

National Water Development Agency

Note on interlinking of rivers projects in the Country

Details and status (16.05.17)

1.0 Background

Suggestions for a National water grid for transferring water from water rich regions to water-deficit areas have been made from time to time. Two proposals, put forth earlier in the seventies which attracted considerable attention, are National Water Grid by Dr. K. L. Rao and Garland Canal by Captain Dastur. These proposals were not pursued further by the Government as they were not techno-economically feasible.

The continued interest shown by various quarters gave impetus to study inter-basin water transfer proposals. The then Ministry of Irrigation (now Water Resources) formulated a National Perspective Plan (NPP) for Water Resources Development in August 1980 envisaging inter basin water transfer in the country. The National Perspective Plan comprises of two components, namely i) Peninsular Rivers Development and ii) Himalayan Rivers Development.

The National Water Development Agency was set up on 17th July 1982 by Government of India as a Society under Societies registration act 1860 under the Ministry of Water Resources to study the feasibility of the links under Peninsular Component of National Perspective Plan. The NWDA is fully funded by Government of India. Subsequently in 1990-91, NWDA Society resolved to take up the studies of Himalayan Component also. Further, on 28th June, 2006 preparation of DPR of link projects and pre-feasibility/ feasibility reports of intra-basin links as proposed by States were also included in the functions of NWDA Society. Accordingly, MoWR vide resolution dated 30.11.2006 modified the functions of NWDA Society. The functions of NWDA were further modified vide MoWR resolution dated 19.5.2011 to undertake the work of preparation of DPRs of intra-state links also. Further, two new functions in the mandate of NWDA were added vide Gazette notification dated 07.10.2016.

i) To undertake/construct/repair/renovate/rehabilitate/implement the projects either on its own or through an appointed Agency/Organization/PSU or Company and the projects forming part of Interlinking of Rivers, for completion of projects falling under Pradhan Mantri Krishi Sinchai Yojana (PMKSY) of which projects under Accelerated Irrigation Benefits Programme (AIBP) are also included and similar other projects. ii) NWDA to act as a repository of borrowed funds or money received on deposit or loan given on interest or otherwise in such manner, as directed by MoWR, RD & GR and to secure the repayment of any such borrowed funds/money/deposits/loan etc. by way of mortgage, pledge, charge or lien upon all or any other property, assets or revenue of the society both present and future.

2.0 Studies Completed by NWDA

NWDA carried out Water Balance Studies of 137 basins/sub-basins and 71 diversion points. It also carried out toposheet studies of 74 reservoirs & 37 link alignments. Based on these studies, NWDA identified 30 links (16 under Peninsular Component & 14 under Himalayan Component) for preparation of Feasibility Reports (FRs). Out of these, FR of 14

links under Peninsular Component and FR of 2 links (Indian portion) and Draft FR of 7 links under Himalayan Component have been completed. Field surveys & investigations for the remaining links under Himalayan Component are under progress except one link namely Kosi-Mechi which lies entirely in Nepal.

**Studies/reports completed by National Water Development Agency under
National Perspective Plan**

Sl.No	Particulars	Peninsular Component	Himalayan Component	Total
1.	Water balance studies of basins/sub-basins	137	--	137
2.	Water balance studies of diversion points	52	19	71
3.	Toposheet and storage capacity studies of reservoir	58	16	74
4.	Toposheet studies of link alignment	18	19	37
5.	Prefeasibility reports (PFR)	18	14	32
6.	Surveys and Investigations and Preparation of Feasibility Reports (FR) of specific links	14	2 (Indian Portion) & 7 (Draft FR)	16

2.1 Detailed Project Reports (DPRs) of Priority Links

Four priority links for preparation of Detailed Project Report (DPR) have been identified viz; Ken-Betwa link phase –I & II, Damanganga-Pinjal Link, Par-Tapi-Narmada link and Mahanadi-Godavari link.

The Detailed Project Report of Ken-Betwa link project Phase-I was completed by NWDA in April, 2010 and submitted to Govt. of MP and UP in May, 2010. Detailed Project Report of Ken-Betwa link project Phase-II has been completed in January, 2014 and submitted to the concerned States Government of Madhya Pradesh and Uttar Pradesh in January, 2014. The various statutory clearances w.r.t. environment, forest and wildlife for Ken-Betwa Link Project-Phase-I are in the advance stages. The Government will be implementing this National Project as a model link project of ILR programme after the required clearances and approval.

For the two priority links namely Damanganga-Pinjal & Par-Tapi-Narmada, a Memorandum of Understanding (MoU) was signed by the Chief Ministers of Gujarat, Maharashtra and the Union Minister for Water Resources on 3.05.2010 for the preparation of DPR by NWDA. The DPR of Damanganga-Pinjal link has been completed in March, 2014 and submitted to Govt. of Maharashtra and Gujarat. The DPR of Par-Tapi-Narmada link project has also been completed in August, 2015 and submitted to Govt. of Gujarat and Maharashtra.

The consensus building for preparation of the Detailed Project Report of the **Mahanadi – Godavari link**, a mother link of 9 link system viz., Mahanadi – Godavari – Krishna – Pennar – Palar – Cauvery – Vaigai – Gundar linkage with concerned State of Odisha is under process.

Status of preparation of Detailed Project Reports (DPRs) of Inter State Link Projects under NPP

Sl. No.	Name	States concerned	Status	Date of completion/ Target	Remarks
1	Ken – Betwa Phase - I	Madhya Pradesh & Uttar Pradesh	Completed	April, 2010	Submitted to Govt. of MP & UP
2	Ken – Betwa Phase - II	Madhya Pradesh & Uttar Pradesh	Completed	January, 2014	Submitted to Govt. of MP & UP
3	Damanganga - Pinjal	Gujarat & Maharashtra	Completed	March, 2014	Submitted to Govt. of Gujarat & Maharashtra
4	Par - Tapi – Narmada	Gujarat & Maharashtra	Completed	August, 2015	Submitted to Govt. of Gujarat & Maharashtra

3.0 Intra-State Links

The preparation of Pre Feasibility/ Feasibility reports of intra-state links proposed by States were included to the functions of NWDA in November, 2006 in consultation with the State Governments. NWDA has requested all the States / UTs to inform the details of intra – state links for further studies by NWDA. So far, NWDA has received 46 proposals of intra-state links from 9 States viz. Maharashtra, Gujarat, Jharkhand, Orissa, Bihar, Rajasthan, Tamil Nadu, Karnataka and Chhattisgarh. Out of these, Pre-Feasibility Reports (PFRs) of 37 intra-state links have been completed by NWDA up to March, 2017.

Status of preparation of DPRs of Intra State Link Projects as proposed by State Govts.

Sl. No.	Name of the link project	State	Status	Date of completion/ Target	Remarks
1	Burhi Gandak – Noon – Baya - Ganga	Bihar	Completed	December, 2013	Submitted to Govt. of Bihar for further action
2	Kosi – Mechi	Bihar	Completed	March, 2014	Submitted to Govt. of Bihar for further action
3	Ponniyar - Palar	Tamil Nadu	Under Progress	June, 2017	
4	Wainganga - Nalganga	Maharashtra	Under Progress	March, 2018	

4.0 Benefits from Interlinking of Rivers Projects as per National Perspective Plan

The implementation of National Perspective Plan would give benefits of 35 million hectares of irrigation 25 million ha from surface waters and 10 million ha by increased use of ground waters, raising the ultimate irrigation potential from 140 million ha to 175 million ha and generation of 34000 Megawatt of power, apart from the incidental benefits of flood control, navigation, water supply, fisheries, salinity and pollution control etc. The details of benefits from each link as per PFR/FR/DPR are shown in Annex-I.

The cost of individual link project including cost of land required to be acquired for project can be finalized only after the Detailed Project Report is techno-economically approved/completed.

Implementation of Inter Linking of Rivers (ILR) Projects involves various steps such as preparation of Feasibility Reports of links, negotiation and consensus among concerned States, agreement with neighbouring countries if link Project involves, these countries, preparation of DPRs of the projects and structures identified for the link, clearance from appraisal agencies which include clearance by Ministry of Environment & Forests (MoEF), clearance by Ministry of Tribal Affairs (MoTA), techno-economic clearance by Technical Advisory Committee of MoWR, investment clearance by Planning Commission and funding of the project. The procedure as stated above has to be followed independently for each of 30 links.

5.0 Supreme Court Judgement regarding Linking of Rivers

5.1 Judgement of the Supreme Court

The Hon'ble Supreme Court in the matter of Writ Petition (Civil) No. 512 of 2002 "In Re: Networking of Rivers" alongwith Writ Petition (Civil) No. 668 of 2002 delivered a judgment dated 27.2.2012. A copy of the judgment of Hon'ble Supreme Court is placed at Annex-I. The Hon'ble Supreme Court has directed that an appropriate body should be created to plan, construct and implement the inter linking of rivers program for the benefit of the nation as a whole.

"We would recommend, with all the judicial authority at our command, that these projects are in the national interest, as is the unanimous view of all experts, most State Governments and particularly, the Central Government. But this Court may not be a very appropriate forum for planning and implementation of such a programme having wide national dimensions and ramifications. It will not only be desirable, but also inevitable that an appropriate body should be created to plan, construct and implement this inter linking of rivers program for the benefit of the nation as a whole".

The main directions of Hon'ble Supreme Court are covered under para 64 of judgment. Hon'ble Supreme Court has directed the Union of India and particularly the Ministry of Water Resources, Government of India to constitute forthwith a Committee to be called a "Special Committee for Inter-Linking of Rivers" under the Chairmanship of Hon'ble Minister for Water Resources".

5.2 Constitution of the Special Committee

The Special Committee for the Interlinking of Rivers has been constituted by the Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD and GR) vide Gazette Notification dated 23.09.2014. Twelve meetings of Special Committee for Interlinking of River (ILR) have been held on dated 17.10.2014, 06.01.2015, 19.03.2015, 14.05.2015, 13.07.2015, 15.09.2015, 18.11.2015, 08.02.2016, 29.04.2016, 26.07.2016, 09.11.2016 and 08.03.2017 respectively. In the first meeting of the Special Committee for Interlinking of Rivers (ILR) it was decided to constitute four specific sub-committees namely (i) Sub-committee for comprehensive evaluation of various studies/reports (ii) Sub-committee for system studies for identifications of most appropriate alternate plan (iii) Sub-committee for restructuring of National Water Development Agency and (iv) Sub-Committee for consensus building through negotiations and arriving at agreement between concerned States. The Sub-Committee at serial No. (iv) is already functioning as Consensus Group under Chairman, CWC. Other three Sub-Committees have been constituted by MoWR, RD & GR. These Sub-Committees have started functioning. Various meetings of above Sub-Committees have been held.

Ministry of Water Resources, RD & GR vide O.M. dated 12.03.2015 constituted a Group on Intra-State river links under the Chairmanship of Shri A. D. Mohile, former Chairman, Central Water Commission. The Group has held various meetings and submitted its report on 28.05.2015 to the Secretary, Ministry of Water Resources, RD & GR.

5.3 Constitution of Task Force for Interlinking of Rivers

Ministry of Water Resources, River Development & Ganga Rejuvenation vide O.M. No. 2/5/2015-BM/630-645 dated 13.04.2015 has constituted a Task Force for Interlinking of River to look into the issues relating to Interlinking of Rivers. Seven meetings of the Task Force has been held on 23rd April, 2015, 5th November, 2015, 28th April, 2016, 15th June, 2016, 25th October, 2016, 13th February, 2017 and 11th May, 2017.

Present status of Inter Basin Water Transfer Links

Sl. No	Name	States concerned	States benefited	Annual Irrigation (Lakh ha)	Domestic and Industrial supply (MCM)	Hydro power (MW)	Status
Peninsular Component							
1	Mahanadi (Manibhadra) - Godavari (Dowlaiswaram) link	Orissa, Maharashtra, Andhra Pradesh, Karnataka, & Chattisgarh,	Andhra Pradesh & Orissa	0.91+3.52 = 4.43	802	445	Feasibility Report Completed
2	Godavari (Inchampalli) - Krishna (Pulichintala) link	Orissa, Maharashtra, Madhya Pradesh, Andhra Pradesh, Telangana, Karnataka & Chattisgarh,	Telangana & Andhra Pradesh	1.09+5.04 =6.13	413	--	Feasibility Report Completed
3	Godavari (Inchampalli) - Krishna (Nagarjunasagar) link	-do-	Telangana	2.87	237	975	Feasibility Report Completed
4	Godavari (Polavaram) - Krishna (Vijayawada) link	Orissa, Maharashtra, Andhra Pradesh, Karnataka, & Chattisgarh,	Andhra Pradesh	5.82	162	--	Feasibility Report Completed
5	Krishna (Almatti) – Pennar link	-do-	Andhra Pradesh & Karnataka	1.90+0.68 = 2.58	56	--	Feasibility Report Completed
6	Krishna (Srisaïlam) – Pennar link	Maharashtra, Andhra Pradesh, Karnataka& Telangana	--	--	--	17	Feasibility Report Completed
7	Krishna (Nagarjunasagar) - Pennar (Somasila) link	Maharashtra, Andhra Pradesh & Karnataka,	-do-	5.81	124	90	Feasibility Report Completed
8	Pennar (Somasila) - Cauvery (Grand Anicut) link	Andhra Pradesh, Karnataka, Tamil Nadu, Kerala & Puducherry	Andhra Pradesh, Tamil Nadu & Puducherry	0.49+4.36 + 0.06 = 4.91	1105	--	Feasibility Report Completed

ANNEX – I (contd..)

Sl. No	Name	States concerned	States benefited	Annual Irrigation (Lakh ha)	Domestic and Industrial supply MCM)	Hydro power (MW)	Status
9	Cauvery (Kattalai) - Vaigai - Gundar link	Karnataka, Tamil Nadu, Kerala & Puducherry	Tamil Nadu	3.38	185	--	Feasibility Report Completed
10	Ken-Betwa link a) Ken-Betwa Link Phase-I b) Ken-Betwa link Phase-II	Uttar Pradesh & Madhya Pradesh - do -	Uttar Pradesh & Madhya Pradesh Madhya Pradesh	2.66 + 3.69 = 6.35 0.99	49 6	78	DPR Phase-I completed in April 2010 & DPR Phase-II Completed in January 2014.
11	Parbati -Kalisindh- - Chambal link	Madhya Pradesh, Rajasthan & Uttar Pradesh (UP requested to be consulted during consensus building)	Madhya Pradesh & Rajasthan	*Alt.I: 2.05+0.25 = 2.30 (Alt.II : 1.77 + 0.43 = 2.20)	13.2	--	Feasibility Report Completed
12	Par-Tapi-Narmada link	Maharashtra & Gujarat	Gujarat	2.30	60	20.7	DPR completed in August, 2015
13	Damanganga - Pinjal link (As per DPR)	Maharashtra & Gujarat	Maharashtra (only water supply to Mumbai)	--	895	--	DPR Completed in March 2014.
14	Bedti - Varda link	Maharashtra, Andhra Pradesh & Karnataka	Karnataka	0.60	--	4	Pre-Feasibility Report Completed
15	Netravati – Hemavati link	Karnataka, Tamil Nadu & Kerala	Karnataka	0.34	--	--	Pre-Feasibility Report Completed
16	Pamba - Achankovil - Vaippar link	Kerala & Tamil Nadu,	Tamil Nadu	0.91	--	508	Feasibility Report Completed

ANNEX – I (contd..)

S.L No.	Name of the Link	States/Country concerned	States benefited	Annual Irrigation (Lakh ha)	Domestic and Industrial supply (MCM)	Hydro power (MW)	Status
Himalayan Component							
1.	Manas-Sankosh-Tista-Ganga (M-S-T-G) link	Assam, West Bengal, Bihar & Bhutan	Assam, West Bengal & Bihar	2.08 + 1.82 + 2.64 = 6.54	--	5287	FR in progress
2.	Kosi-Ghaghra link	Bihar, Uttar Pradesh & Nepal	Bihar & Uttar Pradesh	8.17 + 0.67 + 1.74 (Nepal) = 10.58	48	--	FR in Indian portion in progress
3.	Gandak-Ganga link	-do-	Uttar Pradesh	37.99 + 2.41 (Nepal) = 40.40	700	--	Draft FR completed (for Indian portion)
4.	Ghaghra-Yamuna link	-do-	Uttar Pradesh	25.30 + 1.35 (Nepal) = 26.65	1391	10884	FR completed (for Indian portion)
5.	Sarda-Yamuna link	Bihar, Uttar Pradesh, Haryana, Rajasthan, Uttarakhand & Nepal	Uttar Pradesh & Uttarakhand	3.45 + 0.30 = 3.75	6250	3600	FR completed (for Indian portion)
6.	Yamuna-Rajasthan link	Uttar Pradesh, Gujarat, Haryana & Rajasthan	Haryana & Rajasthan	0.435 + 2.442 = 2.877	57	--	Draft FR completed
7.	Rajasthan-Sabarmati link	-do-	Rajasthan & Gujarat	5.35 + 2.04 = 7.39	282	--	Draft FR completed
8.	Chunar-Sone Barrage link	Bihar & Uttar Pradesh	Bihar & Uttar Pradesh	0.30 + 0.37 = 0.67	--	--	Draft FR completed
9.	Sone Dam – Southern Tributaries of Ganga link	Bihar & Jharkhand	Bihar & Jharkhand	2.99 + 0.08 = 3.07	360	95	FR in progress
10.	Ganga(Farakka)-Damodar-Subernarekha link	West Bengal, Orissa & Jharkhand	West Bengal, Orissa & Jharkhand	7.63 + 0.30 + 0.55 = 8.47	484	-	Draft FR completed
11.	Subernarekha-Mahanadi link	West Bengal & Orissa	West Bengal & Orissa	0.18 + 0.365 = 0.545	--	9	Draft FR Completed

ANNEX – I (contd.)							
12.	Kosi-Mechi link	Bihar , West Bengal & Nepal	Bihar	2.99 + 1.75 (Nepal) = 4.74	24	3180	PFR completed. FR to be taken up Entirely lies in Nepal
13.	Farakka-Sunderbans link	West Bengal	West Bengal	1.50	184	--	Draft FR completed
14.	Jogighopa-Tista-Farakka link (Alternative to M-S-T-G)	-do-	Assam, West Bengal & Bihar	----	216	1115	Alternative to M-S- T-G Link. Not to be taken up.

FR -- Feasibility Report

PFR – Pre feasibility Report

DPR – Detailed Project Report

S&I -- Survey and Investigation

MCM -- Million Cubic Meters

ANNEX -II**Intra – State link proposals received from the State Governments**

S. No.	Name of intra-state link	Rivers	Present status / Target of Completion of PFR
	<u>Maharashtra</u>		
1.	Wainganga (Gosikhurd) – Nalganga (Purna Tapi)	Wainganga & Nalganga	Completed
2.	Wainganga – Manjra Valley	Wainganga & Manjra	Completed (Not found feasible)
3.	Upper Krishna – Bhima (system of Six links)	Krishna & Bhima	Completed
4.	Upper Ghat – Godavari Valley (Damanganga (Ekdare)- Godavari Valley)	Damanganga & Godavari	Completed
5.	Upper Vaitarna – Godavari Valley	Vaitarna & Godavari	Completed
6.	North Konkan – Godavari Valley	Patalganga & Godavari	Completed
7.	Koyna – Mumbai city	Koyna	Completed
8.	Sriram Sagar Project (Godavari) – Purna – Manjra	Godavari, Purna & Manjra	Completed
9.	Wainganga (Gosikhurd) – Godavari (SRSP)	Wainganga & Godavari	Withdrawn by Govt. of Maharashtra
10.	Middle Konkan – Bhima Valley	Savitri, Kundalika, Amba & Bhima	Completed
11.	Koyna – Nira	Koyna & Nira	Completed
12.	Mulsi – Bhima	Mulsi & Bhima	Completed
13.	Savithri – Bhima	Savithri & Bhima	Completed
14.	Kolhapur – Sangli – Sangola	Krishan & Bhima	Completed
15.	Riverlinking projects of Tapi basin and Jalgaon District	Tapi	Completed
16.	Nar – Par - Girna valley	Nar, Par & Girna	Completed
17.	Narmada – Tapi	Narmada & Tapi	Completed
18.	Khariagutta – Navatha Satpura foot hills	Dropped	Ground water recharge schemes to be studied by CGWB. Consequently not accepted by TAC of NWDA for PFR studies.
19.	Kharia Ghuti Ghat – Tapi	Dropped	
20.	Jigaon – Tapi – Godavari Valley	Tapi & Godavari	Completed

S. No.	Name of intra-state link	Rivers	Present status / Target of Completion of PFR
	<u>Gujarat</u>		
21.	Damanganga – Sabarmati – Chorwad	Damanganga, Sabarmati & Chorwad	Completed
	<u>Odisha</u>		
22.	Mahanadi – Brahmani	Mahanadi & Brahmani	Completed
23.	Mahanadi – Rushikulya (Barmul Project)	Mahanadi & Rushikulya	Completed
24.	Vamsadhara – Rushikulya (Nandini Nalla project)	Vamsadhara & Rushikulya	Completed
	<u>Jharkhand</u>		
25.	South Koel – Subernarekha	South Koel & Subernarekha	Completed
26.	Sankh – South Koel	Sankh & South Koel	Completed
27.	Barkar – Damodar – Subernarekha	Barkar, Damodar & Subernarekha	Completed
	<u>Bihar</u>		
28.	Kosi – Mechi [entirely lie in India]	Kosi & Mechi	DPR also Completed
29.	Barh – Nawada	Ganga & Kiul	Completed
30.	Kohra – Chandravat (now Kohra-Lalbegi)	Kohra & Chandravat	Completed
31.	Burhi Gandak – Noon – Baya - Ganga	Burhi Gandak, Noon, Baya & Ganga	DPR also Completed
32.	Bagmati –Burhi Gandak [Belwadhar]	Burhi Gandak & Bagmati	Completed
33.	Kosi – Ganga	Kosi & Ganga	Completed
34.	Development of Bagmati Irrigation & Drainage Project-Phase-II (Barrage near Kataunjha in Muzaffarpur District) and Adhwara Multipurpose Project with Kosi-Adhwara-Bagmati Link	Kosi, Adhwara & Bagmati	Preparation of PFR has been completed
35.	Transfer of Ganga water to South Bihar through pump Canal Scheme at Buxer	Ganga	Initially, NWDA consented to take up the work but after receiving the details from Govt. of Bihar, it was found that these are not intra-state links therefore not taken up.
36.	Development of Badua-Chandan Basin	Badua & Chandan	

S. No.	Name of intra-state link	Rivers	Present status / Target of Completion of PFR
	<u>Rajasthan</u>		
37.	Mahi – Luni link	Mahi & Luni	Completed
38.	Wakal – Sabarmati – Sei – West Banas – Kameri link	Wakal, Sabarmati, Sei, West Banas & Kameri	Completed
	<u>Tamil Nadu</u>		
39.	Ponnaiyar – Palar link	Ponnaiyar & Palar	Completed
	<u>Karnataka</u>		
40.	Almatti (Bagalkot)-Malaprabha Sub-basin	Almatti & Malaprabha	Not found feasible
41.	Malaprabha-Tungabhadra Sub-basin	Malaprabha & Tungabhadra	Not found feasible
42.	Bedti - Dharma - Varada link	Bedti, Dharma & Varada	completed.
43.	Bhadra-Vedavathi(Vani Vilasa Sagar) link	Bhadra & Vedavathi	Dropped as per request by Karnataka representative during 11 th meeting of Special Committee on ILR
44.	Diversion of west flowing rivers schemes (Barapole-upper cauvery link)	Barapole & upper cauvery	Dropped as per request by Karnataka representative during 11 th meeting of Special Committee on ILR
45.	Diversion from Bedti & Aghanashini to Varada	Aghanashini & Varada	Found feasible and will be taken up for preparation of PFR
	<u>Chhattisgarh</u>		
46.	Pairi-Mahanadi link	Pairi & Mahanadi	Completed