

Executive Summary

NWDA earlier prepared the Feasibility Report of Par – Tapi – Narmada Link and circulated among all concerned on 14.08.1995. The report envisaged transfer of surplus of water of west flowing rivers between Par and Tapi and surplus water of Tapi at Ukai to deficit area in North Gujarat. However later when water balance study of Tapi at Ukai was done, it was found that there is no surplus in Tapi river at Ukai. As such contribution of Tapi river in the earlier proposed link has been dropped and revised Feasibility Report has been prepared. Thus the present proposal of the Par-Tapi-Narmada link envisages transfer of surplus water from west flowing rivers between Par and Tapi to water deficit areas in North Gujarat. The scheme is located mainly in southern Gujarat but it also covers part of the areas of Maharashtra, North of Mumbai on the western ghats of India. The link project consists of 7 proposed reservoirs on the rivers between Par and Tapi and a 395 km long link canal (including 33 km length of the feeders) connecting these reservoirs to carry water to their target command areas north of Narmada. It will also irrigate small enroute areas. The target areas are part of the command of the Narmada canal system. By taking over part of Narmada command, the water saved in Narmada canal can be used to extend the irrigation further north in the drought prone areas of Gujarat. The project details are shown in the attached Index map.

There are five west flowing rivers between Par and Tapi as shown in the Index Map. Considering the possible full development of irrigation and the projected in basin domestic and industrial requirements upto 2025 AD, a total surplus of 1834 Mm³ would be available in these basins. However, considering the topographical constraints of storage sites, only a part of the surplus is proposed for diversion. For this purpose, 7 storage sites have been considered and simulation studies carried out considering monthly inflows and monthly demands. Yield capacity curves were drawn for each of the reservoirs and optimum capacities were decided from these curves. The catchment area, water availability, storage capacity and dependable yield etc. for these reservoirs are given in Table-1.

Table – 1
Assessment divertible yield from 7 reservoirs in
Par- Tapi- Narmada link

Unit: Mm³

Sr. No.	Storage sites	River	Catchment area at the site (sqkm)	Water availability at 75% Dep	In basin & d/s needs	Balance water at 75% Dep.	Live storage	Diver-table Yield as per simulation study
1	Jheri	Par	425	358	115	251	187	242
2	Mohan-kavchali	Par	206	174	61	116	180	137
3	Paikhed	Par	315	244	84	164	218	212
4	Chas-mandva	Auranga	89	76	18	59	75	76
5	Chikkar	Ambika	323	243	132	124	130	146
6	Dabdar	Ambika	482	289	96	203	205	267
7	Kelwan	Purna	733	435	202	253	258	270
	Total		2573	1819	708	1170	1253	1350

Thus, the 7 proposed reservoirs provide a total of 1350 Mm³ of water. The link canal can be considered in two parts namely Par-Tapi and Tapi-Narmada. The Par-Tapi portion of the link is 210 km long which includes 5.5 km tunnels, 33.267 km of feeders and the capacity of the canal varies from 44 Cumecs to 91 Cumecs. The link starts with a tunnel connecting Mohankavchali reservoir to Paikhed weir. The open channel link starts from Paikhed weir and drops into Ukai reservoir. The Tapi-Narmada portion of the link starts from Ukai reservoir crosses Narmada river and it terminates at the Miyagam branch canal of Narmada Main Canal. This part of the link is 190 km long with a capacity varying from 71 to 45 Cumecs.

The diverted water will be used to irrigate a total of 1.69 lakh ha annually comprising of 0.52 lakh ha enroute new command and 1.17 lakh ha in the Narmada command, consisting of Miyagam branch of the Narmada Main Canal.

Power houses are proposed at the foot of the dam at Jheri, Paikhed, Chasmandva and Chikkar dams. In case of the Dabdar and Kelwan reservoirs, power houses are proposed in the feeder canals along the falls. The estimated annual energy to be generated from these power houses is of the order of 93 Mkw.

Seven proposed reservoirs in this link would submerge an area of 7,559 ha out of which 3,572 ha is forest land. Apart from this, around 14,832 people and 9,029 live stock would also be affected by the submergence. Provisions have been made in the report to resettle and rehabilitate the affected persons by providing them a practical and attractive package. Provision has also been made for compensatory afforestation.

The irrigation benefits from the project have been worked out considering the project area with irrigation and without irrigation. The net annual benefit for irrigation has been estimated to be Rs.53.50 lakhs per hundred ha. Thus the total benefit for irrigating 1.69 lakh ha works out to Rs.56,301 lakh per year. The annual benefits from power generation are estimated to be Rs.5,523 lakhs. The overall cost of the link is Rs.6,016 crores (At price level 2004-05). The benefit cost ratio of the project has been found out to be 1.08. The internal rate of return for the project has been computed as 8.82 %.