

Godavari (inchampalli)-Krishana(pulichintala)

EXECUTIVE SUMMARY

Long distance inter-basin transfer of water from surplus basins to water deficit basins has been mooted in our country in order to reduce the imbalance in the water availability between various regions. A National Perspective Plan (NPP) was formulated in the year 1980 by the Union Ministry of Irrigation (now Ministry of Water Resources) and the Central Water Commission identifying a number of inter-basin water transfer links in respect of both Peninsular rivers and Himalayan rivers of the country. The Peninsular Rivers Development and the Himalayan Rivers Development Components put together were expected to create an additional irrigation potential of 35 million hectares besides hydropower potential and other benefits.

The interlinking of Mahanadi-Godavari-Krishna-Pennar-Cauvery is one of the four parts of the Peninsular Rivers Development Component of the NPP. Amongst the Peninsular Rivers, the Mahanadi and the Godavari have sizeable surpluses after meeting the existing and projected requirements within the basins. It is, therefore, proposed to divert the surplus waters of the Mahanadi and the Godavari to the water short river basins viz., the Krishna, the Pennar and the Cauvery. Three water transfer links have been proposed connecting Godavari to Krishna: (i) Inchampalli -Nagarjunasagar, (ii) Inchampalli-Pulichintala and (iii) Polavaram- Vijayawada. This report deals with the feasibility of the second link, i.e., diversion of a part of the surplus waters of Godavari from the proposed Inchampalli reservoir to the proposed Pulichintala dam on river Krishna through the Godavari (Inchampalli)-Krishna (Pulichintala) link canal.

The Godavari (Inchampalli) – Krishna (Pulichintala) link project envisages diversion of 4370 Mm³ of water from the proposed Inchampalli dam on river Godavari to the proposed Pulichintala reservoir on river Krishna. Out of this, a quantum of 3665 Mm³ is earmarked for irrigation, 413 Mm³ is planned to be utilized for municipal & industrial purposes in the command areas and the urban areas en route the link canal up to 20 kms. and the remaining 292 Mm³ will be lost in transmission.

The link canal takes off from the right flank of the proposed Inchampalli dam with FSL 106.68 m and traverses for a length of 312.2 km (including 12.50 km long tunnel proposed to cross the ridge between Godavari & Krishna basins) through Karimnagar, Warangal, Khammam and Nalgonda districts of Andhra Pradesh. The link canal is supported by number of

branch canals of which NSLBC feeder branch taking off at RD 200.00 km by a lift is significant. The multiple reservoir simulation carried out for the Bhopalpatnam & Inchampalli reservoirs and incorporated in this report show that the demands are met with a success rate between 76% and 80% for various purposes.

It is proposed to bring 445299 ha of CCA under irrigation, comprising proposed command of 85230 ha (IRBC 48230 ha, command area of 37000 ha under NSLBC beyond Tammileru) and existing command taken over by link canal to the tune of 360069 ha (NSLBC 156700 ha and NSRBC 203369 ha). Apart from irrigation, it is also proposed to cater to the future municipal and industrial water requirements in the command area as well as all the townships along the link canal up to 20 kms. About 41 lakh human population and the industrial water requirements by 2050 AD are proposed to be served utilizing 176 Mm³ and 237 Mm³ respectively.

Further, it is proposed to tap the power potential available through the spills from the Inchampalli dam. A powerhouse with effective capacity of 825 MW with reversible turbines is proposed for this purpose to generate 2477 MU annually. To facilitate the pumping of water into reservoir, a pond is proposed with storage of 34.2 Mm³ on the downstream of the dam. In addition, three canal powerhouses with effective capacity of 9 MW in each power house are also proposed to generate 110 MU annually through the cascade of falls available on link canal before its outfall into Pulichintala reservoir.

Since the topography doesn't permit the gravity flow irrigation throughout canal system, lifting arrangements are provided on link canal at RD 200 km to feed the existing NSLBC and on the right flank of Pulichintala reservoir. The total pump capacity required is 112 MW and the annual power requirement for these lifting arrangements works out to 285 MU.

The link canal is designed as lined canal of trapezoidal shape with bottom rounded corners. The maximum carrying capacity of the canal is 304 cumecs with the corresponding cross section of 33.4 m of bed width and 6.0 m full supply depth. The tunnel is designed to have 13 m dia. The canal passes through forest patches and agricultural lands comprising forest soils, red earths, black cotton soils and red soils.

The cost of the project is estimated to be Rs.5046 crore, which includes the apportioned cost of head works at Rs.306 crore, the cost of conveyance system at Rs.4252 crore, the cost of power component at Rs.53 crore, the cost of lifting arrangements at Rs. 409 crore and cost of on farm development at Rs. 26 crore. The annual cost after duly considering the land development and the annual power requirement for lifting works out to 646 crore. The direct benefits from the link project due to irrigation, municipal & industrial water supplies and power generation are estimated to be Rs.2202 crore.

The benefit-cost ratio (BCR) of the project works out to 3.41 where as the internal rate of return (IRR) works out to 19.26 %.

The objective of preparing the Feasibility Report is to facilitate firming up of the proposals for optimum utilization of Godavari waters in the water short areas of Andhra Pradesh.