga National Park:

- It is located in Sikkim and it is one of the highest ecosystems in the world. The Khangchendzonga National park has become the 11th Biosphere Reserve from India that has been included in the UNESCO designated World Network of Biosphere Reserves (WNBR). The core area of the Biosphere Reserve is a major trans-boundary Wildlife Protected Area and is largely situated in the Greater Himalayas.
- Khangchendzonga National Park (KNP) was also designated as a **World Heritage Site in 2016 under the 'mixed' category** (Mixed heritage sites contain elements of both natural and cultural significance). World's third highest peak, **Mt. Khangchendzonga**, is situated within the park. Numerous lakes and glaciers, including the 26 km long **Zemu Glacier** are a part of the park. The vegetation of the park includes temperate broadleaf and mixed forests consisting of oaks, fir, birch, maple, willow. The vegetation of the park also includes Alpine grasses and shrubs at higher altitudes.



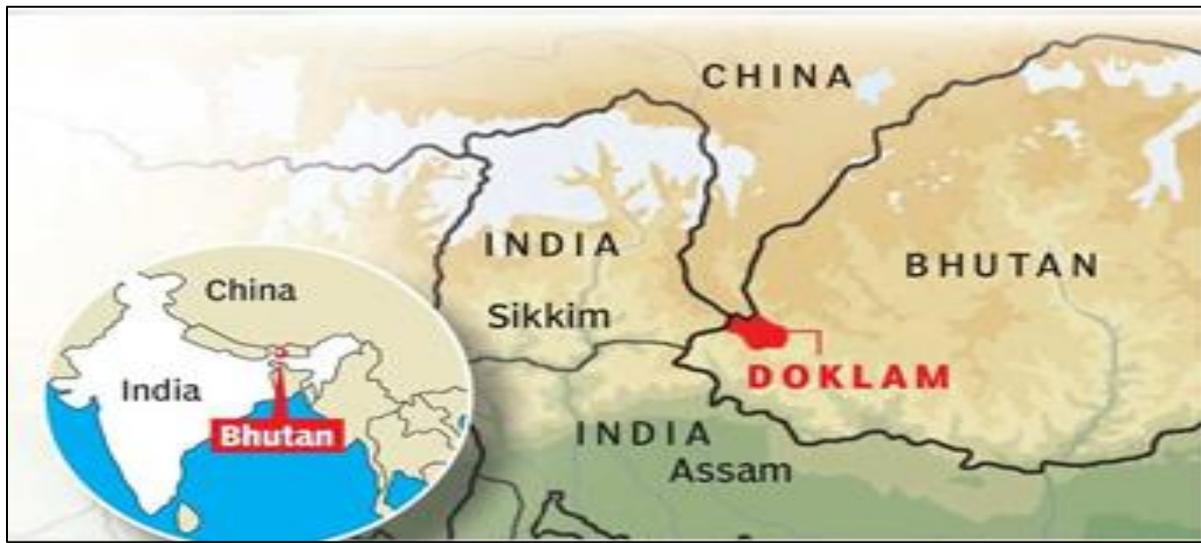
What is in the news?

Doklam:

- Reacting sharply to recent reports of an unprecedented build-up of military infrastructure on the Chinese side of the Doklam plateau, Bhutan's Prime Minister Lotay Tshering said that no side should do anything near the tri junction point unilaterally.

About Doklam:

- The Doklam is a plateau, near the **India-Bhutan-China tri-junction**.



- The location holds strategic importance as it would bring China within striking distance of India's vulnerable '**Chicken Neck**', the **Siliguri Corridor**, the life-line to India's northeast.



- In June 2017, a military standoff occurred between China and India as China attempted to extend a road on the Doklam plateau southwards near the **Doka La pass** and Indian troops moved in to prevent the Chinese.
- India claimed to have acted on behalf of Bhutan. Bhutan formally objected to China's road construction in the disputed area.
- Under the **2007 India-Bhutan Friendship Treaty**, the two sides have agreed to cooperate closely with each other on issues relating to their national interests.
- In August 2017, both India and China announced that they had withdrawn all their troops from the face-off site.

28. Delhi

Geography of Delhi:

a) Boundary

- To the east the territory is bounded by the state of Uttar Pradesh, and to the north, west, and south it is bounded by the state of Haryana.

b). Physical features

- **Delhi Ridge:** It is a ridge in the National Capital Territory of Delhi in India. Most of Delhi's forests are on the Ridge, the tail end of the Aravalli hills that runs from the south to the north of the city.
- The ridge is a northern extension of the ancient Aravalli Range, covering a distance of about 35 kilometres. The Delhi Ridge acts as the green lungs for the city and protects Delhi from the hot winds of the deserts of Rajasthan to the west. It is also responsible for earning Delhi the tag of the world's second most bird-rich capital city, after Kenya's Nairobi.



c). Principal rivers

Yamuna:

- It is the second largest tributary river of the Ganga and the longest tributary in India. Originating from the **Yamunotri Glacier** of **Banderpooch peaks** of the Lower Himalaya in Uttarakhand. It merges with the Ganges at Triveni Sangam, Prayagraj which is a site of the Kumbh Mela, a Hindu festival held every 12 years. Prominent tributaries are Tons, Hindon, Rind, Sengar, Varuna, Chambal, Betwa, Ken.

Why in news?

Delhi Ridge

- The President of India inaugurated the **34th Surajkund International Crafts Mela** in Surajkund, Haryana on February 1, 2020. Surajkund is an ancient reservoir located on Southern Delhi Ridge of Aravalli range in Faridabad city of Haryana state about 8 km from South Delhi.

29. Chandigarh

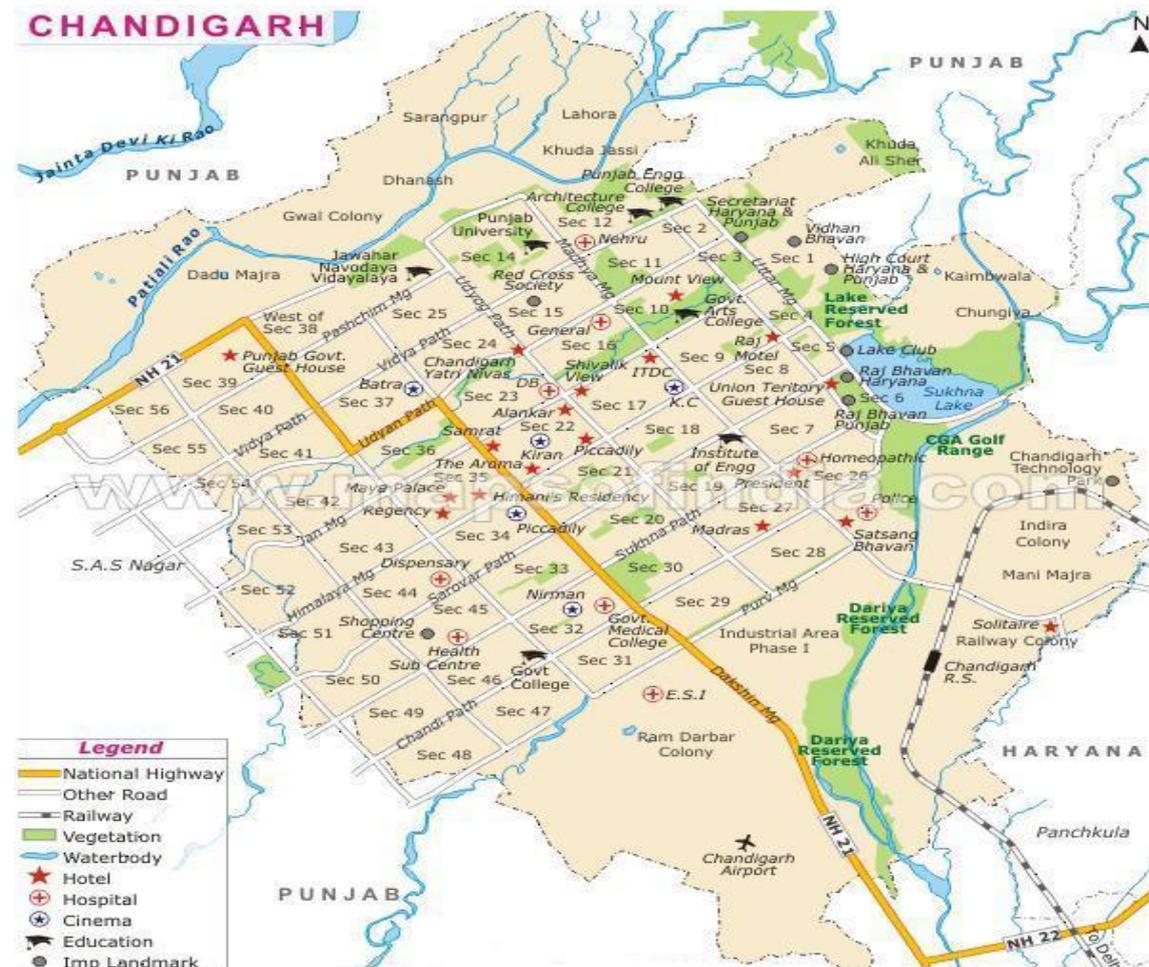
Geography of Chandigarh:

a) Boundary

- It is bounded by the state of Haryana on the east and by the state of Punjab on all other sides.

b) Physical features

- Chandigarh is located near the foothills of the Sivalik range of the Himalayas in northwest India. The city, lying in the northern plains, includes a vast area of flat, fertile land. Its northeast covers sections of Bhabar and while the remainder of its terrain is part of the Terai.



c) Principal rivers

Sukhna:

- It is a Seasonal stream from Shivalik hills.

Patiala Rao:

- It is a seasonal stream that originates in Shivalik Hills, Punjab, enters Chandigarh then to Mohali and later merges into the Ghaggar River

What is in the news?

Sukhna Lake:

- Punjab and Haryana High Court declared Chandigarh's Sukhna lake as a living entity

About the Lake:

- Sukhna Lake is a 3 km artificial rain-fed lake in Chandigarh. It was created in 1958 by damming the Sukhna Choe, a seasonal stream coming down from the Shivalik Hills

30. Punjab

Geography of Punjab

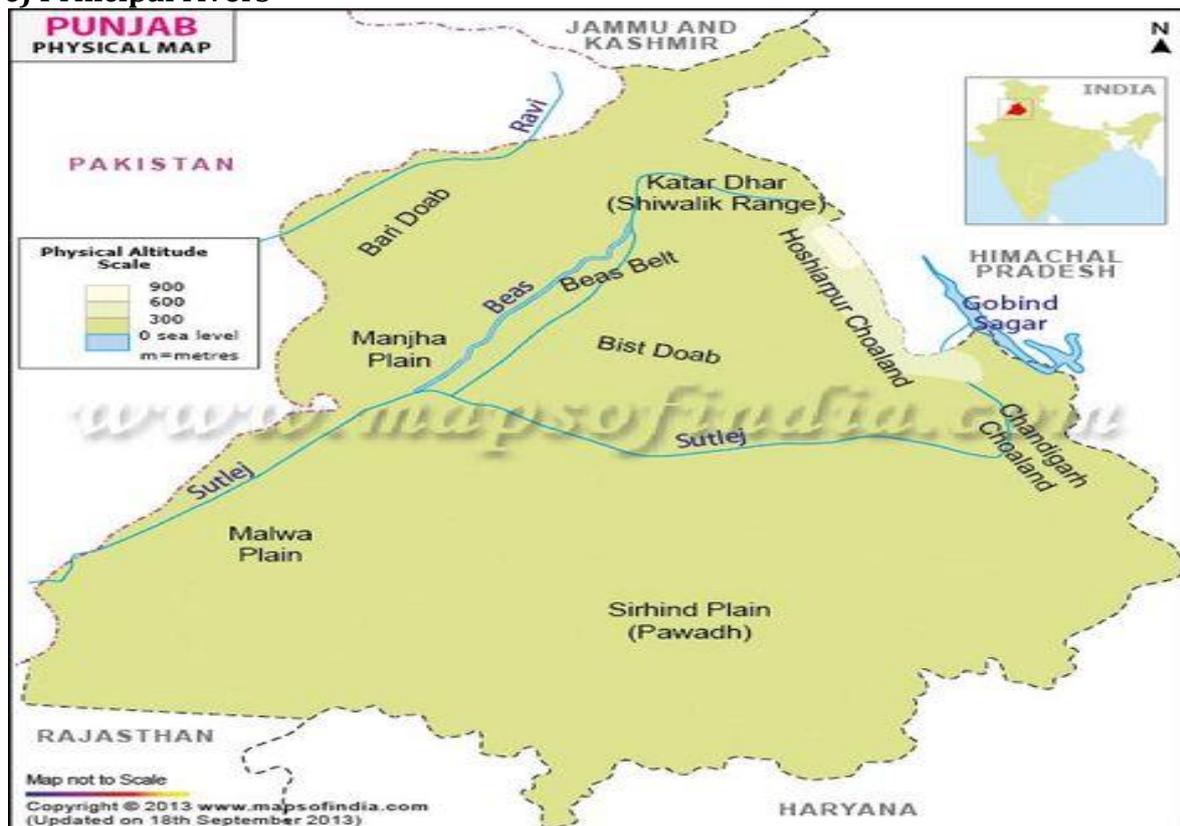
a) Boundary

- It is bounded by the Indian states of Jammu and Kashmir to the north, Himachal Pradesh to the northeast, Haryana to the south and southeast, and Rajasthan to the southwest and by the country of Pakistan to the west.

b). Physical feature

- **Siwalik Range:** Siwalik Range lies in the north-eastern part of the state where elevations reach about 900 metres.
- **Choland:** Farther south, the narrow, undulating foothill region is dissected by closely spaced seasonal torrents, locally known as chos, several of which terminate in the plain below without joining any stream

c) Principal rivers



Ravi:

- The Ravi has its source in **Kullu hills** near the **Rohtang Pass** in Himachal Pradesh. It drains the area between the Pir Panjal and the Dhaola Dhar ranges. It joins into the Chenab in Pakistani Punjab.

Beas:

- The Beas originates near the **Rohtang Pass**, at a height of 4,062 m above sea level, on the southern end of the Pir Panjal Range, close to the source of the Ravi. It crosses the Dhaola Dhar range and it takes a south-westerly direction and meets the Sutlej river at Harike in Punjab.

Sutlej River:

- It rises from the **Manasarovar-Rakas Lakes** in Tibet. It enters India through Shipki La pass on the Tibet-Himachal Pradesh boundary. It cuts deep gorges where it pierces the Great Himalaya and the other Himalayan ranges. Before entering the Punjab plain, it cuts a gorge in Naina Devi Dhar, where the famous **Bhakra dam** has been constructed.
- After entering the plain at Rupnagar (Ropar), it turns westwards and is joined by the **Beas at Harike**. During its onward journey it receives the collective drainage of the Ravi, Chenab and Jhelum rivers. It joins the Indus a few kilometres above **Mithankot**. Out of its total length of 1,450 km, it flows for 1,050 km in Indian territory.

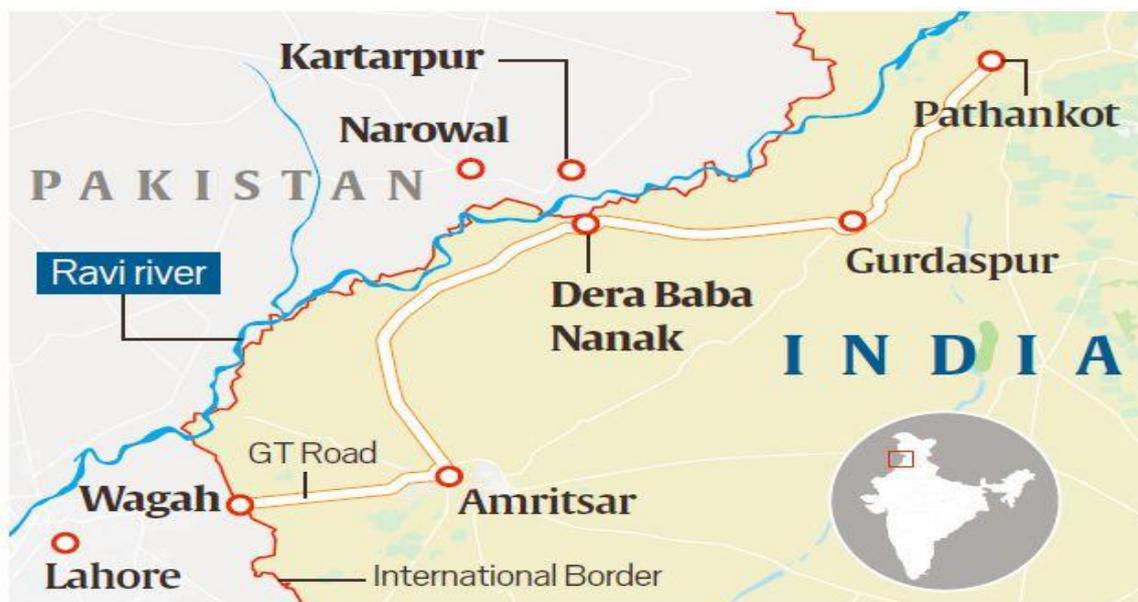
What is in news?

Kartarpur Sahib corridor

- Pakistan has agreed to give year-long visa-free access for Indian pilgrims to the holy Gurdwara of Kartarpur Sahib.

What is Kartarpur Sahib corridor?

- It is a corridor to facilitate visa-free travel of Indian Sikh pilgrims to the **Gurdwara Darbar Sahib** in Kartarpur, Pakistan.
- It is in Kartarpur Sahib that Guru Nanak Dev had spent the last 18 years of his life. The gurdwara is built where Guru Nanak is said to have died.
- In November 2018, Vice President Venkaiah Naidu laid the foundation stone for the construction of the Kartarpur Sahib Road Corridor on the Indian side in Gurdaspur district of Punjab, marking a new beginning in India-Pakistan relations.



31. Chhattisgarh

Geography of Chhattisgarh

a) **Boundary:** It is bounded by the Indian states of Uttar Pradesh, Jharkhand, Odisha, Telangana, Maharashtra and Madhya Pradesh.

b). **Physical features**

- **Chota Nagpur plateau:** It is a plateau in eastern India, which covers much of Jharkhand state as well as adjacent parts of Odisha, West Bengal and Chhattisgarh. Chota Nagpur is the collective name for the **Ranchi**, **Hazaribagh**, and **Kodarma** plateaus. The Chota Nagpur plateau in its entirety lies between the basins of the Ganges (Ganga) and Son rivers to the north and the Mahanadi River to the south. Through its centre, from west to east, runs the coal-bearing, faulted Damodar River valley.
- **Maikala Range:** They are range of hills in the state of Chhattisgarh India. The Maikal Hills are an eastern part of the Satpuras in Chhattisgarh. To one side of this stretch of landscape, the Achanakmar Wildlife Sanctuary of Chhattisgarh is located. Kanha National Park and Kanha Tiger Reserve in the Mandla and Balaghat districts of Madhya Pradesh and located in the Maikal hills of the Satpuras

c) **Principal rivers**

Mahanadi:

- The Mahanadi basin extends over states of Chhattisgarh and Odisha and comparatively smaller portions of Jharkhand, Maharashtra and Madhya Pradesh. It has its source in the northern foothills of Sihawa in **Dandakaranya, Raipur District** of Chhattisgarh. Its principal tributaries are **Seonath**, the **Hasdeo**, the **Mand**, **Ong**, **Tel** and the **Ib**.



Rihand:

- It rises from Matiranga hills. It is a tributary of the Son River and flows through the Indian states of Chhattisgarh and Uttar Pradesh.

Hasdeo:

- It is the largest tributary of Mahanadi River. The river flows in the state of Chhattisgarh. It joins Mahanadi River near Shiladehi. Hasdeo Bango Dam is constructed across this river.

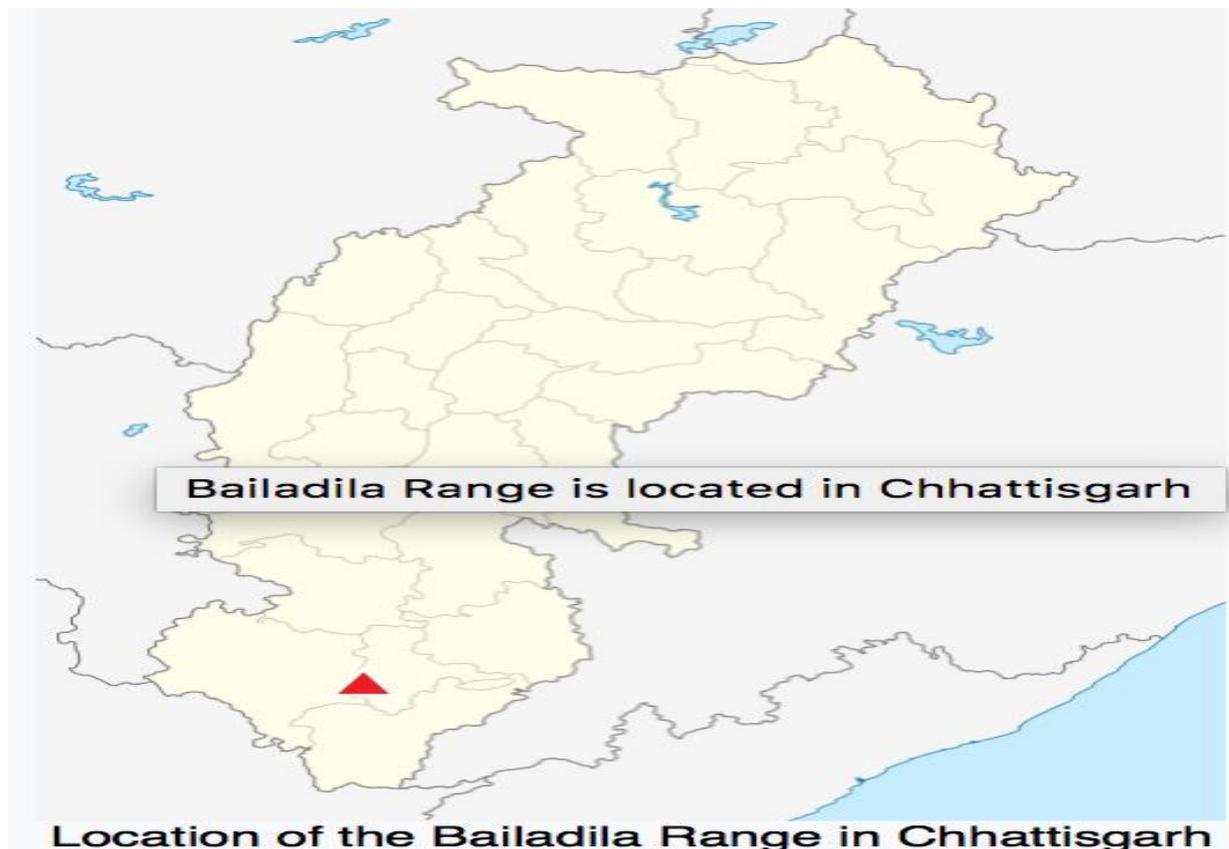
What is in news?

a) Biladila Hills

- Activity related to mining has been stalled in Chhattisgarh's iron ore rich Bailadila hills in Dantewada district following a five-day protest by local tribal groups. The villagers are protesting the move to take up mining in Bailadila because they consider it as sacred since it contains their local deity.

About Biladila Hills:

- Bailadila hills is in the Deccan Plateau about 200 km west of the Eastern Ghats.
- It has been named 'Bailadila' because it resembles the hump of an ox.
- It is located in southern Chhattisgarh.



Related information:

Niyamagiri hills:

- The Niyamgiri Hills form a mountain range in the Eastern Indian state of **Orissa**.
- They are home to more than 8,000 of the Dongria Kondh people.
- They successfully fought off Vedanta Resources, a company that was determined to mine their sacred mountain's rich seam of bauxite (aluminium ore).

