

Chapter- 14

Other Aspects of the Project

14.1 Foreign Exchange Element

Majority of the requirements of plants and machinery, spares, equipments/ instruments, etc proposed to be procured/ hired would be met indigenously. However, at the time of construction, if the need for importing of specific equipment is necessary, then the requirement of foreign exchange for the same would be dealt with within the stipulated provision of foreign exchange policy of Government of India.

14.2 Revenue

14.2.1 Revenue from Irrigation

Par-Tapi-Narmada Link Project has been planned to transfer surplus waters of West flowing Par, Auranga, Ambica and Purna river basins of South Gujarat and neighbouring Maharashtra to provide irrigation facilities to: the areas on its enroute: tribal areas enroute right side of the link canal; tribal dominant districts of Dang and Valsad of Gujarat and Nasik district of Maharashtra; command area of five projects proposed by Government of Gujarat in its initial reaches to caters the water demands for irrigation and drinking purposes in its enroute; and take over the part command area of existing Miyagam Branch Canal of Narmada Canal System. The Narmada waters so saved in Sardar Sarovar Project would be utilized to provide irrigation facilities: in tribal areas of Naswadi, Kavant, Sankheda, Jetpur Pavi, Chhota Udepur talukas of Chhota Udepur district and Halol, Ghogamba and Kalol talukas of Panchmahal district by lift directly from Narmada Main Canal on substitution basis; and in drought affected Saurashtra region of Gujarat on substitution basis through Narmada Canal System to meet irrigation, domestic and other requirements. In addition to this, all possible Panchayat / village tanks coming in the vicinity of the project will be filled up. The project will also provide drinking water to tribal population in the vicinity.

As such, the main source of revenue from this project would be irrigation and domestic water charges. The details on the same have been deliberated in Chapter – 9 “Irrigation Planning and Command Area Development”.

14.2.2 Revenue from Power

Six power houses; one each at the toe of Paikhed, Chasmandava, Chikkar, Dabdar and Kelwan dams and one at the fall of the feeder pipe line connecting Kelwan reservoir to the main canal are proposed for hydropower generation. The total annual energy generation from the project has been estimated as 102.00 MU, out of which 45.53 MU would be from Power house at Paikhed dam; 5.67 MU from Power house at Chasmandva dam; 8.35 MU from Power house at Chikkar dam; 16.60 MU from Power house at Dabdar dam; 13.07 MU from Power house at Kelwan dam; and 12.48 MU from Power house at the fall of the feeder pipe line connecting Kelwan reservoir to the main canal. Based on the prevailing charges for consumption of electricity in Gujarat State the annual revenue from the power component of project would be Rs. 6120.00 lakh. The cost of installation of power house is Rs. 18091.00 lakh while the annual maintenance cost of power house installation will be Rs. 391.55 lakh. The interest on capital cost of power house @10% / year works out to Rs.1809.10 lakh. Thus, the cost of power house including its maintenance cost will be recovered in 17 years from the revenue generated from the hydro-electric power planned to be generated from the project.

14.2.3 Fisheries

Pisciculture has been planned in the Par-Tapi-Narmada link project. Creation of reservoirs at Jheri, Paikhed, Chasmandava, Chikkar, Dabdar and Kelwan will increase the natural fish production. It is estimated that about 303 Tons of natural fish can be produced annually in these reservoirs. In addition to this about 2226 panchayat and village tanks will also be filled up by this project. This will also contribute to fish production and increase the income of the population engaged in fisheries Development in that region.

14.3 Financial Resources

After completion of the Detailed Project Report the following clearances will have to be obtained from the respective agencies.

Sl. no.	Clearance	Agency
(i)	Techno-economic	Central Water Commission, TAC of MoWR, RD & GR
(ii)	Forest Clearance	Ministry of Environment, Forest and Climate Change
(iii)	Environmental clearance	Ministry of Environment, Forest and Climate Change
(iv)	R&R Plan of Tribal Population	Ministry of Tribal Affairs

After obtaining these clearances the Detailed Project Report will be submitted to the Ministry of Water Resources, RD & GR for investment clearance. The year wise requirement of funds for the construction of the project is furnished in Annexure – 10.6 in Volume - II.

14.4 Future Utilisation of Facilities Created (Buildings)

Par-Tapi-Narmada link envisages construction of six dams; 2 nos. of diversion barrages; six power houses; 1 tunnel of 12.7 km length; and construction of 406 km long link canal (including feeder pipe lines of 37.075 km and 5 tunnels along the link canal of total length 1.15 km). To facilitate the office accommodation, stores, residential accommodation for the construction teams, two categories of buildings i.e. permanent and semi-permanent/ temporary are proposed to be constructed at various construction colonies/ sites and also in the near vicinity of Valsad / Navsari / Vadodara. After the commissioning of the project, the permanent buildings will be utilized for operation and maintenance of the project while the remaining infrastructure can be utilized for the future projects likely to come up in the vicinity or for offices of other State/Central Govt. organisations.

14.5 Legal Aspects of Par-Tapi-Narmada Link

14.5.1 Effect of Par-Tapi-Narmada Link on the Territory of other States

Par-Tapi-Narmada link envisages construction of six dams (Jheri, Paikhed, Chasmandva, Chikkar, Dabdar and Kelwan dams); two barrages (Paikhed barrage and Chasmandva barrage); one tunnel of 12.70 km length; six power houses (one each at the toe of Paikhed, Chasmandva, Chikkar, Dabdar and Kelwan dams and one at the fall of the feeder pipe line connecting Kelwan reservoir to the main canal); and construction of 406 km long link canal (including feeder pipe lines of 37.075 km and 5 tunnels along the link canal of total length 1.15 km).

The Jheri reservoir is lying entirely in Maharashtra State and intercepts an area of 425 km²; Paikhed reservoir intercepts an area of about 269 km² of Maharashtra State and 46 km² is in Gujarat State; Chasmandva reservoir intercepts an area of about 62 km² of Maharashtra State and 27 km² is in Gujarat State; Chikkar reservoir intercepts an area of about 102 km² of Maharashtra State and 202 km² is in Gujarat State; Dabdar reservoir is lying entirely in Gujarat State and intercepts an area of 457 km². Kelwan reservoir is lying entirely in Gujarat State and intercepts an area of 694 km².

The submergence area of the Jheri reservoir at FRL 246 m is about 836 hectare of which 408 ha is forest area and entirely in Maharashtra State; The submergence area of the Paikhed reservoir at FRL 248.0 m is about 994 hectare of which 317 ha is forest area and lies in Surgana taluka of Nasik district of Maharashtra State and Dharampur taluka of Valsad district in Gujarat State; The submergence area of the Chasmandva reservoir at FRL 214.0 m is about 615 hectare of which 300 ha is forest area and lies in Surgana taluka of Nasik district of Maharashtra State and Dharampur taluka of Valsad district and Vansda taluka of Navsari district in Gujarat State; The submergence area of the Chikkar reservoir at FRL 210.0 m is about 742 hectare of which 300 ha is forest area and the entire area lies in Ahwa taluka of Dang district in Gujarat State; The submergence area of the Dabdar reservoir at FRL 169.0 m is about 1249 hectare of which 614 ha is forest area and the entire submergence area lies in Ahwa taluka of Dang district in Gujarat State; The submergence area of the Kelwan reservoir at FRL 164.0

m is about 1629 hectare of which 890 ha is forest area and the entire submergence area lies in Ahwa taluka of Dang district in Gujarat State.

14.5.2 Existing InterState Agreement on Sharing of Water

There is no existing InterState agreement on sharing of waters generated from the catchment area of the rivers Par, Auranga, Ambica and Purna lying in the territories of Gujarat and Maharashtra States.

14.6 Sharing of Water and Hydro Power

For preparation of Detailed Project Report of Damanganga – Pinjal link and Par – Tapi – Narmada link projects a tripartite Memorandum of Understanding (MoU) was signed on 3rd May, 2010 by Hon’ble Chief Ministers of Maharashtra and Gujarat and Hon’ble Union Minister of Water Resources. As per this MoU, Gujarat State will get the benefits of Par – Tapi – Narmada link project.

The project Par-Tapi-Narmada Link Project has been planned to transfer surplus waters of West flowing Par, Auranga, Ambica and Purna river basins of South Gujarat and neighbouring Maharashtra to provide irrigation facilities to: the areas on its enroute: tribal areas enroute right side of the link canal; tribal dominant districts of Dang and Valsad of Gujarat and Nasik district of Maharashtra; command area of five projects proposed by Government of Gujarat in its initial reaches to caters the water demands for irrigation and drinking purposes in its enroute; and take over the part command area of existing Miyagam Branch Canal of Narmada Canal System. The Narmada waters so saved in Sardar Sarovar Project would be utilized to provide irrigation facilities: in tribal areas of Naswadi, Kavant, Sankheda, Jetpur Pavi, Chhota Udepur talukas of Chhota Udepur district and Halol, Ghogamba and Kalol talukas of Panchmahal district by lift directly from Narmada Main Canal on substitution basis; and in drought affected Saurashtra region of Gujarat on substitution basis through Narmada Canal System to meet irrigation, domestic and other requirements. In addition to this, all possible Panchayat / village tanks coming in the vicinity of the project will be filled up. The project will also provide drinking water to tribal population in the vicinity While Maharashtra will get the benefits through the Damanganga-Pinjal Link Project by way of augmentation of water supply to meet the domestic water requirement of Mumbai city.

14.6.1 Water Sharing

The water availability study of Par-Tapi-Narmada link has been carried out by Central Water Commission (CWC) in consultation with National Water Development Agency (NWDA) and State Governments of Gujarat and Maharashtra. Based on this study, the issue of sharing of water between the States of Gujarat and Maharashtra has been deliberated in three meetings with Governments of Gujarat and Maharashtra at the level of Chief Engineers held so far.

The gross water availability at dam sites and basins as a whole, as worked out by CWC in the report is re-produced in Table 14.1 below. The Gujarat and Maharashtra governments in principle agreed that the sharing of water shall be based on the proportion of catchment area of the respective States duly accounting for the variation in catchment rainfall. The details are discussed in Chapter – 3 “InterState Aspects”.

Table – 14.1
Gross Water Availability

S. No.	Basin/ Dam Site	Gross Water Availability (MCM) at	
		75% Dependability	50% Dependability
1	Par Basin	1725.9	1921.5
2	Jheri dam site	391.2	466.5
3	Paikhed dam site	263.9	334.9
4	Auranga Basin	857.7	982.9
5	Chasmandava dam site	70.0	90.9
6	Ambica Basin	1914.1	2430.3
7	Chikkar dam site	220.4	257.1
8	Dabdar dam site	322.5	454.7
9	Purna basin	1101.1	1419.3
10	Kelwan dam site	362.2	445.3

14.6.2 Power Sharing

Six power houses; one each at the toe of Paikhed, Chasmandva, Chikkar, Dabdar and Kelwan dams and one at the fall of the feeder pipe line connecting Kelwan reservoir to the main canal are planned to generate

hydro power through the water proposed to be diverted and also the committed releases of water to meet the downstream requirements. During the 1st meeting at the level of Chief Engineers of Gujarat and Maharashtra and NWDA held on 23rd September, 2013 at Ukai dam, the issue of sharing hydro power likely to be generated through the powerhouses proposed in Par-Tapi-Narmada Link Project was discussed. Regarding sharing of hydro power, the Chief Engineer (South), NWDA was of the opinion that due to topographical constraints the Government of Maharashtra may not be able to utilize their full share of water by transferring across Western Ghats and suggested that the Government of Gujarat may be allowed to divert the utilizable water from Maharashtra catchment through Par-Tapi-Narmada Link for utilization in enroute and in drought prone areas of Saurashtra and Kutch regions of North Gujarat and in lieu of that the Government of Maharashtra may claim share in hydro power likely to be generated through six power houses. The Chief Engineer of both the States indicated that they will discuss with their authorities in State Government on this suggestions. The details are discussed in Chapter – 3 “InterState Aspects”.

14.7 Feasibility of Utilization of Water by Maharashtra State across Western Divide by Lift:

Clause-5 of tripartite Memorandum of Understanding (MoU) signed amongst the States of Gujarat and Maharashtra and Union Government for preparation of Detailed Project Report of Damanganga-Pinjal and Par-Tapi-Narmada Link Projects indicates that the feasibility of utilisation of water by Maharashtra in their territory by lifting water over the western divide will be examined during preparation of Detailed Project Report of these link projects.

Accordingly, NWDA has carried out study of alternative proposals to utilise Maharashtra portion of water contributing to Par-Tapi-Narmada link by lift across Western Ghats during 2014. The Executive Summary, Salient Features and Index Map of the proposal are given at Annexures 14.1 to 14.3 respectively in Volume-II. The proposal was found to be economically not viable in view of its B.C. Ratio being 0.51.

Nar-Par-Girna Valley link project is one of the Intra-State link proposal of Maharashtra State for which NWDA has prepared the Pre-

feasibility Report. Nar-Par-Girna Valley link project envisages diversion of 534 MCM surplus waters from twenty small proposed dams located in Maharashtra portion of west flowing river basins i.e. Ambica basin, Auranga basin and Nar-Par basins to east side i.e. Girna sub-basin of Tapi basin to utilize in the proposed command areas identified in Nasik, Jalgaon and Aurangabad areas of Girna sub-basin by gravity and lift. The Pre-feasibility Report of Nar-Par-Girna Valley Link Project has been circulated to Government of Maharashtra vide NWDA Letter No. NWDA /CE(S)/I.S Links/NP-GPN valley/2011-DB/284-88 dated 18-4-2011 (Annexure -14.4 in Volume - II).