Interlinking of rivers

- The Idea of interlinking of Indian rivers was first proposed in 1858 by a British Irrigation Engineer, **Sir Arthur Thomas Cotton**. Later M. Visveswarayya, K. L. Rao and D. J. Dastur revived it in 1960s.
- The then Ministry of Irrigation formulated a **National Perspective Plan** (NPP) in **1980** envisaging inter basin water transfer in the country.
- NPP has two components- Peninsular Rivers Development, Himalayan Rivers Development
- **National Water Development Agency (NWDA**) was set up in **1982** by Government as a society under Societies Registration Act 1860.
- **14 links are under Himalayan River Development Component and 16 links are under Peninsular River Development Component**.
- Presently the nodal ministry concerning the projects is **Ministry of Jal Shakti**, Department of Water Resources, River Development and Ganga Rejuvenation.

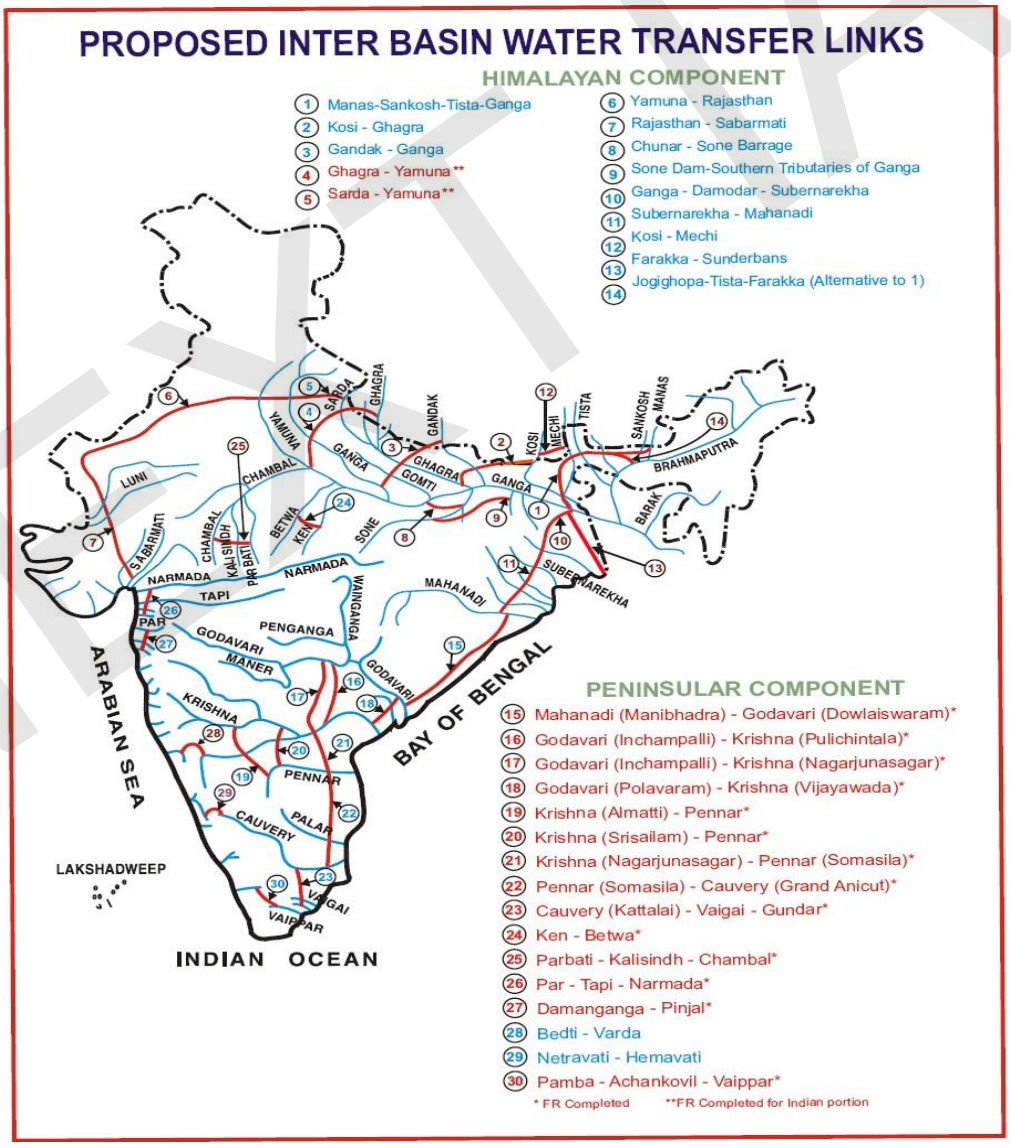

Fig 1: Proposed Inter-basin River links

The interlinking of rivers as the name suggest is making the link for water transfer between the water surplus basin where flooding occurs and water deficit basin where drought situation arises frequently. The government aims to fulfill this objective by building a network of reservoirs and canals through **National River Interlinking Project (NRLP),** which is also called the **National Perspective Plan**. By this the dual problem of flooding as well as drought in different parts of the country can be solved.

RIVER LINKING PROJECTS IN INDIA

Ken-Betwa Link Project (KBLP)

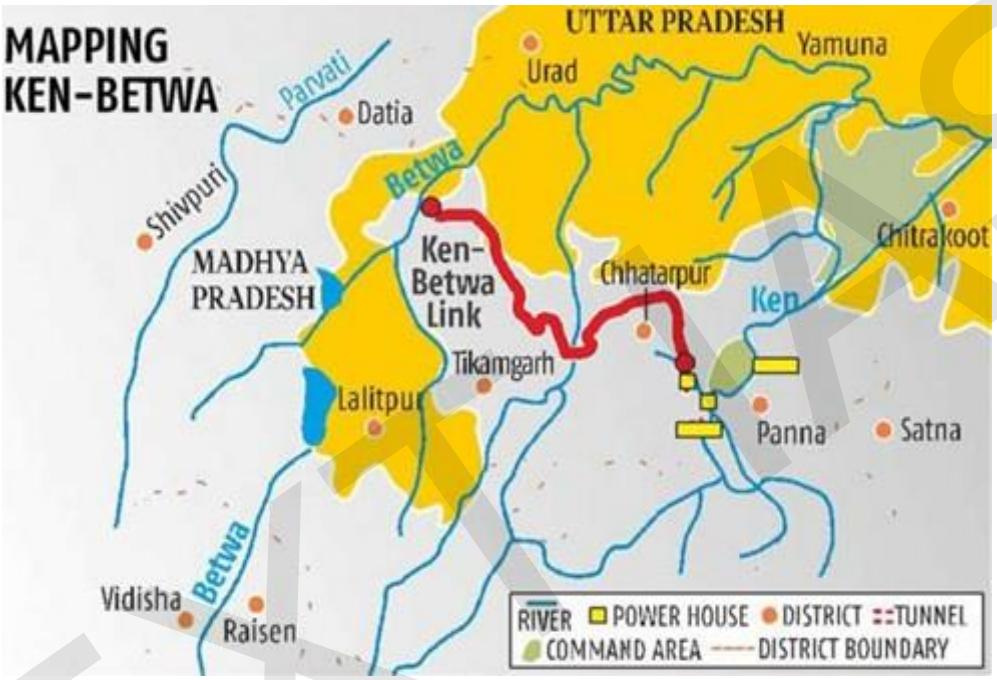

Fig 2: Ken-Betwa river link

- Both Ken and Betwa rivers are the **Right Bank Tributaries of River Yamuna**. These rivers flow in South Western Uttar Pradesh and Northern Madhya Pradesh. This link will benefit **Bundelkhand** Region.
- This project has been declared as **National Project in 2009** by the Government of India, which entailed 90:10 funding earlier i.e. 90% Union Government and 10% State Governments (U.P. & M.P.) and now it is 60:40. It is a part of Peninsular River Development Component of NPP.
- The transfer of water will be from **water surplus Ken River** to **water deficit Betwa River** under this project.
- The components of Ken-Betwa Link Project (KBLP) are **Lower Orr dam, Kotha Barrage and Bina Complex**.

Other Proposed River Linking Projects

Damanganga-Pinjal Link Project and Par-Tapi-Narmada Link Project

- Damanganga-Pinjal Link Project (DPLP) and Par-Tapi-Narmada Link Project (PTNLP), both come under Peninsular River Development Component of NPP.
- The areas of DPLP and PTNLP include the states of Maharashtra and Gujarat.

- Water from **water surplus Damanganga basin** is proposed to be diverted to **water deficit Mumbai City** through **Pinjal Reservoir** to meet the domestic water requirement.

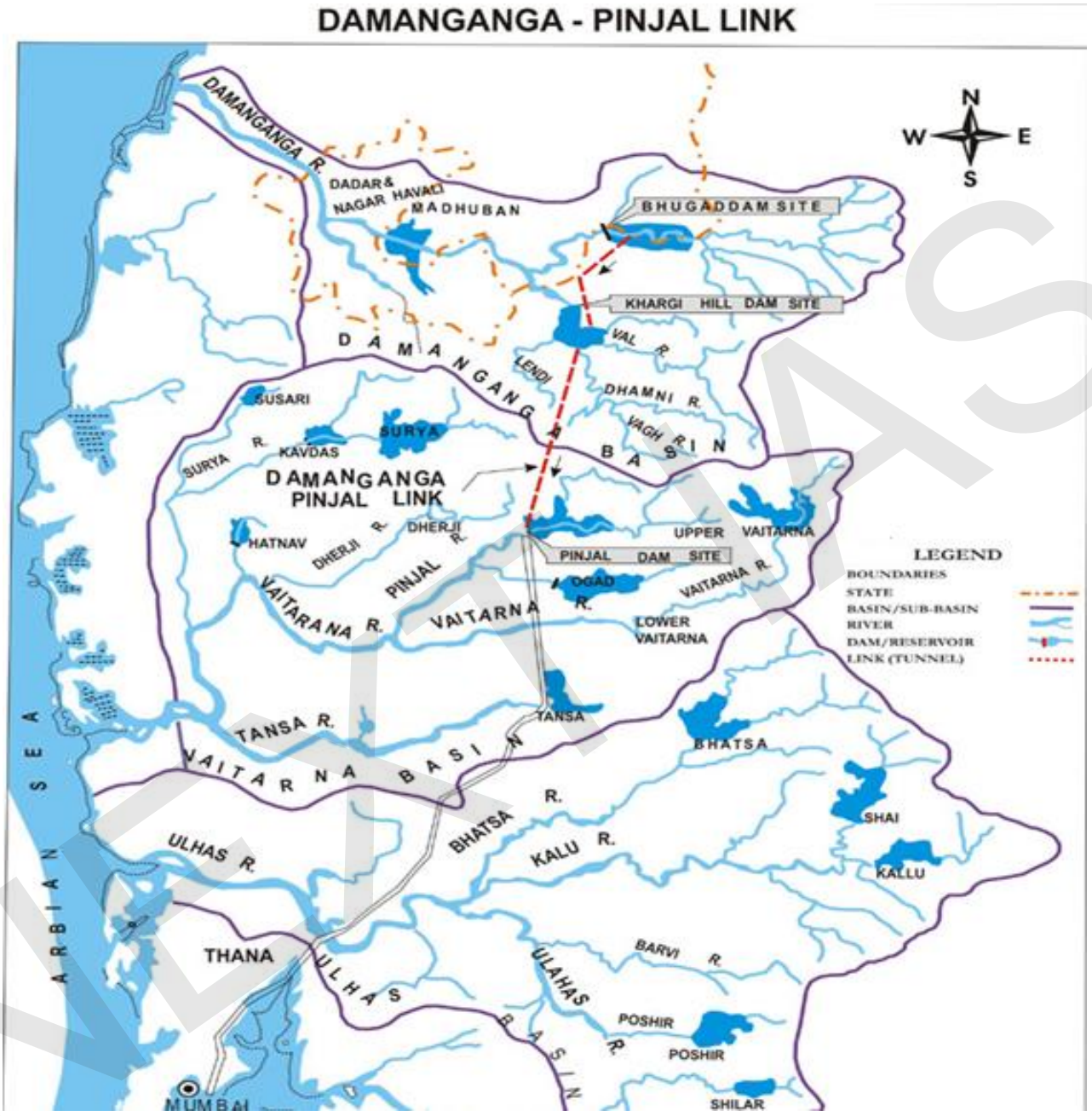

Fig 3: Damanganga-Pinjal Link

- **Pa-Tapi-Narmada Link Project (PTNLP)** proposes to transfer water from the water surplus regions of Western Ghats to the **water deficit regions of Saurashtra and Kutch**.
- Only one of the seven proposed reservoirs lies in the state of Maharashtra and others lie in Gujarat.

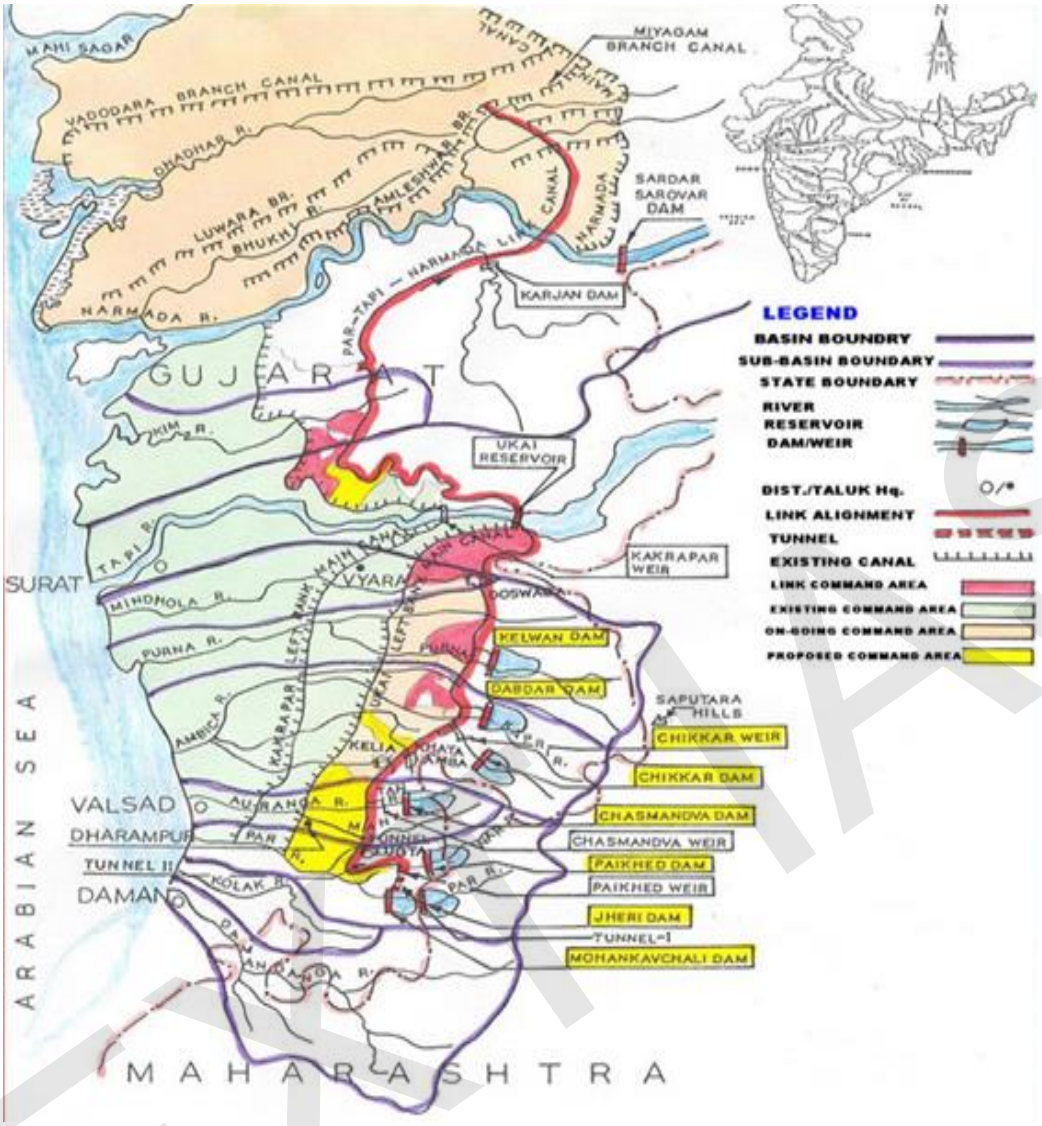

Fig 4: Par-Tapi-Narmada link

- Both river link projects have Project Report ready and their techno-economic appraisal is completed.

Mahanadi-Godavari Link Project

- Mahanadi-Godavari link is the first and the critical link of **Mahanadi-Godavari-Krishna-Pennar-Cauvery-Vaigai-Gundar Link** proposed under Peninsular River Development Component of NPP.

Fig 5: Mahanadi Cauvery river link

- This project envisages construction of a storage reservoir on Mahanadi River at Manibhadra and a link canal from this reservoir to the Godavari River.
- This project will benefit in irrigation, domestic, industrial water supplies and power generation as per the proposed scheme.
- Task force has approved the Detailed Project Report (DPR) of this project in February 2021.

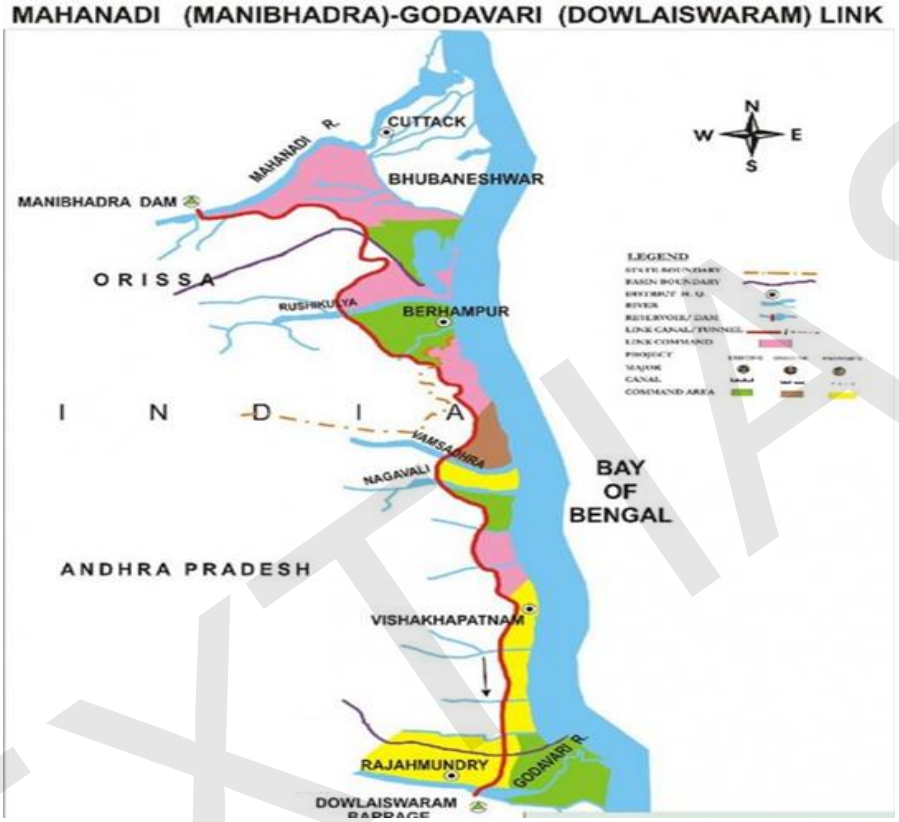

Fig 6: Mahanadi Godavari link

Godavari-Cauvery (Grand Anicut) link project

- The project proposes the diversion of unutilized water in the **Indravati sub-basin of Godavari basin** to meet the requirement of water deficit region between Godavari and Cauvery rivers.
- This link has 3 components-
    - Godavari (Inchampalli/Janampet) - Krishna (Nagarjunsagar)
    - Krishna (Nagarjunsagar) - Pennar (Somasila)
    - Pennar(Somasila) - Cauvery (Grand Anicut)

Manas-Sankosh-Teesta-Ganga (MSTG) Link Project

- MSTG link envisages diversion of surplus water of Manas, Sankosh and intermediate rivers for augmenting the flow of Ganga and provide water in Mahanadi basin.
- MST link passes through Manas Tiger Reserve which lies in Assam and Buxa Tiger Reserve which lies at the border of West Bengal.

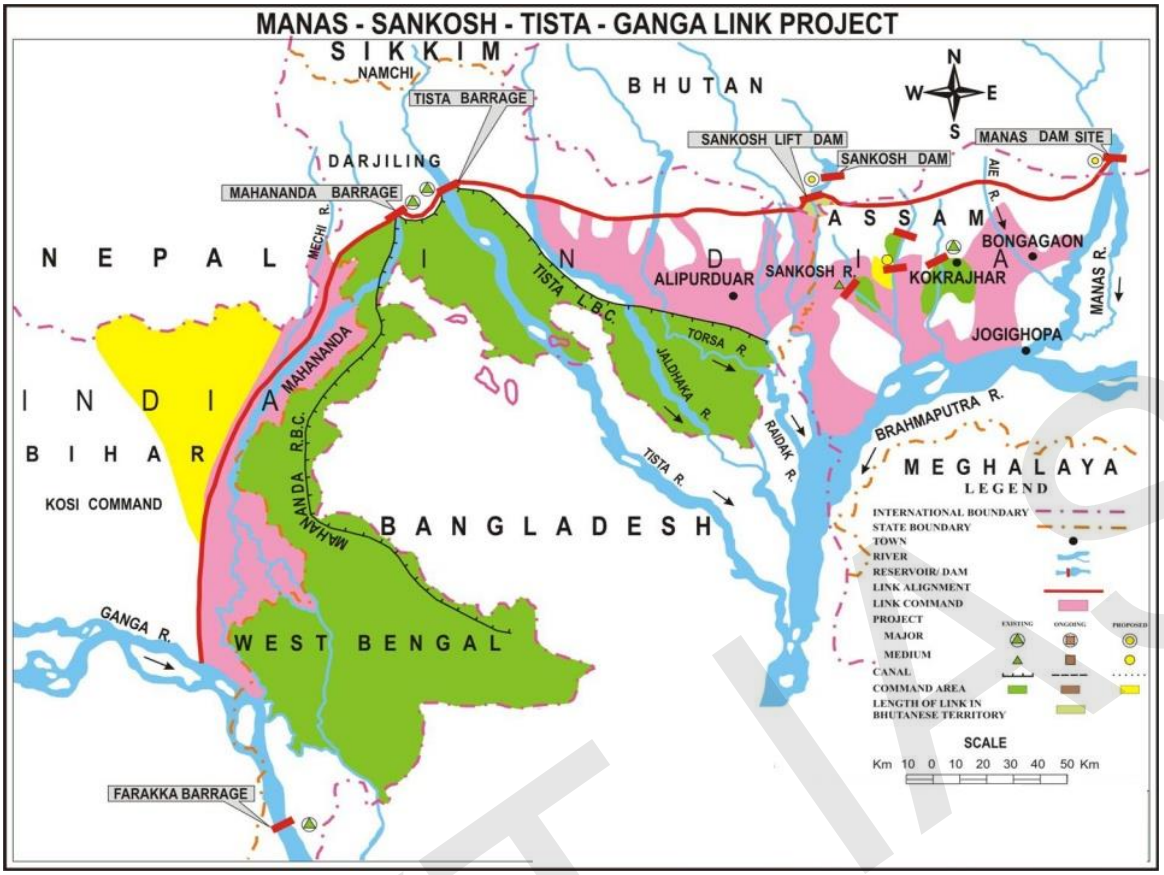

Fig 7: Manas-Sankosh-Tista-Ganga Link

Need of interlinking of rivers

- India faces the dual problem of flooding of some Himalayan rivers in Monsoon Season and drought in the peninsular India due to absence of perennial rivers. This issue can be addressed by interlinking of rivers.
- The problem of water shortage for domestic, farm, industrial sector etc. can be addressed by equitable distribution of water throughout the interlinked basins.

Merits of interlinking of rivers

- Flood Control in water surplus regions and Drought Control in water deficit regions.
- Inland water navigation (IWN) will be promoted and by this the issue of overburdened roadways/highways and pollution will be addressed and IWN is cheaper also.
- More irrigated area will drive more sown area in the country thereby increasing agricultural production, farmer's income and food security and this will help in accomplishing **Sustainable Development Goal (SDG) 2 of Zero Hunger**.
- This will promote Tourism and generate Employment in relevant sectors.
- This will also benefit Fisheries sector.
- Clean drinking water at homes, water availability for industries can also be increased.
- The projects have the Hydropower Potential of estimated **34000 MWs** thereby increasing Renewable Energy Production share of the country and **India's Nationally Determined Contribution (NDC**) will also be achieved. This is directly related to the **SDG 7** which is **Affordable and clean energy.**

Challenges/ Issues with interlinking of Rivers

At one hand the idea of interlinking if rivers has potential merits and on the other hand it has its own challenges associated with it. These are as follows-

- **Environmental challenges:**
  - Large scale deforestation is the basic need for the construction of dams and canals which directly affects the environment and country's forest coverage area.
  - Disturbance in the river ecology is another important issue as the Himalayan Rivers which are abundant in sediments will be interlinked with the Peninsular Rivers. This may affect the fish's species and other river creatures.
  - Constructed dams will submerge large area of land of forest reserves, wildlife sanctuaries etc which will lead to the migration of animals from their habitat.
  - Dams and Canals associate with them the Seepage problem which ultimately results in increasing soil salinity in nearby areas and reduction in agricultural production.
  - Climate change is leading changes in glaciers and rainfall pattern; this may convert surplus basins to deficit basins and vice versa.
- **Social and political challenges:**
  - **Land acquisition** from nearby villagers is a hurdle as they perceive it as their ancestral land and reside and perform agriculture there. In the tribal areas, it is the main social concern as tribal people collect minor forest produce (MFP) from the forests and it is their only livelihood.
  - **Displacement** of people and providing residential area with all the amenities will be difficult.
  - Water is a **state subject** in India. It may lead to interstate water disputes as surplus states are not easily ready to share water with other states thereby increasing the project completion time and cost.
  - Political parties are not always willing to take the tough decisions as it is harmful for them in elections.
  - It may also lead to international water disputes affecting our foreign/international relations.
- **Technological and Economic challenges:**
  - At some places due to the terrain/physical features, there is a need to lift canals to transfer water from low lying or surplus regions to high areas or deficit regions.
  - These projects are very costly and go in Billions of USD as well as time taking, so it is difficult for Government to fund these infrastructures for a long run.

Suggestions and Way forward

- Before going for on-site construction works for interlinking of rivers, proper Environment Impact Assessment (EIA) study should be done. All the stakeholders should be involved in the project so as to easily and consensually moving forward in the developmental works.
- Conservation of water should be the prime motto for the government as well as the people. Timely advertisements, school initiatives, radio broadcasts, awareness campaigns

etc. related to conservation of water/reducing water wastage should be promoted by the Ministry and institutions.

- Alternatives of water conservation like rain water harvesting, ponds, watershed management, check dams, micro irrigation like drip and sprinkler irrigation should also be promoted at ground level.
- Promotion of less water consuming crops in water deficit areas should be promoted.