

# **Interlinking of Rivers in India: Advantages and Challenges**

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## **Abstract**

India is a diverse country not only in terms of culture and traditions but also in terms of geography, wherein some regions have an excess of river water and others face water scarcity. Being a monsoon country the rainfall is unsteady, unevenly distributed and hence drought in some parts and floods in other parts frequently occur. The Rivers play a vital role in the lives of the Indian people. Indian agriculture largely depends upon Monsoon which is always uncertain. This problem of the irregular distribution of water can be overcome to a greater extent by interlinking of rivers. Therefore, there is a crucial need to manage this river water. This paper analyses the availability of water resources in different parts of India. The main objective of this paper is to promote sustainable development and management of the water resources and also to understand the challenges and prospects in 'Interlinking of Rivers' in India and to study the advantages and disadvantages of the project about the 'Indian Rivers Inter-link Project'.

Keywords- monsoon, agriculture, river linking floods, drought, water resource

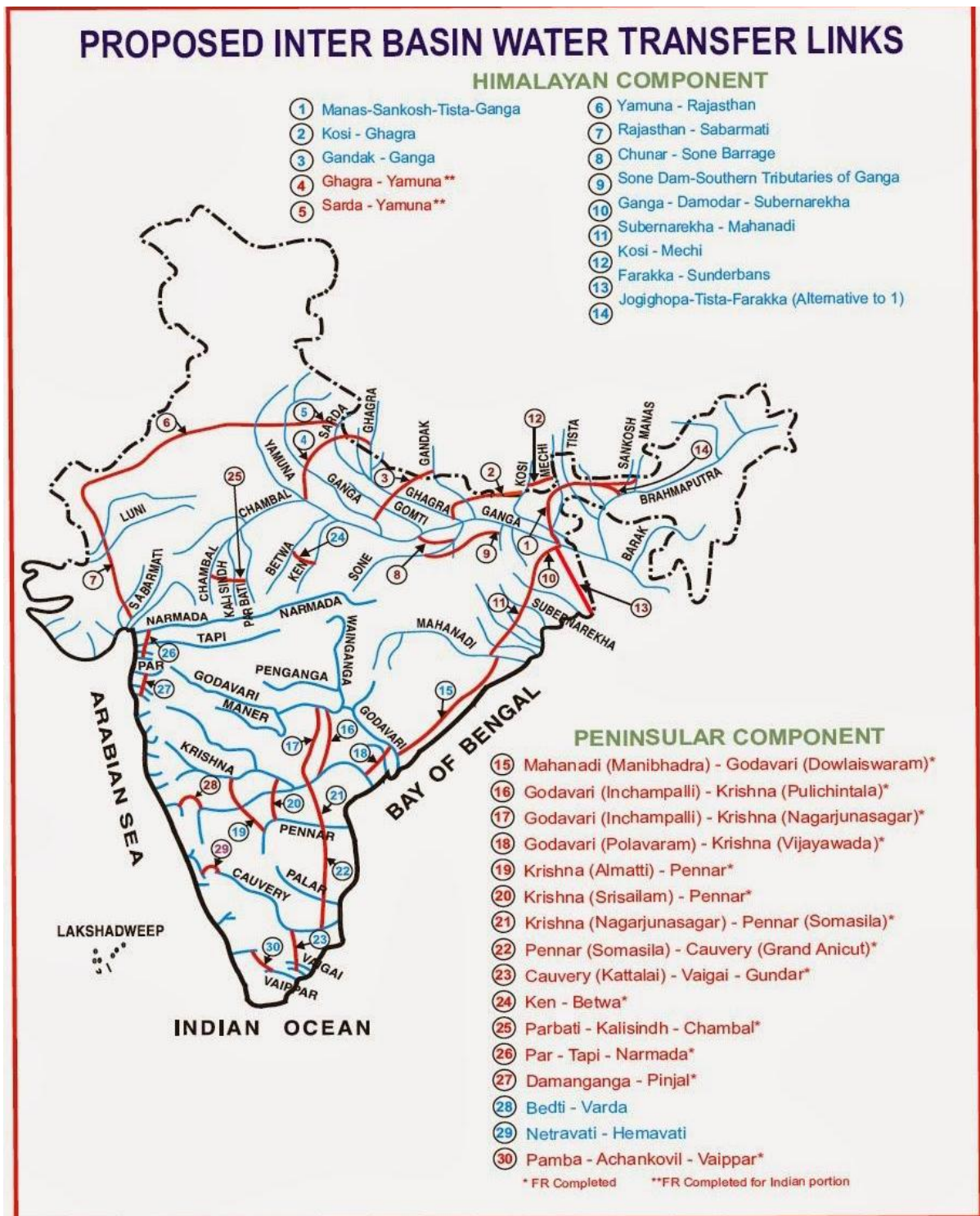
## **Introduction**

Water is one of the principal elements which not only governs life on earth but also influences economic, industrial and agricultural growth of mankind. There is a general perception that with the growing human population and rising standards of living, the available supplies of freshwater on the planet are becoming insufficient to meet the demand. India has a monsoon climate. Except for a small coastal area in the South, almost the entire rainfall occurs during three to four monsoon months. There is water scarcity in certain regions and water surplus in the other regions in our nation. There is an urgent need to adopt a highly efficient, effective and sustainable water program that can help us to use the available water resources judiciously and effectively. The water from surplus rivers can be interlinked with the water-scarce rivers so that there is a proper supply of water to fields, villages, towns and industries round the year without causing any harm to our environment. The Indian Inter Link River Project (ILR) has been proposed as a solution by National Water Development Agency (NWDA) of India. The national river linking project of India which is also called an inter-basin water transfer by National water development agency is designed to mitigate water deficiency in the western and southern part of the country while also decreasing the chances of recurring floods in the eastern parts, especially in Ganga basin. As per NWDA interlinking of rivers is one of the most effective ways to improve irrigation and agricultural production and minimize the various natural catastrophic situation like the flood, drought. The regional imbalance of river water causes a serious situation for farmers in the monsoon deficit area. By this river linking project water from all-time flowing rivers to the seasonal rivers can easily be transferred through canals and regional imbalance can be reduced.

## **Interlinking river project**

One of the largest civil engineering projects that have been proposed jointly by the Supreme Court and the President of India. This project aims to transfer the water from surplus river basins to the water-scarce western and southern regions of India to mitigate the drought conditions prevailing in these regions and also to divert the surplus water in the eastern regions of India. Under this project, 30 links and some 3000 storages will connect 37 Himalayan and Peninsular rivers. The project has been proposed to fulfil the very idea of interlinking the water surplus Himalayan Rivers with water scarce western and peninsular India. Detailed planning of this mega-project is being undertaken by the National Water Development Agency (NWDA). This agency has been carrying out studies for water resources development based on the National Perspective Plan. This proposal of interlinking of rivers

comprises of two components, namely Himalayan and Peninsular Component. The Himalayan component carries of 14 canal links and 16 links are proposed in the peninsular component.



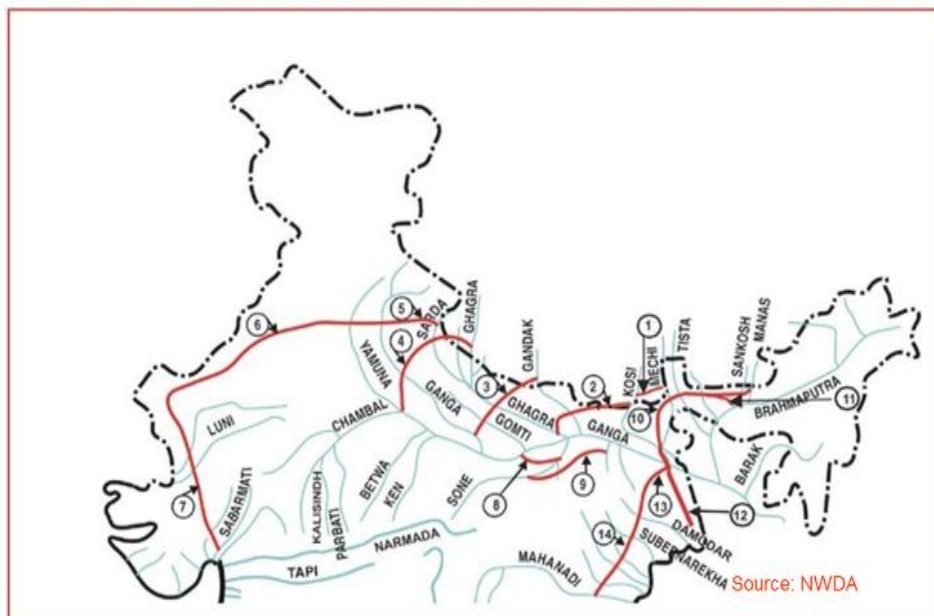
Proposed Inter-Link of Rivers in India

(NWDA)

## Projects in the Himalaya

- Himalayan Rivers Development Component under which 14 links have been identified. This component aims to construct storage reservoirs on the Ganga and Brahmaputra rivers, as well as their tributaries in India and Nepal. The aim is to conserve monsoon flows for irrigation and hydropower generation, along with flood control. The linkage will transfer surplus flows of the Kosi, Gandak and Ghagra to the west. A link between the Ganga and Yamuna is also proposed to transfer the surplus water to drought-prone areas of Haryana, Rajasthan and Gujarat.

## PROPOSED INTER BASIN WATER TRANSFER LINKS HIMALAYAN COMPONENT

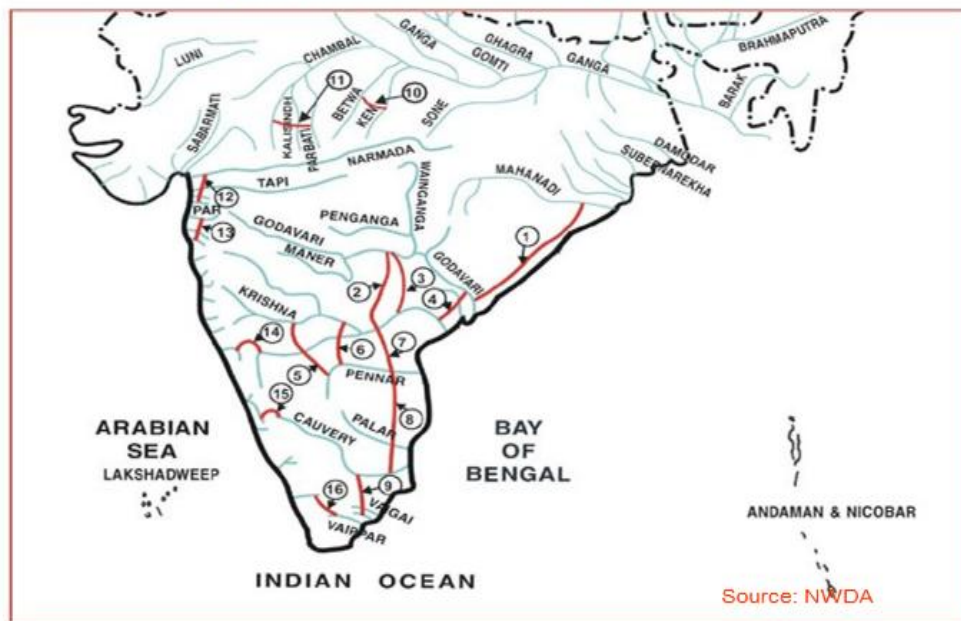


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|--------------------------|--|
| 1. Kosi – Mechi          | 8. Chunar- Sone Barrage                      |
| 2. Kosi – Ghagra         | 9. Sone Dam – Southern Tributaries of Ganga  |
| 3. Gandak – Ganga        | 10. Manas –Sankosh - Tista - Ganga           |
| 4. Ghagra – Yamuna *     | 11. Jogighopa – Tista – Farakka (Alternate)  |
| 5. Sarda – Yamuna *      | 12. Farakka – Sunderbans                     |
| 6. Yamuna – Rajasthan    | 13. Ganga (Farakka) – Damodar – Subernarekha |
| 7. Rajasthan – Sabarmati | 14. Subernarekha – Mahanadi                  |
- \* FR Completed

- Projects in the peninsular component**

Peninsular Rivers Development Component of the Southern Water Grid, which includes 16 links that propose to connect the rivers of South India. It envisages linking the Mahanadi and Godavari to feed the Krishna, Pennar, Cauvery, and Vaigai rivers. This linkage will require several large dams and major canals to be constructed. Besides this, the Ken River will also be linked to the Betwa, Parbati, Kalisindh, and Chambal rivers.

## PROPOSED INTER BASIN WATER TRANSFER LINKS PENINSULAR COMPONENT



- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Mahanadi (Manibhadra) – Godavari (Dowlaiswaram) *</li> <li>2. Godavari (Inchampalli) – Krishna (Nagarjunasagar) *</li> <li>3. Godavari (Inchampalli) – Krishna (Pulichintala) *</li> <li>4. Godavari (Polavaram) – Krishna (Vijayawada) *</li> <li>5. Krishna (Almatti) – Pennar *</li> <li>6. Krishna (Srisaillam) – Pennar *</li> <li>7. Krishna (Nagarjunasagar) – Pennar (Somasila) *</li> <li>8. Pennar (Somasila)–Palar- Cauvery (Grand Anicut) *</li> </ol> | <ol style="list-style-type: none"> <li>9. Cauvery (Kattalai) – Vaigai – Gundar *</li> <li>10. Ken – Betwa *</li> <li>11. Parbati – Kalisindh – Chambal *</li> <li>12. Par – Tapi – Narmada *</li> <li>13. Damanganga – Pinjal *</li> <li>14. Bedti – Varda</li> <li>15. Netravati – Hemavati</li> <li>16. Pamba – Achankovil – Vaippar *</li> </ol> <p>* FR Completed</p> |
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### Major states to benefit directly from NRLP:

Madhya Pradesh, Uttar Pradesh, Rajasthan, Kerala, Tamil Nadu, Gujarat, Bihar Andhra Pradesh, Chattisgarh, Puducherry, Odisha, West Bengal, Telangana, Karnataka, Maharashtra are the major states which will get direct benefits of this national river linking project. When reservoirs will be made on the surplus river and will be connected in other parts of the country then the so-called regional imbalance could be diminished and inland navigation and irrigation pattern will enhance and farmers will not have to wait for a good monsoon.

### Major advantages of ILR:

- Create the potential to increase agricultural production by an additional 100 per cent over the next five years;
- Unify the country by involving every Panchayat as a shareholder and implement agency;
- Provide for enhancing the security of the country by an additional waterline of defence;
- Employ the 10 lakh people for the next 10 years;
- Eradicate the flooding problems which recur in the north-east and the north every year;
- Solve the water crisis by providing alternative, perennial water resources;
- The large canals linking the rivers are expected to facilitate inland navigation too;
- Increasing food production from about 200m tonnes a year to 500m tonnes;

- Boost the annual average income of farmers;
- To solve the problem of the water crisis in cosmopolitan cities of India and Inter-state water-disputes.
- The rural areas of the country will get an all-out development on modern lines .it will boost the rural economy and the lifestyle of the Indian village.
- Due to the interlinking of rivers, the overall economic activities of the country will be enhanced resulting in an annual increase of GDP. Employment opportunities also increase.
- Not only the environment protection and pollution control shall be achieved but this creation of “National Rivers Water Grid” shall also provide extra security to the country as a whole.
- Generate employment in agriculture, power, transport & construction sector.

#### **Major disadvantages of ILR:**

- Environmental costs (deforestation, soil- erosion, etc.)
- Rehabilitation: not an easy task
- Social unrest/Psychological damage due to the forced resettlement of local people;
- Political effects: strained relationship with neighbours (Pakistan, Bangladesh)

#### **Challenges of ILR:**

##### **1. Political Challenges**

Water is the sign of wealth for a state as its basic need of every kind thus several states do not want to go with national river linking project in fear of losing surplus of water to the other states. A less political desire will make this project again a lip service so for this issue there must be an enthusiasm towards the project only after this can be a dream project comes true.

##### **2. Economic Challenges**

National river linking project is a dream project for the Indian government has a vast impact on the national economy as the programming cost of this project is very high nearly \$87 billion. It seems rather difficult to arrange this vast money from the market itself.

##### **3. Environmental Challenges**

The national river linking project form very start has been a matter of criticism to the environmentalist. They feel the project as negligent, incautious and impertinent. According to the major group of environmentalist that project will change the geography of the whole country recklessly and will invite several challenges and the worst effect of nature.

##### **4. International Challenges**

Himalayan rivers like Ganga, the Brahmaputra which flows in either multination boundaries or combination boundaries. India’s neighbours especially Bangladesh will resist this project because the flow of Ganga in Bangladesh will be reduced which will create a problem in implementing NRLP.

#### **Achievements of Interlinking of Rivers (ILR) Programme:**

- Interlinking of River (ILR) programme is of national importance and has been taken up on high priority. Hon’ble Minister for Water Resources, RD & GR is monitoring the progress of ILR from time to time. The mission of this programme is to ensure greater equity in the distribution of water by enhancing the availability of water in drought-prone and rain-fed area.
- Under the National Perspective Plan (NPP) prepared by Ministry of Water Resources, NWDA has already identified 14 links under Himalayan Rivers Component and 16 links under Peninsular

Rivers Component for inter-basin transfer of water-based on field surveys and investigation and detailed studies.

- Out of these, Feasibility Reports of 14 links under Peninsular Component and 2 links (Indian portion) under Himalayan Component have been prepared. Draft Feasibility Reports of 7 link projects (Indian portion) of Himalayan Component have also been completed.

### **Paper methodology and objectives:**

Paper is based on a deep study of various secondary data. The main objective of the paper is to make light on the project national river linking (NRLP) and its significance and challenges in the way ahead.

### **Conclusion:**

With the rapid increase of demand for water and new technological advancements, the ILR project seems to act as a boon for the nation. It will not only meet the water requirements of millions of people by providing water but would also reduce the problems people face in water-scarce regions. The water supply would be from regions having surplus water in the rivers to regions where water is scarce, thus, equally and adequately fulfilling the needs of people across the nation.

It not only boosts the water supply in the country but also, increases the production of crops due to the increase in irrigation thereby, increasing incomes of the farmers. Till the construction phase of about 50 years, it would employ the unemployed.

Though ILR is beneficial it would have a crucial and alarming impact on the environment. Thus, it is essential to develop various methods in mitigating with the drawbacks of the project, also, the construction of dams, canals and tunnels should not be blindly done, the placement of these things should be done by keeping in mind the impact it would have ecologically on a certain region.

But even if the project is executed the water supply problem in vast regions of the country would still be a point to ponder on as many areas of the country have vast deserts which do not contain rivers in the vicinity to which they could be linked, thus, providing water in scarce regions would still pose a challenge. Resource mobilization for such a large-scale project would be difficult; also, the scale of the project may result in scarcity of some other resource within the nation.

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