



Government of India
(Ministry of Water Resources, River Development
and Ganga Rejuvenation)

Report of the Sub Committee for
Restructuring of National Water Development Agency (NWDA)
(constituted by Special Committee for Interlinking of Rivers)

New Delhi
September 2015

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PREFACE

Acknowledging the need for restructuring of NWDA with several new roles and challenges before NWDA with the special emphasis for time bound implementation of ILR Programme by the Supreme Court in 2012, the Special Committee on Interlinking of Rivers constituted by the Government of India in September 2014 (chaired by Sushri Uma Bharti, Hon'ble Union Minister for Water Resources, River Development and Ganga Rejuvenation) assigned to a Sub-Committee the tasks of a critical review of NWDA with an aim to turn over the organisation to deliver the cherished goals better with a restructure set up.

The composition of the Sub-Committee for Restructuring of NWDA as per a decision taken during its second meeting of SCILR held in New Delhi on 2015 was as follows:

Composition:

1.	Shri M. Gopalakrishnan Former Secretary General, ICID	-	Chairman
2.	Shri M.E. Haque Former Member, CWC	-	Member
3.	Prof. Vasant Gandhi IIM, Ahmedabad	-	Member
4.	Dr. Gautam Pingle, Retd. Prof. Administrative Staff College of India (ASCI) Hyderabad	-	Member
5.	Joint Secretary (PP) Ministry of WR, RD & GR	-	Member
6.	Chief Engineer (HQ), NWDA	-	Member-Secretary

The envisaged Terms of Reference for this Sub Committee were:

1. To review the present organisational structure and staff strength of NWDA vis-à-vis the present mandate of NWDA.
2. To suggest suitable modifications in the mandate of NWDA to include various aspects related to the implementation of the ILR Programme.
3. To suggest suitable organisational structure for NWDA to cover the enhanced mandate for implementation of ILR Programme.
4. To suggest the proposed Organisational Structure for the enhanced mandate of NWDA.

Initially, the Committee was given a 2 month time frame for their tasks; this was later extended, looking into the needs in the fourth meeting by another 2 months.

The Sub Committee had held several sittings since March 2015 as listed below:

Sl. No. of the Meeting of Sub Committee	Venue	Date	Members present Shri	Apologies	Special Invitees Shri
First	New Delhi	24, 25 Feb.	M. Gopalakrishnan T.V.S.N. Prasad, JS(PP) M.E.Haque Dr. Gautam Pingle R.K. Jain	Prof. Vasant Gandhi	S. Masood Husain, DG, NWDA Dr. M.K. Sinha, SJC (PP), (MoWR)
Second	New Delhi	10 March	M. Gopalakrishnan Dr. Gautam Pingle Prof. Vasant Gandhi R.K. Jain	M.E. Haque JS (PP) (or his nominee of MoWR)	S. Masood Husain, DG, NWDA (attended only partly)
Third	New Delhi	11, 12 June	M. Gopalakrishnan Dr. B. Rajender, JS(PP) M.E. Haque Dr. Gautam Pingle R.K. Jain	Prof. Vasant Gandhi	M.K. Srinivas, CE (South) NWDA
Fourth	Bengaluru	29, 30 June	M. Gopalakrishnan M.E. Haque Dr. Gautam Pingle R.K. Jain	Prof. Vasant Gandhi Dr. B. Rajender	M.K. Srinivas, CE (South) NWDA
Fifth	New Delhi	10-13 July	M. Gopalakrishnan M.E. Haque Prof. Vasant Gandhi (12 th July) R.K. Jain	Dr. Gautam Pingle Dr. B. Rajender	M.K. Srinivas, CE (South) NWDA
Sixth	Ahmedabad	12 Aug. 2015	M. Gopalakrishnan Prof. Vasant Gandhi Dr. Gautam Pingle R.K. Jain	JS (PP) (or his nominee of MoWR) M.E.Haque	M.K. Srinivas, CE (South), NWDA
Seventh	New Delhi	10 Sept. 2015	M. Gopalakrishnan M.E. Haque Dr. Gautam Pingle R.K. Jain	Prof. Vasant Gandhi JS (PP) (or his nominee of MoWR)	S. Masood Husain, DG, NWDA M.K. Srinivas, CE (South), NWDA

The Sub Committee had looked into various reports available during its first five meetings. These are listed hereunder:

1. Report on Organizational Structure for Interlinking of Rivers prepared by Indian Institute of Management Ahmadabad – December 2006
2. WAPCOS (an assigned Consultancy Report on NWDA's performance) titled "Investigations of River Link Proposals carried out by National Water Development Agency, Ministry of Water Resources during the X Plan (2012)
3. Restructuring Central Water Commission Reports (2011 and 12) (*unpublished*)
4. Report on Re-Structuring of National Water Development Agency prepared by Shri M.E. Haque -December,2012 (*Unpublished*)
5. *The Draft on 'The River Basin Management Act 2012'* of Ministry of Water Resources, Government of India (document was placed *in public domain*)
6. Consultant's Review Report on the Proposals for the Restructuring of Central Water Commission (2011) : M. Gopalakrishnan (April 2012), endorsing River Basin Authorities approach and suggesting field units of CWC to morph over as the hubs of country wide RBAs (*unpublished*)
7. A Power Point Presentation on 'Proposed Institutional & Legislative Reforms' and the *draft RBM Act 2012 (with contemplated revisions)* by Gopalakrishnan for the National Workshop on IWRM organized by World Bank / ADB/ MOWR during February 2015.

Some officers and staff of NWDA made a request to call on the Sub Committee to present their views, expectations and / or grievances the present system; they were given an opportunity of hearing and their submissions were also received and duly considered, where relevant¹.

¹ Mr. M.K. Srinivas, CE (South), Mr. N.C Jain, Director (Tech.), Mr. K.P. Gupta, SE, Mr. O.P.S. Kushwah, S.E, Mrs Jancy Vijayan, Director (MDU), Mr. K.K. Rao, Asst Engineer and Mrs. Archana Gupta, Assistant Director (Official Language), Mrs. Anita Lalchandani, Assistant Director gave the staff view point which were heard by the Committee. In Bangalore, opportunity was provided to the field officers (Junior Engineers, Asst Executive Engineers also to indicate their 'wish list' during the 4th sitting. They were similar to what the Sub committee heard from similar interactions with staff in New Delhi in the 3rd sitting and sixth sitting in Ahmedabad.

Part I

Preliminary Observations on the Approach

Some Preliminary & Basic Observations

The Sub Committee would like to record that it had also discussed various issues including the aspects of governance and the likely transition as a result of the efforts in this regard by the Union Water Resources RD and GR. As one could find them on a quick preliminary survey, varied efforts in this direction in recent times are discernible. Appreciating that the existing constitutional provisions assign water under the State list and many disputes crop up which need a judicial interventions, the recent efforts are addressing ways and means to improve the situation by empowering the Centre with new mechanisms and laws.

The sincere efforts to implement the programme of interlinking of rivers (ILR) in a time bound manner is a challenge for all concerned and in order to ensure that these efforts contribute positively to the aims discussed above, due importance must be laid in this direction. This is more so as it takes considerable time to convince the States concerned in agreeing to a link proposal that concern(s) them presently and make good progress. The Sub Committee considers that a suitable and effective mechanism that equips the Union Government with sufficient competency (and skill) to intervene will help ILR implementation successfully would have to be dealt with *pari pasu* with NWDA restructuring as proposed.

For better management of water, the approach of IWRM, under consideration in the Government in the Centre is relevant; and, the desirability of creating 'River Basin Authorities' (RBAs) for this purpose is being debated since a few years both in the National and State levels. Some efforts for Restructuring Central Water Commission (CWC) has been attempted in the recent past. The Sub Committee understands that, *inter-alia*, the CWC field organisations are proposed to morph over as River Basin Authorities with the primary task of evolving Master Plans for the River Basins by one of the recent structural review proposal in the anvil.

The Sub Committee also notes that a draft reviewing the earlier one named '**RBA Act 2012**' (based on the Doabia Committee Report) suggests a two tier structure. This would involve a Governing Council and Executive Arm with a character that could capture typically both the States in any Basin and the Centre. Besides all cross cutting organisations dealing with water resources management in different levels dealing with water issues are being suggested to be brought into this organizational structure. The primary task of the proposed Basin Organisations under the restructured Central Water Commission is understood to encompass the idea of Master Plan for the Basins. This is yet to happen, though some time stands elapsed.

An acceptable Master Plan amongst stakeholders as the basis for the development and management of the basin resources including water is thus getting acknowledged. Once this exercise commences at river basin levels and gets accomplished, the NWDA proposals for the Inter-basin water transfer should have a stronger case for its take off.

The Sub Committee thus takes note of the parallel efforts for reorganizing Central Water Commission itself: and hope that it would be done such as to bring in the river basin management concepts and encouraging the formulation of suitable authorities. Nevertheless, as one progresses in time, the likely changes in water management and water

governance will also impact the reorganized structure recommended for NWDA for ILR implementation. This is a future scenario, however. There are several 'ifs'. **For the present, the Sub Committee restricts its review exercise only to the immediate needs of NWDA for facing the challenges ahead in the upcoming plans or say about a little over 10 years.** While attempting this, the necessary changes in the NWDA activities, particularly in regard to review of possible scenarios with the availability of more data base including system studies, appraisal and monitoring have been taken into account.

The Sub Committee recognizes that '*NWDA Restructuring*' approach has to be gradual and that, in this process, any possible conflict with existing procedural requirements for water sector development projects must be avoided. Thus, the role of CWC especially in respect of comprehensive technical examination for project acceptance and clearance, in respect of all inter-state river waters and diversions, clearances from other identified agencies in vogue, like those related to environment and forest, tribal welfare, wild life shall be respected as per the standard procedures.

The above brings in the necessity to keep on board uncertainties with developments envisaged in water sector due to external issues outside the traditional 'water-box' issues, mentioned above. Not only 'water box' issues (such as water balance studies, hydrologic and topographic studies planned for engineering infrastructure planning), but also out of 'water box' issues, require to be factored to face water challenges in future. This will therefore dictate a likely change in the activities that would be required to be undertaken by NWDA in future. These issues are to be addressed with care by NWDA by strengthening itself as an organization capable of dealing with multi sectoral issues.

All possible options as alternatives have to be progressive depending on such exigencies that might develop in respect of various individual river link proposals. These shall take on board such exigencies and compulsions to progress and work towards an enabling an agreement between the States (in respect of interstate links) as well as appropriate international agreement(s) where needed. In the latter case, the role of other Ministries in the Centre (External Affairs, Law etc.) is also crucial.

Approach of the Sub Committee for suggesting the restructuring proposal

Keeping the above aspect in view, the Sub Committee attempted to visualize a broad scenario of the NWDA's tasks in future, taking it further to approximately adjudging the resources allocation. Keeping in view the directions of Hon'ble Supreme Court, the policy statements of the union Government and targets set by the NWDA in next decade or so, the resources that would be necessarily required for activities (a) during next five years; (b) during sixth to 10th years from now, and (c) after 10th year have been assessed. Very broadly, the activities and relative changes in terms of work load of the same in different phases could be as under:

I. During next five years from now:

- Increased activities related to field investigations with efforts to complete FRs, undertake revision of FRs (wherever necessary) and take up DPRs of identified links
- Considerable increase in respect of works related to appraisal of projects (including those related to pursuing of matters with agencies responsible for mandatory clearances)
- Initiating the system studies to examine all possible scenarios and to arrive at the optimal choice of particularly in view of likely suggestions from the concerned State Governments and other stakeholders.
- Increased activities related to process of negotiations, with concerned States as also other Stake holders requiring increased workload of NWDA professionals for such activities.

II. During 6th year to 10th year

- Reduced activity related to field works for FR with completion of majority of the targets in this regard
- With focus on completion of DPR of identified projects, considerable manpower of NWDA to be engaged for this activity.
- Increase in the activities relating to negotiations leading to increased work on Systems Studies & Appraisal processes to be done by NWDA,
- Implementation of 2 major links with increased activities related to monitoring by NWDA.

III. Beyond 10th year from now

- Reduction in the activities related to Investigations and preparations of DPR
- Hectic negotiations both with States and neighbouring nations
- Increased involvement of MEA, MoEF & CC and others in the process of appraisal, critical review and negotiations, necessitating detailed examination of all possible options, calling for further in depth system studies etc..
- With the start of the implementation of the project, considerable increase in monitoring activities.
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This is somewhat reflected in the Statement, given beneath.

More on the approach will be dealt with in the corresponding Sections as relevant, subsequently.

**Scenario as Visualized by the Sub Committee for this Report Purpose,
Regarding tasks to be handled by NWDA for Implementing Various Links
Envisaged in ILR**

<i>Year (from now on)</i>	<i>During next 5years</i>	<i>During 6-10 years</i>	<i>Beyond 10th years</i>
<i>Quantum of works</i>	<i>In %</i>	<i>In %</i>	<i>In %</i>
Water Balance Reports (a re-review)	5	5	5
PFR	20	5	0
FR (<i>for International links</i>)	55	55	10
Revision of Feasibility Reports, due to changes necessitated during negotiations with States etc.			
DPR			
Systems Studies	0	5	25
National / International Negotiations	5	10	20
Appraisal	5	10	15
Monitoring	0	2	20
Other professional activities	10	8	5

From the above, it is apparent that there would be considerable shift in the functions of NWDA in the coming years with increased focus on system studies, critical review, negotiations at national and international levels and monitoring etc. All related aspects, particularly the likely changes in activities were kept in view during the deliberations of the Sub Committee. The main goal of the Sub Committee however, remain to suggest the structure of the organisation which would help in the implementation of ILR projects after addressing the challenges in water sector in general and those related to ILR projects, in particular.

Part II

Overview on National Water Development Agency

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Introduction

The National Water Development Agency (NWDA mentioned in brief), a registered Society under the Ministry of Water Resources was set up in July 1982 to provide necessary amplification of a proposal for the “National Perspective Plan for Water Resources Development” envisaging transfer of surplus water to adjoining river basins by reservoir and interlinking canal systems. The transfer of surplus water to imminent water scarce basins / regions was foreseen right from 1980 and it was acknowledged that pooling of the water resources in the country for the common goal of ensuring equity was envisaged. Primarily the overall scheme was projected with two main components, viz. (i) Himalayan Rivers Development, and (ii) Peninsular Rivers Development. As an Autonomous Society under the Societies Registration Act, 1860, NWDA had undertaken the water balance and other studies keeping the aim of optimal utilisation of Water Resources.

In the proposals of National Perspective Plan (NPP), the transfer of water has been proposed mostly by gravity, lifts were kept minimal and confined to around 120 m and only surplus water after meeting all in-basin requirement in foreseeable future has been planned for transfer to water deficit areas.

It was envisaged right from inception, a broad approach while formulating the “National Perspective for Water Resources Development’ that kept in view certain basic principles for reasons understandable:

- (i) Existing uses have to be kept undisturbed and honoured to the best extent.
- (ii) The ongoing water developmental activities, under the prevailing legal and constitutional framework.
- (iii) The perspective developments within the framework should keep in view all the existing agreements between or amongst the states within the country as well as existing treaties with the neighbouring countries.
- (iv) As the storage sites are limited on account of topographical and other resources, the plan should be based on the principle of optimum development of available storage sites including development of new storages, big and small, wherever feasible. The plan should envisage appropriate multipurpose and multi-objective development of water resources projects, for irrigation, flood control, hydro-power generation (keeping peaking needs as one of the objectives), and navigation etc.
- (v) While planning inter-basin and inter-State transfer of waters, rational needs of the basin States for the foreseeable future shall be kept in view and provided for.
- (vi) Water development should have preservation and enhancement of the environment as one of the major objectives, and provide for the funds needed for afforestation and improvement of forests in areas nearby. Recreation, fisheries development etc should also be taken into account.
- (vii) Domestic and industrial uses of water as well as for irrigation should be given high priority. Pollution control should be one of the main objectives.

- (viii) The people to be displaced by project works should be given liberal rehabilitation and resettlement packages so that they are better off with improved living conditions.

NWDA began its exercise with the Peninsular Rivers system to begin with. Subsequently, it was also entrusted with the task of Himalayan Rivers Development Component of National Perspectives.

The Peninsular Component as visualised since the beginning had four major components of links viz:

- (i) Interlinking of Mahanadi-Godavari-Krishna-Cauvery rivers and building storages at potential sites in these basins
- (ii) Interlinking of west flowing rivers, north of Mumbai and south of Tapi
- (iii) Interlinking of Ken-Chambal
- (iv) Diversion of other west flowing rivers.

The Himalayan Component of the scheme envisages construction of storage reservoirs on the principal tributaries of Ganga and Brahmaputra rivers in India, Nepal and Bhutan along with interlinking of river systems to transfer surplus flows of the eastern tributaries of the river Ganga to the west. The north south transfer was contemplated by a link of the Ganga with the river Mahanadi which also envisaged lifting the water.

NWDA Governance and Structure

The NWDA Society is the apex body to review the progress and performance of the Agency towards the attainment of its objectives and to give such policy direction as deemed fit. The Society has the Union Minister of Water Resources as its President and the Union Minister of State for Water Resources as its Vice President. A member from the Planning Commission, Chief Minister / Minister in-charge of Water Resources / Irrigation of the States of Andhra Pradesh², Chhattisgarh, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, and Uttarakhand, Lt. Governor / Minister-in-charge of Water Resources / Irrigation of the Union Territories of Goa, Daman & Diu and Puducherry, Secretaries of the Union Ministries of Agriculture (Department of Agriculture), Irrigation, Energy (Department of Power), Civil Aviation, Finance (Department of Expenditure), Planning Commission and Department of Environment, Director Generals of Geological Survey of India and Survey of India, Chairman of the Central Water Commission, Central Electricity Authority and Central Ground Water Board, Members of CWC in charge of Water Resources and Design & Research, Director General, India Meteorological Department and Director, National Remote Sensing Agency are the members of the Society. The Director General, NWDA is the Member Secretary.

The NWDA has the Governing Body (GB) to carry out effectively the objectives set forth. The Secretary, Ministry of Water Resources is the Chairman of the GB of NWDA. The members

²The States that were not mentioned but got created subsequently participate in NWDA as special invitees (like Telangana State)

of GB include Secretary or his nominee (not below the rank of Joint Secretary) from the Ministry of Finance (Department of Expenditure), Ministry of Power, Ministry of Agriculture (Department of Agriculture & Co-operation), Ministry of Science & Technology, Ministry of Environment & Forests, Planning Commission, Chairman, Central Water Commission, Chairman, Central Ground Water Board, Chairman, Central Electricity Authority, Additional Secretary, Ministry of Water Resources, Member (WP&P), Central Water Commission, Member (D&R), Central Water Commission, Director General or his nominee (not below the rank of Joint Secretary), India Meteorological Department, Commissioner (PR), Ministry of Water Resources, Water Resources Secretary or his nominee not below the rank of Chief Engineer from Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal and Puducherry. Director General, NWDA is the Member Secretary.

The Governing Body of NWDA has constituted a Technical Advisory Committee (TAC) under the chairmanship of the Chairman, Central Water Commission for examination and scrutiny of the various technical proposals framed by the Agency. The members of TAC include two Members of Central Water Commission, New Delhi, Member (Hydro) of Central Electricity Authority, Joint Secretary, Department of Agriculture & Co-operation, Adviser (IA), Ministry of Environment & Forests, Director General, Geological Survey of India, Chairman, Central Ground Water Board, Director General, India Meteorological Department, Director, National Institute of Hydrology, Chairman, Inland Water Ways Authority of India. The Director General, NWDA is the member Secretary. Special Invitees to TAC meetings include: virtually all the Chief Engineers dealing with water, irrigation/drainage and flood management sectors in the different State Governments besides the Planning and Design Chief Engineer of Brahmaputra Board.

Director General, NWDA is the Principal Executive Officer of the Society, responsible for proper administration of the affairs and funds of the Society and for coordination and general supervision of the day to day activities of the Society.

Judicial Interventions on Interlinking of Rivers undertaken by NWDA

The Hon'ble Supreme Court in the matter of Writ Petition (Civil) No. 512 of 2002 "In Re: Networking of Rivers" along with Writ Petition (Civil) No. 668 of 2002 delivered a judgment dated 27.2.2012. 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.

The relevant Para 63 of the judgment provides: (*to quote*)

"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”.

In the main directions of Hon’ble Supreme Court covered under para 64 of judgment the Union of India and particularly the Ministry of Water Resources, Government of India was advised to constitute a Committee, to be called a “Special Committee for Inter-Linking of Rivers” under the Chairmanship of Hon’ble Minister for Water Resources”. Accordingly, a Special Committee for the Interlinking of Rivers was constituted by the Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD and GR), under the Chairmanship of Sushri Uma Bharti Hon’ble Minister of WR, GR and RD) more fully amplified in the Gazette Notification dated 23.09.2014.

ILR Task Force (2002-04) with a special ToR as set forth by the Supreme Court Directive (2002)

A concerted focus on the implementation of the Government of India’s envisaged Interlinking of Rivers programme first surfaced following a Supreme Court Directive in November 2002 calling for suitable steps for a speedy implementation of the Scheme. This came in response to a Public Litigation Judgement relating to Pollution in Yamuna and emerging Water Scarcity in different parts of the country. The Government had constituted a Task Force on Interlinking of Rivers which was chaired by Shri Suresh Prabhu assisted by a 10 member team of experts from different disciplines that matters. The members of the Task Force, inter-alia, included some part-time members who were nominees : A member from water deficit States, another from water surplus States besides reputed economist, sociologist; legal and a wildlife expert joined the team. A new impetus was brought in for a comprehensive study of the programme on Interlinking of rivers. Task Force had also induced 10 Resource Persons, who were experts in different disciplines like international dimension, communication with media & NGOs, environmental issues, human resource development, bio-diversity & legal issues.

The term of reference of the erstwhile Task Force on ILR (Suresh Prabhu Committee) was:

- i) Provide guidance on norms of appraisal of individual projects in respect of economic Viability, socio-economic impacts, environmental impacts and preparation of resettlement plans;
- ii) Devise suitable mechanism for bringing about speedy consensus amongst the States;
- iii) Prioritize the different project components for preparation of DPRs and implementation.
- iv) Propose suitable organizational structure for implementing the project;
- v) Consider various modalities for project funding; and
- vi) Consider international dimensions that may be involved in some project components.

The TF ILR (2003) submitted action plans in two parts on the scheduled dates to Supreme Court which explains many interesting inputs generated during the period.³

³ Action Plan I & II are seen in Annex.

After winding up of the Task Force, a Special Cell on interlinking of rivers was created under the Ministry of Water Resources.

With this completion of work, the Task Force had completed its object and stood dissolved. After winding up of the Task Force, a Special Cell on interlinking of rivers was created under the Ministry of Water Resources. A new Committee started to work as a follow up of the Task Force which was chaired by the Secretary of the Union Ministry of Water Resources in order to make progress in a consultative manner and achieve progress desired for the implementation of ILR. However, though this committee had met apparently for 9 times, as mentioned in the Parliamentary Committee findings (Samabasiva Rao Committee 2009, *ibid*), not much was achievable.

The action plans evolved by the Task Force chaired by Shri. Suresh Prabhu remained a relevant document on ILR that was not superseded by any subsequent document. The action plans were the guiding documents for the further implementation of ILR as conceived by the then Task Force. However as the Supreme Court judgement observes much progress had not been possible on implementing the ILR proceeding in the lines recommended. {to quote from page 29, para 33 :(*“However, what happened to the two Action Plan reports submitted by the Task Force is a matter left to the imagination of anyone”*)}.

Notwithstanding the relegated stature that the ILR underwent since 2004, the works on Ken-Betwa Link, which was suggested to be taken up as a maiden link to learn lessons that can help the master scheme, did make a good progress. A DPR was prepared by NWDA, as per the ToR evolved by the erstwhile TF, and this was firmed up in 2008. Other formalities that precede project implementation like clearances from all concerned sources and land acquisition etc. also commenced, involving respective agencies in the State Governments⁴ and were pursued by NWDA. This task was somewhat different to its basic functions, and performed for the first time by NWDA since the co basin states were seeking for its help notwithstanding the basic factor that the Projects are processed by the States concerned in normal cases.

The Parliamentary Standing Committee on Water Resources(14th Lok Sabha), chaired by Shri Sambasiva Rao, Hon’ble Member of Parliament held a thorough review of the overall proposal and the needs thereof.

As per the details included in the 11th report of the Standing Committee (presented to 14th Lok Sabha on October 22, 2008 and laid in Rajya Sabha on the same day), it is seen that the committee came across, *before and after the selection of the subject*, divergent views being expressed by eminent persons and groups on varied considerations; the committee had also informal interactions with the representatives of State Governments of Maharashtra, Kerala, Tamil Nadu and Andhra Pradesh. The committee decided to invite comments / Memoranda from individuals / associations /NGOs / experts interested in the subject by

⁴ This also brought in some new roles getting added to NWDA’s mandate which is important as far as Sub Committee’s work focus. The mandate of NWDA stood enhanced with the aspirations of State Government and their agencies involved with the link relying all the more on NWDA for handling clearances by assisting them and also even getting necessary approvals for the scheme by all concerned departments and agencies (which normally is the onus of Project proponents i.e., the State Government concerned).

issuing of a Press Communiqué, also by giving wide publicity of All India Radio / Doordarshan in June, 2005. In response to this, reportedly 969 Memoranda / letters containing views / suggestions were received. Of these 81 Memoranda (52 in favour and 29 against) were found to be worth their consideration by the Committee. Whereupon, the committee short listed 32 individuals / NGOs / experts to appear as non-official witnesses before them, and took evidence of these individuals / Experts and the representatives of NGOs etc. in 12 sittings spread over the period from January 2006 to September, 2007. After examining the recommendations of the Task Force on ILR (headed by Suresh Prabhu in 2002-04), the reports of the Indian Institute of Management, Ahmedabad on institutional / organizational set up, the report of National Council of Applied Economic Research (NCAER) about the economic impact of ILR Project etc. the Committee observed that they were disappointed at the slow pace of progress of the Inter-Linking of Rivers (ILR) programme, and asked the government to seek legal opinion on strengthening central water laws for better implementation of this National Programme.

Referring to the inter-State water disputes and the “consultative” approach of the Union Water Resources Ministry on the rivers linking programme, the committee, in its 14th report, *“regretted to observe”* that, the government has preferred to pursue the ILR programme only in a consultative manner through the ‘Consensus Group’ formed for the purpose despite several cases of dispute among the States. *“The Consensus Group has further failed to bring about any radical shift in the thought process of the States,”* the panel noted. They were further *“disheartened”* with the Ministry’s stand that *“unless it came as a recommendation from the Centre-State Relations Commission, such a proposal could not be considered.”*

Instead of waiting for a recommendation by the Commission to that effect, the committee suggested that the government obtain the opinion or advice of the Ministry of Law on the enactment of such a law as may not impinge on the powers of the State governments but would speed up implementation of inter-State water projects under the rivers linking programme.

The documents which were generated by the erstwhile Task Force on Interlinking of Rivers stand relevant even on this date. Of the many reports that touch upon issues concerning various aspects like economic viability, fund raising aspects, etc. including a report focusing on ‘Organisational Structure for the implementation of Interlinking of Rivers’, by Indian Institute of Management, Ahmedabad.⁵

Functions of NWDA

Recently, the functions of NWDA have been revisited and the work of preparation of detailed Project Reports (DPR) of various link proposals and Pre-feasibility Reports and feasibility reports of intra-State links as proposed by the States have also been included as its functions.

⁵ The Sub Committee 3 of SCILR is fortunate to have Prof. Gandhi IIM A who was one of the lead authors of this report,

As defined the functions of NWDA envisage:

- a) To carry out detailed surveys and investigations of possible reservoir sites and inter-connecting links in order to establish feasibility of the proposal of Peninsular Rivers Development and Himalayan Rivers Development Components forming part of the National Perspective for Water Resources Development prepared by the then Ministry of Irrigation (now Ministry of Water Resources, River Development and Ganga Rejuvenation) and Central Water Commission.
- b) To carry out detailed surveys about the quantum of water in various Peninsular River Systems and Himalayan River Systems which can be transferred to other basins/States after meeting the reasonable needs of the basin/States in the foreseeable future.
- c) To prepare feasibility report of the various components of the scheme relating to Peninsular Rivers Development and Himalayan Rivers Development.
- d) To prepare detailed project reports of river link proposals under National Perspective Plan for Water Resources Development after concurrence of the concerned States.
- e) To prepare pre-feasibility/feasibility/detailed project reports of the intra-State links as may be proposed by the States. The concurrence of the concerned co-basin States for such proposals may be obtained before taking up their FRs/ DPRs.
- f) To do all such other things the Society may consider necessary, incidental, supplementary or conducive to the attainment of above objectives.

It is discernible that these functions themselves had to undergo certain changes compatible to some revisions in NWDA mandate and these are:

Functions of National Water Development Agency as amended from time to time

Gazette Notification dated 26th August 1981	Gazette Notification dated 11th March 1994	Gazette Notification dated 30th November 2006	Gazette Notification dated 19th May 2011
a)To carry out detailed surveys and investigations of the possible storage reservoir sites and inter-connecting links in order to establish feasibility of the proposal of Peninsular Rivers Development forming part of	a)To carry out detailed surveys and investigations of the possible storage reservoir sites and inter-connecting links in order to establish feasibility of the proposal of Peninsular Rivers Development and Himalayan Rivers	a)To carry out detailed surveys and investigations of the possible storage reservoir sites and inter-connecting links in order to establish feasibility of the proposal of Peninsular Rivers Development and Himalayan Rivers Development	a)To carry out detailed surveys and investigations of the possible storage reservoir sites and inter-connecting links in order to establish feasibility of the proposal of Peninsular Rivers Development and Himalayan Rivers Development

National Perspective for Water Resources Development prepared by the Ministry of Irrigation and the Central Water Commission.	Development Components forming part of National Perspective for Water Resources Development prepared by the Ministry of Irrigation (now Ministry of Water Resources) and the Central Water Commission.	Components forming part of National Perspective for Water Resources Development prepared by the Ministry of Irrigation (now Ministry of Water Resources) and the Central Water Commission.	Components forming part of National Perspective for Water Resources Development prepared by the Ministry of Irrigation (now Ministry of Water Resources) and the Central Water Commission.
b)To carry out detailed studies about the quantum of water which is surplus in various Peninsular Rivers Systems and which can be transferred to other basins / States after meeting reasonable needs of basin States in the foreseeable future.	b)To carry out detailed studies about the quantum of water which is surplus in various Peninsular River Systems and Himalayan Rivers Systems and which can be transferred to other basins / States after meeting reasonable needs of basin / States in the foreseeable future.	b)To carry out detailed studies about the quantum of water which is surplus in various Peninsular River Systems and Himalayan Rivers Systems and which can be transferred to other basins / States after meeting reasonable needs of basin / States in the foreseeable future.	b)To carry out detailed studies about the quantum of water which is surplus in various Peninsular River Systems and Himalayan Rivers Systems and which can be transferred to other basins / States after meeting reasonable needs of basin / States in the foreseeable future.
c)To prepare feasibility reports of various components of the schemes relating to Peninsular Rivers Development.	c)To prepare feasibility reports of various components of the scheme relating to Peninsular Rivers Development and Himalayan Rivers Development	c)To prepare feasibility reports of various components of the scheme relating to Peninsular Rivers Development and Himalayan Rivers Development.	c)To prepare feasibility reports of various components of the scheme relating to Peninsular Rivers Development and Himalayan Rivers Development.
		d)To prepare detailed project report of river link proposals under National Perspective Plan for Water Resources Development after concurrence of the concerned States.	d)To prepare detailed project report of river link proposals under National Perspective Plan for Water Resources Development after concurrence of the concerned States.
		e)To prepare pre-feasibility / feasibility	e)To prepare pre-feasibility / feasibility

		reports of the intra-state links as may be proposed by the States.	/detailed project reports of the intra-state links as may be proposed by the States. The concurrence of the concerned co-basin States for such proposals may be obtained before taking up their FRs/DPRs.
f)To do all such other things the Society may consider necessary, incidental, supplementary or conducive to attainment of above objectives.	f)To do all such other things the Society may consider necessary, incidental, supplementary or conducive to attainment of above objectives.	f)To do all such other things the Society may consider necessary, incidental, supplementary or conducive to attainment of above objectives.	f)To do all such other things the Society may consider necessary, incidental, supplementary or conducive to attainment of above objectives.

NWDA & its present Organisational set up

The Director General, NWDA is the designated Principal Executive Officer of the Society, and is mainly responsible for proper administration of the affairs and accountable for managing funds of the Society. He has the onus for coordinating and supervising in general, the day to day activities of the Society/ Organisation. The Director General is of a rank of equivalence to that of a Higher Administrative Grade (HAG) in Government of India Group 'A' Cadre.

At the Headquarters of NWDA, the Director General is assisted by a Chief Engineer, senior functionaries including a Director (Technical), one Director (Finance), one Director (Administration), one Director (Multidisciplinary Unit) and two Superintending Engineers.

NWDA has field offices for undertaking surveys and investigations of each one of the various links which form together the National Interlinking of Rivers proposals. As of now, there are two Chief Engineers, each one heading the regional headquarters which are located at Hyderabad and Lucknow for the Southern and Northern link schemes, respectively.

The offices of the Superintending Engineers are located at Gwalior, Valsad, Hyderabad, Patna and Bhubaneswar.

Restructuring of Cadres of Professionals and Supporting Staff of NWDA

Since its coming to existence in 1982, both the functions of NWDA as well as the strength of the professionals and supporting staff to carry them out have been changing due to various reasons and circumstances. More on this aspect follows.

The role of the water resources management in a country like India, and the contributions expected out of the proposed Interlinking of Rivers is almost daunting. With the changing dynamics that govern large scale water transfers, any proposal as conceived with certain assumptions need a constant review and re appraisal. This is an onerous task to accomplish by the Agency seized with this responsibility. When one looks around globally, we find that:

1. Only a few countries around the world could claim such a diversity in the river systems, (snow fed perennial to ephemeral rivers covering arid and semi arid regions).
2. The number of major river basins by themselves is sizeable (nearly 20).
3. Virtually, most of the river basins are of inter-state nature. Not only are the river systems are of multi state nature but also some are having trans-boundary implications (all the Himalayan River systems and the links envisaged in them as a part of the overall ILR scheme).
4. In the above process, depending on the level at which a particular solutions is advanced, one has to take on board other interests as best as one could.
5. As per Constitutional provisions, the power to harness water as a resource lie in the States; Centre provides a coordinating role in respect of inter-state and a major role in respect of international rivers.
6. The enormity of the challenge aggravates with increasing population, industrialisation urbanisation and the likely impacts due to climate change. These are to be kept in view in the planning processes.

The task associated to proceed with ILR in the light of the above and other constitutional provisions governing the subject of 'water', NWDA's extended activities in additional fronts kept changing, particularly from engineering and hydrological aspects like water balance studies to other relevant aspects like environmental, social and other aspects etc. From '**survey and investigation and the preparation of pre-Feasibility Reports**', NWDA had to move on to '**Feasibility Reports stage and later DPRs**' that can enable funding decisions.

NWDA had engaged a Consultant to review and propose the 'Restructuring of NWDA' in 2012. Shri M. E. Haque, one of the members of this Sub Committee had looked into the various aspects as fully as possible and came up with a report which is in consideration in the Ministry of Water Resources, River Development and Ganga Rejuvenation. The Committee had reviewed this report in detail and had held discussions after its formal presentation. It has been found that with a view to arrive the requisite basic inputs for the restructuring of different cadres of professionals and supporting staff in NWDA, the following issues have been dealt with in length with all relevant data:

- Changing functions and structure of National Water Development Agency
 - Addition of new functions / increase in the scope of existing functions
 - Achievements and future targets
- Working environment
 - Emergence of new challenges
 - Adopting new techniques and technologies
- Cadres management issue
 - Career progression and Welfare measures

- Enhancing professional capabilities

The Committee finds that the changes in the functions of NWDA since inception had been brought out in this report. Besides, this Report on Restructuring of NWDA (2012), amongst other things, several important activities undertaken by NWDA other than those listed in its mandate are highlighted; most of them do have a bearing on creating a national water consciousness and the necessity for water transfers to address water scarcity in the country. Thus, one can argue that these activities are also directly related to the functions of NWDA; they address broader issues related to development and management of water resources in the country and could be done by other agencies, as well.

- **Activities directly related to the functions of NWDA**

- a. Secretarial and technical support to “Task Force on Interlinking of Rivers” in 2003-04;
- b. Organization of programmes for awareness creation for consensus building;
- c. Pursuing the clearance of the projects (*on behalf of States*) with appraising agencies; and
- d. Arranging public hearings (*on behalf of States*) etc..

Of the above, the activity ‘a’ that is NWDA’s Secretarial Support to the “Task Force on Interlinking of Rivers” is notable. With the composition of a new Task Force to assist Special Committee on ILR and its desire to get some similar support, NWDA is obliged to rise up to the occasion.

For the purpose of the Report’s objectives, suffice to note that National Water Development Agency had an experience to act as the resources institution for a number of groups forming part of the erstwhile Task Force (2003-04).

Subsequent to the completion of detailed project report (DPR) of Ken-Betwa Link, the processing tasks associated with the project appraisal by the concerned evaluating agencies as per Statute, like the Ministry of Environment and Forests in respect of related issues, Ministry of Tribal Affairs where the resettlement aspects touched upon their welfare etc. has been handled by NWDA. This is something new. Normally, the project proposals are submitted to the concerned agencies for appraisal by the State Government Departments leaving all further follow up actions for compliance of the observations etc. to them.

- **Activities related to other than basic NWDA mandate, but relevant to water sector**

In addition to the various activities directly related to its functions, National Water Development Agency has also undertaken and successfully completed several activities which have contributed towards improved management of water resources in the country. Some of the important activities are:

- a. Organization of National Water Conventions;
- b. Organization of India Water Week;
- c. Secretarial and technical support to “National Commission on Integrated Water Resources Development”

- ***Works undertaken by NWDA beyond its original mandated tasks as a part of the expanded mandate to cover 'intra state links studies'***

As a result of the expanded mandate to look at pre-feasibility reports / feasibility reports (as well detailed project report (DPR) of Intra-State links) proposed by the States that are broadly acceptable after a preliminary study, a number of new tasks have emerged now.

There are a total of 46 proposals (Bihar – 9, Gujarat – 1, Jharkhand – 3, Maharashtra – 20, Orissa – 3, Rajasthan – 2, Tamil Nadu – 1, Karnataka -6, and Chhattisgarh -1) received by National Water Development Agency.

Any organisational structure as that of NWDA should not be static; as NWDA and its mandate expands particularly with a special impetus on the implementation of ILR programme by the present Government in a time bound manner, the Committee finds that restructuring NWDA should commence forthwith and as per changing needs, reviewed at intervals of say about 10 years, depending on progress achieved, impediments encountered and identifying the new challenges as they emerge.

We now turn to the achievements in relation to the preparation of the ILR link reports and the stage that obtains at present.

Part III

Inter Basin Water Transfer

A brief on the Status of Reports on Identified links as per National Perspective Plan

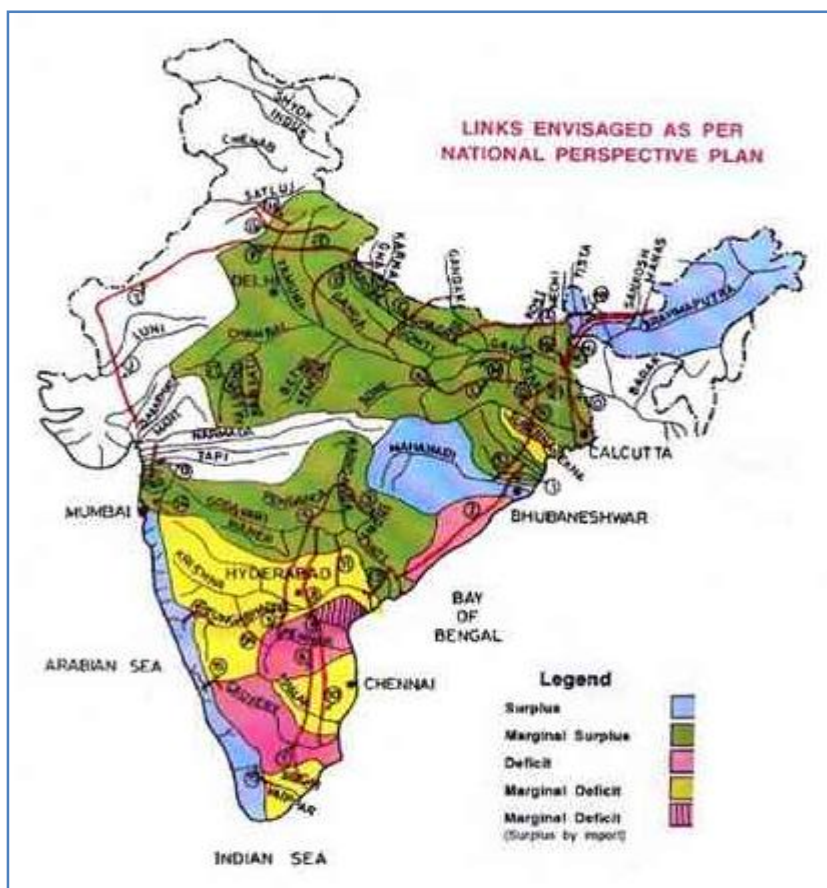
Part III A brief on the Status of Reports on Identified Links as per NPP

Studies made by NWDA on Inter Basin Water Transfer

National Perspective Plan

The various river links and the inter basin water transfer envisage through them are seen in map placed below:

A map of the National Perspective Plan is given below:-



The National Perspective Plan for Inter Basin Water Transfer comprised of two components viz. Peninsular Rivers Development and Himalayan Rivers Development.

(a) Himalayan Rivers Development Component:

The Himalayan Rivers Development Component envisages construction of storages on the principal tributaries of Ganga and the Brahmaputra in India, Nepal and Bhutan along with interlinking canal systems to transfer surplus flows of the eastern tributaries of the Ganga to the West, apart from linking of the Manas, one of the main Brahmaputra tributaries with Sankosh (another river that drains into Brahmaputra), extending these links further to Teesta, Ganga, Subarnarekha and Mahanadi.

This component is expected to yield as per an initial assessment an additional irrigation of about 22 million ha and generation of about 30 million KW of hydropower, besides providing flood control in the Ganga-Brahmaputra basin. It was contemplated that the requisite discharge for augmentation of flows at Farakka required *inter-alia* to flush the channels and enhance the functionality of Kolkata Port. Inland navigation facilities were factored in this proposal.

(b) Peninsular Rivers Development Component:

Peninsular Rivers Development Component is divided into four major parts:

- (i) Interlinking of Mahanadi-Godavari-Krishna-Cauvery rivers and building storages at potential sites in these basins

This part involves interlinking of the major river systems where surpluses from the Mahanadi and the Godavari are intended to be transferred to the needy areas in the south, through Krishna and Cauvery rivers.

- (ii) Interlinking of west flowing rivers, north of Bombay and south of Tapi

This scheme envisages construction of as many optimal storages as possible on these streams and interlinking them to make available appreciable quantum of water for transfer to areas where additional water is needed. The scheme provides for taking water supply canal to the metropolitan areas of Mumbai; it also provides irrigation in the coastal areas in Maharashtra

- (iii) Interlinking of Ken-Chambal

The scheme provides for a water grid for Madhya Pradesh, Rajasthan and Uttar Pradesh and interlinking canal backed by as many storages as possible.

- (iv) Diversion of other west flowing rivers

The high rainfall on the western side of the Western Ghats runs down into numerous streams which discharge into the Arabian Sea. The construction of an interlinking canal system backed up by adequate storages could be planned to meet all requirements of Kerala as also for transfer of some waters towards east to meet the needs of drought affected areas.

c) Total Benefits

The implementation of National Perspective Plan would give benefits of 25 million ha of irrigation from surface waters, 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 34 million KW of power, apart from the incidental benefits of flood control, navigation, water supply, fisheries, salinity and pollution control etc.

Progress of works relating to Peninsular Component of NPP

Under Peninsular Component, so far, apart from collection and compilation of data, water balance study reports of all 137 basins/sub-basins and 52 diversion sites against 49 planned, toposheet studies of 58 storage sites, toposheet-studies of 18 link alignments and against planned earlier and Pre-Feasibility Reports of 17 links were completed by the end of VIII Plan.

Based on the above water balance / prefeasibility studies, 16 links which have been identified under the Peninsular Component for preparation of the Feasibility Reports by NWDA.

The year wise progress on the works relating to various studies under Peninsular and Himalayan Component

S. No	Name of Link	Year of completion of PFR	Year of completion of FR	Year of completion of DPR
1.	Mahanadi (Manibhadra) – Godavari (Dowlaiswaram)	1990-1991	03-04	
2.	Pamba – Achankovil – Vaippar	1990-1991	92-93	
3.	Ken – Betwa Phase – I	1990-1991	94-95	2010-2011
	Ken – Betwa Phase – II			2013-2014
4.	Godavari (Polavaram) – Krishna (Vijayawada)	1990-1991	94-95	
5.	Par – Tapi – Narmada	1990-1991	03-04	2015-2016
6.	Parbati – Kalisindh – Chambal	1991-1992	02-03	
7.	Godavari (Inchampalli) – Krishna (Pulichintala)	1992-1993	03-04	
8.	Damanganga – Pinjal	1992-1993	02-03	2013-2014
9.	Godavari (Inchampalli) – Krishna (Nagarjunasagar)	1992-1993	03-04	
10.	Krishna (Srisailam) – Pennar	1993-1994	98-99	
11.	Krishna (Nagarjunasagar) – Pennar (Somasila)	1993-1994	98-99	
12.	Krishna (Almatti) – Pennar	1994-1995	03-04	
13.	Netravati – Hemavati	1995-1996		
14.	Bedti – Varda	1995-1996		
15.	Pennar (Somasila) – Cauvery (Grand Anicut)	1996-1997	03-04	
16.	Cauvery (Kattalai) – Vaigai – Gundar	26.09.1997	03-04	

- **Other Studies under Peninsular Component**

S. No	Name of Link	Date of circulation of PFR	Remarks
1.	Godavari (Inchampalli Low Dam) – Krishna (Nagarjunasagar Tail Pond)	23.03.1996	VIII Plan
2.	Aghanashini - Varada	27.08.1999	IX Plan

Surveys and Investigation in respect of remaining 2 links i.e. Bedti-Varda link and Netravati-Hemavati link could not be taken up by NWDA so far essentially because of the non-availability of Govt. of Karnataka's concurrence to proceed with them as per NWDA's plans. The State Government have apparently alternatives that are being looked into by itself.

Progress of works relating to Peninsular Component of NPP

Under Himalayan Component, water balance studies at 19 diversion points, toposheet studies of 16 reservoirs, toposheet studies of 19 link alignments & of Pre-Feasibility Reports of 14 links were completed by end of VIII Five Year Plan.

Based on the above water balance/ prefeasibility studies, 14 links have been identified under the Himalayan Component for preparation of the Feasibility Reports by NWDA.

S. No	Name of Link	Year of completion of PFR	Year of completion of FR	Year of completion of DPR
The river links serial numbers are in continuation of peninsular links listed above				
17.	Manas – Sankosh – Teesta – Ganga (MSTG)	1994-1995		
18.	Sarda – Yamuna	1994-1995	03-04	
19.	Ghaghara – Yamuna	1996-1997	03-04	
20.	Ganga (Farakka) – Damodar – Subernarekha	1997-1998		
21.	Chunar – Sone Barrage	1997-1998		
22.	Subernarekha – Mahanadi	1997-1998		
23.	Yamuna – Rajasthan	1997-1998		
24.	Rajasthan – Sabarmati	1997-1998		
25.	Gandak – Ganga	1997-1998		
26.	Kosi – Ghaghra	1997-1998		
27.	Kosi – Mechi	1997-1998		
28.	Sone Dam – Southern Tributaries of Ganga	1997-1998		
29.	Farakka – Sunderbans	1997-1998		
30.	Jogighopa – Teesta – Farakka (Alt. to MSTG)	1997-1998		

Topographical surveys for preparation of feasibility reports of 2 links, namely, Sarda – Yamuna Link (Indian Territory) and Ghaghara – Yamuna Link (Indian Territory) were also completed up to the end of IX Plan.

The Tasks ahead

Peninsular ILR links

The Implementation of Ken-Betwa project is reflected as one on fast track in the Ministry's latest Report (2015) while reflecting on significant achievements of the one year of new NDA Government. This has two components on Ken-Betwa link, a new change. Ken-Betwa - I and Ken-Betwa - II as nomenclature are proposed to be taken up, simultaneously.

Taking on board, the Mahanadi-Godavari flood moderation, the concerned link as envisaged in the ILR, is being examined critically for a revised scope.

Intra-State link Projects

NWDA so far has received total 46 proposals of Intra-State links from 9 States viz. Maharashtra, Gujarat, Jharkhand, Odisha, Bihar, Rajasthan, Tamil Nadu, Karnataka and Chhattisgarh. The Pre-feasibility Reports (PFRs) of 35 Intra-State links (including PFR of Kosi – Adhwara – Bagmati link of Bihar and Paury – Mahanadi link of Chhattisgarh completed recently). The DPR of 2 links namely (i) Burhi Gandak-Noon-Baya-Ganga link and (ii) Kosi – Mechi link of Bihar have been completed and sent to Govt. of Bihar in December, 2013 and March, 2014 respectively.

Preparation of DPR of 4 links, namely (i) The Ponnaiyar-Palar link of Tamil Nadu, (ii) Wainganga-Nalganga link of Maharashtra, (iii) Barakar-Damodar-Subarnarekha link of Jharkhand and (iv) Vamsadhara-Rushikulya of Odisha has been taken up by NWDA on the request made by the concerned States.

Part IV

**Independent Assessment of Works
Accomplished**

Part IV Independent Assessment of Works accomplished

The WAPCOS Report (2012) – An independent review of NWDA works during the plan period

The Sub Committee finds that a fair assessment of the accomplishments of NWDA has been brought out in an elaborate manner by the independent consultants M/s Water & Power Consultants (India) Ltd. (WAPCOS) in their recent report (2012).

Not only the WAPCOS Report explains the unique nature of the studies of NWDA and carving out an acceptable approach in such cases that was adopted by the Society with whose approval NWDA operates, but also it deals with, at length, the enhanced quantum of works that go with moving on to the advanced stages (from Feasibility to Detailed Project Report) on various links. While NWDA could restrict investigations to 10% of the toposheet related surveys / investigations, massive investigation works are required to be undertaken at Feasibility / DPR stage, as per the Terms of Reference set for the Link Reports by the erstwhile Task Force. NWDA has focussed so far on surface water hydrology and related studies for diversion points/sub-basins/basins as a whole. Basin wise Groundwater availability, utilization and balance for future development are duly assessed and projected and the ground water is left for States for its future development as per their own planning, considering the TAC⁶ decisions.

As had been identified by the erstwhile Task Force on Interlinking of Rivers (2002-04), there had been advances in technology that can help rapid completion of several tasks conventionally done by NWDA since its inception for survey, investigations and preparation of solutions for planning water infrastructure for large scale water transfer. Operational research techniques which were not as easily available earlier for adoption are now used increasingly with advances in computing and numerical methodologies. Space technology coupled with Geographical Information System (GIS) has added new tools. The hydraulic models have been made much easier through one dimensional and two dimensional non-steady flow models which can be linked with GIS based system. A new science of eco-hydrology has been developed.

NWDA needs to equip itself with all these changing technologies and this could be either in house or outsourced through leading competent institutions that devotes time and energy especially with resources being made available for R&D.

One also found arguments that the NWDA reports do not adequately justify the environmental flow releases required in the river and go by *ad-hoc* decision of TAC of

⁶The Governing Body of NWDA has constituted a Technical Advisory Committee (TAC) under the chairmanship of the Chairman, Central Water Commission for examination and scrutiny of the various technical proposals framed by the Agency. The members of TAC include Member (WP&P), Member (D&R), CWC, Member (HE), Central Electricity Authority, Joint Secretary, Department of Agriculture & Co-operation, Advisor (IA), Ministry of Environment & Forests, Director General, Geological Survey of India, Chairman, Central Ground Water Board, Director General, India Meteorological Department, Director / Scientist (F), National Institute of Hydrology, Chairman, Inland Water Ways Authority of India. The Director General, NWDA is the member Secretary. There are Special Invitees to TAC meetings comprising senior State Government Officials.

NWDA; and that these *ad-hoc* decisions might have no proper link to the maintenance of hydro-ecologic regime for the aquatic system. But the fact of the matter still is very little information is known about the aquatic ecosystem and its hydraulic and hydrologic requirements on scientific basis for the Indian species; the riverine reaches in which they survive and the limit states that can cause certain harm. Sediment transport and proper consideration especially for Himalayan river systems where the ILR schemes are to be further studied in depth would require special efforts.

This requires special capabilities in regard to empirical modelling of water and sectional hydraulics, which are not available within NWDA and consulting with expert agencies within Water Resources Ministry (like CWPRS), and State Irrigation Research Institutes, would be needed.

In its analysis of NWDA works, WAPCOS Report deals also with the efficient nature in which NWDA is able to handle its assignments. It acknowledges that the work being done by NWDA is unique in nature at least as far as India is concerned. No standard norms are available and commenting on efficiency and cost effectiveness becomes inherently difficult.

WAPCOS hence adopted a yardstick, evolved by itself, for this task. This was by way of interpreting the term “efficiency” and “cost effectiveness” in certain ‘*possibly acceptable manner*’, like:

- i. Whether the assigned work is being done smoothly and efficiently.
- ii. Whether the work done leads to the fruition of the main objective i.e. better scientific development and optimum utilization of water resources either through National Perspective Plan or through other means.
- iii. Whether the money spent on the activities are worthwhile
- iv. NWDA can conduct these works at a lower cost.

In spite of difficulties, outlined in brief in their Assessment, WAPCOS finds that NWDA along with the CWC and Ministry of Water Resources have been instrumental in moving forward and make it feasible for interlinking projects. We find that this is the case in regard to:

- both the Ken-Betwa links (Phase I and Phase II)
- Damanganga-Pinjal link & Par-Tapi-Narmada links

Gaining strength by working with CWC and MoWR, RD&GR, liaising with the concerned State Governments as appropriate and involving their officials, NWDA had finalised Detailed Project Reports in all these cases successfully. Ken-Betwa link programme as a model case with other link projects following suite is something quite encouraging.

Work assessment:

Bench marking the Southern and the Northern Units and a comparison of their performance by WAPCOS Report also indicates that they are compatible. In short, the Sub Committee has reasons to believe that an extensive in depth studies undertaken by WAPCOS that completed an overall assessment of NWDA’s performance, only recently, could be

considered still valid and the findings are appropriate. As per this report, NWDA had been able to accomplish its assigned basic tasks on the works on Interlinking of Rivers in the best possible manner; and respecting the uniqueness of the tasks and constraints within which the studies were to be carried through by NWDA, the performance is commendable.

WAPCOS report does however identify works completed so far in regard to certain '*hazy*' areas like desirable environmental flows to be let downstream when a development does take place with a dam that moderates the flow beyond its location in the river reach (or a barrage for diversion of flows for energy generation as run off hydroelectric plants); aspects regarding wild life that extends beyond water access to an integral strip or otherwise for the animal straying, some aspects as to the tribal welfare and protecting their interests, which require other sound opinions; these have to be accommodated with all possible care and due diligence.

NWDA could then only proceed further with ILR under the guidance of the Special Committee on ILR constituted in accordance with Hon'ble Supreme Court directive for the scheme's implementation. The Sub Committee would like to stress the need for the strengthening of the Multi-Disciplinary Unit (MDU) in existence, though not fully armed with personnel and other wherewithal to carry out its tasks either within the organisation or otherwise by guiding and monitoring consultants' who are engaged by outsourcing by NWDA for such works related to examining the various links. In the later sections, the existing MDU personnel will be absorbed in the proposed Systems Unit and also the Project Appraisal and Evaluation units, as appropriate.

Part V

Strength, Weaknesses & Opportunities / Threats (SWOT) Analysis

Part V NWDA - Strength, Weakness, Opportunities & Threat (SWOT)

SWOT Analysis in brief

While taking stock of the NWDA's strength in several areas, the Sub Committee did not miss to search for possible weaknesses that could act as impediment to deliver the best by them. The Sub Committee was fortunate to be facilitated by the available Consultant's Report on Restructuring NWDA by Haque (2012) which has its validity even on date, given the fact no significant changes in aspects considered in this report had actually taken place in the interim. Besides, an additional report of significance is the one prepared by WAPCOS⁷ as explained hereunder.

Independent Consultant's Report (2012) on Restructuring NWDA

A notable fact we find in the above Report on Restructuring NWDA has been that this was subsequent to Supreme Court's directions on the Interlinking of Rivers in 2012. The Committee has been formally intimated when enquired that his report is in processing in the Ministry as per procedure. The Sub Committee notes that this report was placed before the Governing Body of NWDA in 2013 - as a part of the NWDA's report on the works accomplished during 2012-13.

One has reasons to assume that the Governing Body has taken note of the same though no specific views are made on the submission of the report.

Our Sub Committee had reviewed the above report critically keeping further developments. These amongst other aspects, include the formation of Special Committee on ILR chaired by the Hon'ble Minister of WR&RD and GR, and the creation of a new Task Force on ILR to work in parallel. It is also seen that two other important Sub Committees (1 & 2) are to consider associate issues like project clearances and system studies.

Haque's report its scope of the Study under the following specifics:

- Changing functions and structure of National Water Development Agency
 - Addition of new functions / increase in the scope of existing functions
 - Achievements and future targets
- Working environment
 - Emergence of new challenges
 - Adopting new techniques and technologies
- Cadres management issue
 - Career progression and Welfare measures
 - Enhancing professional capabilities
- Restructuring as a tool for better management

Not only a significant reduction in sanctioned staff strength is noticeable but also lack of action that could ensure the filling in all these positions of sanctioned strength (curtailed) is

⁷ Water & Power Consultancy (India) Limited. (WAPCOS)

the scenario that is found for considerable time in NWDA. This could be by default due to unplanned and also delayed administrative actions. The above Report explains that:

“At the time of setting up of National Water Development Agency, the total strength of the professionals and supporting staff was envisaged to be 1677, with 884 (about 53%) professionals and 793 (about 47%) supporting staff. However, the numbers of posts in different categories have gone down considerably over the time and at present the total number of filled posts is only 583. The existing strength, thus, is merely about 35% of the strength that was envisaged at the time of setting up of the Agency.”

The following table indicates the present status:

Table : Declining Staff Strength

Description	Professionals	Administrative and other supporting staff	Total
Total strength envisaged at the time of setting up of NWDA	884	793	1677
Sanctioned Strength prior to SIU	238	382	620
Sanctioned strength as of 31.8.2015 based on SIU	212	281	493
Posts filled up as on date	225	294	519

It may be observed from the above table that the declining trend in case of professionals is relatively more serious. While the overall strength of the officials of National Water Development Agency has gone down to about 35%, the strength of professionals has gone down to as low as 24% which is definitely a matter of serious concern. This is more so in view of the fact that there has been considerable increase in the functions as well as workload of National Water Development Agency.

Unless, reviewed in proper perspective, the situation is likely to worsen further in view of the recommendations contained in the report of the Staff Inspection Unit on the Work Measurement Study of National Water Development Agency. The Staff Inspection Unit has recommended further reduction of the officials of National Water Development Agency to 493 i.e. only about 29% of the strength which was envisaged at the time of setting of the Agency. The report of the Staff Inspection Unit has of course certain limitations, given the tasks assigned and the team that is supposed to undertake them. As Haque’s Report amplifies, SIU report had neither considered the increase in the functions of National Water Development Agency nor evaluated the work load nor looked at the emerging challenges in the water sector vis-a vis the role of the Agency which are required to be addressed in all

seriousness by a professional and technical set up, attempting to handle them with Governmental rules and regulations.

The methodology adopted by the Staff Inspection Unit (SIU) for assessment of manpower (based on the actual annual workload generated and application of standard norm for housekeeping functions and incorporating allowances for miscellaneous and allied activities) is inappropriate for any technical organization like National Water Development Agency; the functions and target for such technical set ups are to be properly appreciated in relation to emerging challenges in water sector. Given its complexity, the Sub Committee believes that it is beyond the scope of a SIU type review and should not be given any importance.

Haque's Report (2012) contain an interesting analysis on 'ageing manpower' and the net impact that could be visualised in just a few years hence, in case of continuance of the 'business as usual' situation. This has been reviewed and updated by the Sub Committee with the data as at present. With the trend of very slow rate of fresh appointments and abolition of posts in different grades due to various reasons in the past few years, NWDA would lose its strength at a rapid pace due to less and less professional strength. This has to be remedied on war footing.

Sub Committee's analysis, an update of the earlier report of Haque, reveals the following situation on ageing manpower:

Aging Manpower and consequential inertia to adapt to new technologies and advancement

Average age of professionals	:	52½ years
Average age of administrative and supporting staff	:	51½ years
Professionals retiring by 2025 (as % of total strength as on date)	:	71.57%
Administrative and supporting staff retiring by 2025 (as % of total strength as on date)	:	87%

**Details of Retirement of Professionals at
National Water Development Agency**

S. No.	Designation	Total	Number of Professionals to retire							
			Before 2015	During 2016-20	During 2021-25	During 2026-30	During 2031-35	During 2036-40	During 2040-45	During 2045-50
	Professionals									
1	Chief Engineer	3 *	-	1	1	-	-	-	-	-
2	Director(Tech)	1	-	1	-	-	-	-	-	-
3	Superintending Engineer	7	-	2	5	-	-	-	-	-
4	Director (MDU)	1	-	-	1	-	-	-	-	-
5	Executive Engineer	23	-	7	16	-	-	-	-	-
6	Assistant Executive Engineer	15	-	6	9	-	-	-	-	-
7	Assistant Engineer	43	-	5	28	7	3	-	-	-
8	Junior Engineer	57	-	-	20	14	8	3	6	3
	Professional Support									
9	Head Draftsman	1	-	-	1	-	-	-	-	-
10	Draftsman Grade-I	5	-	3	2	-	-	-	-	-
11	Draftsman Grade-II	18	-	7	11	-	-	-	-	-
12	Draftsman Grade-III	17	-	4	7	3	2	1	-	-
	Total	191	-	36	101	24	13	3	6	3
	% of Total			18.85	52.88	12.57	6.81	2.09	3.14	1.57

* one post under deputation

Details of Retirement of Professionals at National Water Development Agency

S. No.	Designation	Total	Number of Professionals to retire							
			Before 2015	During 2016-20	During 2021-25	During 2026-30	During 2031-35	During 2036-40	During 2040-45	During 2045-50
1	Professionals (Junior engineers to Chief Engineers)	150	-	22	80	21	11	3	6	3
2	Professional Support (Draftsman – all grades)	41	-	14	21	3	2	1	-	-
	Total	191	-	36	101	24	13	4	6	3
	% of Total			18.85	52.88	12.57	6.81	2.09	3.14	1.57

Remedial steps to face the challenges due to situation as above, has to be carefully chalked out as addressed in Chapter VII (sections on interim Restructuring and staff strength, and their mode of their recruitment etc.). NWDA has to join hands with other organizations such as Central Water Commission, Central Water and Power Research Station, National Institute of Hydrology, Central Soils and Material Research Station, Central Electricity Authority etc. to see that the requisite support is obtained. Besides, its own 'in house' professionals and staff would be required to undergo training and acquire specialization in specific areas like systems engineering, and allied multi disciplines for the best outcome.

At the time of setting up of NWDA, several posts from different disciplines other than "Engineering" stood identified for NWDA. These posts were:

- Chief Geologist
- Director (Drilling)
- Director (Survey, Planning and coordination)
- Scientist (Soils)
- Scientist (Agronomy)
- Director (Economics)
- Director (Environment)
- Director (Sociology)
- Deputy Director (Environment)
- Deputy Director (Economics & Stat.)
- Asst. Director (Computer Applications)
- Assistant Director (Eco. / Env.)
- Senior Geologist
- Senior Drilling Engineer
- Superintending Surveyor

No serious efforts appear to have been there to get these posts filled in all along.

Obviously, as pointed out in the report of the Consultant (M.E. Haque 2012), the objective of identifying and including above mentioned professionals was to involve the experts / professionals from all related discipline in preparation of feasibility reports actively. Only professionals from "Civil Engineering" discipline by and large were managing, all through. The majority of the posts of other disciplines over a period of time have either been abolished or gone under '*deemed abolished*' category. Given the position that the scope of work of the NWDA has increased considerably and that emerging challenges, including those related to social and environmental aspects are to be taken on board in a proper perspective, a need to revive a few of these posts and fill them in is obvious. Some new posts related to subjects like GIS, System Studies are also required to be created and made functional. This aspect is addressed later in Chapter VII.

- **Modern Techniques and Technology**

Techniques and technologies undergo rapid changes. As indicated both in WAPCOS evaluation study and Consultant's Report, NWDA can perform better by adapting to notable

developments like: (a) modern equipment for survey and investigations; (b) advanced methodology and access to sophisticated equipment for geophysical investigations; (c) remote sensing techniques; (d) geographic information system; (e) analytical tools etc.. System study has emerged as an effective tool for faster analysis of all possible alternatives with a view to help in rational and judicious decision making. How to best use some qualified professionals available at higher levels is an issue that must receive priority. The Multi-Disciplinary Unit in Headquarters, for example, is one such unit that could be enhanced in performing better and more. Making available latest packages on systems studies and working with NIH jointly after necessary training of professionals can enhance NWDA's own competency to handle tasks equally well than outsourcing.

The field organisations require to be strengthened using the 'restructuring' opportunity by modernising them with GPS, precision instruments etc. alongside looking into personnel addition. The Sub Committee has reasons to believe that in parallel, Central Soils and Materials Research Station and Central Water & Power Research Station Pune, under the Union Ministry of Water Resources have under a World Bank supported study recently, envisaging Institutional strengthening. This can help in undertaking studies related to geo physical and geo technical aspects during project investigation by NWDA jointly with sister organisations in the same Ministry.

Part VI
Restructuring NWDA

NWDA as an
Empowered Authority

Part VI Restructuring NWDA

Assessment of NWDA and its Transformation

The Sub Committee has the following assessment available before them that facilitates the consideration for NWDA's transformation as an able body to meet with the challenges ahead:

- **WAPCOS Report (2012)**

In its analysis of NWDA works, WAPCOS Report deals also with the efficient nature in which NWDA is able to handle its assignments. It acknowledges that the work being done by NWDA is unique in nature at least as far as India is concerned. No standard norms are available and commenting on efficiency and cost effectiveness becomes inherently difficult. NWDA along with the CWC and Ministry of Water Resources have been instrumental in moving forward ILRs for the DPRs like Ken-Betwa link Stages I & II), Damanganga - Pinjal and Par-Tapi-Narmada links. The comparison of the two field units also confirms an efficient performance, more or less equal, expected from out of the available staff. The Sub Committee has reasons to believe that an extensive in depth studies undertaken by WAPCOS's overall assessment of NWDA's performance, only recently, could be considered still valid and the findings are appropriate. As per this report, NWDA had been able to accomplish its assigned basic tasks on the works on Interlinking of Rivers in the best possible manner; and respecting the uniqueness of the tasks and constraints within which the studies were to be carried through by NWDA, the performance is commendable.

However, the Sub Committee notes serious issues highlighted by WAPCOS, to quote :-

- A. *NWDA has no legal authority to decide the surplus and deficit and to plan the links. Obtaining the concurrence of the state when numerous states are involved (such as in case of the Mahanadi, Godavari, Krishna, Pennar, Cauvery links) is a very tough task. These will however become possible if the Parliament were to enact legislation under Entry 56 of the Union List to enable NWDA to conduct the job at an appropriate juncture.*
- B. *Many components of the Himalayan links require international cooperation between India and other countries (Nepal & Bhutan) in particular and these have to be acted upon by the Ministry of External Affairs in conjunction with Ministry of Water Resources. Unless this is done on priority, NWDA cannot prepare complete report which can be executed.*

IIM-A

The Sub Committee on Restructuring NWDA would like to refer to the Report of Indian Institute of Management, Ahmedabad "Organisational Structure for Interlinking of Rivers" (December, 2006) which was made available in 2007 to the Government of India and NWDA.

The report has been specific to underline that: *(to quote)*

“The Interlinking of Rivers project is a huge challenge, the need for an appropriate institutional/ organizational structure for its implementation is crucial. Apart from physical and financial implementation issues, it will need to bring about consensus amongst the states concerned, and also require agreements with some of our neighboring countries.”

“The present legal framework in which water is a state subject, and only in case of interstate river water disputes can Central Government come in, appears inadequate even to deal with local inter-state river water issues. Mutual agreements frequently do not work, and formal agreements, tribunal awards, and acts also often fail. For a programme such as the interlinking of rivers, in which far-flung States are involved, a special legal framework would be essential. Attention will be required towards developing a legal framework and appropriate water laws to address the envisaged transfer and use of water. “

“Based on the variety of considerations that have been discussed above, it is suggested that the implementation should be through a structure in which, broadly, the top level is political dealing with consensus building, national/ international facilitation, and legal issues, the middle level is organizational dealing with planning, policy, design, coordination, support and monitoring, and the bottom level is operational dealing with construction, operation and managing contracts and agreements”

“From the experience of other such infrastructure development organizations, it is clear that financial independence would be crucial, and raising basic finance on a special or accrual basis would be extremely useful. It is also clear from the past experience and the complexity in managing such water resources that a legal framework would be of very great importance, and a special Bill/ Act for interlinking of rivers would be extremely useful to have. The Act should specifically focus on inter-river basin water transfer projects of a national and inter-state nature of this kind, and address construction, management, operations and all related issues involved.”

IIM-A Report (2006) envisages the suggestion to formulate a ‘National Authority for Inter-Linking of Rivers (NAILR)’ and elaborates on it to quote:

- *This would be the Central organizational body for planning, programming, implementation, monitoring, and overall coordination on technical, economic, social, policy, and legal issues. Its major role would include investigation, strategy formulation, goal setting, planning, execution, coordination, monitoring and institutional support.*
- *The body would be involved in coordination and overall guidance / support for various major issues and matters related to the programme. This would include engineering planning and design, and technical expertise, financial resource*

generation and allocation, legal procedures, agreements and disputes resolution, coordination across ministries and integration across the levels of nation, states, and people.

- *The Authority would deal with inter-state and international dimensions of the project and initiate action for obtaining the necessary support and clearance. It would address environmental issues and deal particularly with procedures for obtaining environmental clearances. It would be the central data compilation centre to support water resource management and would constantly scan to collect and compile all relevant information. It would also be the memory bank of the programme – a storehouse for the experience and learning. It would also determine the HRD policies, ensure necessary training and manpower development, and would promote the introduction and use of the latest technology including information technology to facilitate the implementation of the project.*
- *This body will have considerable State involvement. This will be particularly through deputation of outstanding senior officials to the organization, particularly from the water resources departments, and also from other departments. Such deputations will be sought from all the states. The organization will set norms, systems, and traditions of well distributed representation, and rotation in its various posts to impart a truly national character and image to the organization.*
- *For many of these positions, professionals can be drawn from the NWDA, CWC, CGWB, various Corporations/ Boards, and from the State Government outfits, since all of them have substantial knowledge and experience on the investigation, designing, planning, project formulation, and implementation related aspects. The NWDA as a body has a lot of strengths/ experience whose expertise can be either outsourced for a variety of functions or even can be thought of absorbing into the Authority. However, expertise would be required far beyond the NWDA, and particularly people with an orientation towards rapid project execution and operations management would be required – some may be found in prominent river boards/ authorities mentioned above. Some expertise bringing experience from the NHAJ would also be useful. Some members of the Task Force on Interlinking of Rivers could also be involved to make useful contributions.*
- *The Authority will have several coordinating units / committees on major heads and subjects where there is substantial interdependence. This will help in sorting out most interdependency / coordination problems at the lower levels and speed-up the processing and implementation. The units / committees would encourage leadership and have a rotating head system to improve participation, coordination and leadership development”.*

Sub Committee's opinion:

Most of the above presumptions, or at least some broader aspects on the above, may require a deeper introspection at various levels of the Government itself. Now let us examine as to:

- **Would it help to have 'a New Form' for the 'Old and New' Content?'**

An unhesitating and frank exchange of views within the Sub Committee's deliberation took place on this and the ray of hope in enhancing the probability of speedier implementation made it see the truth in it. In the process several issues agitated the Sub Committee's process of analysis and discussions. The questions considered, *inter-alia*, were:

1. Is it that the NWDA had remained virtually a toothless body?
2. Does a Society under the Societies Registration Act 1860 consisting of about 24 members plus, increasing in size formally or otherwise with the splitting of States and bringing in new players, (nominated by various Central and State governments) can meet with the challenge of implementing the Scheme in a time bound manner mobilizing all that is required (including financial resources)?
3. Can a simple set up with the restricted functions to preparation of DPRs which need ultimate approval by State and Central Agencies (*implementation of such DPRs are not mandatory*), deliver the desired output? Once the idea, as it seems, to get initial and preparatory work done without infringing too much on State's rights over water resources stands accomplished, what is the new manner in which the Nation could succeed to implement a Scheme that had the mandate of the people in 2014 nation-wide elections for the Lok Sabha?
4. Is it that the Gol's action in (*nominally and actually in charge of a National Project like ILR*) allowing the sanctioned staff strength decline from 1677 (884 professional and 793 supporting staff) to 620 since NWDA's formation, mean a relegation of its importance? (*Working against the morale boosting, it is found that even this figure of curtailed sanctioned strength is not being filled up - 493 of which 177 professional and 316 supporting staff*).
5. How could SCILR invigorate NWDA to change a possible perception that one gets led unto, viz: the Gol is not serious about the efficiency and efficacy of NWDA, till date?

All these facts having surfaced - and recorded in the reports referred *ibid*,⁸ in some form or other indirectly and inferentially, the only way forward is to replace NWDA with an new institution without the infirmities of the present set up; this will take on the staff of NWDA and carry out its enhanced mandate. Looking critically, the reason seems to lie in the status of NWDA itself. For one, it is a Society, a body accorded the least priority with other pressing

⁸Various studies - during the past few review exercises (Mohile, Gandhi and Haq), have either indirectly or directly highlighted the case of past neglect and need for future restructuring of NWDA.

tasks within the Ministry. Thus, apparently, even in the Ministry, NWDA is obliged to plead its case (mostly unsuccessfully) for more staff or more funds.

Sub Committee turned its attention on aspects of transformation of NWDA to address many negative aspects of present NWDA's structure, which *inter-alia*, keep on board staffing, internal working etc.

Sub Committee's Core Recommendations

The Sub Committee finds that the implementation of ILR under the present scheme of things with NWDA as a Society had resulted not necessarily in effective and aggressive promotion of the project. A lot of time has dragged by; when '*speeding up the implementation*' had been repeatedly urged from different quarters, particularly the Judiciary, this situation needs a critical look and reversal.

Our Sub Committee senses that the Society (*and the Executive Head of NWDA*) is unable to exercise the necessary powers and authority that is a requisite for the implementation of the major project at national level with long ranging interests. This is important if we expect significant progress in making agreements on schemes and its contents, trade off discussions etc. One could anticipate that a Head of the Institution with necessary powers could deal with States and their lead officials better and be effective to achieve accelerated progress.

NWDA as a society was effective till now for desk studies and Pre-feasibility stages on links which required a persuasive and conciliatory approach with States to facilitate such studies. Things are not the same as we move further on to advanced stages leading to implementation. To prepare Detailed Project Reports (fundable development project report, in donor agencies' parlour) and facilitate take off of the project on ground, and create appropriate machinery for implementation with necessary funding, requires a radically new structure for NWDA to be effective.

During the meetings of SCILR there were discernible trends. The States were more for intra state links than the National ILR, as conceived by the Union Government with a national perspective. Thus, in order to call States to the discussion table and have an effective dialogue on ILR while rendering some support for intra state links to the extent desirable from a national angle, morphing NWDA over to an Authority would be helpful. While any name as appropriate could be left to the consideration of the higher level committees (like Special Committee on ILR and the Government at the Centre), for the sake of this Report, this Sub Committee is pleased to recommend:

Key Recommendations

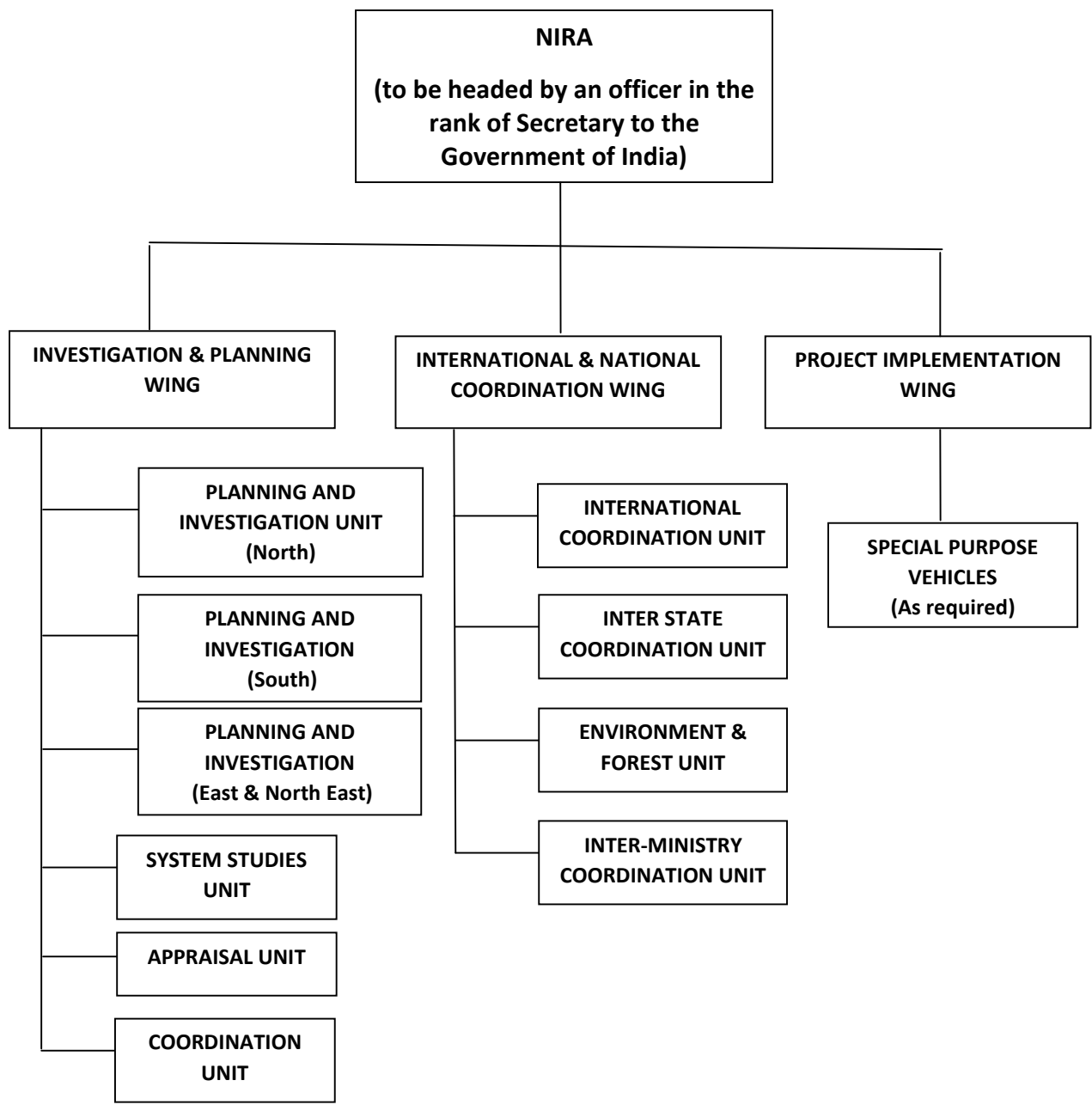
1. A new institution called National Interlinking of Rivers Authority (NIRA) should be created which must be suitably empowered to effectively function with enhanced mandate for achieving the overall objectives of ILR. The Authority should be enabled with the wherewithal to implement ILR. The Sub-Committee feels that creation of the

proposed Authority through an Act of Parliament would be necessary.

2. The Authority could have three distinct broad functions namely

- (a) Investigation & Planning of ILR links
- (b) Coordination with neighbouring countries and with the concerned States in India and
- (c) Implementation of the 'duly agreed project for a particular link.

The broader structure of NIRA is illustrated as under. This should deliver the implementation of ILR programme as decided by Government from time to time.



3. The Head of the Authority is empowered to call meetings inviting State Government officials at highest level and help the Special Committee on ILR as appropriate – the core objective being support in achieving needed consensus on the Link Project and its contents in varied fronts.
4. The Sub Committee has noted the initiation of Special Purpose Vehicles (SPVs) for implementation of links duly agreed to by the concerned States.
5. The specific internal and staffing pattern of the International and National Co-ordination Wing of NIRA needs to be firmed up after consultations with Ministry of External Affairs, Ministry of Home Affairs, Ministry of Environment, Forest and Climate Change and Ministry of Law. The Sub Committee is, for the present, not getting into the amplification the full-fledged structure for the NIRA at present. The Sub-Committee, however, opines that the function related to International and National co-ordination is very crucial and necessary mechanism is required to be put in place without any further delay.
6. NIRA will absorb all existing NWDA officers and personnel protecting their rights and privileges and enhancing them comparable to that of an Organised Services. All the Government rules and regulations shall apply. These extend to pension benefits for the employees following similar provisions as in the Government.
7. Any other provisions that are necessary and appropriate for such a change, promulgated by an appropriate Order of the Central Government.

Part VII

Interim Recommendations for Immediate Action before Major Revamping as an Authority

(In the Interim, till such steps required to create an empowered Authority are processed as recommended in the previous section, NWDA has to be strengthened. This is the scope of this Section)

Part VII Restructuring NWDA to cater to meeting with the new mandate pending the creation of NIRA

A new mandate

The proposed new mandate for NWDA shall fall in line with what has been indicated for NIRA in the previous section.

As a body that will handle the planning, programming, implementation, monitoring, and overall coordination of interlinking of rivers programme, a sequentially strengthening set up is envisioned.

While handling the mandated tasks including technical, economic and financial, environmental, social, legal, and other policy issues, NWDA will work with the respective associated Link Authorities .

Situation Analysis on the status on *'Implementation of Link Programmes sequentially'*

A perusal of the manner in which one finds the implementation of ILR obtains at present is perhaps, to go sequentially one after the other link(s) that can be taken up, of course after resolving all the preliminaries. More or less proceeding with the low hanging fruits and work on the furthering of the entire scheme with experiences gained, while consensus building of all concerned goes on. These include, inter-alia, necessary agreement between co basin states for a specific link and getting equipped with necessary MOUs.

These have to be processed by NWDA after facilitating clearances for the DPRs, as finalized. And the immediate scope of restructuring NWDA could commence with this goal. This is doable, sanctions necessary may be easier to be processed given the complexities in the creation of an Authority as in Section VI for the overall Implementation of the entire River Links.

The Sub-Committee therefore proceeded with the assumption of taking up the implementation of links, as many as possible, sequentially. This presupposes that time required for processing different link proposals vary depending on many compelling circumstances.

Till such time when the new National Interlinking of Rivers Authority (NIRA) comes into being, NWDA is to be enabled to handle the immediate and pressing tasks ahead for action, in a progressive manner.

Some of the specific tasks to be completed are indicated in the Table beneath. These include the left over Feasibility Reports for NPP links as well as the Intra State links which have been accepted by NWDA, in principle, for the preparation of DPRs, in recent times with an enhanced and revised mandate.

Balance Tasks and their Status

Specific Tasks Yet to be Completed	Status
National Perspective Plan (NPP links)	
<p>Feasibility Reports of 14 links envisaged as per NPP. The 16 links as per NPP also comprise two links in Karnataka and these two tantamount to 'intra State links'. The Karnataka State Government are not demanding the firming up of NPP envisaged links viz: Bedti Varahi and Nethravathi – Cauveri and are envisaging their own plans for Nethrawathi diversion within the State.</p> <p>Only 14 links will therefore remain as balance to be undertaken by NWDA, in our view.</p>	<p>Alternatives are being studied for Mahanadi Godavari link, and this will modify considerably the scope of the Eastern link of Peninsular Component.</p> <p>Survey and investigation in respect of two links under peninsular components could not be taken up due to the requisite permission by the State Government of Karnataka. Necessary actions are being taken by NWDA as well as SCILR with the Government of Karnataka to pursue with little progress.</p>
<p>The Himalayan Component links are 12 links.</p> <p>These require extensive further survey and investigation, project finalization.</p> <p>These inter-alia, will require studying other projects already in advanced stages between countries based on mutual understanding and agreement(s) etc. (like Pancheshwar Project (6000 MW), Karnali Project (18000 MW) with downstream reregulating structure across the river near border), Kosi Project, Sankosh Project (6000 MW) with a downstream reregulator structure at Kerabahari) etc., to mention a few.) and proceed with integrating them with ILR as per NPP proposals.</p>	<p>The survey and investigations in respect of 12 links under this linger on, since a portion of these links as well as the dam and diversion structure like barrage downstream for the reregulation have the identified locations in Nepal or Bhutan, as the case may be.</p> <p>Further progress on these links will require Gol's high level interventions and bring in inter-ministerial consultation processes (like Ministries of Power, External Affairs, Environment and Forest & Water Resources, GR & RD). This will call for, <i>prima facie</i>, suitable steps in MOWR and CWC.</p> <p>NWDA's work programme is somewhat linked to the demands associated with the tasks to be handled by MoWR and CWC, besides respective State Governments of the Union. We have not specifically enhanced the requirements as per the suggestions for Restructuring (for immediate needs) right in the submission under consideration, leaving it for a further review at an appropriate juncture. This will be when discernible progress on these links are foreseeable with dialogue with our neighbouring countries, Nepal, Bhutan and Bangladesh, in immediate future.</p>

Intra State links	
PFR of 23 intra-State links	PFR for 13 in progress
DPR of select links for which PFRs are acceptable to the respective State Governments. The requirement would arise as and when a request for proceeding with DPR is solicited by the concerned State(s) to be undertaken through NWDA	<p>The number of Intra State links where further work would be required to be undertaken by NWDA could only be a 'best guess'. Various parameters will have to be taken on board and all these are now unavailable.</p> <p>For the 'NWDA Restructuring' proposals, our Sub Committee propose that only about 50% of the 13 links (for which PFRs are in progress) could require DPR to be done by NWDA.</p> <p>The envisaged restructuring proposals in this document address these only for the present.</p>

It may be pointed out that the works on Intra State links undertaken by NWDA appear to have been undertaken as a persuasive step to garner the consent of the States for the overall interlinking of rivers programme in principle. However, these new '*intra state links*' sought after by the States could be counterproductive to the NPP links in a few cases as the water diversions planned at the locations as per NPP may not then be feasible. Suffice to say at present that these are studies being launched by all concerned, without adequate overall system studies and a rigorous examination of its impact on NPP links.

We envisage, however, that it shall have to form part of the NWDA tasks to be undertaken in the restructured NWDA's System Unit, in particular as one progresses with intra state link works.

These have been considered in the 'Restructuring Proposal' being suggested by our Sub Committee.

- **Works to be undertaken and a Bar Chart showing the activities to be sequentially kept on the anvil for the future:**

Keeping the above aspect in view, the Sub Committee attempted to visualize a broad scenario of the NWDA's tasks in future, taking it further to approximately adjudging the resources allocation. Keeping in view the directions of Hon'ble Supreme Court, the policy statements of the union Government and targets set by the NWDA in next decade or so, the resources that would be necessarily required for activities (a) during next five years; (b) during sixth to 10th years from now, and (c) after 10th year have been assessed. Very broadly, the activities and relative changes in terms of work load of the same in different phases could be as under. This is based on detailed information regarding targets of work planned by NWDA in the near future. This is also annexed to this Report at the end.

During next five years from now:

- Increased activities related to field investigations with efforts to complete FRs, undertake revision of FRs (wherever necessary) and take up DPRs of identified links
- Considerable increase in respect of works related to appraisal of projects (including those related to pursuing of matters with agencies responsible for mandatory clearances)
- Initiating the system studies to examine all possible scenarios and to arrive the optimal choice of particularly in view of likely suggestions from the concerned State Govts. and other stakeholders.
- Increased activities related to process of negotiations, with concerned States as also other Stake holders requiring increased workload of NWDA professionals for such activities.

During 6th year to 10th year

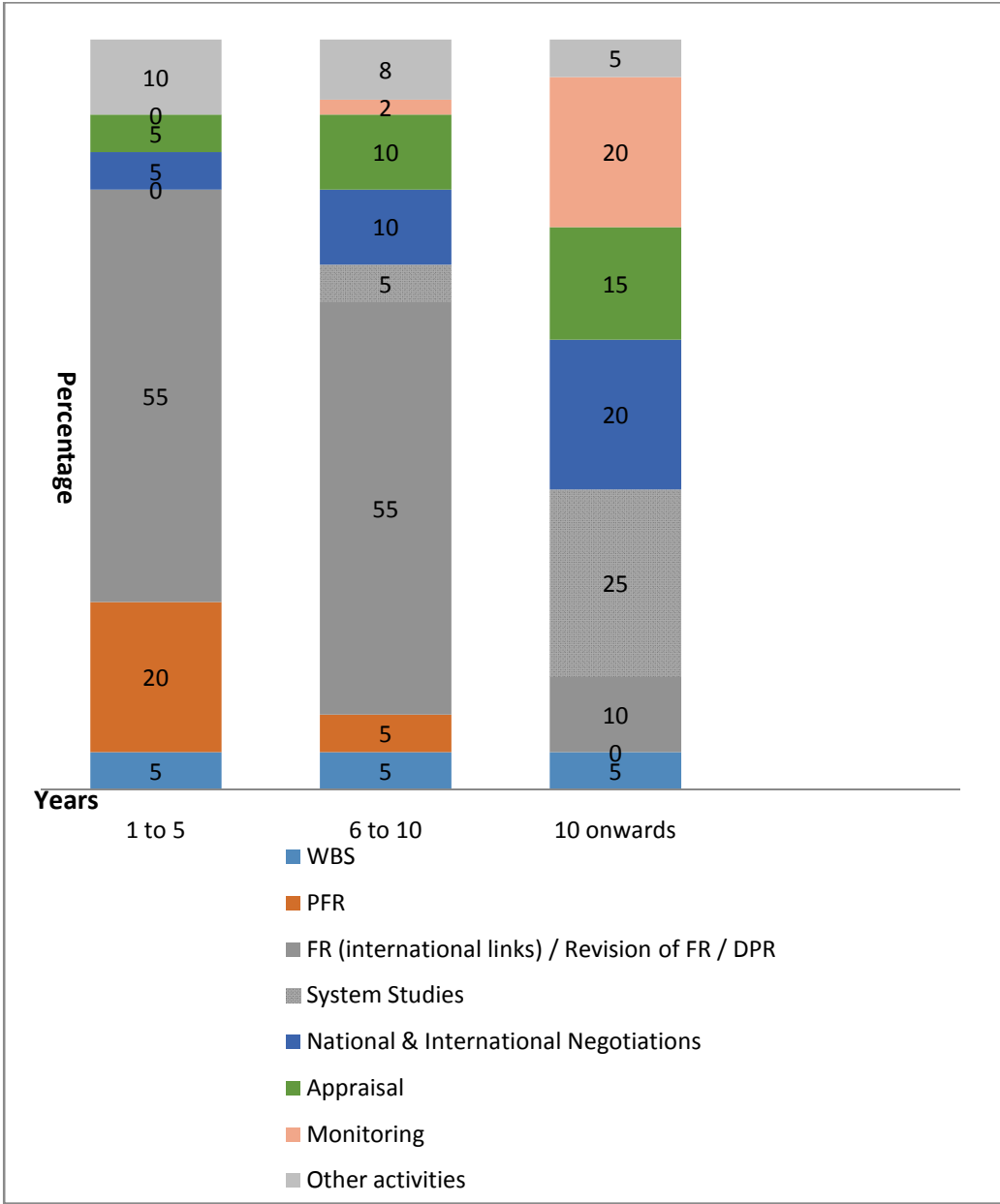
- Reduced activity related to field works for FR with completion of majority of the targets in this regard
- With focus on completion of DPR of identified projects, considerable manpower of NWDA to be engaged for this activity.
- Increase in the activities relating to negotiations leading to increased work on Systems Studies & Appraisal processes to be done by NWDA,
- Implementation of 2 major links with increased activities related to monitoring by NWDA.

Beyond 10th year from now

- Reduction in the activities related to Investigations and preparations of DPR
- Hectic negotiations both with States and neighboring nations
- Increased involvement of MEA, , MoEF and others in the process of appraisal, critical review and negotiations, necessitating detailed examination of all possible options, calling for further in depth system studies etc.
- With the start of the implementation of the project, considerable increase in monitoring activities.

Year (from now on)	During next 5 years	During 6-10 years	Beyond 10 years
<i>Quantum of works</i>	<i>In %</i>	<i>In %</i>	<i>In %</i>
Water Balance Reports (a re-review)	5	5	5
PFR	20	5	0
FR (for International links)	55	55	10
Revision of Feasibility Reports, due to changes necessitated during negotiations with States etc.			
DPR			
Systems Studies	0	5	25
National / International Negotiations	5	10	20
Appraisal	5	10	15
Monitoring	0	2	20
Other activities	10	8	5

A bar chart below depicts the dynamic nature of the kind of works that might draw the 'in-house' resources (manpower and costs associated):



Time line for Implementation

Modus Operandi for actual Implementation of a Link programme once DPR is processed for construction

In respect of Ken-Betwa Interlinking programme, it is seen that the take off stage has already reached for construction. Following an action to process the DPR for approval by various agencies and Ministries concerned in the Centre by NWDA as desired by co-basin States, a model stands established that NWDA could in association with the States handle such requirements for an envisaged link after the completion of DPRs.

The Sub Committee has kept this aspect in view while making the recommendations and have proposed a full-fledged Unit headed by a Chief Engineer for 'Comprehensive Evaluation'. This unit could, as and when called upon to do so by the States which share a

link programme, could likewise process a DPR for a logical take off for construction with all concerned. The Systems Unit suggested to be headed by a Chief Engineer with a multi-disciplinary team under its fold could jointly analyse the impacts of all possible alternative options, cross cutting in nature during this processing stage and address any multi sectoral concerns.

Governing Body for Ken-Betwa Link Implementation

Moving on to the execution phase, this link is proposed to be guided and governed by a specially constituted body, consisting of a Governing Body (GB) and a Ken – Betwa Link Project Corporation (KBLPC).

This GB is to be vested in powers for the construction of both Phases I & II of Ken-Betwa Interlinking Programme, including all civil, mechanical and electrical components associated with it – like the Dams, Canals and Power houses etc.

The GB KBLP is likely to be chaired by the Secretary, WR,RD&GR and will have the representation of Senior Officials of the Centre as well as co-basin States (Secretaries to the Governments in the concerned Ministry and State Departments), Chairman CWC, DG NWDA, CEO of the Link Project besides senior officials of the Forestry, Wild Life of the State Government. The Chief Engineer of the Central Water Engineering Services or NWDA dealing with this link in the Centre shall be nominated to be the Member Secretary of the Board. The GB will have an overall responsibility for execution of Ken – Betwa link project through KBLPC. The KBLPC will be consisted as an Autonomous Body for execution of K – B link and will work under the guidance and direction of GB.

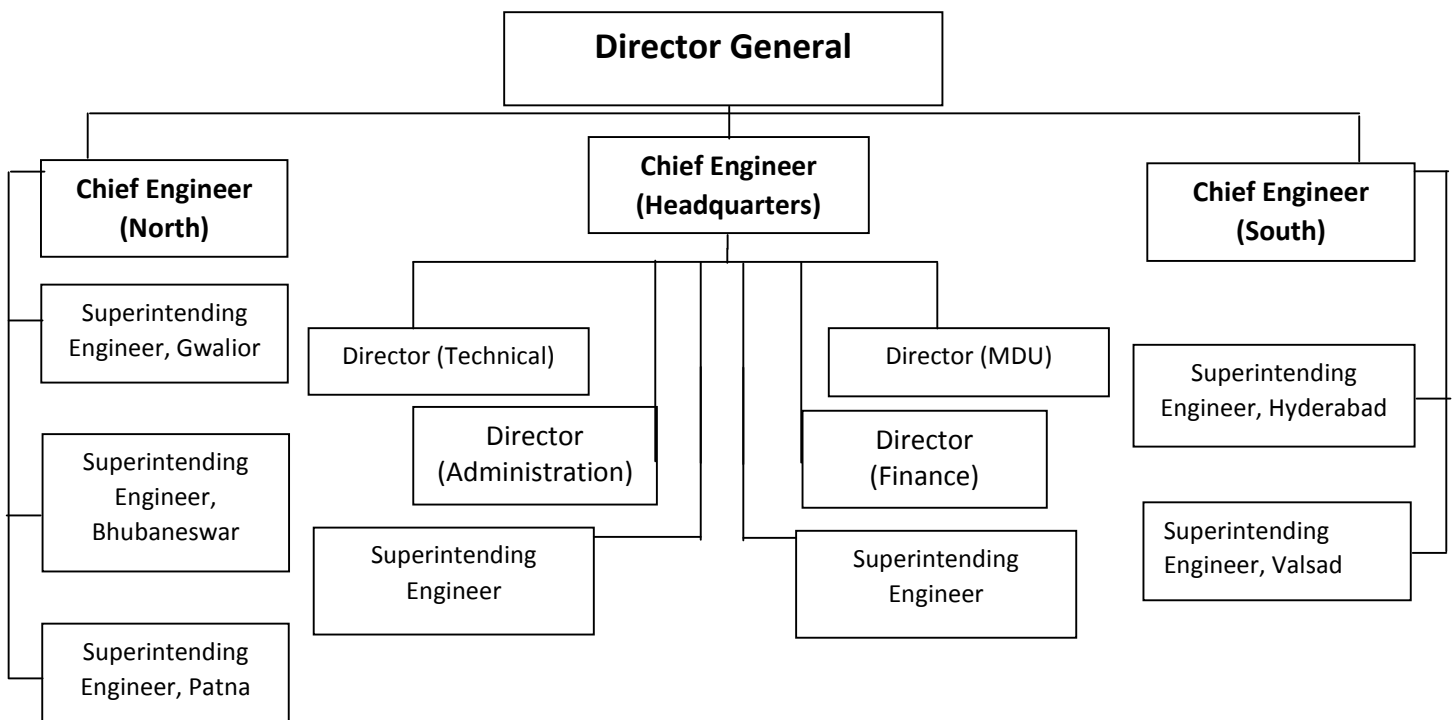
The Sub Committee therefore have reasons to believe that the construction stage activities of ILR shall be getting assigned to similar agencies of '*Inter-state as well as Central (Gol) character*', and these agencies would evolve their own governance provisions. And that, the construction stage activities of ILR will not remain, therefore, the NWDA task. This aspect has been kept in view accordingly in our suggestions for the Restructuring NWDA. The construction of the envisaged ILR related works is supposed to be undertaken by **agencies other than NWDA**, the name of the agency to be decided and declared in due course(*by the concerned States in agreement with the Centre*).

The Sub Committee realizes that the complexity associated with water sector and particularly those in respect of Interlinking Projects call for ensuring continuity at professional level. Such continuity will help not only in smooth translation of accepted plans into successful projects but also be of great help in addressing the problems encountered during the course of implementation of the projects by effectively utilizing the '*Institutional memory*'. Since the professionals at NWDA have remained associated actively at every stage right from the inception up to Project approval, the services of professionals from NWDA could be gainfully utilised. With a view to institutionalize a suitable arrangement the Sub Committee recommends that all SPVs constituted for implementation or execution of the approved projects, must include at least one post of Chief Engineer along with a few supporting professionals, which could be filled up from amongst the professionals from NWDA, particularly with those who remained associated with specific projects.

We now move on to the NWDA Organisation as it obtains now, and the proposed revamping to handle the challenges ahead in respect of quite a few link projects to take off in the near future.

- **The present situation:**

The overall structure at top and senior levels as it obtains at present is represented beneath in the chart form:



The situation as it obtains, in so far as the entire staffing of NWDA is concerned remains as follows:

Details of Posts of various categories as at present in National Water Development Agency

S. No.	Description	Posts envisaged at the time of setting up of NWDA	Sanctioned strength prior to SIU report	Sanctioned strength as per SIU report as on date i.e. 31.08.2015	Number of posts filled as on 31.08.2015 (Present strength)
	Group A (Technical)				
1	Director General	1	1	1	1
2	Chief Geologist	1		-	-
3	Chief Engineer (I/II)	3	3	3	3
4	Director (Drilling)	1		-	-
5	Director (Survey, Planning and Co-ordination)	1		-	-
6	Director (Technical Engineering)	1	1	1	1
7	Director (MDU)	-	1	1	1
8	Director (Hydrology)	2		-	-
9	Superintending Engineer/ Director(Engineering)	10	7	7	7
10	Scientist(Soils)	1		-	-
11	Scientist(Agronomy)	1		-	-
12	Deputy Director/ Executive Engineer- Technical PA to DG	31	27	23	23
13	Deputy Director(Hydrology)	4	1	1	-
	Deputy Director(Com. Prog.)		1		
14	Senior Geologist	1		-	-
15	Senior Drilling Engineer	1		-	-
16	Superintending Surveyor	1		-	-
17	Assistant Director(Hydrology)	8	1	1	1
18	Assistant Director (Engineering)	34	21	16	14
	Total Group A (Technical)	102		54	51
19	Director (Finance)	1	1	1	1
20	Director (Administration)	1	1	1	1
21	Deputy Director (Administration)	1	1	1	-
22	Administrative Officer	1	1	1	-
23	Assistant Director (OL)	-		1	1
	Total Group A (Administration & Accounts)	4	68	5	3

S. No.	Description	Posts envisaged at the time of setting up of NWDA	Sanctioned strength prior to SIU report	Sanctioned strength as per SIU report as on date i.e.31.08.2015	Number of posts filled as on 31.08.2015 (Present strength)
	Group B (Technical)				
24	Assistant Engineer	102	55	47	43
25	Programme Assistant	16	2	0	2
26	Head Draftsman	2	1	1	1
	Total Group B (Tech)	120		48	46
	Group B (Administration & Accounts)				
27	Accounts Officer	2	2	1	2
28	Hindi Officer*	1	1	-	-
29	Sr. Private Secretary	-	1	1	1
30	Private Secretary	-	3	3	3
31	PS to DG	1		-	-
32	Steno Grade-I	4	5	1	3
33	Superintendent Grade-I	1	2	2	2
34	Assistant Accounts Officer	-		-	-
35	Jr. Accounts Officer	9	9	9	8
	Total Group B (Administration &Accounts)	18	81	17	19
	Group C (Technical)				
36	Design Assistant	24	7	-	-
37	Junior Engineer**	528	67	60	57
38	Draftsman Grade-I**	34	5	2	5
39	Draftsman Grade-II	4	20	9	18
40	Draftsman Grade-III	38	21	6	17
41	Ferro Printer	34		-	-
42	Driver Special Grade**	-	2	2	1
43	Driver Grade-I	-	16	13	11
44	Driver Grade-II	-	14	10	10
45	Driver Grade-III/Driver OG	36	9	8	7
	Total Group C	698		110	126
	Group C (Administration & Accounts)				
46	Superintendent Grade-II**	8	5	4	4
47	Hindi Translator**	1	1	1	1
48	Steno Grade-II	17	13	8	12
49	Junior Accountant	25	9	9	7

S. No.	Description	Posts envisaged at the time of setting up of NWDA	Sanctioned strength prior to SIU report	Sanctioned strength as per SIU report as on date i.e.31.08.2015	Number of posts filled as on 31.08.2015 (Present strength)
50	Steno Grade-III	29	13	22	13
51	Assistant/Head Clerk	52	20	20	20
52	UDC/Cashier	180	67	45	58
53	LDC	209	75	60	55
54	MTS	-	124	90	104
	Total Group C (Administration & Accounts)	521	488	259	274
	Group D				
55	Daftry	1		-	-
56	Peon/Safaiwala/Farash/Chowkidar	213		-	-
	Total Group D	214		-	-
	Grand Total	1677	637	493	519

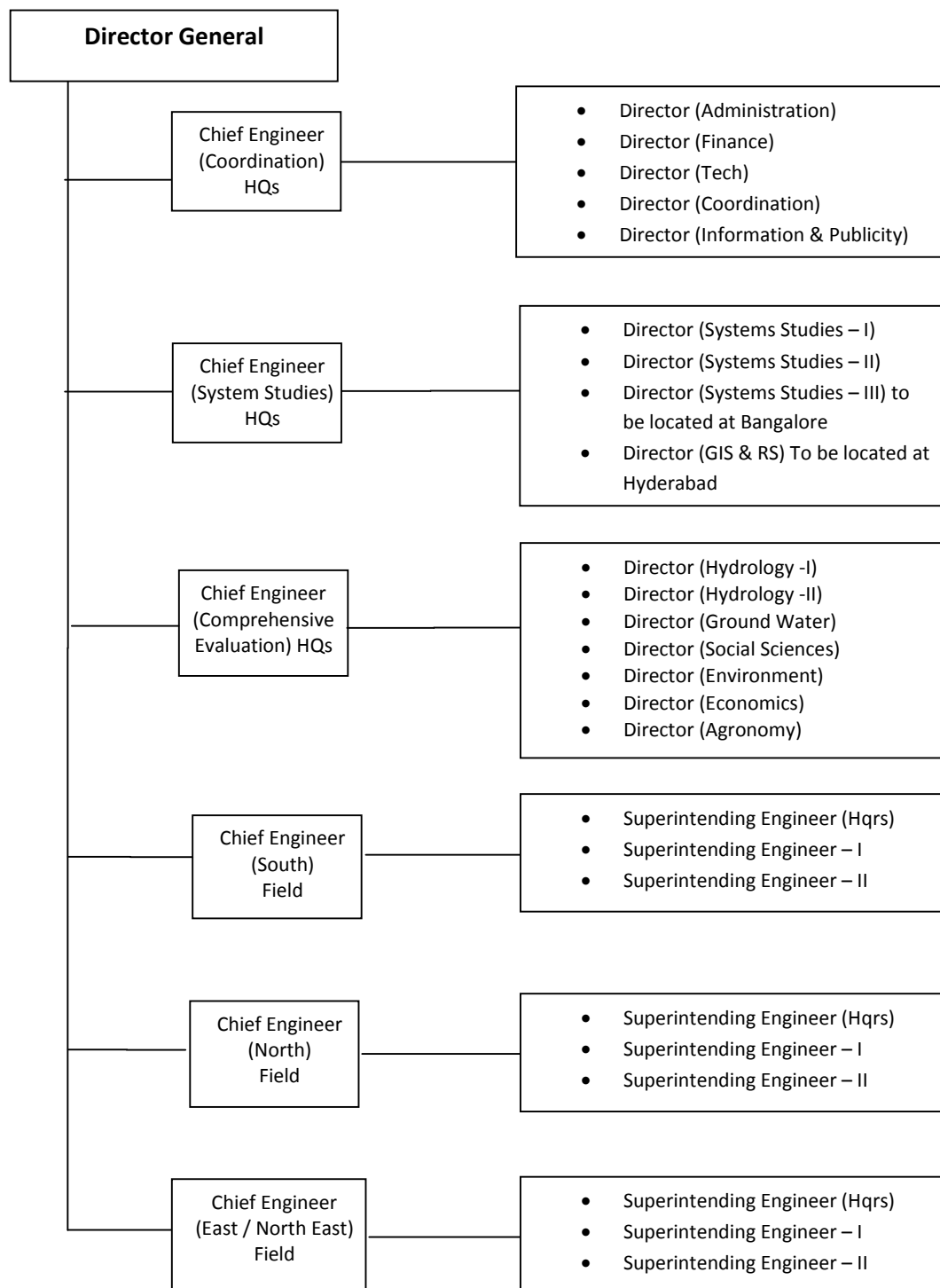
*Re designated as Assistant Director (OL) in Group "A"

**These posts are now in Group "B"

Organisational Structure recommended by the Sub-Committee

The envisaged structure shall have a dedicated 'Systems group'; this group shall, at Unit level, headed by a Chief Engineer given the specific tasks outlined *ibid*. There shall be one Directorate under this located in Hyderabad and another in Bangalore to ensure a spread out and visibility of NWDA tasks in the southern region. Systems Unit coordination can be from Delhi Headquarters without any difficulty as 'e' linkage will keep togetherness of the unit with advanced system connectivity in modern days.

Organisational Structure recommended by the Sub-Committee



Modules for the Individual Formation (Units , Circles and Division)

The Sub Committee consider that the units headed by each one of the Chief Engineers, Superintending Engineers and Executive Engineers at the field in different locations shall have to have a full complimentary staff at officers and subordinate levels so as to deal with the assigned tasks for them at different levels. In what follows, we suggest a module in each one of the case, which is generic in nature. Special adjustment(s) as required in individual cases are best left to the DG NWDA who can make such moderations as deemed fit depending upon exigencies.

The Units headed by a Chief Engineer in the field offices shall have, for example, the following officers and staff in its fold for an efficient delivery of the tasked activities:

Sl. No.	Description	Number of Posts
1	Chief Engineer	1
2	Director (Engg.)	1
3	Deputy Director (Engg.)	1
4	Assistant Director (Engg.)	3
5	Accounts Officer	1
6	Hindi Officer	1
7	Private Secretary (PS)	1
8	Steno Grade I	2
9	Superintendent Grade I	1
10	Junior Engineer	1
11	Driver Grade I	1
12	Driver Grade III / Driver OG	1
13	Hindi Translator	1
14	Junior Accountant	1
15	UDC	2
16	LDC	2
17	MTS	5

At Circle level, headed by the Superintending Engineer, the Circle Office shall have a composition as listed below:

Sl. No.	Description	Number of Posts
1	Superintending Engineer	1
2	Deputy Director (Engg.)	1
3	Assistant Director (Engg.)	3
4	Junior Engineer	2
5	Draftsman Grade I	1
6	Draftsman Grade II	2
7	Driver Grade I	1
8	Superintendent Grade II	1
9	Hindi Translator	1
10	Steno Grade II	1
11	Steno Grade III	1
12	UDC	2
13	LDC	3
14	MTS	4

And, the Executive Engineers of the various field divisions shall have the following staff composition:

Sl. No.	Description	Number of Posts
1	Executive Engineer	1
2	Assistant Engineer	4
3	Jr. Accounts Officer /Jr. Accountant	1
4	Junior Engineer	8
5	Draftsman Grade II	1
6	Driver Grade II	1
7	Driver Grade III / Driver OG	1
8	Steno Grade III	1
9	Head Clerk	1
10	UDC / Cashier	3
11	LDC	3
12	MTS	4

As mentioned earlier, the liaison and providing the 'knowledge' that NWDA treasures is proposed to be handled by an officer of the rank of a Chief Engineer along with necessary supporting professionals as and when any link is considered for execution and necessary action to constitute an Authority follows. The concerned post of Chief Engineer and supporting professionals, as necessary in each one of the cases, would have to be factored in the budget of the new Authority constituted with the responsibility of undertaking and executing the concerned link. Given this, we have not added any additional posts for the purpose in this recommendation for Restructuring NWDA.

The additional field Chief Engineer and his unit tentatively proposed for East and North East region could be if so compelled due to circumstances, start with the western link (Par – Tapi - Narmada, & Damanganga - Pinjal links of the western India). As and when the Himalayan link activities are taken up on priority after necessary preliminaries, the unit could be shifted to North East or East, at the discretion of the Director General.

Such shifts as necessary may be left to the Director General NWDA in respect of other posts in Systems Unit, Monitoring Unit etc. as per exigencies so as to obtain optimal results from their functioning.

New functional units

Important to note is that the restructuring proposals are coming up specific new functional units in the strength chart places in the previous paragraphs and statements. These are:

- Unit for “System Studies” at the headquarters of National Water Development Agency under an officer in the level of Chief Engineer with a few Directorates spread out in Hyderabad and Bangalore. (in order to ensure a dispersion against concentration to encourage competitive delivery of outputs).
 - A sub unit for geographic information system (GIS) and remote sensing (RS) for providing necessary inputs to various units, particularly to (i) the field unit for preparation of pre-feasibility reports / feasibility reports as also for use in preparation of detailed project report, (ii) the unit for system studies, and (iii) the unit for comprehensive evaluations.
- Unit for geographic information system (GIS) and remote sensing (RS) for providing necessary inputs to various units, particularly to (i) the field unit for preparation of pre-feasibility reports / feasibility reports as also for use in preparation of detailed project report, (ii) the unit for system studies, and (iii) the unit for comprehensive evaluations.
- Unit for comprehensive evaluation within house expert staffing in areas such as economics, agronomy, social sciences, environment, hydrology, and ground water (these are now not there in NWDA though MDU is meant to address them in a way, due to lack of staff in position).

The manpower for the new units figure in the statements in earlier pages. Highlighting them area-wise would be useful to discern the restructures future set up’s in house strength in the areas of concern.

Manpower recommended for System Studies Unit

Sl. No.	Description	Number of Posts
1	Chief Engineer (System Studies)	1
2	Director (System Studies)	3
3	Director (GIS&RS)	1
4	Deputy Director (System Studies)	3
4	Deputy Director (GIS&RS)	2
5	Deputy Director (Computer Applications)	1
6	Asstt. Director (Computer Applications)	2
7	Head Draftsman	1
8	Draftsman Grade I	1
9	Private Secretary	1
10	Steno Grade I	4
11	Steno Grade II	1
12	MTS	5

Manpower requirements for the unit for “Comprehensive Evaluation” envisaged in the statement in preceding pages are:

Recommended Manpower for the ‘in-house’ Unit for “Comprehensive Evaluation”

Sl. No.	Description	Number of Posts
1	Chief Engineer (Comprehensive Evaluation)	1
2	Director (Hydrology)	2
3	Director (Ground Water)	1
4	Director (Economics)	1
5	Director (Environment)	1
6	Director (Agronomy)	1
7	Director (Social Sciences)	1
8	Deputy Director (Hydrology)	4
9	Deputy Director (Ground Water)	2
10	Deputy Director (Agronomy)	2
11	Deputy Director (Economics)	2
12	Deputy Director (Environment)	2
13	Deputy Director (Social Sciences)	2
14	Assistant Director (Hydrology)	8
15	Head Draftsman	1
16	Draftsman Grade I	1
17	Private Secretary	1
18	Steno Grade I	7
19	Steno Grade II	2
20	M.T.S	10

Overall Staffing as per Sub-committee Recommendations

NWDA will be having the pattern of staffing in all categories as listed in the Table beneath:

- **Details of professionals and supporting staff proposed for re-structured National Water Development Agency**

Sl. No.	Description	Posts at Hqrs.	Posts at office of CE(N)	Posts at office of CE(S)	Posts at office of CE(E)	Posts at Office of SEs		Posts at Office of EEs		Total Posts	Present/ Sanctioned Strength
						Unit	Total	Unit	Total		
Group A (Technical)											
1	Director General	1								1	1
2	Chief Engineer	1	1	1	1					4	3
3	Chief Engineer (System Studies)	1								1	-
4	Chief Engineer (Comprehensive Evaluation)	1								1	-
5	Director (System Studies)	3								3	-
6	Director (Information and Publicity)	1								1	-
7	Director (Hydrology)	2								2	-
8	Superintending Engineer / Director (Engg.)	2	1	1	1	1	6			11	9
9	Director (Ground Water)	1								1	-
10	Director (Economics)	1								1	-
11	Director (Environment)	1								1	-
12	Director (Agronomy)	1								1	-
13	Director (Social Sciences)	1								1	-
14	Director (GIS&RS)	1								1	-
15	Deputy Director (Engg.) / Executive Engineer	3	1	1	1	1	6	1	12	24	23

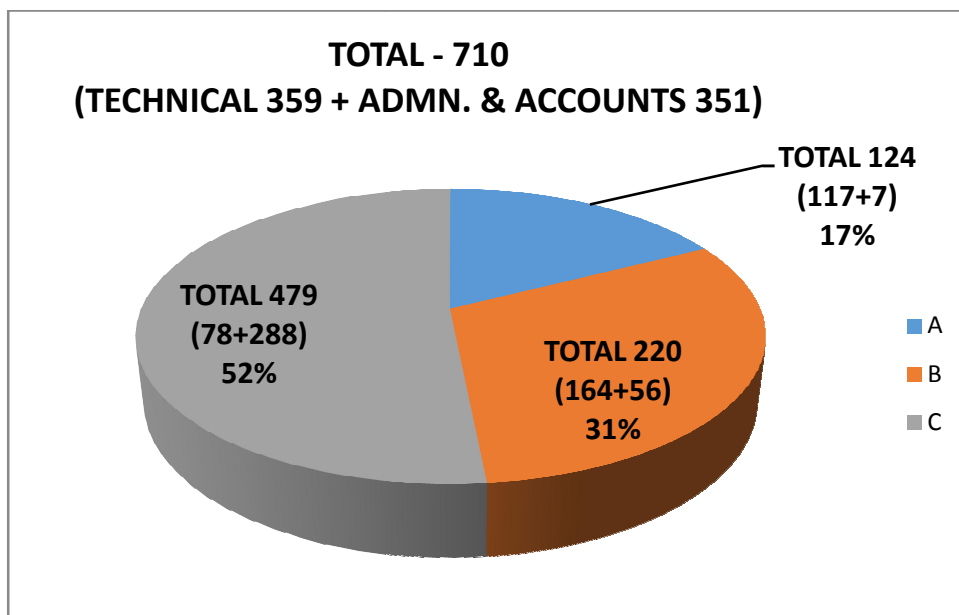
Sl. No.	Description	Posts at Hqrs.	Posts at office of CE(N)	Posts at office of CE(S)	Posts at office of CE(E)	Posts at Office of SEs		Posts at Office of EEs		Total Posts	Present/ Sanctioned Strength
						Unit	Total	Unit	Total		
16	Deputy Director (Hydrology)	4								4	1
17	Deputy Director (Ground Water)	2								2	-
18	Deputy Director (System Studies)	3								3	-
19	Deputy Director (Agronomy)	2								2	-
20	Deputy Director (Economics)	2								2	-
21	Deputy Director (Environment)	2								2	-
22	Deputy Director (Social Sciences)	2								2	-
23	Deputy Director (GIS&RS)	2								2	-
24	Deputy Director (Computer Applications)	1								1	-
25	Assistant Director (Hydrology)	8								8	1
26	Assistant Director (Computer Applications)	2								2	-
27	Assistant Director (Engg.)	6	3	3	3	3	18			33	16
	Total Gr. A (Tech)	57	6	6	6		30		12	117	54
Group A (Administration & Accounts)											
28	Director (Finance)	1								1	1
29	Director (Admn.)	1								1	1
30	Deputy Director (Administration)	1								1	1
31	Deputy Director (Finance)	1								1	-
32	Administrative Officer	1								1	1
33	Deputy Director (Official Language)	1								1	-
34	Assistant Director (Official Language)	1								1	1
	Total Gr. A (Adm. & Acc.)	7								7	5

Sl. No.	Description	Posts at Hqrs.	Posts at office of CE(N)	Posts at office of CE(S)	Posts at office of CE(E)	Posts at Office of SEs		Posts at Office of EEs		Total Posts	Present/ Sanctioned Strength
						Unit	Total	Unit	Total		
Group B (Technical)											
35	Assistant Engineer	1						4	48	49	47
36	Programme Assistant										2
37	Head Draftsman	2								2	1
38	Junior Engineer	2	1	1	1	2	12	8	96	113	60
	Total Gr. B (Tech)	5	1	1	1	2	12	12	144	164	110
Group B (Administration & Accounts)											
39	Accounts Officer	2	1	1	1					5	2
40	Hindi Officer		1	1	1					3	-
41	Information and Publicity Officer	1								1	-
42	Sr. Private Secretary	1								1	1
43	PS	4	1	1	1					7	3
44	Steno Grade I	16	2	2	2					22	3
45	Superintendent Grade I	2	1	1	1					5	2
46	Jr. Accounts Officer							1	12	12	8
	Total Gr. B (Adm. & Acc.)	26	6	6	6				12	56	19
Group C (Technical)											
47	Draftsman Grade I	4				1	6			10	5
48	Draftsman Grade II					2	12	1	12	24	18
49	Draftsman Grade III										17
50	Driver (Special Grade)	2								2	2
51	Driver Grade I	3	1	1	1	1	6			12	11
52	Driver Grade II	1						1	12	13	10
53	Driver Grade III / Driver OG	2	1	1	1			1	12	17	7
	Total Gr. C (Tech)	12	2	2	2	4	24	3	36	78	70
Group C (Administration & Accounts)											
54	Superintendent Grade II					1	6			6	4
55	Hindi Translator	1	1	1	1	1	6			10	1

56	Steno Grade II	5				1	6			11	12
57	Junior Accountant	5	1	1	1					8	9
58	Steno Grade III					1	6	1	12	18	22
59	Assistant / Head Clerk	4						1	12	16	20
60	UDC / Cashier	5	2	2	2	2	12	3	36	59	58
61	LDC	5	2	2	2	3	18	3	36	65	55
62	MTS	8	5	5	5	4	24	4	48	95	104
	Total Gr. C (Adm. & Acc.)	33	11	11	11		78		144	288	285
Grand Total		140	26	26	26		14		348	710	543

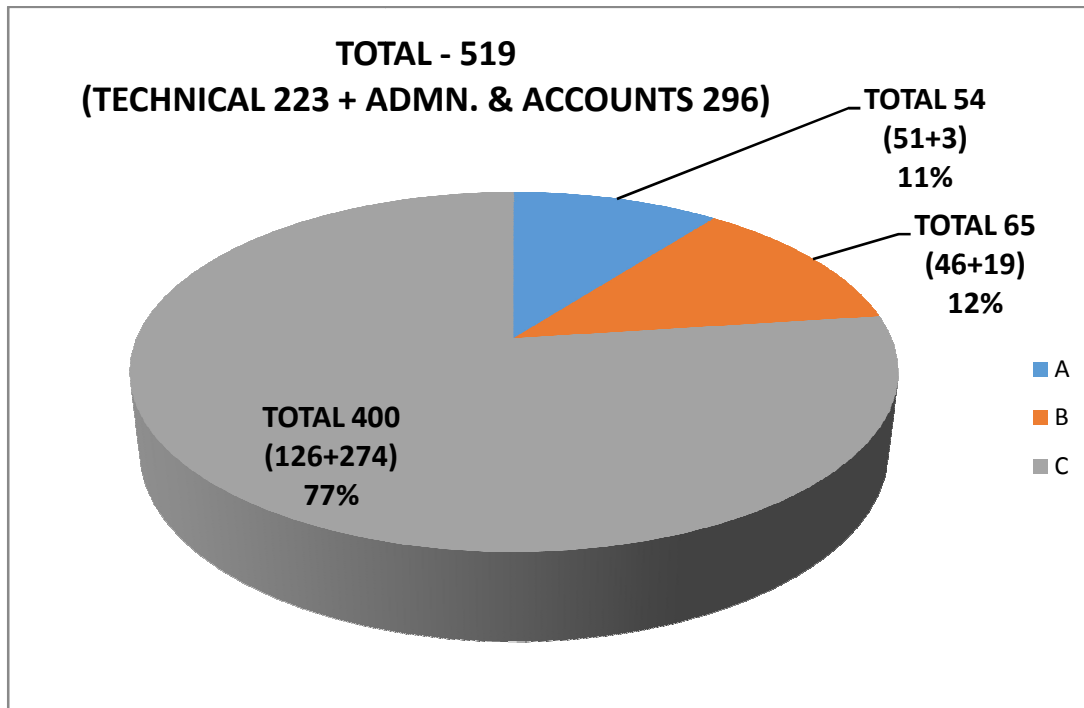
The pie diagram depicts the categories of overall Staffing as proposed in the Restructuring Recommendations:

- Group A - 124 (Technical - 117 + Admn. & Accounts - 7)
 - Group B - 220 (Technical - 164 + Admn. & Accounts - 56)
 - Group C - 366 (Technical - 78 + Admn. & Accounts - 288)
- Under Group C, MTS form a sizeable 33 % of Admn. & Accounts staff.



The following pie diagram depicts the categories of overall present staffing:

- Group A - 54 (Technical - 51 + Admn. & Accounts - 3)
 - Group B - 65 (Technical - 46 + Admn. & Accounts - 19)
 - Group C - 400 (Technical - 126 + Admn. & Accounts - 274)
- Under Group C, MTS form a sizeable 38 % of Admn. & Accounts staff



Are right men are there at the right job?

The professional profile of National Water Development Agency require a review. To make the Agency fully gear up for addressing the future challenges by:

1. strengthening its capabilities in new functional areas,
2. restoring the strength of the existing functional units which are required to complete the works in hand in time bound manner,
3. strengthening the existing units by rationalizing them and adopting modern tools and technologies,
4. there could be a possibility to reduce the manpower requirements wherever feasible, but this may proceed *pari pasu* with the action to restructure NWDA.

The scope to critically undertake an internal review should remain open and the Head of the Department is supposedly empowered to act upon them from time to time.

Strengthening of existing units on language front: Rajbhasha or Hindi Unit

Note: This could also extend to other National languages, as appropriate to the links in the concerned States wherever necessitated, so as to assure effective communication and prevent misinformation on ILR, in some regions.

It was explained that in the recent times the workload of National Water Development Agency in Hindi speaking regions has increased considerably and calls for more and documentations in Hindi. In view of above position, it is considered necessary to suitably strengthen the unit for use of Rajbhasha Hindi. This is more so in view of the importance of systematic actions for information and publicity. As at present, the strength of officers and staff members for Rajbhasha is inadequate. Only one Assistant Director (Official Language) at its headquarters handles the tasks.

The Sub Committee recommends strengthening the units related to Rajbhasha not only at the headquarters of national water Development Agency but also in the field units where the link projects lie. The Sub Committee restricts its recommendations limitedly, as of now, to the Headquarters and in Hindi only (*as the official language at Centre in addition to English*).

- a. One Deputy Director (Official Language) at headquarters who will be overall in-charge for promotion of use of Rajbhasha as per the directions and guidelines of the Government of India
- b. One Assistant Director (Official Language) at headquarters to exclusively assist in preparation of technical reports, information and publicity materials etc.. in Hindi and organization of various activities for mass awareness in Hindi
- c. Two Hindi Officers, one each at the office of the Chief Engineers of the field formations of National Water Development Agency to plan and bring out the various reports in Hindi
- d. Eight Hindi Translators – one at the headquarters, one each at the two offices of the Chief Engineers of field formation and one each at the five circles to help in translating the technical reports and other documents in Hindi

Closer cooperation with concerned organizations in the Centre and States

National Water Development Agency is urged to evolve suitable mechanism to derive maximum benefit from the expertise and experiences of other organizations and institutions, particularly with sister organizations associated with the Ministry of Water Resources. Some of the areas for cooperation are identified as under.

- System studies with Central Water Commission (CWC)
- National Institute of Hydrology (NIH)
- National Water Academy of Central Water Commission (CWC) for Capacity building
- Hydrological design for preparation of detailed project report with Hydrology Studies Organization of Central Water Commission (CWC)
- Development of suitable catchment models for projection of water availability scenario under different conditions with National Institute of Hydrology (NIH)

- Comprehensive evaluation of the projects with Central Water Commission (CWC)
- Specialized training in hydrological analyses with National Institute of Hydrology
- Remote sensing applications with National Remote Sensing Centre, Central Water Commission and national Institute of Hydrology
- Geo-physical / Geo technical investigations with Central Soil and Material Research Station (CSMRS)

Use of modern techniques and technologies

The use of modern techniques and technologies to improve the quality of the output and expedite the completion of the identified tasks is important. Some of the techniques and technologies identified for use are:

- a. Application of remote sensing technology
- b. Extensive use of geographical information system
- c. Development and use of river basin models
- d. Use of 'Total Station' in surveys and investigations
- e. Use of modern tools for geo-physical investigations
- f. Extensive application of software for:
 - Technical studies (such as hydrological design, reservoir planning, operation of water resources system etc.)
 - Administrative and accounting procedures

Care to recruit any new staff with knowledge in these new spheres may be exercised and existing staff including officers at senior levels trained as appropriate.

Promoting research and evaluation studies

The growing importance of water as the most important resource for all developmental activities related to social uplifting & economic growth and emerging challenges in development and management of water resources are well known.

Research and evaluation studies supported by the Ministry of Water Resources under the scheme "Research and Development" could be utilised to encourage studies pertaining to spheres like social upliftment, equity achievement and regional balancing that can be dovetailed in ILR and inclusive growth providing an authentic scheme details so as to encourage dissemination of positive aspects of ILR and minimise misinformation campaigns based on apprehensions that are baseless.

Select academic institutions could be encouraged to take up research under their own programme besides some marginal support of R&D funds from MoWR. National Water Development Agency may also consider financial support for research on such issues of the specific projects.

Capacity Building

Enhancing capability in-house by focussed capacity building exercise is a necessity. Recommended spheres are:

Specialized trainings

- Intensive training programme of identified group of officers in the area of “System Studies”, “Hydrologic Modelling” and “Catchment Modelling”
- Environmental aspects of water resources planning
- Social considerations in water resources planning, development and management
- Training programmes for professionals, particularly for middle level and junior level professionals in application of modern techniques and technologies such as:
 - Use of remote sensing data for pre-feasibility studies
 - Application of various “Software Packages” for analysis of data etc..
 - Use of modern equipment such as “Total Stations” etc. for survey and investigation
 - Use of modern equipment for geo-physical investigations

Important Administrative Issues

The professionals and staff members have vented their grievances to the Sub Committee in a few aspects that are of significant concern and if duly addressed would result in getting the best output.

Broadly these issues are captured in what follows:

- (a) reduced promotional avenues and stagnation in different grades;
- (b) Non-parity in the pay band and grade pay of the officers as compared to similarly placed officers in other organizations including those under the Ministry of Water Resources;
- (c) pension benefits for the employees following similar provisions as in the Government.
- (d) Problems being faced by the officials due to frequent transfers; and
- (e) Absence of any incentive for duties of unique nature and for works in difficult areas.

The issue of reduced promotional avenues and stagnation in different grades is has cropped in due to several probable reasons. These are, *inter-alia* :

- (i) unplanned recruitment i.e., recruitment in large numbers only on one two occasions at the entry grade;
- (ii) reduction in number of promotion posts due to various reasons;
- (iii) delays in recruitment due administrative reasons, and the
- (iv) mode of filling up of some posts through deputation.

These need to be addressed appropriately through timely actions; all out efforts should take place in the concerned sections in the Government to ensure that the posts are neither abolished nor gone under the category of 'deemed abolished' as a result of such posts remaining unfilled for more than a year.

Mode of filling up the posts

As per existing recruitment rules, various posts in NWDA are being filled up either on deputation or by promotion of officers in the feeder grade, as was explained to the Sub Committee. There exists a non-parity in the pay band and grade pay of the posts in NWDA and similar posts in other organizations in Ministry of Water Resources. This seemingly affect the interest of others to join NWDA, perhaps in two ways.

- a. A number of posts earmarked to be filled up by deputation remained vacant and have been abolished or have gone under the category of 'deemed abolished' over time leading to considerable reduction in the strength particularly that of professionals.
- b. Due to non-filling up of the posts from professionals from outside NWDA, the Agency was deprived of the benefits of vast and varied experience of professionals who would have otherwise joined NWDA on deputation.

It is desirable to attract the highly experienced experts to join NWDA; and, it is in this background that pay parity and other incentives as appropriate are being recommended.

Posts in Civil Engineering and allied Disciplines (Hydrology, Systems Engineering etc.)

Our Sub Committee recommend a single cadre of engineering officers and all posts [such as Chief Engineer, Superintending Engineers, Director (Technical), Director (Hydrology), Director (Multi-disciplinary Unit), Director (Coordination), Director (Information and Publicity) and supporting professionals.

In case of new posts for the professionals from related disciplines (i.e., disciplines other than 'civil engineering'), it is suggested that the posts may be filled up on deputation only. Due care to ensure that the eligible officials of National Water Development Agency do not suffer may be incorporated in the Rules of Cadre. This can be such that the mode of selection adopted besides yielding the right officers for the jobs to be performed at different levels, does not leave behind the interest of eligible NWDA existing officers and staff. Alternatively, suitable 'saving clause' should be included in the recruitment rules.

Posts in the Restructured NWDA relating to specialised spheres (other than Civil Engineering and allied Disciplines (including Hydrology, Systems Engineering etc.), dealt with above

Specific posts in the specialised spheres listed beneath will require alternative option and are best kept as 'ex-cadre' to be filled by deputation or secondment from Centre, State(s), Academic Institutions and the like. They can be advertised as open recruitment also if the above option does not bring in the right type of officer(s).

**Posts of Related Discipline and the Possible Cadre /
Organizations who can spare them**

Sl. No.	Description	Number of Posts
1	Director (Ground Water) Deputy Director (Ground Water)	Central Ground Water Board
2	Director (Economics) Deputy Director (Economics)	Indian Economic Service
3	Director (Environment) Deputy Director (Environment)	Ministry of Environment and Forests
4	Director (Agronomy) Deputy Director (Agronomy)	Indian Council for Agricultural Research – Agricultural Research Service
5	Director (Social Sciences) Deputy Director (Social Sciences)	Indian Council for Social Science Research or Agricultural Research Service

Pay parity of NWDA staff with that of Government of India (with other benefits to Government officers as per prevailing rules)

An important issue relates to non-parity in the pay band and / or grade pay when compared with other organizations, specifically with organizations / institute under the Ministry of Water Resources. It may not be out of place to mention that non-parity in the pay band and / or grade pay has also resulted in non-filling up of the posts in National Water Development Agency. A number of posts at senior level (which were required to be filled up by officers on deputation) could not be filled up because of this reason as such post were not attractive enough for the officers from other organization (of the State Government or the Central Government). This is evident from the fact that very few applications were received as and when such posts were advertized. The non-filling up of posts has contributed to abolition of the posts or the post having gone under the “*deemed abolished*” category adversely affecting the organisation to deliver its best.

The Sub Committee find that the issues of the nature being dealt with here had also been well addressed in Haque’s Report (2012) and hence, suggest that the recommendations therein should be given due consideration.

Conclusion

The Sub Committee note that if the NWDA morph over to an Authority, several issues discussed as impediments to get the best from Organisation will become ‘non-existent’. These are particularly relevant to Staff Scales that are compatible to Central Officers of regular cadre and other welfare measures like post-retirement benefits etc.

Most of the recommendations in this section shall therefore be of relevance, in the interim, till the Interlinking of Rivers Authority (or such alternative nomenclature) that the Government direct, springs up winding up NWDA).

Part VIII

Summary & Conclusions

Summary & Conclusions

The Sub Committee for Restructuring NWDA

- Having examined thoroughly
 - The expected rolls that a Central organisation seized with the National Programme on Interlinking of Rivers so as to meet with the anticipation of the Hon'ble Supreme Court's Directive for quick follow up actions,
 - And the Government of India's development focus and thrust to implement the ILR programme soonest,
 - The existing organisational structure of NWDA and its performance capabilities based on a study and analysis of its recent accomplishments,
 - The changing roles in NWDA's mandate as well as related functions in more recent times,
 - The accelerated phase to be adopted for the speedy implementation of ILR involving co basin States and with a fair agreement of the parties concerned,
 - The enhanced activities required to be taken on board to progress on Himalayan Links – these involve the neighbouring States like Nepal, Bhutan and Bangladesh whose agreement would be vital for the main objectives of transfer of water from east to west and north to south
 - The complexities in dealing with water issues respecting the available framework as per Constitution, Tribunal awards for water sharing in quite few cases and
 - all other peripheral connected issues linked with water resources development and management holistically with basin management approach
- Looking into the past and available reports concerning the water sector governance, National Water Policy as updated from time to time, other institutional reforming recommendations available from studies undertaken in the recent past in respect of
 - NWDA,
 - CWC and
 - other MoWR Institutions like NIH, CSMRS and CWPRS
- Perusing such documents generated in Ministry of Water Resources in recent times on RBA act revision (in draft form), National Water Framework laws etc.

Concludes that:

- NWDA had been able to accomplish its assigned basic tasks on the works on Interlinking of Rivers in the best possible manner; and respecting the uniqueness of the tasks and constraints within which the studies were to be carried through by NWDA, the performance is commendable.

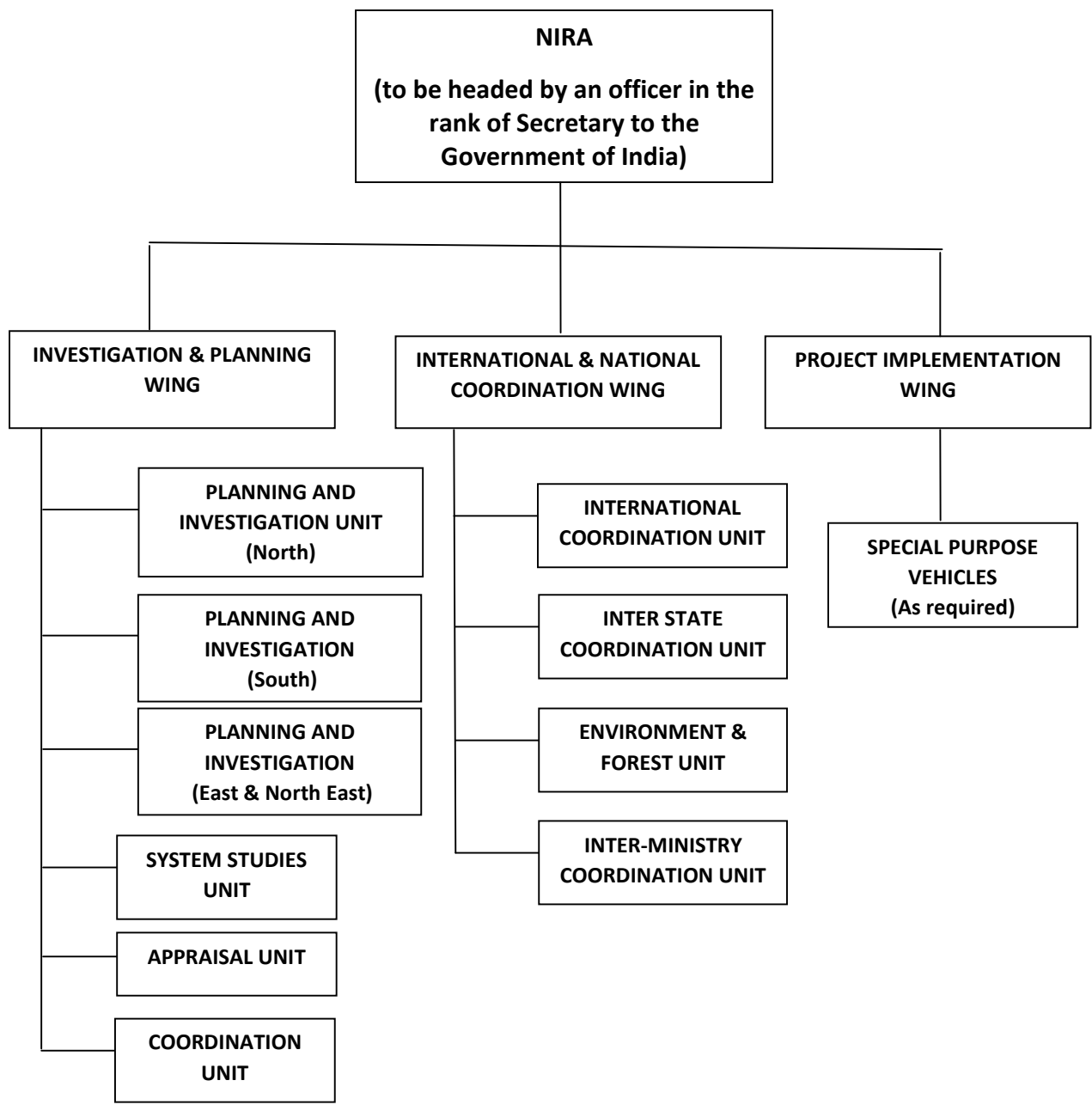
- the implementation of ILR under the present scheme of things with NWDA as a Society had resulted not necessarily in an effective and aggressive promotion of the project to the extent desired⁹.
- A lot of time has dragged by; when 'speeding up the implementation' had been repeatedly urged from different quarters, particularly the Judiciary.
- While NWDA as a society was and is relevant till the scheme, commenced as a desk study and moved to Pre-feasibility stages on links which required a persuasive and conciliatory approach with States to facilitate such studies (like water balance studies, pre-feasibility studies and feasibility studies with a limited survey and investigations), things are not the same as we move further on to advanced stages leading to implementation : the tasks have moved on and the commencement of Detailed Project Reports (fundable development project report, in donor agencies' parlour) and take off of the project on ground, require quick steps for creating appropriate machinery for implementation with necessary funding.

Propose the following recommendations:

- A new institution called National Interlinking of Rivers Authority (NIRA) be created, suitably empowered to effectively function with enhanced mandate for achieving the overall objectives of ILR. The Authority should be enabled with the wherewithal to implement ILR. The Sub-Committee feels that creation of the proposed Authority through an Act of Parliament would be necessary.
- The Authority be assigned three distinct broad functions namely
 - (a) Investigation & Planning of ILR links
 - b) Coordination with neighbouring countries and with the concerned States in India and
 - (c) Implementation of the 'duly agreed project for a particular link.

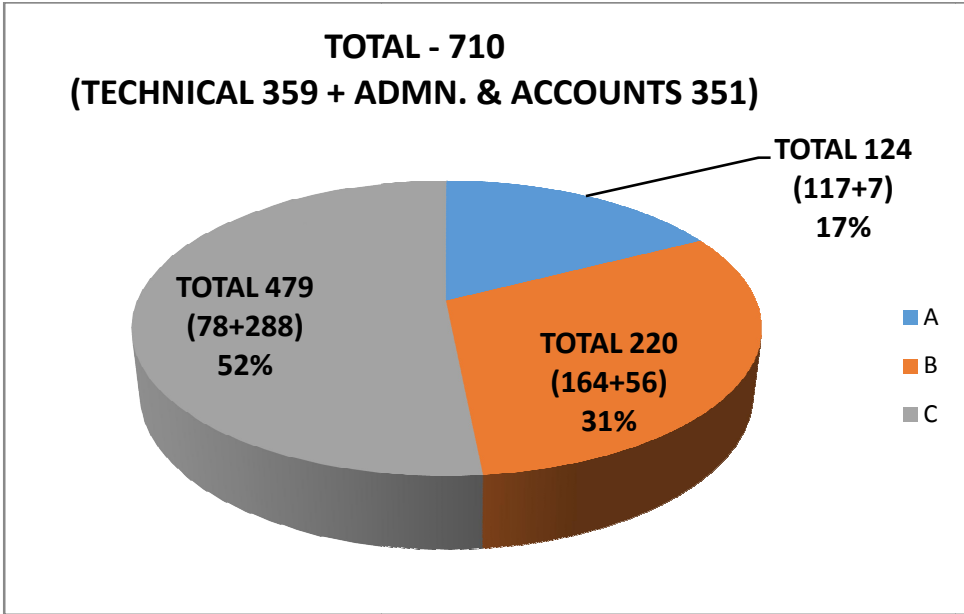
The broader structure of NIRA is illustrated beneath.

⁹ NWDA as a Society has undoubtedly carried out the functions which were initially planned to be undertaken i.e., preparation of Pre-Feasibility Reports and Feasibility Reports. However, subsequently, an enhanced function viz: preparation of DPR, pursuing mandatory clearances and approval for the same by various agencies warranted a lot more additional functions/efforts.



- The Head of the Authority be empowered to call meetings inviting State Government officials at highest level and help the Special Committee on ILR as appropriate – the core objective being support in achieving needed consensus on the Link Project and its contents in varied fronts.
- Special Purpose Vehicles (SPVs) be created (like KBRLA) for implementation of links duly agreed to by the concerned States, sequentially.
- The specific internal and staffing pattern of the International and National Co-ordination Wing of NIRA could be firmed up after consultations with Ministry of External Affairs, Ministry of Home Affairs, Ministry of Environment, Forest and Climate Change and Ministry of Law. The Sub Committee is, for the present, not getting into the amplification the full-fledged structure for the NIRA at present. The Sub-Committee, however, opines that the function related to International and National co-ordination is very crucial and necessary mechanism is required to be put in place without any further delay.
- NIRA will absorb all existing NWDA officers and personnel protecting their rights and privileges and enhancing them comparable to that of an Organised Services. All the Government rules and regulations shall apply. These extend to pension benefits for the employees following similar provisions as in the Government.
- Any other provisions that are necessary and appropriate for such a change, promulgated by an appropriate Order of the Central Government.
- And pending the above, as some time lapse is but unavoidable, make further certain immediate Restructuring measures so as to equip the organisation deliver the expected outputs and assist SCILR effectively in the near future.
- The Sub Committee propose as a part of strengthening the existing set up with a new field unit headed by a Chief Engineer in the East/ North Eastern region and suggest specific new functional units for Systems Studies, Comprehensive Evaluation /Project Monitoring and a GIS &RS Unit (also to be headed by an officer of the rank of a Chief Engineer in each case) with supporting staff. Sufficient strengthening of allied support (Administration, Finance etc.) is also envisaged compatible to the augmented structure of NWDA.

The full details of Sub Committee's recommendations are seen in the earlier section. In summary, this would result in an organisation with officers of Grades A, B & C (as per Gol norms) having the following break-up:



The recommended set up would comprise of:

- Group A - 124 (Technical - 117 + Admn. & Accounts - 7)
 - Group B - 220 (Technical - 164 + Admn. & Accounts - 56)
 - Group C - 366 (Technical - 78 + Admn. & Accounts - 288)
- Under Group C, MTS form a sizeable 33 % of Admn. & Accounts staff.

More details, in abstract form grade-wise, is as follows:

Sl. No.	Description	Posts at Hqrs.	Posts at office of CE(N)	Posts at office of CE(S)	Posts at office of CE(E/NE)	Posts at Office of SEs		Posts at Office of EEs		Total Posts	Present strength
						Unit	Total	Unit	Total		
Group A (Technical)											
	Total Gr. A (Tech)	57	6	6	6		30		12	117	
Group A (Administration & Accounts)											
Group B (Technical)											
	Total Gr. B (Tech)	3							48	51	
Group B (Administration & Accounts)											
		26	6	6	6			1	12	57	
Group C (Technical)											
	Total Gr. C (Tech)	14	3	3	3		36		132	191	
Group C (Administration & Accounts)											
	Total Gr. C (Adm. & Acc.)	33	11	11	11		78		144	288	
Grand Total		140	26	26	26		144		348	710	

Further, the Sub Committee had reviewed the present situation and had felt it necessary for enhanced efforts for capacity building of the in-house staff as per recommendations in the previous chapter. To help achieve the best results, NWDA should work in close liaison with other Central Organisations like CWC, CGWB, NIH, CSMRS, CWPRS etc. and the Ministry of Water Resources, River Development and Ganga Rejuvenation. The posts of ex cadre nature have also been spelt out with the suggested modus operandi for filling in some of these positions rapidly.

Till such time when the new National Interlinking of Rivers Authority (NIRA) come into being, NWDA would thus be better enabled to handle the immediate and pressing tasks ahead for action, and position itself for the final morph over as an empowered Authority soon after its proclamation by the Government in due course of time.

Part IX

Report Submittal

Report Submittal

The Chairman and members of the **Sub Committee on Restructuring National Water Development Agency**, sign and submit their unanimous Report to the Chairperson of the Special Committee on Interlinking of Rivers for further consideration and proposals to the Government of India.

We record our sincere appreciation to Director General, NWDA and all the officers in NWDA who rendered the logistics and support to the Sub Committee's work all along.

M.E. Haque
Member

Prof. Vasant Gandhi
Member

Dr. Gautam Pingle
Member

Dr. B. Rajender
Joint Secretary Ministry of Water Resources,
River Development & Ganga Rejuvenation
Member

R.K. Jain
Chief Engineer NWDA
Member Secretary

M. Gopalakrishnan
Chairman

New Delhi

Friday, 11, September 2015

Annexures

Annex - I

Summary of Report of Task Force on Interlinking of Rivers (TF-ILR) and Present Status

A Task Force under the Chairmanship of Shri Suresh P Prabhu, the then Member of Parliament, Lok Sabha with Shri C.C. Patel as Vice-Chairman; and Dr. C. D. Thatte as Member-Secretary was constituted on December 13, 2002 (Annex – I).

In addition to the above members of the Task Force, part-time members were also nominated in consultation with the Chairman of the Task Force and with the approval of the Prime Minister. These part-time members were i) a member from water deficit States; ii) a person from water surplus States; iii) an economist; iv) a sociologist; and v) a legal/world wildlife expert.

The term of reference of Task Force are furnished below:

- i) Provide guidance on norms of appraisal of individual projects in respect of economic viability, socio-economic impacts, environmental impacts and preparation of resettlement plans;
- ii) Devise suitable mechanism for bringing about speedy consensus amongst the States;
- iii) Prioritize the different project components for preparation of Detailed Project Reports and Implementation;
- iv) Propose suitable organizational structure for implementing the project;
- v) Consider various modalities for project funding; and
- vi) Consider international dimensions that may be involved in some project components.

The Task force held 12 meetings, Secretarial services and expenditure of Task Force borne by NWDA. Task Force had also induced 10 Resource Persons, who are experts in different disciplines like international dimension, communication with media & NGOs, environmental issues, human resource development, bio-diversity & legal issues.

Task Force on Interlinking of Rivers has submitted Action Plans I & II and thus completed its role. Thereafter it has been wound up by Ministry of Water Resources with effect from 31.12.2004.

Action Plan-I

Task Force has submitted Action Plan –I on April 30, 2003 giving an outline of the time schedules for the completion of the feasibility studies, detailed project reports, estimated costs, implementation schedule, concrete benefits and advantages of the project, etc.

A brief of Action Plan-I and present Status is furnished below:

I Time Schedule for the Completion of the Feasibility Studies

Task Force has indicated to complete all the Feasibility reports of 30 identified links by National Water Development Agency by 2005.

Present Status

The present status of completion of feasibility reports is furnished at Annex-II

II Time Schedule for the Completion of the Detailed Project Report

It is recommended that preparation of DPRs be started by August 2003 and with completion target of December 2006, if consensus develops on some links. Task Force has also fixed the time schedule for finalisation of Term of Reference for preparation of DPR by August 2003.

Present Status

Term of Reference for preparation of DPR completed in 2004. After having consensus DPR of Ken-Betwa Link Phase-I and Phase-II completed in April 2010 and January 2014. DPR of Damanganga-Pinjal link completed in March-2014.

III Estimated Cost

Task Force has suggested to take up critical review of cost and Benefit-cost ratio to each individual link.

IV Implementation Schedule

Envisaged schedule for implementation is suggested to be 10 year from start.

V Benefit of the Programme

Task Force has suggested benefits from Interlinking of rivers programme as detailed below:

Drought proofing and reversal of eco-degradation:	The DPRs will indicate the extent of Drought Proofing possible due to the programme
Irrigation	Gross potential increases from 140 to 174 Mha
Hydropower	Addition of 34000 MW installed capacity
Drinking, municipal, industrial water supply	About 12 BCM of quantum
Flood management	Mainly due to absorption of floods in reservoirs
Navigation	Under examination with IWWA
Employment generation	Mainly in drought prone, rural, hilly/tribal areas
Reversal of migration from rural to urban areas:	The spread of irrigation will stabilise rural population of the order of about 5 Crores of people

Action Plan-II

Task Force has submitted Action Plan-II on 16th April, 2004, giving alternative options for funding and execution of the project as also the suggested methods for cost recovery was submitted Time Schedule for the Completion of the Feasibility Studies. A brief of action plan-II giving details of Terms of Reference vis-a-vis Recommendations of Task Force are furnished below:

(i) Providing guidance on norms of appraisal of individual projects in respect of economic viability, socio-economic impacts, environmental impacts and preparation of resettlement plans.

Task Force got prepared Terms of Reference (TOR) for preparation of Detailed Project Reports (DPR) through M/s Engineers India Ltd. (EIL) in 2004 giving detailed guidelines.

Present Status

On the basis of TOR provided by Task Force NWDA has completed 3 DPRs under National Perspective Plan and 2 DPRs of Intra State links

(ii) Devise suitable mechanism for bringing about speedy consensus amongst the States.

Chairman individually met Chief Ministers of various States which are participating the inter linking programme in order to arrived at political consensus. These includes

- a. Madhya Pradesh
- b. Rajasthan
- c. Gujarat
- d. Maharashtra
- e. Andhra Pradesh
- f. Tamil Nadu
- g. Karnataka
- h. Chhattisgarh
- i. West Bengal and
- j. Assam
- k. Goa

Present Status

As decided by Hon'ble Supreme Court in its order dated 27.2.2012, special committee for inter linking of rivers has been constituted for bring about speedy consensus amongst the States which inter-alia comprises Irrigation/Water Resources Ministers of Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh Jharkhand, Bihar, Haryana and Puducherry as members.

(iii) Prioritise the different project components for preparation of Detailed Project Reports and implementation.

The TF-ILR has stated that the peninsular links are the right component to begin with.

Top priority links identified by TF-ILR are:

- | | | |
|----|--------------------------------|----------------|
| a) | Ken-Betwa link | UP & MP |
| b) | Parbati-Kalisindh-Chambal link | MP & Rajasthan |

Present Status

The TF-ILR has prioritised Ken-Betwa link and Parbati-Kalisindh-Chambal link. In addition, now MOWR has prioritised under Inter- basin links, Polavarm-Vijayawada, Par-Tapi-Narmada and Damanaganga-Pinjal link for preparation on DPRs and further implementation. Also it has prioritised Intra-State links of 2 links in Bihar (Burhi Gandak-None-Baya-Ganga and Kosi-Mechi), 1link in Maharashtra(Wainganga-Nalganga) & 1link in Tamil Nadu (Ponnaiyar-Palar) for preparation of DPRs and further implementation. Polavarm project(which is a part of is Polavarm-Vijayawada link) being implemented by State government at its own.

(iv) Propose suitable organisational structure for implementing the project

TF-ILR assigned the work to IIM-Ahmedabad.

Present Status

The report of IIM-Ahmedabad has been received in 2006. A two tier institutional/organizational setup has been proposed for the implementation of the programme on Interlinking of Rivers (ILR) along with a Council – “National River Water Development Council (NRWDC)” to act as the apex body of the proposed setup. The National Authority Interlinking of Rivers (NAILR) is proposed as the first tier of the proposed two tier

organizational structure and the regional or branch offices or subsidiaries would act as “Link Instrument” and is proposed as the second tier of the organizational setup.

(v) Consider various modalities for project funding

TF-ILR consulted ICICI for funding options. ICICI has proposed that funding should be partly through public, public-private and private inputs. The exact requirement on realistic basis will be available only after the preparation of Detailed project Reports (DPR) of all the links.

Present Status

The report of National Council of Applied Economic Research (NCAER) on Economic Impact of Interlinking of River Programme has been received in April, 2008. NCAER has recommended that ILR Programme has the potential to reduce the vulnerability of Indian agriculture to rainfall and put agriculture to sustained growth path. With increasing food grain production growth by additional 2 percentage point over baseline scenario (i.e. without ILR Programme).

Based on NWDA studies NCAER has estimated that the cost of ILR project would be Rs. 4,44,331.20 crores which is 21-22% lower than the present rough estimate. NCAER is of the view that the programme would take nearly 35 – 40 years. However, with use of modern construction and Remote Sensing techniques, the programme at the best could be completed in 25 years.

(vi) Consider international dimensions that may be involved in some project components

A Working Group on International dimensions constituted by Task Force on ILR has also suggested that at the present juncture, it is too early, to pursue the matter further at high political levels with the Nepal government. Regarding Bangladesh, it has been suggested that Dhaka will continue to raise the ILR issue in Joint River Commission and possibly in other bilateral fora. India should respond by reiterating the line taken in the JRC i.e., ILR is a concept, not a single project.

Appropriate follow up action has been taken on the recommendations given by Task Force in respect of Guidance on norms of appraisal, bringing about speedy consensus amongst the States and prioritization of links. The stage has not come for taking decision on the remaining recommendations of the Task Force.

ANNEX-I

(TO BE PUBLISHED IN THE GAZETTE OF INDIA IN PART – I, SECTION –I)

NO.2/21/2002-BM

GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES

New Delhi, the 13th December, 2002

RESOLUTION

The Ministry of Water Resources (then known as Ministry of Irrigation) in the year 1980 formulated a National Perspective Plan for water resources development by transferring water from water surplus basins to water deficit basins/regions by inter-linking of rivers. The National Perspective Plan has two main components i.e. the Himalayan Rivers Development and Peninsular Rivers Development. The National Water Development Agency (NWDA) was set up as a Society under the Societies Registration Act, 1860 in 1982 to carry out the detailed studies and detailed surveys and investigations and to prepare feasibility reports of the links under the National Perspective Plan.

2. NWDA has, after carrying out detailed studies, identified 30 links for preparation of feasibility reports and has prepared feasibility reports of 6 such links. The various basin States have expressed divergent views about the studies and feasibility reports prepared by NWDA. With a view to bringing about a consensus among the States and provide guidance on norms of appraisal of individual projects and modalities for project funding etc. the Central Government hereby sets up a Task Force.

3. The Task Force shall be as under:

- (i) Shri Suresh Prabhu, Member of Parliament, Lok Sabha, Chairman
- (ii) Shri C.C. Patel, Vice-Chairman; and
- (iii) Dr.C.D. Thatte, Member-Secretary.

4. In addition to the above members of the Task Force, part-time members will also be nominated in consultation with the Chairman of the Task Force and with the approval of the Prime Minister. These part-time members will be as under:

- (i) a member from water deficit States
- (ii) a person from water surplus States
- (iii) an economist
- (iv) a sociologist; and
- (v) a legal/world wildlife expert.

5. The terms of reference of the Task Force will be to:

- i) Provide guidance on norms of appraisal of individual projects in respect of economic viability, socio-economic impacts, environmental impacts and preparation of resettlement plans;
- ii) Devise suitable mechanism for bringing about speedy consensus amongst the States;
- iii) Prioritize the different project components for preparation of Detailed Project Reports and Implementation;
- iv) Propose suitable organizational structure for implementing the project;

- v) Consider various modalities for project funding; and
- vi) Consider international dimensions that may be involved in some project components.
- 6. The Task Force shall have its headquarters in New Delhi and shall meet as and when necessary.
- 7. The terms and conditions for Chairman, Vice-Chairman, Member-Secretary and other Members shall be decided in due course.
- 8. The milestone/time table for achieving the goal of inter-linking of rivers by the end of 2016 is as given at Annexure.
- 9. The financial provisions of the Task Force will be regulated as under:
 - i) All the capital and revenue expenditure required to be incurred by the Task Force shall be borne by the Central Government through the grants-in-aid to National Water Development Agency; and
 - ii) National Water Development Agency will account for expenditure of the Task Force as a part of its establishment expenditure and would provide such other secretarial/ministerial assistance as may be required. Audit of Controller General of Accounts and Comptroller and Auditor General of India would be incident on such expenditure in the same manner as it would be on National Water Development Agency's other usual expenditure.

Sd/-

(VIJAY KUMAR)

Deputy Secretary to the Government of India

ORDER

Ordered that a copy of the resolution be communicated to the concerned State Governments and Union Territories, the Private and Military Secretaries to the President, Prime Minister's Secretariat, the Comptroller and Auditor General of India, the Planning Commission, all concerned Ministries/Departments of Central Government and full time members of Task Force.

Ordered also that the Resolution be published in the Gazette of India and that the State Governments be requested to publish it in the State Gazettes for general information.

Sd/-

(VIJAY KUMAR)

Deputy Secretary to the Government of India

To

**The Manager,
Government of India Press,
Faridabad,
HARYANA
(with Hindi version)**

Milestone dates/Time Table for interlinking of Rivers

- | | |
|---|-----------------------|
| (i) Notification of the Task Force | By 16.12.2002 |
| (ii) Preparation of Action Plan-I, giving an outline of the time schedules for the completion of the feasibility studies, detailed project reports, estimated cost, implementation schedule, concrete benefits and advantages of the project, etc. | 30.04.2003 |
| (iii) Preparation of Action Plan-II, giving alternative options for funding and execution of the project as also the suggested methods for cost recovery. | 31.07.2003 |
| (iv) Meeting with the Chief Ministers to deliberate over the project and to elicit their cooperation. | May/June, 2003 |
| (v) Completion of Feasibility Studies (already in progress). | 31.12.2005 |
| (vi) Completion of Detailed Project Reports. (Preparation of DPRs will start simultaneously since FSs in respect of six river links have already been completed). | 31.12.2006 |
| (vii) Implementation of the Project (10 years). | 31.12.2016 |

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 (Polavaram) - Krishna (Vijayawada) link	Orissa, Maharashtra, Andhra Pradesh, Karnataka, & Chattisgarh,	Andhra Pradesh	5.82	162	--	Feasibility Report Completed
3	Godavari (Inchampalli) - Krishna (Nagarjunasagar) link	Orissa, Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka & Chattisgarh,	-do-	2.87	237	975	Feasibility Report Completed
4	Godavari (Inchampalli) - Krishna (Pulichintala) link	-do-	-do-	6.13	413	--	Feasibility Report Completed
5	Krishna (Nagarjunasagar) - Pennar (Somasila) link	Maharashtra, Andhra Pradesh & Karnataka,	-do-	5.81	124	90	Feasibility Report Completed
6	Krishna (Srisailam) – Pennar link	-do-	--	--	--	17	Feasibility Report Completed
7	Krishna (Almatti) – Pennar link	-do-	Andhra Pradesh & Karnataka	1.90+0.68 = 2.58	56	--	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 – II (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	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
11	Damanganga - Pinjal link (As per DPR)	Maharashtra & Gujarat	Maharashtra (only water supply to Mumbai)	--	895	--	DPR Completed in March 2014.
12	Par-Tapi-Narmada link	-do-	Gujarat	1.69	--	32.50	FR Completed DPR under progress
13	Ken-Betwa link (As per DPR of 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.
14	Pamba - Achankovil - Vaippar link	Kerala & Tamil Nadu,	Tamil Nadu	0.91	--	508	Feasibility Report Completed
15	Bedti - Varda link	Maharashtra, Andhra Pradesh & Karnataka	Karnataka	0.60	--	4	PreFeasibility Report Completed
16	Netravati – Hemavati link	Karnataka, Tamil Nadu & Kerala	Karnataka	0.34	--	--	PreFeasibility Report Completed

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.	Kosi-Mechi link	Bihar , West Bengal & Nepal	Bihar	2.99 + 1.75 (Nepal) = 4.74	24	3180	Entirely lies in Nepal
2.	Kosi-Ghaghra link	Bihar , Uttar Pradesh & Nepal	Bihar & Uttar Pradesh	8.17+ 0.67 + 1.74 (Nepal) = 10.58	48	--	S&I work taken up
3.	Gandak-Ganga link	-do-	Uttar Pradesh	37.99+2.41(Nepal) = 40.40	700	--	S&I work completed
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	--	S&I work completed
7.	Rajasthan-Sabarmati link	-do-	Rajasthan & Gujarat	5.35 + 2.04= 7.39	282	--	S&I work completed
8.	Chunar-Sone Barrage link	Bihar & Uttar Pradesh	Bihar & Uttar Pradesh	0.30 + 0.37= 0.67	--	--	S&I work completed
9.	Sone Dam - Southern Tributaries of Ganga link	Bihar & Jharkhand	Bihar & Jharkhand	2.99 + 0.08=3.07	360	95	S&I work taken up
10.	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	S&I work taken up
11.	Jogighopa-Tista-Farakka link (Alternative to M-S-T-G)	-do-	Assam, West Bengal & Bihar	----	216	1115	S&I work taken up

ANNEX – II (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
12.	Farakka-Sunderbans link	West Bengal	West Bengal	1.50	184	--	S&I work completed
13.	Ganga(Farakka) -Damodar-Subernarekha link	West Bengal ,Orissa & Jharkhand	West Bengal, Orissa & Jharkhand	7.63+0.30+0.55= 8.47	484	--	S&I work completed
14.	Subernarekha-Mahanadi link	West Bengal & Orissa	West Bengal & Orissa	0.18 + 0.365 = 0.545	--	9	S&I work completed

FR -- Feasibility Report

PFR – Pre feasibility Report

DPR – Detailed Project Report

S&I -- Survey and Investigation

MCM -- Million Cubic Meters

Future Work of NWDA year 2015 to 2019											Annex - II	
SL. NO.	DETAILS	WATER BALANCE REPORTS (REVIEW) *	PFR	FR / REVISION OF FR	DPR@	System studies		1 - 5 years NATIONAL / INTERNATIONAL NEGOTIATIONS	APPRAISAL	MONITORING	OTHER ACTIVITIES	Remarks
						PRELIMINARY SYSTEM STUDIES BASED ON SECONDARY DATA AND REPORT ACTUALLY COMPLETED	COMPREHENSIVE SYSTEM STUDIES BASED ON ALL RELEVANT INFORMATION INCLUDED IN DPR ETC					
I	Basins / Sub-basins											
II	NPP Links											
	HIMALAYAN COMPONENT											
1	Kosi – Mechi	★		★		★						
2	Kosi – Ghagra	★		★		★						
3	Gandak – Ganga	★		★		★		★				
4	Ghagra – Yamuna	★		★		★		★				
5	Sarda – Yamuna	★		★	★	★						
6	Yamuna – Rajasthan			★		★						
7	Rajasthan – Sabarmati			★		★						
8	Chunar – Sone Barrage	★		★		★						
9	Sone Dam – Southern Tributaries of Ganga	★		★		★						
10	Manas –Sankosh - Tista - Ganga	★		★	★	★		★				
11	Ganga – Damodar – Subernarekha			★		★						
12	Subernarekha – Mahanadi			★		★						
13	Farakka – Sunderbans			★		★						
	PENINSULAR COMPONENT											
14	Mahanadi (Bermul) – Godavari (Dowlaiswaram)	★	★	★	★	★	★	★				
15	Godavari (Inchampalli) – Krishna (Nagarjunasagar)	★				★	★	★				
16	Godavari (Inchampalli) – Krishna (Pulichintala)	★				★	★	★				
17	Krishna (Almatti) – Pennar	★			★	★		★				
18	Krishna (Srisaillam) – Pennar	★			★	★		★				
19	Krishna (Nagarjunasagar) – Pennar (Somasila)	★			★	★						
20	Pennar (Somasila)–Palar- Cauvery (Grand Anicut)	★			★	★						
21	Cauvery (Kattalai) – Vaigai – Gundar	★			★	★						
22	Ken – Betwa					★	★	★	★	★	★	
23	Parbati – Kalisindh – Chambal					★						
24	Par – Tapi – Narmada				★	★	★	★	★			
25	Damanganga – Pinjal				★		★	★	★			
26	Bedti – Varda			★								
27	Netravati – Hemavati			★								
28	Pamba – Achankovil – Vaippar											
III	Intra State Links											
	Maharashtra											
1	Wainganga (Goshikurd) – Nalganga (Purna Tapi)				★	★						
2	Upper Krishna – Bhima (system of Six links)					★						

SL. NO.	DETAILS	WATER BALANCE REPORTS (REVIEW) *	PFR	FR / REVISION OF FR	DPR@	System studies		NATIONAL / INTERNATIONAL NEGOTIATIONS	APPRAISAL	MONITORING	OTHER ACTIVITIES	Remarks
3	Upper Ghat – Godavari Valley (Damanganga (Ekdare)- Godavari Valley)					★	★					
4	Upper Vaitarna – Godavari Valley					★						
5	North Konkan – Godavari Valley					★						
6	Koyna – Mumbai city				★	★						
7	Sriram Sagar Project (Godavari) – Purna – Manjira					★						
8	Middle Konkan – Bhima Valley					★						
9	Koyna – Nira					★						
10	Mulsi – Bhima					★						
11	Savithri – Bhima					★						
12	Kolhapur – Sangli – Sangola					★						
13	Riverlinking projects of Tapi basin and Jalgaon District					★						
14	Nar – Par - Girna valley					★						
15	Narmada – Tapi					★						
16	Jigaon – Tapi – Godavari Valley Gujarat					★						
17	Damanganga – Sabarmati – Chorwad Odisha					★						
18	Mahanadi – Brahmani					★						
19	Mahanadi – Rushikulya (Barmul Project)					★						
20	Vamsadhara – Rushikulya (Nandini Nalla project) Jharkhand				★	★						
21	South Koel – Subernarekha					★						
22	Sankh – South Koel					★						
23	Barkar – Damodar – Subernarekha Bihar				★	★						
24	Kosi – Mechi [entirely lie in India]					★			★	★	★	
25	Barh – Nawada					★						
26	Kohra – Chandravat (now Kohra-Lalbegi)					★						
27	Burhi Gandak – Noon – Baya - Ganga								★	★	★	
28	Burhi Gandak – Bagmati [Belwadhar]											
29	Kosi – Ganga					★						
30	Development of Bagmati Irrigation & Drainage Project- Phase-II (Barrage near Kataunjha in Muzaffarpur District) and Adhwara Multipurpose Project with Kosi-Adhwara- Rajasthan					★						
31	Mahi – Luni link					★						
32	Wakal – Sabarmati – Sei – West Banas – Kameri link					★						
33	Tamil Nadu											
34	Ponnaiyar – Palar link				★	★						
35	Karnataka											
36	Bedti - Dharma - Varada link		★									
37	Bhadra-Vedavathi(Vani Vilasa Sagar) link		★									
38	Diversion of west flowing rivers schemes (Barapole- upper cauvery link)		★									
39	Diversion from Bedti & Aghanashini to Varada Chhattisgarh		★									
40	Paury-Mahanadi link					★						

Future Work of NWDA year 2020 to 2024						6 - 10 years		Annex - II (Contd..)				
SL. NO.	DETAILS	WATER BALANCE REPORTS (REVIEW)	PFR	FR / REVISION OF FR	DPR	System studies		NATIONAL / INTERNATIONAL NEGOTIATIONS	APPRAISAL	MONITORING	OTHER ACTIVITIES	REMARKS
						PRELIMINARY SYSTEM STUDIES BASED ON SECONDARY DATA AND REPORT ACTUALLY COMPLETED	COMPREHENSIVE SYSTEM STUDIES BASED ON ALL RELEVANT INFORMATION INCLUDED IN DPR ETC					
I	Basins / Sub-basins											
II	NPP Links											
	HIMALAYAN COMPONENT											
1	Kosi – Mechi				★			★				
2	Kosi – Ghagra				★			★				
3	Gandak – Ganga				★							
4	Ghagra – Yamuna				★							
5	Sarda – Yamuna						★	★	★	★	★	
6	Yamuna – Rajasthan				★			★				
7	Rajasthan – Sabarmati				★			★				
8	Chunar – Sone Barrage							★				
9	Sone Dam – Southern Tributaries of Ganga							★				
10	Manas –Sankosh - Tista - Ganga						★	★	★	★	★	
11	Ganga – Damodar – Subernarekha				★			★				
12	Subernarekha – Mahanadi				★			★				
13	Farakka – Sunderbans				★			★				
	PENINSULAR COMPONENT											
14	Mahanadi (Bermul) – Godavari (Dowlaiswaram)						★	★	★	★	★	
15	Godavari (Inchampalli) – Krishna (Nagarjunasagar)				★							
16	Godavari (Inchampalli) – Krishna (Pulichintala)				★							
17	Krishna (Almatti) – Pennar						★	★				
18	Krishna (Srisailam) – Pennar						★	★				
19	Krishna (Nagarjunasagar) – Pennar (Somasila)						★	★				
20	Pennar (Somasila)–Palar- Cauvery (Grand Anicut)						★	★				
21	Cauvery (Kattalai) – Vaigai – Gundar						★	★				
22	Ken – Betwa									★	★	
23	Parbati – Kalisindh – Chambal				★			★				
24	Par – Tapi – Narmada									★	★	
25	Damanganga – Pinjal									★	★	
26	Bedti – Varda				★			★				
27	Netravati – Hemavati				★			★				
28	Pamba – Achankovil – Vaippar				★			★				
III	Intra State Links											
	Maharashtra											
1	Wainganga (Goshikurd) – Nalganga (Purna Tapi)						★					
2	Upper Krishna – Bhima (system of Six links)						★					
3	Upper Ghat – Godavari Valley (Damanganga (Ekdare)- Godavari Valley)						★					
4	Upper Vaitarna – Godavari Valley						★					
5	North Konkan – Godavari Valley						★					
6	Koyna – Mumbai city						★					

SL. NO.	DETAILS	WATER BALANCE REPORTS (REVIEW)	PFR	FR / REVISION OF FR	DPR	PRELIMINARY SYSTEM STUDIES BASED ON SECONDARY DATA AND REPORT ACTUALLY COMPLETED	COMPREHENSIVE SYSTEM STUDIES BASED ON ALL RELEVANT INFORMATION INCLUDED IN DPR ETC	NATIONAL / INTERNATIONAL NEGOTIATIONS	APPRAISAL	MONITORING	OTHER ACTIVITIES	REMARKS
7	Sriram Sagar Project (Godavari) – Purna – Manjira						★					
8	Middle Konkan – Bhima Valley						★					
9	Koyna – Nira						★					
10	Mulsi – Bhima						★					
11	Savithri – Bhima						★					
12	Kolhapur – Sangli – Sangola						★					
13	Riverlinking projects of Tapi basin and Jalgaon District						★					
14	Nar – Par - Girna valley						★					
15	Narmada – Tapi						★					
16	Jigaon – Tapi – Godavari Valley						★					
	Gujarat											
17	Damanganga – Sabarmati – Chorwad						★					
	Odisha											
18	Mahanadi – Brahmani						★					
19	Mahanadi – Rushikulya (Barmul Project)						★					
20	Vamsadhara – Rushikulya (Nandini Nalla project)						★					
	Jharkhand											
21	South Koel – Subernarekha						★					
22	Sankh – South Koel						★					
23	Barkar – Damodar – Subernarekha						★					
	Bihar											
24	Kosi – Mechi [entirely lie in India]											
25	Barh – Nawada						★					
26	Kohra – Chandravat (now Kohra-Lalbegi)						★					
27	Burhi Gandak – Noon – Baya - Ganga											
28	Burhi Gandak – Bagmati [Belwadhar]						★					
29	Kosi – Ganga						★					
30	Development of Bagmati Irrigation & Drainage Project-Phase-II (Barrage near Kataunjha in Muzaffarpur District) and Adhwara Multipurpose Project with Kosi-Adhwara-						★					
	Rajasthan											
31	Mahi – Luni link						★					
32	Wakal – Sabarmati – Sei – West Banas – Kameri link						★					
33	Tamil Nadu											
34	Ponnaiyar – Palar link						★					
35	Karnataka											
36	Bedti - Dharma - Varada link						★					
37	Bhadra-Vedavathi(Vani Vilasa Sagar) link						★					
38	Diversion of west flowing rivers schemes (Barapole-upper cauvery link)						★					
39	Diversion from Bedti & Aghanashini to Varada						★					
	Chhattisgarh											
40	Paity-Mahanadi link						★					

Future Work of NWDA year 2025 onwards												
SL. NO.	DETAILS	WATER BALANCE REPORTS (REVIEW)	PFR +	FR / REVISION OF FR ++	DPR	System studies		NATIONAL / INTERNATIONAL NEGOTIATIONS	APPRAISAL	MONITORING	OTHER ACTIVITIES	REMARKS
						PRELIMINARY SYSTEM STUDIES BASED ON SECONDARY DATA (WATER BALANCE STUDIES ETC.)	COMPREHENSIVE SYSTEM STUDIES BASED ON ALL RELEVANT INFORMATION AFTER PREPARATION OF DPR					
I	Basins / Sub-basins											
II	NPP Links											
	HIMALAYAN COMPONENT						★	★	★	★	★	
1	Kosi – Mechi						★	★	★	★	★	
2	Kosi – Ghagra						★	★	★	★	★	
3	Gandak – Ganga						★	★	★	★	★	
4	Ghagra – Yamuna											
5	Sarda – Yamuna						★	★	★	★	★	
6	Yamuna – Rajasthan						★	★	★	★	★	
7	Rajasthan – Sabarmati											
8	Chunar – Sone Barrage											
9	Sone Dam – Southern Tributaries of Ganga											
10	Manas –Sankosh - Tista - Ganga						★	★	★	★	★	
11	Ganga – Damodar – Subernarekha						★	★	★	★	★	
12	Subernarekha – Mahanadi						★	★	★	★	★	
13	Farakka – Sunderbans						★	★	★	★	★	
	PENINSULAR COMPONENT											
14	Mahanadi (Bermul) – Godavari (Dowlaiswaram)						★	★	★	★	★	
15	Godavari (Inchampalli) – Krishna (Nagarjunasagar)						★	★	★	★	★	
16	Godavari (Inchampalli) – Krishna (Pulichintala)						★	★	★	★	★	
17	Krishna (Almatti) – Pennar						★	★	★	★	★	
18	Krishna (Srisailam) – Pennar						★	★	★	★	★	
19	Krishna (Nagarjunasagar) – Pennar (Somasila)						★	★	★	★	★	
20	Pennar (Somasila)–Palar- Cauvery (Grand Anicut)						★	★	★	★	★	
21	Cauvery (Kattalai) – Vaigai – Gundar						★	★	★	★	★	
22	Ken – Betwa								★	★	★	
23	Parbati – Kalisindh – Chambal						★	★	★	★	★	
24	Par – Tapi – Narmada								★	★	★	
25	Damanganga – Pinjal						★	★	★	★	★	
26	Bedti – Varda						★	★	★	★	★	
27	Netravati – Hemavati						★	★	★	★	★	
28	Pamba – Achankovil – Vaippar						★	★	★	★	★	
III	Intra State Links											
	Maharashtra											
1	Wainganga (Goshikurd) – Nalganga (Purna Tapi)							★	★	★	★	
2	Upper Krishna – Bhima (system of Six links)							★	★	★	★	
3	Upper Ghat – Godavari Valley (Damanganga (Ekdare)- Godavari Valley)							★	★	★	★	
4	Upper Vaitarna – Godavari Valley							★	★	★	★	
5	North Konkan – Godavari Valley							★	★	★	★	
6	Koyna – Mumbai city							★	★	★	★	
7	Sriram Sagar Project (Godavari) – Purna – Manjira							★	★	★	★	

