

## Some information regarding the river link schemes of India

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### Abstract

There is a long standing proposal to transfer the water of some rivers which have surplus discharge to the basins where there is low discharge. The rivers coming down from the Himalayas as well as from the Western Ghats have high discharge due to heavy precipitation over there. In this connection some feasibility studies are being carried out by National Water Development Agency to link these rivers with the rivers of Southern, Central and Western Regions. Apart from transfer of water, the Project will generate electricity increase irrigation, recharge ground water aquifers, control floods and open up navigational ties. Since water is a state subject in our political system, the solving of the technical problems will follow once the political will to implement the schemes has been made. A task force formed by the Government of India is at present monitoring the investigation work including the environmental impact studies, assigned to different organisation. Till the DPR is ready no adverse comment regarding this scheme is desirable.

### Introduction:

Sir Arthur Cotton who was the pioneer in the Water Resources Development in the southern states of India, first proposed, sometimes in 1840, to link the Indian rivers for navigational purposes. His ambitious plan was implemented to some extent but was later abandoned with the introduction of the railways. Subsequently Late Dr K. L. Rao, an eminent Engineer and a former Central Irrigation Minister proposed that the water of some surplus rivers may be diverted to deficit rivers to develop water equilibrium. In order to carry out systematic feasibility studies in this regard, the National Water Development Agency (NWDA), a Society under the Ministry Of Water Resources was formed in August, 1980 to link the following Peninsular and Extra-Peninsular / Himalayan rivers: —

### Link for Peninsular rivers

1) Mahanadi - Godavari; 2) Godavari-Krishna, 3) Godavari (Inchampalli low dam) -Krishna (Nagarjunasagar tail pond); 4) Godavari (Polavaram)-Krishna (Vijayawada); 5) Krishna (Almatti) - Pennar; 6) Krishna (Srisailam)-Pennar; 7) Krishna (Nagarjunasagar)-Pennar; 8) Pennar (Somasila)-Cauvery (Grand Anicut); 9) Cauvery (Kattalai)-Vaigai-Gundar; 10) Ken Betwa; 11) Parbati -Kalisindh - Chambal; 11) Par-Tapi-Narmada; 12) Damanganga - Pinjal; 13) Bedti -Varda; 14) Netravati - Hemavati; 15) Pamba- Achankovil- Vaippar

### Link for extra Peninsular/Himalayan rivers

1) Kosi: -Mechi; 2) Kosi Ghagra; 3) Gandak - Ganga; 4) Ghagra -Yamuna; 5) Sarda -

Yamuna; Tributaries of Ganga: 10) Brahmaputra - Ganga (MSTG); 11) Brahmaputra: -Ganga (JTF) (ALT); 12) Farakka – Sunderbans: 13) Ganga-Damodar-Subarnarekha; 14) Subarnrekha-Mahanadi.

### Project Details

The scheme envisages the construction of Dams Barrages and Canals to transfer the surplus water of eastern rives to deficient area of southern, Western and Centreal India. Surplus discharge is available during flood season, in general in the lower Ganga, in the Mahanadi and Godavari and in the west flowing small rivers and in the rivers of the North –Eastern Region. Apart from transfer of water from surplus to deficit basins, the Project will generate hydro - electricity, increase irrigation, recharge groundwater aquifers, control floods and open up navigational facilities. Ever since the formation of the aforesaid Society, the investigations for 30 link schemes have been done and these seem to be technically viable in the opinion of NWDA.

Amongst the Peninsular river links, Mahanadi-Godavari-Krishna-Cauvery-Link is the most important. As per this scheme, the proposed link canal is to take off from a place called Manibhadra ( 20°27': 84°59'; 73 D/15 ) located on the right abutment of the Mahanadi and will cross 5 major rivers viz, Rushikulya, Bahuda, Vamsadhara, Nagaravalli & Champavati and join Dowleswaran Barrage on the Godavari covering 932 km. It has been proposed to divert 11, 176 million M<sup>3</sup> of water-out of which 3845 million M<sup>3</sup> will be used for enroute irrigation and 6500 million M<sup>3</sup> will be diverted to Dowlaiswaram for onward use. The detailed geo-technical feasibility studies have already been completed. In Orissa portion, 13 aqueducts and a tunnel will be required to transport this water and out of the total 455km long canal alignment,

about 150km appears to be problematic. If the aforesaid Manibhadra Dam ultimately comes up, the fertile agricultural lands along the course of the Mahanadi will get submerged besides displacing about one lakh population. This Problem can be solved to some extent if a barrage is constructed at Manibhadra and a storage dam near Balipur ( 20° 30' 19", 84° 53' 26"; 73 D/14 ) about 15 km upstream of Manibhadra. There will not be any problem of submergence of villages if the dam is set up at Balipur. But the Govt. of Orissa does not accept that Mahanadi river has any surplus water which can be shared with Andhra State. If they can ultimately build up a dam across the Mahanadi river overcoming the stiff opposition from the local people, irrigation can be provided over large areas on the right flank of the Mahanadi up to almost Vamsadhara basin and the recurring floods in the delta region of the Mahanadi can be checked to a great extent.

The Godavari is joined by Indravati & Penganga downstream of the major storage at Shri Ramsagar. The Godavari river has surplus water which can be stored at Inchampalli dam site and the water can be effectively used for irrigation. After irrigating the land between the Godavari & the Krishna, some water will be left which can be transferred to Cauvery Basin. But the Govt. of Andhra Pradesh does not agree that there is surplus water in the Godavari.

There are a number of west flowing rivers originating from the Western Ghats. In view of heavy precipitation along the Western Ghats, these rivers carry a lot of discharge. But except for hydro-power generation in some of these rivers and minor irrigation along the narrow coastal plains, the enormous water resources have not yet been properly utilized. The diversion of some of these west flowing rivers towards the east, if technically possible, as it has been done in case of west flowing Periyar eastwards into Vaigai through the Western Ghats of Kerala, will be very beneficial to

the people living on the leeward side of the Western Ghats.

Due to heavy precipitation, the rivers of the North-Eastern Himalayas have very high discharge compared to average Indian rivers. For example the Brahmaputra which is India 's largest and least tapped river accounts for 28% of nation 's water resources. The Brahmaputra-Ganga gravity link canal that India had proposed in the seventies was rejected by Bangladesh for many reasons. Now that proposal is dead and no transfer of its surplus water has been contemplated at this stage.

Amongst the Eastern Himalayan rivers., Manas - Sankosh - Tista - Ganga Link is very important. The scheme envisages the construction of high dams in Bhutan across the Manas and Sankosh rivers and excavation of canals along a narrow strip of land between Bangladesh in the south and Bhutan in the north. This 206 km long canal will be aligned near the foot-hills of the Himalayas through thick forest and populated areas and ultimately meet the river Ganges upstream of Farakka Barrage. The ground survey work for this canal is over but the detailed geo-technical feasibility studies are yet to be taken up. This scheme if ultimately implemented, will increase the flow of the Ganges and save the Calcutta Port.

Water is the main resource of Nepal, but very little attempt has been made to tap this natural resource for generation of hydro-electricity. Until some storage dams are constructed in Nepal, the water of India - Nepal trans-boundary rivers like Koshi, Gandak and Mahakali can not be effectively transferred and used in India. At present Nepal is very much against this scheme.

The 149 km long Chunar-Son Link envisages the diversion of 5. 418 cu. m of Ganga water to Son Barrage. This canal will take- off from the right bank of the Ganga, slightly up stream of Chunar town in UP. Along the proposed canal alignment 21 bridges, 5 Aqueducts, 3 Head Regulators,

1 Forebay, 3 Pump Houses and 4 railway bridges are to be constructed. The geo-technical feasibility studies are yet to be taken up for this link scheme. It is very doubtful whether this scheme can be ultimately implemented because the vast cultivable lands between the Ganga and Son have to be spared for the proposed wide canal. A storage dam at a place called Khadwan about 6 km upstream of the existing Son Barrage could not be raised due to serious objection from people living in the submergence areas though the feasibility studies for this scheme were completed in the eighties.

Some people think that the realignment of the rivers may lead to an ecological disaster. It will disturb the natural flow and destroy the ecosystem, causing sedimentation and erosion.

As already mentioned, the linking of Indian rivers was contemplated long back. Recently it has come to lime light when the Supreme Court of India directed the Govt. of India to complete river linking work within a period of 12 years primarily to mitigate the problems of drinking water. In the proposed river linking scheme, there are two types of problems - Political & Technological. Since water is considered a state issue in our political system, the subject of evacuees rehabilitation is a matter of great concern for the state. The issue of sharing the Cauvery water between Tamil Nadu & Karnataka remained unresolved after years of political tussles. The solving of the technical problems will follow once the political will to implement the schemes has been made.

As per the schedule the Detailed Project Report (DPR) on the proposed river linking has to be made ready by 2006. The Govt Of India has formed a Task Force to monitor the aforesaid investigation work assigned to different organizations. For example, the Central Pollution Control Board to determine river quality and pollution level, Tata Energy Resources Institute (TERI) and National

Environmental Engineering Research Institute (NEERI) will study the environmental impact on the links between Subarnarekha – Mahanadi – Godavari with respect to forests and wildlife. The wild life institute Of India will study the effects on wildlife. The resources groups on Finance, Social issues (for rehabilitation) and

technology involving Indian Space Research Organisation (ISRO) will also submit their reports after carrying out detailed studies. On completion of these studies any constructive criticism from some competent authorities is welcome. Otherwise, like many Water Projects, these River Linking Schemes will also suffer due to negativism.