

Chapter – 3

InterState Aspects

3.1 States Traversed by the Rivers

The Par-Tapi-Narmada Link Project in the Western part of India is envisaged to transfer surplus water from west flowing Par, Nar (a tributary of Par River), Tan (a tributary of Auranga River), Ambica, Khapri (a tributary of Ambica) and Purna rivers for providing additional irrigation facilities in South Gujarat and for further diversion towards North Gujarat, predominantly to bring maximum benefits to en-route command areas Tribal areas of Dang, Navsari, Valsad, Chhota Udepur and Panchmahal districts. and in Saurashtra region of North Gujarat

The Par, Auranga and Ambica rivers originate in the Maharashtra State and flow through Maharashtra and Gujarat States and drain into the Arabian Sea. The Purna River originates in the Gujarat State and drains into the Arabian Sea after traversing through the Gujarat State. However, the catchment area of all these river basins lies both in Maharashtra and Gujarat States. Therefore, the rivers Par, Auranga, Ambica and Purna are all inter-State rivers.

3.2 Distribution of Catchment in State and Yields from the Catchment of the State Concerned

The State-wise distribution of catchment area of the river basins and dam sites of Par-Tapi-Narmada link project is given in Table –3.1:

Table – 3.1
State Wise Distribution of the Catchment Area of the Basins/Dam Sites

Sl. No.	Name of Basin / Dam	Catchment Area (km ²)		
		Maharashtra	Gujarat	Total
1	Par basin	773 (46.91%)	875* (53.09%)	1648
a	Jheri	425 (100 %)	Nil	425

Sl. No.	Name of Basin / Dam	Catchment Area (km ²)		
		Maharashtra	Gujarat	Total
b	Mohankavchali (free catchment)**	79 (38.35%)	127 (61.65%)	206
c	Paikhed (Nar river)	269 (85.40%)	46 (14.60%)	315
2	Auranga basin	150 (20.05%)	598* (79.95%)	748
a	Chasmandva (Tan river)	62 (69.66%)	27 (30.34%)	89
3	Ambica basin	102 (3.80%)	2583* (96.20%)	2685
a	Chikkar	102 (33.55%)	202 (66.45%)	304
b	Dabdar (Khapri river)	Nil	457 (100%)	457
4	Purna basin	58 (2.64%)	2135* (97.36%)	2193
a	Kelwan	Nil	694 (100%)	694

* *Effective drainage area*

** *The Mohankavchali dam has not been considered in the present planning of Par-Tapi-Narmada link*

The catchment area of Jheri dam site is lying entirely in Maharashtra State and the annual surface water yield from the catchment up to the dam site is 391.2 MCM at 75% dependability. The distribution of 75% dependable annual yields on the basis of catchment area and based on catchment area including weighted rainfall in respect of Mohankavchali, Paikhed, Chasmandva and Chikkar dams are given in Table-3.2:

Table – 3.2
State Wise Yields from the Catchment Areas of Mohankavchali, Paikhed, Chasmandva and Chikkar Dam Sites

Dam site	Basis of Distribution at 75% Dependability	Gross Yield at Dam Site (MCM)	Yield from Maharashtra Area (MCM)	Yield from Gujarat Area (MCM)
Mohankavchali (free catchment d/s of Jheri dam)*	Based on catchment area	212.70	81.57	131.13
	Based on catchment area and weighted rainfall		79.81	132.89
Paikhed	Based on catchment area	263.90	225.36	38.54
	Based on catchment area and weighted rainfall		220.62	43.28
Chasmandva	Based on catchment area	70.00	47.98	22.02
	Based on catchment area and weighted rainfall		47.15	22.85
Chikkar	Based on catchment area	220.40	73.95	146.45
	Based on catchment area and weighted rainfall		74.66	145.74

* Mohankavchali dam has not been considered in the present planning of Par- Tapi-Narmada link

The catchment area of proposed Dabdar and Kelwan dams are lying entirely in the Gujarat State. The annual surface water yield at the Dabdar

dam site is 322.50 MCM and at Kelwan dam site is 362.20 MCM at 75% dependability.

3.3 (a) Effect on Project and of the Project on the InterState Agreement on Sharing of Waters, Sharing the Benefits and Costs, Acceptance of Submergence in the Upstream State etc., if any

The preparation of Detailed Project Report of the link project had been taken up with the concurrence of Governments of Gujarat and Maharashtra during the year 2009. Subsequently, a Memorandum of Understanding (MoU) was signed on 3rd May, 2010 by Hon'ble Chief Ministers of Gujarat and Maharashtra with Hon'ble Union Minister for Water Resources in the presence of Hon'ble Prime Minister for preparation of Detailed Project Reports of Par-Tapi-Narmada and Damanganga-Pinjal links (Annexure-1.3 in Volume-II). As per the tripartite Memorandum Gujarat State will get the benefits of Par-Tapi-Narmada link project through en-route irrigation.

The DPR of Par-Tapi-Narmada Link Project was completed by NWDA in August, 2015 and sent to the Government of Gujarat and Maharashtra vide NWDA, New Delhi D.O Letter No. NWDA/Tech-I/200/44-I/Vol.V/12269 dated 25.08.2015 for their views.

The issue of water sharing and power sharing between the States of Gujarat and Maharashtra has been discussed at the level of Chief Engineers of the States of Gujarat and Maharashtra and NWDA. Further matter in this regard is taken up at the Senior Officers level of the two States and MoWR, RDandGR, Government of India. Hon'ble Union Minister for WR, RDandGR held meeting with the Hon'ble Chief Minister, Government of Maharashtra on 7th January 2015, 9th January 2016 and 3rd May, 2016 where in Damanganga-Pinjal and Par-Tapi-Narmada Link Projects were discussed among other issues. The Secretary WR, RDandGR held meeting with the Hon'ble Chief Minister, Government of Gujarat on 31-12-2016 at Gandhi Nagar regarding DPR of Par-Tapi-Narmada Link. Government of Gujarat suggested, to include more tribal areas in the beneficiary areas of PTN Link. The DPR has been modified considering the modification /suggestions of Government of Gujarat. The modification in the proposal as per the

suggestion of Government of Gujarat are detailed in para 1.7.1 and briefly furnished below:

(i) Inclusion of command areas of the Projects proposed by the Government of Gujarat on left side of the canal in South Gujarat.

Viz., Ugta, Sidhumber, Khata Amba, Zankhari and Khuntali.

(ii) Providing irrigation to the Tribal areas enroute right side of Link Canal by lift.

(iii) Irrigation in Tribal areas in the vicinity of reservoirs.

(iv) Irrigation in Tribal areas right side of the Narmada Main Canal by lift in Chhota Udepur and Panchmahal Districts.

(v) Provision for drinking water in vicinity of reservoirs / Link

(vi) Filling of Panchayat and village tanks in the periphery of Reservoirs.

As mentioned at Para 2 of the MoU, specific MoUs as required shall be entered into amongst the States of Gujarat, Maharashtra and Union Government based on the Detailed Project Report of the Link project and agreements shall be reached on scope of the link, sharing of costs and benefits and arrangements for management and control of water etc.

To review the overall progress of the works for Preparation of Detailed Project Reports of Damanganga-Pinjal and Par-Tapi-Narmada links, the Union Ministry of Water Resources (now Ministry of Water Resources, River Development and Ganga Rejuvenation) had constituted a Steering Committee under the Chairmanship of Secretary, Water Resources. It was decided during 3rd Meeting of the Steering Committee held on 24th December, 2008 that after the Hydrological studies of link projects are completed, a meeting shall be convened with the concerned States to resolve the issue of Water and Power sharing. The Committee to Monitor and Supervise the overall work for preparation of Detailed Project Reports of Par-Tapi-Narmada and Damanganga-Pinjal Link Projects in its 3rd Meeting

held on 31st August, 2010 at New Delhi under the Chairmanship of Chairman, CWC also desired that a copy of hydrological study carried out by CWC of Par-Tapi-Narmada and Damanganga-Pinjal links shall be made available to the State Governments of Gujarat and Maharashtra for their observations and also for initiating the discussions on the issue of water sharing.

The Hydrological study of Par-Tapi-Narmada link project has been carried out by NWDA through CWC, New Delhi. After completion of Water Availability Study of river basins and diversion sites involved in Par-Tapi-Narmada link by CWC, three meetings at the level of Chief Engineers were convened so far by NWDA to discuss the issue of sharing of Par, Auranga, Ambica and Purna river water between the States of Gujarat and Maharashtra i.e. on 23rd September, 2011, 14th June, 2013 and 17th June, 2014 respectively (Copy of the minutes are enclosed as Annexure -5.17, 5.18 and 5.19 in the Annexure Volume-II). The issues that have been emerged during the meetings which pertain to Par-Tapi-Narmada link are summarised below:

- i) The sharing of water shall be based on the catchment area of the respective States duly accounting for the variation in catchment rainfall.
- ii) The representative of Government of Maharashtra desired that the water available at Jheri reservoir shall be utilised by Maharashtra Government and water available at Dabdar and Kelwan reservoirs shall be solely utilised by Government of Gujarat and the water available in remaining 4 reservoirs i.e., Mohankavchali, Paikhed, Chasmandva and Chikkar shall be shared by both the States on the basis of the catchment area and variation in the catchment rainfall in the respective States in addition to riparian right. The representatives of Government of Maharashtra also indicated that Maharashtra will utilise their share of water within respective basins in their territory upstream of the reservoirs proposed under Par-Tapi-Narmada link as well in the Godavari and Tapi basins by transfer of water across Western divide.
- iii) NWDA made a suggestion that due to topographical constraints the Government of Maharashtra may not be able to utilise their full

share of water for transfer across western divide and as such, the Government of Gujarat may be allowed to divert the unutilised water from Maharashtra catchment through Par-Tapi-Narmada link for utilisation in en route and drought prone area of Saurashtra and Kutch area in north Gujarat and in lieu of that the Government of Maharashtra may claim share in the Hydro Power likely to be generated through 6 power houses. The representatives of both the States desired to discuss this matter further with their respective Governments to arrive at consensus on these suggestions.

- iv) The Methodology adopted in the Water Availability Study Report of Par-Tapi-Narmada link was accepted by both the States and agreed to utilise the details on Gross yield at Jheri, Mohankavchali and Paikhed dam sites of Par basin; Chasmandva dam site of Auranga basin; Chikkar and Dabdar dam sites of Ambica basin; and Kelwan dam site of Purna basin involved in Par-Tapi-Narmada link project and Par, Auranga, Ambica and Purna river basins as a whole for planning of various components of Par-Tapi-Narmada link project as worked out in the Water Availability Study Report of Par-Tapi-Narmada link prepared by CWC.
- v) The representative Government of Maharashtra indicated that the areas across the Western Ghats of Maharashtra State in the region i.e. Tapi basin is water short and they are planning to utilize 534 MCM of water from Ambica, Auranga, Nar and Par basins by diversion across the western divide through lift schemes. A note prepared on this issue by TIDC was circulated during the meeting.
- vi) Chief Engineer (South), NWDA requested the representative of Government of Maharashtra to provide the details of lift schemes so that the views of Government of Gujarat can be obtained. The representative of Government of Gujarat was requested to examine and comment on the note circulated by TIDC and to study and indicate their opinion on planning of Par-Tapi-Narmada link project by diverting 1030 MCM of water from Gujarat catchment.

- vii) The representatives of both the States are of the opinion that the issue of water and power sharing of Par-Tapi-Narmada link project needs to be discussed further.

(I) Sharing of Water

During the 2nd meeting at the level of Chief Engineers, it was also decided that NWDA will prepare a comprehensive note on sharing of water and power benefits between Maharashtra and Gujarat. Accordingly, a note has been prepared and circulated to the States. Both the States agreed that the sharing of water should be on the proportionate catchment area basis duly accounting for the variation in the catchment rainfall.

The proposed distribution of water between Gujarat and Maharashtra at 75% dependability at various dam sites proposed under Par-Tapi-Narmada link project is presented in Table-3.3:

Table - 3.3

Proposed distribution of Water between Maharashtra and Gujarat

Dam site	Gross yield at Dam Site (MCM) (at 75% Dependability)	Proposed Distribution to Maharashtra (MCM)	Proposed Distribution to Gujarat (MCM)
Jheri	391.20	391.20	0.00
Mohankavchali	212.70	79.81	132.89
Paikhed	263.90	220.62	43.28
Chasmandava	70.00	47.15	22.85
Chikkar	220.40	74.66	145.74
Dabdar	322.50	0.00	322.50
Kelwan	362.20	0.00	362.20
Total	1842.90	813.44	1029.46
Total excluding Mohankavchali	1630.20	733.63	896.57

Mohankavchali Dam is not considered in the present DPR.

(II) Sharing of Hydro Power

Under Par-Tapi-Narmada link, NWDA has proposed six hydropower schemes, out of which five power schemes are proposed at the toe of Paikhed, Chasmandva, Chikkar, Dabdar and Kelwan dams and one at the available drop of

Kelwan feeder pipe line. The total installed capacity of power generation from all the power schemes is 21 MW and the energy generation that could be achieved from the Power stations is 102 Mkw. It is proposed that the Hydropower generated as above can be provided for use of Maharashtra in lieu of water contributed by Maharashtra State to the link project.

(III) Sharing of Costs

Appropriate agreements shall be entered into amongst the States of Gujarat, Maharashtra and Union Government based on the Detailed Project Report of the Link Project on sharing of costs.

3.3 (b) Effect on Project and of the Project on the InterState Adjudication, if any

No InterState adjudication exists as of now on sharing the waters of Par, Auranga, Ambica and Purna river basins.

3.3 (c) Effect on Project and of the Project on the InterState Aspect of Territory, Property, etc. Coming under Submergence, Project Affected People, Rehabilitation, Compensation, etc

The details of territory, property, etc. coming under submergence, project affected people, rehabilitation, compensation, etc. are furnished under Chapters “Environment Impact assessment and Environment Management Plan” and “Socio-economic Studies and Rehabilitation and Resettlement Plan”.

3.3 (d) Effect on Project and of the Project on the Existing and Sanctioned Projects

The water needs of all the existing and contemplated projects have been considered while proposing water diversion from each river basin. So, the Link Project may not be effected by these projects and the Link Project may not affect these projects.

Though the Par-Tapi reach of the Link Canal drops in the Existing Ukai reservoir on Tapi River, neither the water of Tapi River is proposed for diversion in the Link Canal nor the Link Canal supplement the reservoir with the diverted water. The water let in the Ukai reservoir at its left bank will be drawn instantly from its right bank through the Head Regulator of Tapi-Narmada reach of the Link Canal.

3.3 (e) Any Other Aspect of the Project Involving InterState Problems

The issue of compensating the quantity of water contributed from Maharashtra catchments raised by Maharashtra State shall be addressed.